FLORIDA INTERNATIONAL UNIVERSITY

Miami, Florida

EXPLORING THE FEASIBILITY OF IMPLEMENTING MOSQUE-BASED HEALTH PROMOTION PROGRAMS: A MIXED METHODS APPROACH

A dissertation submitted in partial fulfillment of

the requirements for the degree of

DOCTOR OF PHILOSOPHY

in

PUBLIC HEALTH

by

Bandar Alsaif

2019

To: Dean Tomás R. Guilarte
Robert Stempel College of Public Health and Social Work

This dissertation, written by Bandar Alsaif, and entitled Exploring the Feasibility of Implementing Mosque-Based Health Promotion Programs: A Mixed Methods Approach, having been approved in respect to style and intellectual content, is referred to you for judgment.

We have read this dissertation and recommend that it be approved.

_____
Wasim Maziak

_____
Boubakari Ibrahimou

_____
Consuelo Beck-Sagué

_____
Shanna Burke

_____
Elena Bastida, Major Professor

Date of Defense: March 20, 2019

The dissertation of Bandar Alsaif is approved.

_____
Dean Tomás R. Guilarte
Robert Stempel College of Public Health and Social Work

_____
Andrés G. Gil
Vice President for Research and Economic Development
and Dean of the University Graduate School

Florida International University, 2019

DEDICATION

This work is dedicated to my family. I thank my family for their encouragement at every step of my work and their continuous support. I would not have been able to achieve my professional goals without your support.

I also dedicate this work to my loving wife. Thank you for your patience, Thank you for motivating me to be a better person every day. Thank you for believing in me. Thank you for helping me realize I can do it.

I also thank my extended family and friends for the kind words, support, and best wishes.

ACKNOWLEDGMENTS

I would like to express my deepest gratitude and appreciation to my committee chair, Dr. Elena Bastida, for her patience, support, and guidance during this long process. Thank you for believing in me, and for countless hours of editing, talking through the dissertation with me, and inspiring me to do more. I could not have achieved this milestone without your encouragement. Thank you for everything you have done for me. I look forward to continue to work with you in the future.

I would also like to thank my committee members, Dr. Wasim Maziak, Dr. Boubakari Ibrahimou, Dr. Consuelo Beck-Sagué, and Dr. Shanna Burke. Dr. Ibrahimou, thank you for your guidance and support regarding quantitative analysis and research. Dr. Maziak, thank you for your guidance and continuous feedback. Dr. Consuelo Beck-Sagué and Dr. Shanna Burke, thank you for your endless support and useful suggestions for the dissertation.

I would also like to thank the members of my PhD cohort for their inspiration and support. I value your friendship and unconditional love and support. Your friendship is and will remain important to me. I must extend sincere appreciation to the all the faculty and staff at FIU, who were always there to support and guide me throughout my graduate studies. I must extend sincere appreciation to the local Muslim community in South Florida for their interest and patience and for providing space, suggestions and a welcoming environment for my research. Additionally, I am grateful to the Government of Saudi Arabia, The Ministry of Higher Education, The Saudi Cultural Mission, and University of Hail for financially supporting me and giving me the opportunity to achieve my dream to become a Public Health educator and leader in Saudi Arabia. Lastly, I must

thank all my friends and family for their unwavering encouragement and support. Thank you for listening to me through my frustrations and successes. I could not have completed this dissertation without your support.

ABSTRACT OF THE DISSERTATION

EXPLORING THE FEASIBILITY OF IMPLEMENTING MOSQUE-BASED HEALTH PROMOTION PROGRAMS: A MIXED METHODS APPROACH

by

Bandar Alsaif

Florida International University, 2019

Miami, Florida

Professor Elena Bastida, Major Professor

There is a paucity of literature on health interventions and implementation of faith-based programs, designed to manage chronic diseases in Muslim populations. Largely, this results from the partial empirical data on US Muslim socio demographics and health conditions, which remain regional and limited in scope, hence lacking in providing the necessary foundation for intervention design. Feasibility studies, such as the one conducted in this dissertation, provide essential information for designing health interventions in the South Florida Muslim community.

This research effort, preliminary and focused in scope, produced a feasibility study to assess the health status and needs of mosque attendees, while also examining the mosque as a site for future health interventions in South Florida. It consisted of three aims and employed a mixed method design.

The first aim built on a multi-cluster survey design, to assess the health status and behavioral practices of Muslim mosque attendees. The second aim employed focus groups to expand on the survey findings, while also seeking new information on the feasibility of the mosque as an intervention site. Finally, the third aim relied on interview

data to investigate mosque organizational structures and their underlying relevance to planning and implementing a mosque intervention.

Findings from the survey phase indicated that participants were ethnically diverse, in early middle age, highly educated, with stable income and health insurance. Diabetes, high cholesterol, and high blood pressure were among the most commonly reported health conditions. Results highlight the influence of stereotyping and stigma on mental health and stress.

Three major themes emerged from focus group and interview data analysis: Islam and health; the mosque as an intervention site; and, environmental stressors. Participants acknowledged the influence of Islam on their life activities, and were strongly interested in implementing health programs at the mosque to address physical activity, nutrition, mental health, gender related issues and marital and psychological counseling.

Findings from this research are expected to contribute the foundation for the design and implementation of mosque-based interventions, while also contributing to basic research identifying highest-priority health conditions and behaviors for Muslim Mosque attendees.

TABLE OF CONTENTS

LIST OF TABLES

CHAPTER I

BACKGROUND AND SIGNIFICANCE

Muslim Americans are a rapidly growing, diverse minority group that remains understudied. Hindering an accurate assessment of their numbers is the lack of U.S. census data for this group, which makes it challenging to estimate their population size. To this day, U.S. censuses have not included questions on religious membership; hence, only estimates of their actual numbers and religious affiliation are presently available. The latter are primarily available from the U.S. Religion Census which may inadequately represent the number of Muslims in the U.S. (Pew Forum on Religious and Public Life, 2009; Grammich, Hadaway, Houseal, Jones, Krindatch, Stanley & Taylor, 2012).

The U.S. Religion Census suggests an estimated 3.5 million Muslims live in the United States, which represents approximately 1.1% of U.S. adult population (Pew, 2009; Grammich, Hadaway, Houseal, Jones, Krindatch, Stanley & Taylor, 2012). This population includes 22 diverse ethnic and racial groups including Muslims of Pakistani or South Asian origin (33%), Arabs (27%), African Americans (24%), sub-Saharan Africans (9%), Europeans (2%), White Americans (2%), Iranians (1%), Latinos (1%), and Turks (1%; United States Department of State, 2009; Pew Forum on Religious and Public Life, 2015; Council on American-Islamic Relations [CAIR], 2004).

According to CAIR (2004), there are 2,106 mosques in the U.S.; 118 mosques are located in the state of Florida, which ranked fourth among states by number of mosques in the U.S. The US Religion Census (2012.) estimates that there are approximately 41,240 mosque-affiliated Muslim Americans living in Miami-Dade and Broward

Counties. Of these, 12,355 attend Friday prayers regularly (Grammich, Hadaway, Houseal, Jones, Krindatch, Stanley & Taylor, 2012). These counties have the highest population in the state of Florida, and for the purposes of this paper, will be referred to here as South Florida (Florida Population, 2017; U.S. Census Bureau, n.d.). According to the Arab American Institute Foundation (AAI), there are an estimated 112,300 Arab-Americans living in the state of Florida who are demographically Lebanese (34%), other Middle Eastern (15%), Syrian (12%), Egyptian (11%), Moroccan (9%), Palestinian (6%), and an increasing number of Latinos who have converted to Islam (AAI, 2011). The U.S. religion census draws its data from religious congregations; non-mosque affiliated Muslims are not counted.

At present, there are no readily identifiable population-based sociodemographic and health data on Muslim Americans in the U.S. Hence, it is not surprising to find an absence of data on Muslims in Florida, despite their recent population growth. While some regional studies on U.S. Muslims exist, these tend to be small, local, are often qualitative only, and rely on convenience sampling (Padela, Gunter, & Killawi, 2011; Price, Banerjee, Zawi, Childerhose, & Landry, 2016). Moreover, the stress of acculturation, anxiety, unemployment, poverty, language barriers, discrimination, immigration status, social status, and support may affect the accessibility and utilization of health services for this group, which may lead to health disparities in Muslim populations (Odeh Yosef, 2008; Inhorn, & Serour, 2011; Shah, Ayash, Pharaon, & Gany, 2008; Frankovic, 2015; Hodge, Zidan, & Husain, 2015; Awad, 2010; Inhorn, & Serour, 2011; Padela & Raza, 2014; Laird, Amer, Barnett, & Barnes, 2007).

Rationale of the Study

There is a paucity of literature on health promotion and disease prevention studies, especially faith-based interventions, designed to manage chronic diseases in this population (Padela, Gunter, Killawi, & Heisler, 2012). Hence, findings from this formative research may contribute to filling current gaps in population studies and guiding future intervention research, particularly among mosque attendees. This research study explored and identified South Florida Muslims' perceptions and constructions of health and will be directed toward the development of community-level interventions addressing major chronic health conditions and health care problems experienced by this population. For example, preliminary questions, such as openness to participate in a health intervention and barriers to participation remain unanswered (Odeh Yosef, 2008). Preliminary steps paving the ground for implementing community interventions are needed. While concentration on one disease (i.e., diabetes or hypertension), or a behavior (i.e., smoking or binge eating), may strengthen this research effort, it is important to first identify the disease or behavior as a problem to study within this population, rather than to concentrate on a disease or a behavior that may not be an issue. Presently, there are no health statistics available in South Florida to identify the disease or health needs of the targeted population.

Conducting formative research prior to designing a large and formal intervention may assist in determining the acceptability, feasibility and accessibility of the mosque as an appropriate community location for a health intervention. One of the earliest strategies in conducting formative research is to identify the most suitable community location within which to conduct a culturally tailored intervention and to identify

knowledge, perceptions, and cultural practices that may undermine or facilitate the administration of an intervention for a Muslim population (Padela & Curlin, 2013). Barriers, such as stigmatization from fellow members that could restrict the usefulness or accessibility of an intervention, should also be identified (Samari, 2016).

Furthermore, the role of the imam, a respected religious leader of a Muslim community and the person who leads the prayers in a mosque, needs to be explored in depth. This leader may be able to provide legitimacy, as well as respected and valued support to those who seek health advice (Abu-Ras, Gheith, & Cournos, 2008; Mustafa, Baker, Puligari, Melody, Yeung, & Gao-Smith, 2017). Research and interviews with the imam and mosque staff will determine how much time and effort they may be willing to contribute to healthcare initiatives in their local Muslim communities and whether they would be supportive or not. In addition, formative research in the Muslim community should address whether Muslims are willing to be approached in a mosque for a health study, and whether they are willing to answer questions related to their health and lifestyle.

Therefore, numerous questions remain unaddressed for this population, among which are those related to unmet health needs. This research effort, preliminary and focused in scope, offers a timely opportunity to conduct research on this group. With this perspective in mind, the sociodemographic and health profile of Muslim American mosque attendees in South Florida is explored. The aim of this research is two-fold. First, we conduct an assessment of existing health conditions, health behaviors, cultural beliefs and practices that may affect health status and prevention preferences of the selected population. Second, we explore the underlying strengths and barriers in

conducting mosque-based health interventions. Findings from the formative research are expected to contribute the foundation needed for design and implementation of mosque-based interventions, while also contributing to basic research identifying highest-priority health conditions and behaviors for mosque-attending Muslims.

The Significance of the Study

The explanatory mixed methods approach will help generate empirical data for constructing a comprehensive profile of the health status of this population in South Florida. The population in this study is defined as Muslims who are mosque attendees (MMA). The study design includes three components, which were implemented in three phases. The first consists of a quantitative questionnaire survey to assess the health status and behavioral practices of MMA. The second phase employs focus groups to expand on the survey findings, while also seeking new information on the feasibility of the mosque as an intervention site. Finally, the third phase relies on of interviews with imams and board members to investigate mosque organizational structures and their underlying relevance to planning and implementing a mosque intervention. Data from these three research methods contribute to a comprehensive health profile of MMA, while also assessing the feasibility of the mosque as an intervention site.

As this is a complex public health issue centered on a diverse multifaceted population, it is urgent to identify health needs, while identifying culturally sensitive procedures to address priority health conditions and the potential for use of the mosque as an intervention site.

Literature Review

In this section, we review the evidence-based, peer-reviewed academic literature to identify gaps in knowledge about the health of Muslim American populations, Muslim American health, and faith-based interventions. Concepts on existing health conditions, health-seeking behaviors, insurance status, and cultural beliefs that may affect health statuses and prevention preferences among American Muslims were also reviewed.

For this dissertation, a targeted, retrospective search was conducted using PubMed, Google Scholar, and Florida International University Journal library databases that restricted the topic to "Muslim Americans," "Muslims Health," "Muslims," "Mosque health Interventions," and "Faith-based interventions" by finding the most recent material available. Citation searches were also used to obtain useful leads from other disciplines, such as sociology and psychology. This section will conclude with the goals and aims of the completed study based on existing findings and limitations found in the literature.

Existing Health Conditions

The Islamic perspective on health is that it is one of the greatest blessings God bestows on humanity (Isgandarova, 2005). Muslims believe that humans must be good stewards of the bodies entrusted to them by God because He will judge how each person harmed the physical body on earth (Al-Khayat, M. H., 1997). The teachings of the Quran specifically command Muslims to eat a balanced diet of wholesome food while taking care to avoid excess (Aboul-Enein, 2016).

The Institute for Social Policy and Understanding (ISPU) American Muslim Poll (2018) reports that Muslim Americans are a highly educated, racially and ethnically

diverse group, and younger than any other U.S. religious group, with a majority of the population younger than 49 years of age (Mogahed, & Chouhoud, 2018). However, a significant number of Muslims are reluctant to pay close attention to their health (Inhorn, 2016). Muslim Americans have a high prevalence of health conditions, such as diabetes and hypertension (Dallo & Borrell, 2006; Inhorn, 2016). Approximately 66% of the U.S. Muslim population are first generation immigrants (Pew Research Center, 2016). Previous investigations have shown that the length of time living in the U.S. is positively correlated with increased chronic disease prevalence (Cunningham, Ruben, & Narayan, 2008).

Mental Health Issues

Recently, psychiatric problems have reportedly increased among Muslim Americans, prompting establishment of community services nationwide (Howell, 2011). These mental health issues include obsessive-compulsive disorder, depression, mood disorders, anxiety, and post-traumatic stress disorder (Inhorn, 2016).

Concerning trends have been reported by the Hamdard Center for Health and Human Services (year); 10% of Muslim Americans are affected by post-traumatic stress disorder; 15% by anxiety disorders; 43% by adjustment disorder effects, and 9%, by mood disorders (Bener & Mohammad, 2017). The study also showed 16% of Muslim American children meet criteria for Attention-deficit hyperactivity disorder (ADHD, 13% for anxiety disorders, 15% for mood disorders, and roughly 2% are diagnosed with eating disorders (Bener & Mohammad, 2017). These concerning rates may be linked to issues such as trauma, victimization, cultural practices, and intimate partner violence or child abuse in the community (Aqeel, 2010).

Chronic Disease and Cardiovascular Disease Risks

A study done by Aswad (2011) in Michigan revealed that because of the less expensive Dollar Menu prices at fast food restaurants, 41.5% of Muslims reported eating fast food every day, and almost half of Muslims above the age of 45 years report being told by their physician that they have hypertension (45%) and hypercholesterolemia (46.8%). Furthermore, smoking rates are much higher in Arab-American communities than in the United States nationwide, with close to 40% of males reporting smoking (El-Sayed & Galea, 2009). Approximately 43% of Muslim college students report using alcohol which may increase the risk of chronic disease for an entire generation (Arfken, Arnetz, Fakhouri, Ventimiglia, & Jamil, 2011; Arfken, Ahmed, & Abu-Ras, 2013). Although alcohol use is taboo within the Muslim community due to strict religious dietary norms, it is also a sign of status; therefore Muslims who struggle with alcohol dependence do so behind closed doors, and may be less likely to admit to having a problem (Arfken, Ahmed, & Abu-Ras, 2013)

Although rates of obesity and smoking are lower among Muslim males than Hindus of the same socioeconomic strata, Muslims had significantly higher rates of sedentary lifestyle than Hindus from the same sampled demographic groups in India (Gupta, Gupta, Prakash, Sarna, & Sharma, 2002). Yet, even with this lack of exercise, the Muslim sample had significantly lower rates of HTN, diabetes, and coronary heart disease than the Hindu sample. Research also shows that Muslims achieve better control of HTN, lipid levels, diabetes, and excess weight when they are fasting during Ramadan (Athar, 2005; Qureshi, 2002). However, a knowledge gap exists about whether or not

fasting positively or negatively impacts medication compliance due to increased side effects from taking medications on an empty stomach (citation).

Recent findings have highlighted high rates of diabetes among the Muslim American population. Specifically, the findings have indicated that roughly 20.1% of Muslim American men and 15.5% of the Muslim American women are affected by diabetes (Inhorn, 2016). Given that chronic disease prevalence is high among Muslim Americans, Husain (2017) suggests that religion-based approaches may facilitate connections between Muslim values and beliefs and health status, thus enhancing the acceptability and adoption of health interventions in this group.

Recent studies have shown that the risk of being overweight or obese among foreign-born Muslim Americans increases as their duration of residence in the United States increases (Awad, 2010; Jadalla & Lee, 2012). This increase has been attributed to acculturation and the adoption of the American lifestyle, which is characterized by the increased availability of foods that are calorically dense, increased dependence on labor-saving innovations, limited risk awareness, and decreased affordability of traditional foods (Pew Research Center, 2017). These developments pose a significant threat to the well-being of the Muslim American population; however, some strategies can be adopted to mitigate challenges posed by these changes. These include attention to language appropriateness and use of culture-based programs, diets, and awareness materials, emphasizing positive aspects and strategies of traditional food preparation, and reinforcing family concerns that motivate individuals to adopt healthy eating approaches (Pew Research Center, 2017).

Reproductive Health

According to Arousell and Carlbom (2016), sexual health problems have increased recently in young Muslim Americans. This increase has been attributed to silence and the stigma associated with seeking health care services for reproductive health among Muslim Americans (Inhorn & Serour, 2011; Arousell & Carlbom, 2016).

Often, young Muslim American women do not speak about their sexual health issues since topics of reproductive health are generally not discussed openly in a manner that would promote adoption of healthy behaviors (Arousell & Carlbom 2016). Additionally, the stigmatization of sexuality has adversely affected the way in which Muslim American schools educate their students on reproductive health issues and how they address issues that result from sexually transmitted diseases and infections (Arousell & Carlbom, 2016). Subsequently, the lack of appropriate education contributes to high incidence of unprotected sex, sexually transmitted infections, early pregnancies, and a variety of other reproductive health issues (Inhorn, 2016). Lack of appropriate sexual education affects Muslim American healthcare and sexualpractices leading to an increase in sexual and reproductive health problems within this population

Padela et al. (2011) point out that recent trends among Muslim Americans have highlighted the rise in genetic or congenital anomalies. Many of the factors related to this increase among Muslim Americans are closely linked to cultural practices and religious beliefs. For example, Ghareeb (2011) explains that consanguineous marriages, marriage among persons who are closely related, that are common among Muslim Americans of Pakistani origin, can lead to increased risk of congenital anomalies in their infants. In addition, Padela et al. (2011) specify that various genetic disorders are associated with

incest. Some of these include stillborn babies, intellectual disability, malfunctioning livers and kidneys, physical deformities, and microcephaly.

Status of Healthcare Insurance among Muslim Americans

The enactment of the Affordable Care Act (ACA) in 2010 increased access to health insurance in the United States. Despite the marked reduction in the number of uninsured Americans, some U.S. populations are still at risk of being uninsured. Muslim Americans are among these groups (Padela et al., 2011).

About 30% of U.S. Muslim families live below the federal poverty line of $23,850 and are uninsured. This is a large population that may not afford healthy foods, health services, or prescription medicines (Khawaldeh, 2008; Mogahed, & Chouhoud, 2017). Indeed, most employed Muslim-Americans do not have access to health insurance sponsored by their employers. Noting that employer-sponsored insurance coverage is one of the leading avenues through which Americans access health care, a significant portion of Muslims miss out on coverage due to being self-employed, underemployed, or unemployed (Husain, 2017). More precisely, Vu et al. (2016) found that a large proportion of Muslim Americans are uninsured since 29% remain underemployed, roughly, 22% are self-employed, and 17% are unemployed.

The Muslim American population includes many recent immigrants. Specifically, Masud (2010) explains that approximately 25% of Muslim Americans arrived in the U.S. within the past two decades, and over 65% of the Muslims over 18 years were born abroad. As such, most of these individuals have inadequate knowledge of healthcare

insurance options in the U.S. This poses significant risks since Muslims may be exposed to considerable financial strain in the event of a medical emergency.

Despite these concerning findings, recent changes in the insurance market and achievements by organizations seeking to raise awareness of the need for health insurance may reverse the negative trends in a few years. Masud (2010) points out that there has been considerable advancement in alternative insurance markets within the U.S. One of the alternative markets that have experienced substantial improvements is the Muslim American insurance market. Recently, significant attention has been paid to insurance plans that are compliant with Islamic laws. For instance, there has been substantial interest in Takaful insurance plans, which are compliant with Islamic law, designed to appeal to uninsured Muslim Americans (Masud, 2010). In addition, the American Insurance Group (AIG) has begun introducing Takaful insurance products and insurance operations that satisfy the Islamic law needs of Muslim Americans by avoiding and restricting the utilization of insurance funds to be invested in companies that involves elements prohibited by Islamic law such as gambling, alcohol, tobacco, and pork products (Inhorn & Serour, 2011). Coupled with the increased interest among Muslim Americans, reports by Ernst and Young (2009) indicated that the Takaful market was expected to exceed the $10 billion mark in 2010. These developments suggest that the trend of under-insured Muslim Americans may be reversed if attention is placed on developing insurance plans that are compliant with tenets of the Muslim religion.

Concerted effort by governmental and nongovernmental organizations in the U.S. and Florida plays an important role in educating Muslim American immigrants on health insurance options through grassroots awareness strategies (Vu et al., 2016). Given that

Muslim Americans within South Florida originate from diverse national backgrounds and have unique educational, income, and language capabilities, the Muslim-oriented campaigns empower this market to exploit various health insurance options. In addition, the establishment of community health groups targeting Muslim Americans has increased access to a wider variety of Muslim American subgroups, which has facilitated increased enrollment in the health insurance program by members of demographic groups that were previously unreachable (Inhorn & Serour, 2011).

To illustrate, families that experience financial hardships should have access to professional advice on how to prioritize their spending and access premium insurance cover, and most suitable options for their families (Husain, 2017). These initiatives have played an important role in simplifying the process of enrolling in insurance plans. These efforts, according to Padela and Zaganjor (2014), are contributing to the increased enrollment in health care plans among the self-employed, underemployed, and unemployed Muslim American, as well as among Muslim Americans challenged by language barriers.

Health Seeking Behaviors among Muslim American

In many religions and cultures, various ailments and their modes of treatment have been stigmatized (Vu et al., 2016). This behavior has deep roots in the Muslim American community (Vu et al., 2016). Specifically, a variety of factors that range from cultural mistrust of American health care systems, and religious beliefs and practices, affect health-seeking behaviors among Muslim Americans (Vu et al., 2016).

According to Husain (2017), religious factors have been major contributors to delayed care among American Muslims. Studies have shown that Muslim American

women may avoid seeking medical care for fear that they may not receive care by a same sex physician. Noting that Muslim Americans prefer having modest healthcare encounters, these concerns impede Muslim women from seeking preventive screening services (Inhorn & Serour, 2011). In addition, modesty concerns among Muslim women make it hard for them to attend health awareness programs that may discuss embarrassing health-related topics. For instance, modesty concerns may hinder Muslim women from attending the discussion on how to prevent and seek health for conditions related to human papillomavirus infection due to stigma associated with such processes (Vu et al., 2016). As such, these trends adversely affect health-seeking behaviors among members of this population.

Additionally, cross-sectional studies evaluating aspects of health care indicate that women from varied Muslim backgrounds have differing modesty concerns, thus complicating the process of targeted assistance within hospitals that provide care for Muslim women (Vu et al., 2016). To highlight, Muslim Americans of South Asian origin have considerable modesty concerns about breast cancer examination, while Muslim Americans from Arab nations express considerable concerns over the likelihood that medical practitioners may not respect their bodies (Padela & Zaganjor, 2014). Ultimately, these diverse and complicated concerns may adversely affect the health-seeking behaviors among adults within the Muslim American population.

Further, health-seeking behaviors among Muslims in the U.S. are affected by fatalistic beliefs that are informed by the doctrines of the Muslim faith. Specifically, religion-informed fatalism about health or the belief that an individual's health outcomes are predestined by God may encourage delayed health-seeking behavior (Padela &

Zaganjor, 2014). For instance, some adults within the Muslim-American population may delay cancer-screening procedures since these ailments are considered penance for an individual's sin, or the belief that despite their choice of health care procedures, these diseases affecting them are fated for them (Inhorn & Serour, 2011). This misperception contributes to delayed health-seeking behaviors, thus leading to health complications among members of the Muslim American community.

The third factor that adversely affects health-seeking behaviors among members of the Muslim American community is mistrust and the strangeness of the American health care system. To elaborate, most Muslims immigrated to the United States from nations that have significantly different health care systems (Padela & Zaganjor, 2014). This incongruity between expectations attached to the U.S. healthcare system and cultural diversity among Muslims from varied backgrounds results in different views about the country's healthcare (Inhorn, 2016). Coupled with challenges such as discrimination, racism, and poverty, many immigrants in the Muslim American community may develop negative beliefs and perceptions towards the country's health care providers and system (Inhorn & Serour, 2011). Ultimately, these challenges may cause members of the Muslims American community to delay seeking health care, thereby leading to health complications.

Provider-patient relationships also affect healthcare-seeking behaviors among members of the Muslim-American community. Specifically, the differences between three major categories of socialization—the family, assignment of socially constructed gender roles, and roles of an individual relative to social organizations—within Muslim

cultures and the American culture have a significant influence on the patient's views of health care (Husain, 2017). These factors will influence health-seeking behaviors.

For example, in the United States, healthcare providers consider the individual as an autonomous entity in health care decisions. In contrast, Muslim cultures place significant emphasis on the family's participation in treating various illnesses (Padela & Zaganjor, 2014). These differences introduce misunderstandings among health healthcare providers from different cultures. Consequently, members of the Muslim American faith may delay seeking health care due to negative perceptions created by misunderstandings with American-culture healthcare providers (Padela & Zaganjor, 2014).

Issues related to informed consent affect health-seeking trends among Muslim Americans. To elaborate, health care delivery within the United States is structured in a manner that considers the patient autonomous. Therefore, patients have full control over confidentiality, health information disclosure, and informed consent agreements. Additionally, during the processes of providing care to Muslim patients, informed consent, health information disclosure, and confidentiality should be obtained in ways that are consistent with the individual's culture, language, and customs (Padela & Zaganjor, 2014). However, a unique aspect of health care within the United States is that it is provided based on the tenets of an individual's human rights. Therefore, providers seek to provide care that improves the wellbeing of the individual (Husain, 2017).

In contrast, most healthcare systems in Muslim countries place significant emphasis on individuals within the context of the family. This aspect complicates issues of patient confidentiality. For instance, a Muslim woman may require a doctor to consult with her husband, away from the patient's bedside (Vu et al., 2016). This approach

contradicts concepts of informed consent, truthful disclosures, and autonomous decision-making. Consequently, such conflicts may lead to negativity and mistrust towards American healthcare systems, thereby limiting patients' interest in seeking health care for different ailments.

Further, dietary restrictions among members of the Muslim-American population may affect the community's ability to seek professional care for different ailments (Padela & Zaganjor, 2014). Particularly, strict beliefs about halal and Muslim kosher requirements may cause members of the American Muslim community to avoid being admitted to hospitals for fear of being fed with pork or non-halal foods. These avoidant behaviors may adversely affect the community's willingness to seek health care for ailments that may require hospitalization (Padela & Zaganjor, 2014).

Gaps in Muslim Population Studies, Intervention Research, Healthcare Inequality

Several gaps exist in Muslim population studies and intervention research. There is a critical need for additional empirical research on developing and validating measures of religiosity that are Islam-based. These measures would be integral to exploring the relationship between Muslim-based tenets and health behaviors among Muslim Americans. Moreover, development and consideration of these measures could play a vital role in establishing of generalizable approaches with different levels of adherence to faith, and different sub-communities within the community (Vu et al., 2016).

Further research needs to be conducted on how health services can be tailored to accommodate members of the Muslim American faith. A major deterrent to health-seeking behaviors is the lack of amenities, food services, and adequate spiritual services for Muslim Americans (Vu et al., 2016). Therefore, adequate measures should be

undertaken to understand the community's preferences and needs; a range of communication strategies between healthcare professionals and members of the Muslim American community may also have to be developed (Mohammadi et al., 2008).

Within the broader literature on Muslim health, The ISPU (2011) report on meeting the needs of American Muslims cites the Institute of Medicine (IOM, 2011) report noting the paucity of research on Muslim health (Padela, Gunter, & Killawi, 2011). The IOM (2002) notes the difficulties of recruiting racial/ethnic minorities to research, which is one of the primary ways in which researchers and clinicians learn about different populations (Nelson, Stith, & Smedley, 2002). The ISPU report further suggests three primary reasons for Muslims' lack of participation in research: mistrust of the healthcare system, perceived experiences of discrimination, and lack of clinical accommodation for religious preferences, and beliefs that hinder open discussions about personal matters (Padela et al, 2011). In response to these factors, Padela, Gunter, Killawi, & Heisler (2012) suggest evidence-based solutions that mitigate the cultural gaps noted in the ISPU report: the use of female-female and male-male interviewing strategies, and linguistically appropriate educational materials that rely on basic language when delivering health messages.

Addressing these barriers is crucial to obtaining high healthcare quality, as suggested by evidenced-based research that indicates that racial disparities in health decline when healthcare practitioners are culturally competent (Anderson et al., 2003; Hasnain, Connell, Menon, & Tranmer, 2011; Hammoud et al., 2000). Therefore, additional research is needed on cultural competency in this population. Despite their country of origin, ethnic, or cultural diversity, the shared religious health beliefs that have

an impact on sexual norms, gender roles, cultural practices, and diet suggests that religious leaders and mosques may be able to contribute to health promotion in numerous ways (Odeh Yosef, 2008; Lawrence & Rozmus, 2001; Tober & Budiani, 2007). Therefore, further research is needed targeting the intersection of religion and health as well as the current state of health in this community (Fatena**,** 2010).

Muslim Americans are a vulnerable population at high risk for health disparities, given the level of discrimination they experience in the U.S. (Padela & Heisler, 2010; Peek, 2011; Pew Forum on Religious and Public Life, 2009; Ahmed & Reddy, 2007; Laird, Amer, Barnett, & Barnes, 2007; Padela & Raza, 2014). Research on the importance of social determinants of health in this community is critically needed.

Strengths of and Barriers to Mosque-Based Interventions

The establishment of mosque-based interventions may be an important avenue for improving health among Muslim Americans. First, mosque-based interventions may play a vital role in promoting a deeper comprehension of healthcare interventions within this community (Husain, 2017). To elaborate, socio cultural and religious constructs in Islam play a key role in establishing links between communities and health interventions. Establishing this connection would potentially enhance the acceptability, salience, and adoption of various interventions among members of the Muslim American community. Second, mosque-based interventions would be quite effective since they would facilitate the development of unique interventions that are tailored to meet the social and cultural contexts of subgroups within the Muslim American population (Rumun, 2014). To elaborate, mosque-based interventions would incorporate a range of culturally tailored

approaches to address health issues among Muslim Americans that were derived from the Arab, Hispanic, European, and the Black American population.

However, effective implementation of mosque-based interventions faces several barriers. First, most previous studies on the effectiveness of religion-based programs were based on evidence from U.S. church settings in which the parishioners were mainly African Americans (Inhorn & Serour, 2011). Though results have been weak, they suggest potential benefits associated with religion-based health interventions. Another barrier is that few studies have explored the suitability of developing and implementing such programs in religious settings, such as mosques. Therefore, these systems may lead to mixed positive and negative outcomes when implemented within a mosque setting. Further, Muslim American populations are among the most diverse in the nation, including multiple languages and national origins. Therefore, a variety of culturally tailored strategies would need to be adopted to enhance the effectiveness of mosque-based interventions (Inhorn, 2016).

Currently there are many faith-based programs for minority populations in the U.S., but none at mosques for Muslims living in South Florida. Faith-based interventions in African American churches have been successful when using lay educators, who are members of the community and who are supported by certified health advisors and pastors who serve as important role models in the community. Examples of faith-based interventions models implemented in churches with improved health outcomes and retention rate are; Healthy Eating and Living Spiritually (HEALS) hypertension management program, Fit Body and Soul (diabetes intervention program), Project Joy and Path-Ways (cardiovascular health program) (Dodani, Sullivan, Pankey, &

Champagne, 2011; Dodani, 2011; Yanek, Becker, Moy, Gittelsohn, & Koffman, 2001; McNabb, Quinn, Kerver, Cook, & Karrison, 1997).

Among the above, the pastor in the HEALS program nominates five "health ministers" from the congregation, preferably from among those who are employed in a health profession, to be "influence leaders" (Dodani et al, 2011). Spirituality is the framework of the HEALS manual with adjunctive lessons demonstrating actual portion control measurements, caloric content analysis, vitamins, exercise lessons, and anthropometric measurements (Dodani et al, 2011). Proper training of lay educators on effective communication skills is critical to positive outcomes in faith-based programs (Dodani et al., 2011). In addition, educators must be well versed in several areas, including the need for confidentiality, protocols, and the legal boundaries of their authority to educate or conduct research on participants, which may be beyond the capacity of lay interventionists (Dodani et al., 2011).

Several studies have examined Muslim health at mosques and the role of the imam. However, many of these studies were small, conducted outside the United States, focused on mental health, not exclusively mosque-centered, or faith-based (Kagimu et al., 1998; Al-Krenawi, Graham, Ophir, & Kandah, 2001; Matin & LeBaron, 2004; Padela, Aasim, Malik, & Ahmed, 2018; Maynard, Baker, & Harding, 2017; Vu, Muhammad, Peek, & Padela, 2018; Banerjee et al., 2017; Vu, Azmat, Radejko, & Padela, 2016). Moreover, these studies did not address the dynamics of social interaction inside mosques; or attempted to understand if non-medical trained mosque personnel would be acceptable in implementing a tailored health program. Finally, the role of culture, gender

identity, religion, and other social determinants of health were not explored in-depth in these studies.

Literature Review Summary

This literature review highlighted aspects of health interventions with an emphasis on Muslim health. Specifically, the review highlighted aspects of diseases that are common among Muslim Americans, some of which are directly related to social and cultural practices within the Muslim community. Several factors influence health-seeking behaviors. These include cultural mistrust of the American healthcare system and the large number of immigrants who do not understand this system, religious beliefs and practices, differing modesty concerns, fatalistic beliefs that are informed by the principles of the Muslim faith, and dietary restrictions. Cumulatively, these factors can adversely affect health-seeking behaviors among members of the Muslim American community. Mosque-based interventions may be able to play a vital role in ensuring that socio cultural and religious constructs in Islam play a key role in establishing links between communities and healthcare interventions.

Muslim Americans are largely uninsured because most employed Muslim-Americans do not have access to employer-sponsored health insurance. The creation of alternative insurance plans, such as the Takaful insurance plans, are a positive development in this area that may reduce the number of uninsured consumers from the Muslim American community.

Lastly, several gaps exist in Muslim population studies and intervention research. Additional empirical research on developing and validating measures of religiosity that

are Islam based, and investigations into how interventions can be tailored to accommodate members of the Muslim American faith are needed.

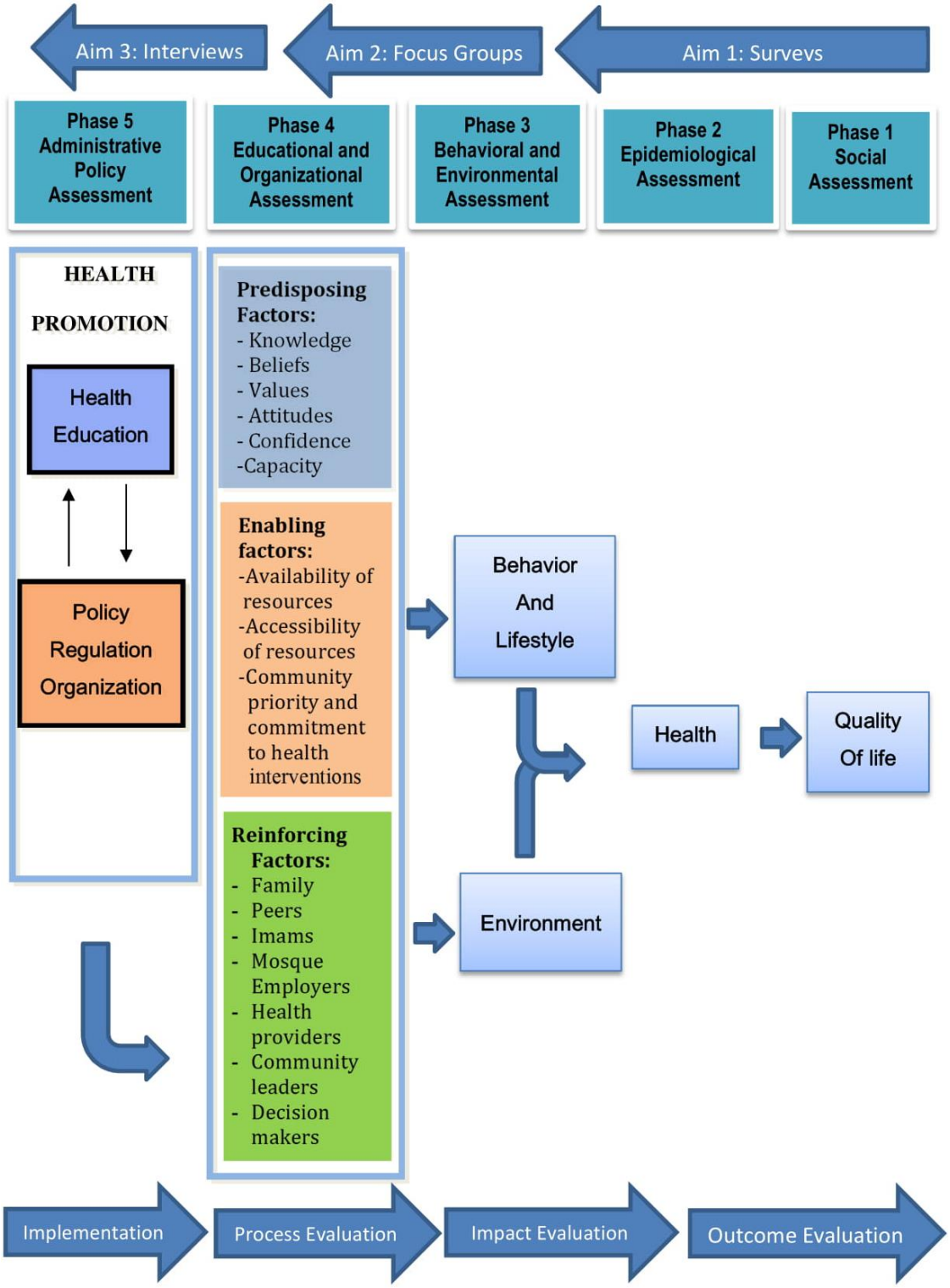
Theoretical Framework

This dissertation centers on a feasibility study that employs formative research strategies to assess the health status and needs of mosque attendees in South Florida, while also examining the mosque as a site for future health interventions. The five key steps for a needs assessment outlined by the PRECEDE–PROCEED Model are used to guide the formative research (Green, 1974; Centers for Disease Control and Prevention, 2017; Gielen et al., 2008).

Dissertation Goal

The goal of the dissertation is to provide a foundation for designing a mosque-based intervention in South Florida. Within this broad goal, a mixed method approach was utilized to investigate the three aims listed below. Each aim fulfills a sequential step of the feasibility study, as outlined by the PRECEDE–PROCEED Model, illustrated on the following page (Figure 1), and described in the CDC's community-assessment recommendations (Green, Kreuter, Deeds, Partridge, & Bartlett, 1980; Centers for Disease Control and Prevention, 2017; Gielen, McDonald, Gary, & Bone, 2008).

Figure 1: PRECEDE–PROCEED Model



SPECIFIC AIMS

Aim 1: To identify the highest impact health conditions and behaviors among MMA in eight South Florida mosques by administering surveys to assess physical and mental health status and needs.

Aim 2: To expand on survey findings by exploring knowledge and perceptions of disease, health, cultural practices, and behaviors that may hinder or facilitate the implementation of a mosque-based intervention (focus groups).

Aim 3: To identify mosque organizational practices that may facilitate or hinder the implementation and the design of a mosque-based health intervention (interviews).

Summary

Combined findings from the three phases of the formative analysis are expected to contribute to the development of a comprehensive intervention that is feasible and scalable. Findings are expected to yield much needed information and background materials for the planning and delivery of health interventions at mosques in South Florida and other communities. The above theoretical framework guides the conceptualization of the feasibility study and thereby facilitates the investigation and integrations of participants' health within the contextual domains set forth by the model.

Limitations:

Findings are limited to attendees of the eight largest mosques in South Florida, encompassing Miami-Dade and Broward Counties, and are not generalizable to other Muslim American populations in the U.S. or Muslims living in other cultures.

Additionally, a multi cluster design was employed which limited sample selection within each mosque. Finally, we realize that social desirability bias may have influenced participants' response, but we believe that the latter was minimized by the recruitment effort, the privacy offered participants in responding to the survey and the anonymity of the survey. However, we recognize that with every survey study, there is an inherent bias between those who choose to participate and those who do not.

CHAPTER II

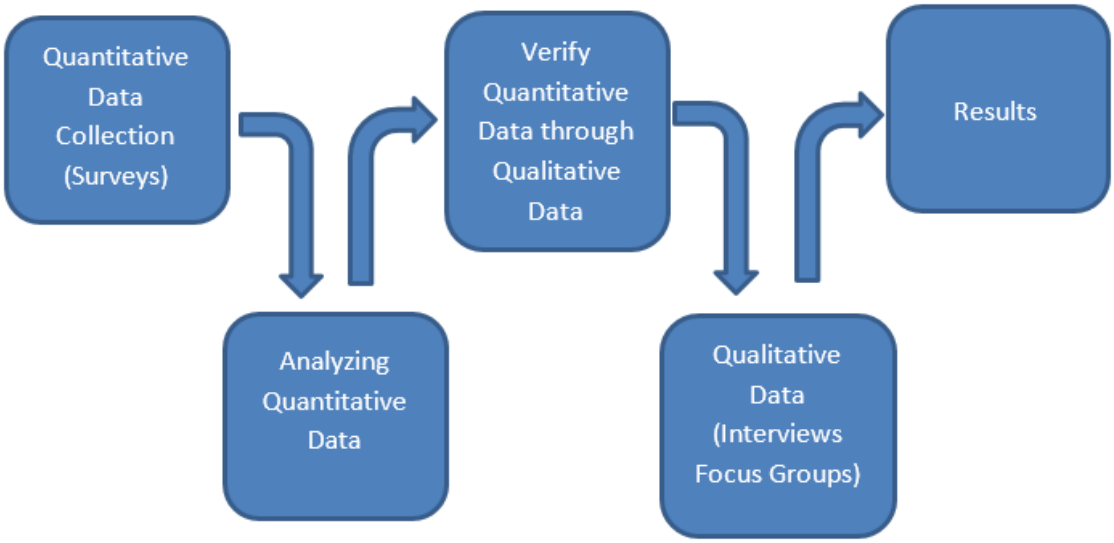
METHODS

In this chapter, the methodological approach is explained in detail, to include the recruitment of participants and procedures for data collection, and data analysis. First, the research design used in this study is explained. Second, the sampling strategies, participants' characteristics, the method by which they were selected, and the demographic characteristics of the study sample are described. Third, the data collection procedures, research instruments used to operationalize the variables, and the procedures used to recruit participants are described. Finally, the data analysis strategy, including data cleaning and statistical procedures, are outlined.

Mixed Method Research Design

The study uses a mixed method approach beginning with a cross-sectional questionnaire survey consisting of recruited participants from eight mosques located in South Florida, followed by focus groups with mosque attendees and interviews with mosques leaders. The mixed method design followed the explanatory sequential mixed-method (quantifiable data, followed by textual data), as outlined by Creswell and Creswell (2017), to address the scan data on Muslim American health in South Florida. The study focused exclusively on mosque attendees. This design served to enhance data obtained from the survey in that it allowed for further interpretations of survey findings by study participants and the mosque leadership. This method is becoming increasingly used by social and behavioral sciences researchers since it provides an opportunity for study participants to review and suggest data interpretations. (See Figure 2)

Figure 2. Explanatory sequential mixed-method design



The study methodology and instruments, including the questionnaire survey, focus groups and interview, were approved by the Institutional Review Board (IRB) of Florida International University (IRB-17-0333-CR01).

Survey Data Collection

Approach

Cluster selection.

Recruitment for the cross-sectional survey, focus groups, and interviews were derived from the universe of all adult mosque attendees and personnel, drawn from a cluster of 30 mosques in Miami-Dade and Broward counties, herein referred to as South Florida. Thirty mosques were identified using Google maps, religious websites, and by speaking with local Muslims. Ethnographic field observations were utilized as one of the strategies for selecting mosques for the study. Criteria for stratifying mosques required meeting five salient structural conditions (Table 1): *Space*: Here defined as intervention

adequate, meaning availability of large grounds and parking space; *Size*: congregations meeting a minimum of 200 Friday attendees; *Diversity:* Broad country of origin representation. Eight mosques, three in Miami Dade and five in Broward counties, met the above criteria. Table 1 provides a synopsis of the matrix employed in mosque selection. For the geographical location of the eight mosques, please refer to Appendix A.

Table 1: Mosque Selection Matrix: Miami-Dade (MIA) and Broward (Brow) counties

	Name	Location	Buildings with classrooms	Large grounds space	Congregation Friday minimum (200)	Strong ethnic representation
1	Masjid Miami Gardens	MIA	✓	✓	✓	✓
2	Masjid Al-Ansar	MIA	✓	✗	✗	✓
3	Masjid Miami	MIA	✗	✗	✓	✓
4	Masjid ul Mumineen	Brow	✗	✓	✗	✓
5	Islamic Association of Tri-County	Brow	✗	✗	✗	✓
6	Masjid Al-Hijrah	Brow	✗	✗	✗	✗
7	Miami Beach Mosque	MIA	✗	✗	✗	✗
8	Islamic Center of Weston	Brow	✗	✗	✗	✗
9	Islamic Center of Broward	Brow	✗	✗	✗	✓
10	Darul Ulum Institute	Brow	✓	✓	✓	✓
11	Masjid al-Fayza	MIA	✗	✗	✓	✓
12	Masjid Ibrahim	MIA	✓	✗	✗	✓
13	Islamic Jaffaria Association Miami	MIA	✗	✗	✗	✗
14	Masjid Al-Iman	Brow	✗	✗	✓	✓
15	Masjid An-Noor	MIA	✓	✓	✓	✓
16	Masjid Jamaat ul Muttaqeen	Brow	✗	✓	✗	✓
17	Madinatul Uloom Institute	Brow	✓	✓	✓	✓
18	Dawahli Islam Islamic Center	MIA	✗	✗	✗	✗
19	Masjid Al-Hijrah	MIA	✗	✗	✗	✗
20	Masjid Tawhid	Brow	✗	✗	✗	✗
21	Shamsuddin Masjid	MIA	✓	✗	✗	✓
22	Jamat Almuaminin, Inc	Brow	✓	✓	✓	✓
23	Masjid Al-Ihsaan	MIA	✓	✓	✓	✓

24	Al Amin Center of Florida	Brow	✗	✗	✗	✓
25	American Muslim Association of North America	MIA	✗	✗	✗	✓
26	Islamic Foundation of South Florida	Brow	✓	✓	✓	✓
27	Masjid Taqwa	Brow	✗	✗	✗	✓
28	United American Muslim Association	MIA	✗	✗	✗	✗
29	Islamic Center of North Miami	MIA	✗	✗	✗	✗
30	Nurul Islam	Brow	✓	✓	✓	✓

Permission and full access to conduct the research were obtained from all eligible mosques. Approval letters were submitted to the Florida International University Institutional Review Board as part of the IRB requirement. IRB approval letter is attached in Appendix B.

Ethnographic observation.

An ethnographic approach was used to identify the best locations and times for the study; observations were conducted on potential participants' diversity and times of higher mosque attendance, as well as checking the size and resources of each mosque. Observations were conducted primarily on Fridays and evening prayers as well as during Sunday afternoon schools. Generally, Friday prayers have the largest number of attendees during the week. People usually gather to socialize and eat at the main area and courtyard of the mosque after Friday prayer. Participants usually spend one hour on average after Friday prayers at the mosque. Men usually have higher attendance than women and children, since they are not required to attend. Most of the mosques visited have social activities on the first Friday of each month, as well as on Saturday evenings. Some of the mosques also have Sunday afternoon classes for adults and children. Therefore, a

decision was made to recruit during three different occasions: Friday prayer, one other regular prayer time, and one weekly social gathering at each of the eight mosques. Moreover, a female researcher was asked to assist in recruiting women to the survey, interviews, and focus groups; since ethnographic findings and the literature suggest the importance of including a woman researcher whenever including women in the study.

Sample Recruitment of Mosque Attendees.

For Aims 1 and 2, the imam at each of the eight mosques delivered a relevant Friday talk about health and the purpose of the study to encourage attendees to participate. Imams invited the researcher to present the study to the congregation and informed attendees about his availability to explain the study. Only those 18 years of age and older were eligible to participate. Recruitment for focus groups came from the survey participants, as recommended by the methods. Imams and board members were not recruited to complete the survey.

Formative Research Phase I*:* Survey Procedures

Adults attending selected mosques, age 18 and older, participated in the study, which constitute the universe of all adults attending the selected mosque. The target was to recruit at least 50 participants from each mosque, for a total sample size of at least 400 (See *Sample Size and Power Considerations*). Recruitment efforts were conducted three times at each mosque, as noted previously, to attempt to reach the target sample size. Participants received a copy of the IRB-approved consent to read and sign and were able to ask questions privately as needed; once this was done, male and female researchers gave participants the survey to fill out and remained in place to explain any questions that

may arise. Participants completed and dropped the survey in the collection box by the mosque doors. Only the researchers had access to the box, maintaining confidentiality at all times. The researcher collected and transferred completed surveys to a sealed envelope, and locked them in an off-site cabinet at FIU until data entry. While the imams explained the study at Friday prayers (largest attendance), data collection were not limited to Fridays only. The survey did not take longer than 10-15 minutes to fill out, but participants were able to take as much time as needed.

Survey Measures.

Two initial steps were followed in developing the survey instrument. First, guided by the PRECEDE-PROCEED Model, the investigator developed a preliminary instrument that included items adopted from established and normed instruments, such as the SF-36, BRFSS, and culturally appropriate items, already validated in prior U.S. Muslim health-related research (see below). This resulted in the first draft of the questionnaire. Second, a panel of experts to include, Muslim community residents, regular mosque attendees, and local Muslim health professionals evaluated the preliminary instrument with attention to its cultural acceptability and appropriateness to the targeted population. The panel approved the preliminary survey instrument and suggested the inclusion of questions on stigma and stereotype. The second draft of the survey questionnaire addressing the panel's recommendations was presented to the panel for further deliberation and approval. Once approved, the second draft of the questionnaire was pilot tested with a sub-sample of 15 Muslim respondents who gave feedback on the instrument's clarity, readability, format, and length. Finally, their suggestions were incorporated, and the approved instrument adopted.

The final version of the survey questionnaire explores sociodemographic, health status and behaviors, stigma and stereotyping among mosque attendees. Survey measures tapping on socioeconomic status (SES), literacy, smoking, dietary salt and other diet habits, alcohol consumption, and physical activity were adopted from the Behavioral Risk Factor Surveillance System Questionnaire (BRFSS) (Stein, Lederman & Shea, 1993) and the MOS 36-Item Short-Form Health Survey (SF-36) (Ware & Sherbourne,1992).

The BRFSS is a U.S. population-based telephone health survey system that provides data on physical activity, obesity, and fruit/vegetable intake (Remington, Smith, Williamson, Anda, Gentry & Hogelin, 1988). The BRFSS also provides data on health practices, health risks behaviors, injury and chronic diseases morbidity and mortality, health risk behaviors, and preventive practices that is used by many health organizations such as States Health Departments, American Cancer Society, and American Heart Association (CDC, 2014). The BRFSS information is used by some states, local health departments, and national health organizations such as the American Cancer Society and the American Heart Association to plan and target their health initiatives (CDC, 2014).

The SF-36 short form Quality of Life scale is a scale that assesses eight areas of physical and mental health perceptions. The scale was designed by the Rand Corporation in 1992 and is used and validated across many health and research studies around the world. The scale consists of 36 questions; each question scored between 0-100 and then categorized under 8 physical and mental health subscales. The scale has high reliability and validity with Cronbach's alpha that range from .73 to .95. The overall score

represented in subscales indicate the participant status; higher scores indicate better physical and mental health conditions. The eight subscales are categorized into physical functioning, role limitations due to physical health, role limitations due to emotional problems, energy/fatigue, emotional well-being, social functioning, body pain, and general health (Ware, 2000).

Seven questions on stigma and stereotype were identified from studies conducted on American Muslims, (Amer & Bagasra, 2013; Kunst, et al, 2012; Kwok, et al, 2011; Killawi et al, 2015; Schmitt et al, 2002; Rippy & Newman, 2008). These studies were thoroughly reviewed and following recommendations by Amer and Bagasra (2013), seven questions were selected. The latter were considered most appropriate to study issues on Muslim stigma and stereotype in general, as indicated by Killawi et al (2015).

The above seven questions were used to construct a Stress due to Stigma and Stereotype Scale. The scale scored each of the seven questions (from the stress/stigma questionnaire) from 0-100, and a total score of 700 was created. Scores were then placed into four categories: 1) Always stressed/stereotyped/stigmatized (467-700 points); 2) Sometimes stressed/stereotyped/stigmatized (234-466 points); 3) Rarely stressed/stereotyped/stigmatized (1- 233points); and, 4) Never stressed/stereotyped/ stigmatized (0 points). The internal consistency of the scale, as calculated by Cronbach's α, was satisfactory in our sample (values of 0.85-0.87) and the Corrected Item-Total Correlation was above 0.4 for most items in the scale. As recommended by Nunnally and Bernstein (1994) and Gliem and Gliem (2003), the scale is reliable if it has an internal consistency Cronbach's α of 0.80 and more, and Corrected Item-Total Correlation of at least 0.40.

Sociodemographic variables to define ethnic origin were based on country of birth and race. To assess socioeconomic status education level, income, relationship status, employment status, and health insurance status were used as indicators. The survey is divided into five sections: 1) sociodemographic; 2) mosque attendance frequency; 3) smoking status, diet, BMI, and disease status; 4) health assessment; 5) stereotype and stigmatization assessment. The questionnaire items, stages in the PRECEDE-PROCEED Model, and dependent and independent variables are shown in Table 2. A more detailed table can be found in Appendix C.

Table.2 Questionnaire items, stages, and variables.

	Variables	Indicators
Independent Variable (Predisposing factors)	Gender identity	Gender?
	Relationship status	Current relationship status?
	Country of origin	Were you born in the United States or in another country?
	Race and	Race and/or ethnicity?
	Ethnicity	Hispanic/Latino
	Group identity	Do you identify with a national or regional group?
	Age (years)	Age in Years
	Education level	How many school years have you completed?
Independent Variable (Enabling factors)	Employment status	Are you now employed?
	Frequency of mosque attendance	Do you attend Friday prayers?
		How many times do you come to the mosque per week?
		Including yourself, how many people live in your household?
		Do they all go to the mosque?
Health assessment	Smoking status	Do you smoke or use any tobacco products? If Yes, how often? What do you use? (Please check all apply) Does a family member smoke at Home?
	Diet habits	Do you consume any of the food or drinks below? (Please check all apply)
		How many glasses of water (8 oz.) do you drink a day?
	Self-image	Do you consider your weight?
	BMI	Can you provide an accurate measurement of your weight and height?

	Chronic disease status	Has a doctor, nurse, or other health professional ever told you or a member of your household that you had any of the following?
	SF-36 questions	
Stereotype and Stigma assessment	Have you ever felt stereotyped because of your faith/religion?	
	If yes, how frequently do you feel stereotyped?	
	When stereotyped, do you feel stressed?	
	Do you experience stress when praying in public?	
	If yes, do you avoid praying in public because of behaviors that stress you?	
	Have you ever felt stigmatized because of your faith/religion?	
	If yes, does stigma prevent you from participating in mosque social activities or observing your religion?	
Enabling Factors	Insurance status	Currently, do you have health insurance
		If not, where do you receive health care when needed?
	Income	What is your annual income?
		What is your annual household income?

Sample Size Considerations.

Initially, sample size calculations were conducted to estimate the number of participants adequate to conduct the planned health and needs assessments. Given the total population of 41,240 mosque affiliated Muslim Americans living in South Florida, sample size calculations yielded an adequate sample size of 384 participants that met conditions for the proposed statistical analysis and would result in a confidence level of 95% and confidence interval of 5%. Recruitment, however, exceed expectations with a large number of mosque attendees expressing enthusiasm for the study. Based on the recommendations of committee members, recruitment was extended by three months prior to the recruitment period, which resulted in a final sample of n= 507 at the time recruitment closed. Finally, we note that the recruited sample resulted from a cluster sampling design in which mosques were selected based on established criteria, explained

earlier. Hence, analyses based on survey data, generated by the cluster design method, were adequately controlled for the cluster nature of the sample.

Survey Data Analysis.

Two researchers using SPSS statistical software (SPSS 20, Chicago, IL, USA) cleaned and entered the data and a third researcher cross validated all entries. Frequencies were used to describe participant demographic factors, including gender identity, age, education level, and socioeconomic status. Means and medians of continuous variables are presented in Chapter 3, with standard deviations or interquartile ranges, respectively. For categorical variables, the researcher calculated proportions and compared them using prevalence ratios and 95% confidence intervals. When appropriate, analysis took into account the cluster design, controlling for the sum of all intra-cluster variances and considering the assumption that participants from one mosque were nested within it. Mixed effects or other covariance components modeling were used to investigate simultaneous relationships within and between levels of grouped data, thereby making it more efficient at accounting for variance among variables at different levels. Chi-square analyses were conducted to assess whether relationships between health status and demographic variables (gender identity, age, education, income, nationality, occupational status, and type of health insurance coverage) achieved statistical significance.

Given that survey collection was nested within mosques, hierarchical logistic regression analysis was employed to test the association of the predictor variables and outcome variables. To account for Intra-Cluster Correlation (ICC) a Generalized Estimating Equations (GEE) statistical method was employed. Hierarchical multiple

regression was used to evaluate the relationship between independent and dependent variables, controlling or accounting for the impact of confounding variables on the dependent variable (Wu, Crespi, & Wong, 2012; Eldridge & Kerry, 2012). Binary logistic regression analysis was used to examine the relationship between each predictor variable and the outcome variable.

Formative Research Phase II: Focus Groups

Aim 2 further explores and expands on salient survey findings through focus groups. Below we indicate the steps employed in generating the focus groups and subsequent analysis.

Focus groups guide

Several procedures were followed to develop the first draft of the Focus group guide. First, guided by the PRECEDE-PROCEED Model, questions were formulated for pilot testing. This resulted in the first draft of the guide, which consisted of preliminary questions and items that were pilot tested with a small panel of experts and students. Some questions considered for inclusion in the focus group guide addressed preferences and accessibility of the mosque as an intervention site. Other questions focused on attitudes and openness toward mosque personnel as health advocates. Concern for practicality included choice of time and date to conduct an intervention, language preference for educational materials and barriers in completing an intervention. Environmental stressors, including stigmatization and stereotyping, were also considered.

Second, once the preliminary guide was drawn a panel of experts was invited to review it. Those invited included experts from Florida International University, Muslim

health professionals, and community residents. The panel was tasked with reviewing the preliminary focus group guide and asked for their views on the receptivity and preferences of the local Muslim community for conducting the focus groups. Questions posited to the panel included their observations on preferred location for health programs, cultural and religious factors relevant to health care access, especially women's preferences, avoidance of certain foods and exercise. The latter were particularly important in evaluating acceptability, cultural, and content validity of the focus group guide, as these pertained to the local Muslim community of both genders. The final version of the open-ended focus group guide was pilot tested in a small group consisting of five Muslim students from Florida International University. This group was asked to review the guide in terms of its clarity, readability, format, and length. Moreover, they were prompted for additional comments and recommendations to improve the preliminary guide. Suggestions by the group included the addition of questions to assist in determining preferred individual locations for health advice by men and women, such as mosques, health fairs, or family clinics. Other comments suggested the inclusion of community preferences and concerns, e.g., the proximity of grocery stores to individual homes and the pricing of health foods at supermarkets where they shop regularly. Suggestions also related to the inclusion of questions to explore patient-physicians' interactions, such as, "What is keeping you from visiting a health professional?" The group also noted the importance of including women related questions, particularly the delivery of medical care (gender identity and location), preferences and barriers for exercise and clothing. Finally, after incorporating the suggested changes to the final version of the questionnaire, was adopted. (Appendix D).

Focus Groups Procedure.

Four mosques, two in each county, were randomly selected as a location for conducting the focus groups. Similarly to recruitment procedures for the survey sample, recruitment signs were posted on all open areas at each of the randomly selected mosques; additionally, recruitment information was posted on the bulletin for each mosque and survey participants were informed on the focus group stage and invited to participate. Four focus groups were conducted. After obtaining full consent, two researchers led the one-hour, audio-recorded, focus groups. Groups varied in size, but each group had a minimum of six participants from each mosque.

Research Phase III: Organizational Interviews

Aim 3 proposed to identify mosque organizational practices that may facilitate or hinder the implementation and the design of a mosque-based health intervention (interviews). For this aim, a purposive sample was drawn that included the universe of the eight mosques organizational structures, led by each Imam. Each mosque leader was invited to participate or designate a surrogate mosque official, e.g. board member. Interviews were scheduled according to each Imam or surrogate preference. All eight mosques participated in the interviews. In two mosques, there was additional participation from two board members.

Interview guide

Given the PRECEDE-PROCEED Model guiding the study, both focus group and interview guide are informed by the previous component. Hence, in developing the interview guide, in addition to earlier questions posited in the study, important topics and

suggestions emerging from survey and focus group findings were also incorporated in formulating the interview guide. As earlier posited when formulating the study, Imams or a surrogates from the mosques leadership were queried on organizational structure, openness to the mosque as an intervention site, endorsement of a possible health-related intervention, and willingness to become health advocates (Appendix E). Additionally, important topics and suggestions emerging from focus groups and survey data were also incorporated to the interview guide. These included practical suggestions for the intervention, among which were time, day, logistics, length and language preference for educational materials. Type and content of the intervention emerged as serious topics, including marriage, domestic and psychological counseling, programs oriented to women, and environmental stressors, including stigmatization and stereotyping.

Interview Procedures.

Ten mosque imams and board members participated in the one-hour, open-ended, in-depth interviews. As noted above, there was additional participation from two mosques. Participants read and signed the consent forms and asked questions as necessary. Researchers audio-recorded and transcribed verbatim all interviews.

Focus Group and Interview Data Analysis:

The investigator transcribed verbatim all focus group and interview textual data. One reader reviewed all transcripts for content accuracy. The researcher entered corrected and revised data to NVivo qualitative data analysis Software (QSR International Pty Ltd. Version 11, 2012) for thematic analysis (Creswell, 2005). Researchers used open and axial coding to order the data and further refine the analysis.

Two researchers examined and discussed emergent themes. Two Inter-raters verified all codes. Researchers uncovered elements not revealed by the quantifiable survey data. For Aim 2, the analysis focused on strength and consistency, that is, agreement of emergent themes, especially resulting from open and axial codes. The purpose here was to explore themes and processes as these related to the feasibility study. For example, interviews with Imams and board members addressed practical organizational and structural questions relevant to implementing an intervention as well as serious topics that emerged from focus group discussions and survey results. Whenever appropriate qualitative data from interviews and focus groups were combined to address one or several themes.

Chapter III

Quantitative Data Results

This chapter illustrates the initial treatment of the data, presents descriptive statistics of participants' demographic characteristics, their responses to the SF-36 instrument, religious commitment, and assessment of stress due to stereotyping and stigma. Moreover, the highest impact health conditions and behaviors among the targeted study population, resulting from the survey data collection, are also identified, interpreted and presented (Aim 1).

Although the data analytic plan was presented in Chapter 2, part of this discussion is repeated below in order to facilitate the reading and interpretation of the analysis presented here. Means and medians of continuous variables are presented in this chapter, with standard deviations or interquartile ranges, respectively. For categorical variables, and proportions to compare prevalence ratios and 95% confidence intervals. When appropriate, analysis took into account the cluster design, controlling for the sum of all intra-cluster variances and considering the assumption that participants from one mosque were nested within it. Mixed effects or other covariance components modeling, Generalized Estimating Equations (GEE), were used to investigate simultaneous relationships within and between levels of grouped data, thereby making it more efficient at accounting for variance among variables at different levels. Chi-square analyses were conducted to assess whether relationships between health status and demographic variables (gender identity, age, education, income, nationality, occupational status, and type of health insurance coverage) achieved statistical significance.

Given that survey collection was nested within mosques, hierarchical logistic regression analysis was employed to test the association of the predictor variables and outcome variables. To account for Intra-Cluster Correlation (ICC) a Generalized Estimating Equations (GEE) statistical method was employed. Hierarchical multiple regression was used to evaluate the relationship between independent and dependent variables, controlling or accounting for the impact of confounding variables on the dependent variable (Wu, Crespi, & Wong, 2012; Eldridge & Kerry, 2012). Binary logistic regression analysis was used to examine the relationship between each predictor variable and the outcome variable.

Demographic Background of Survey Respondents

Data were collected from the eight mosques selected: three mosques were in Miami Dade County and five were in Broward County. Recruitment and data collection were attempted simultaneously at each of the mosques. Once recruited, participants gave informed consent and received the survey instrument to fill out immediately. At each mosque, recruitment and data collection efforts were conducted during three different time-periods and events: Friday prayers, social events and Sunday school. For example, Friday prayers had higher attendance rates but lower response rates, since most people were rushing to go back to work or collect their children from school. Social events had higher response rates, since participants had more time to complete the survey. Finally, during Sunday school parents had disposable time while waiting for their children.

Five hundred and seven (n=507) participants completed the demographic questionnaire that included questions on age, gender identity, race, marital status,

educational level, income level, country of origin, national identity, and employment status. Descriptive statistics were generated on all demographic variables obtained from the participants who responded to the survey (Table 3). Of the 507 survey respondents, 61.1% were male and 38.9% were female. Approximately 68.8% of the participants indicated that they were currently married and 26.2% identified themselves as single. Participants' average age was 41 years (SD=15.8, range=18-86 years).

Participants were asked about place of birth; frequencies and percentages were calculated. Most 355 (70.0%), were born outside the United States while the remaining 152 (30.0%) were born in the United States. Participants reported forty-three different countries of birth (Table 3). The following regions had the greatest representation: South Asian (24.7%), South American (15.5%), and Middle Eastern and North African (MENA) (13.3%). U.S.-born individuals were younger than those reporting any other birth region; 63% of the 18-28 -year-old participants were U.S.-born, followed by those indicating MENA as their birthplace at 20%.

Number of years in school was collected as part of the demographic profile (Table 3). The mean number of years in school was 16.4 years (SD=18.73) and the median was 17. Nearly half (46.2%) reported being educated at least to the undergraduate level, and 234 (46.2%) reported between 13 and 17 years of education. Sixty-nine (13.6%) participants indicated having less than 12 years of education, and 204 (40.2%) reportedly had more than 18 years of education. Individuals born in the United States and MENA region had the highest proportion of participants who reported having more than 18 years of education at 30.9% and 26.5% respectively.

Socioeconomic Status

Socioeconomic status was estimated based on income, insurance, and employment status. A summary of the socioeconomic variables of survey respondents is in Table 3. Income was measured by obtaining participants' best estimate of annual household income. Since 25% of the sample preferred not to respond to the income questions, a large number of missing data had to be imputed; multiple imputations were performed for the substitution of these missing values (Schenker, Raghunathan, Chiu, Makuc, Zhang, & Cohen, 2006; Little, 1988). The largest proportion (n=158; 31.2%) reported their annual income between $51,000- $75,000 (Table 3).

Insurance status.

Among survey respondents, 85.2% of respondents reported that they had some form of health insurance coverage, and 14.8% reported having no health insurance at all (Table 3). Most participants who reported having no insurance indicated that they were paying out-of-pocket for their treatment, going to Community Health of South Florida, Inc. (CHI), a free community clinic, or receiving care from urgent care locations or emergency rooms when care was needed.

Employment.

Approximately 46.2% of participants reported having full time employment and 5.7% were unemployed (Table 3).

Household size.

When asked about the number of people in their household, approximately 22% reported having 2 or fewer members and 78% had 3 to 6 members (Table 3).

Race and Ethnicity

Race/ethnic background was collected as part of the demographic profile. The most commonly reported categories were South Asian and Arab/Middle Eastern/North African.

There were no major differences in the proportions of the demographic characteristics of participants in Miami Dade and Broward mosques. However, participants in Miami Dade County were younger, (57% in Miami Dade and 46% in Broward under the age of 40); while those in Broward were better educated (41.3% in Miami Dade and 58.7% in Broward over 16 years of education). Those in Broward were also more likely to report fulltime professional jobs or retirement (37.2% in Miami Dade and 62.8% in Broward were fulltime employees, and 33.3% in Miami Dade and 66.7% in Broward were retirees).

Table 3. Participants' Characteristics by Region of Origin

	Total	U.S-Born	South Asian	South American	MENA*	African	Other
Variables	**N (%)**	**n (%)**	**n (%)**	**n (%)**	**n (%)**	**n (%)**	**n (%)**
Gender identity							
Male	355 (61.1)	78 (25.2)	80 (25.8)	55 (17.7)	76 (24.5)	11 (3.5)	10 (3.2)
Female	197(38.9)	73 (37.1)	48 (24.4)	39 (19.8)	21 (10.7)	9 (4.6)	7 (3.6)
Age in years							
18-28	124(24.5)	79 (63.7)	12 (9.7)	5 (4)	25 (20.2)	-------	3 (2.4)
29–39	134 (26.4)	36 (26.9)	42 (31.3)	18 (13.4)	24 (17.9)	7 (5.2)	7 (5.2)
40–49	104 (20.5)	23 (22.1)	34 (32.7)	12 (11.5)	25 (24)	5 (4.8)	5 (4.8)
50–59	68 (13.4)	8 (11.8)	16 (23.5)	23 (33.8)	15 (22.1)	4 (5.9)	2 (2.9)
>60	77 (15.2)	5 (6.5)	24 (31.2)	36 (46.8)	8 (10.4)	4 (5.2)	--------
M = 41.27, SD = 15.8, range = 18–86 Years							
Marital status							
Single	133 (26.2)	75 (56.4)	15 (11.3)	13 (9.8)	27 (20.3)	2 (1.5)	1 (0.8)
Married	349 (68.8)	71 (20.5)	110 (31)	74 (21.4)	63 (18.1)	16 (4.6)	15 (4.3)
Divorced /Other	25 (5)	5 (20)	3 (12)	7 (28)	7 (28)	2 (8)	1 (4)
Education (Years)							
12 and lower	69 (13.6)	20 (29)	11 (15.9)	24 (34.8)	10 (14.5)	2 (2.9)	2 (2.9)

13- 17	234 (46.2)	68 (29.1)	82 (35)	43 (18.4)	33 (14.1)	5 (2.1)	3 (1.3)
18 and higher	204 (40.2)	63 (30.9)	35 (17.2)	27 (13.2)	54 (26.5)	13 (6.4)	12 (5.9)
Employment							
Full Time	234 (46.2)	63 (26.9)	66 (28.2)	44 (18.8)	37 (15.8)	11 (4.7)	13 (23.4)
Unemployed	29 (5.7)	7 (24.1)	7 (24.1)	7 (24.1)	7 (24.1)	1 (3.4)	--------
Unemployed not seeking work	244 (48.1)	81 (33.2)	55 (22.5)	43 (17.6)	53 (21.7)	8 (3.3)	4 (1.6)
Insurance status							
Yes	432 (85.2)	127 (30)	111 (26)	83 (19)	80 (18.5)	16 (3.6)	15 (3.5)
No	75 (14.8)	24 (32)	17 (22.7)	11 (14.7)	17 (22.7)	4 (5.3)	2 (2.7)
Size of household							
1 member	30 (6)	4 (13.3)	5 (16.7)	9 (30)	10 (33.3)	1 (3.3)	1 (3.3)
2 members	79 (15.7)	18 (22.8)	15 (19)	26 (32.9)	18 (22.8)	2 (2.5)	--------
3 and more	394 (78.3)	128 (33)	107 (27)	58 (14.7)	69 (17.5)	17 (4)	15 (3.8)
Household Income							
<$20,000	7 (1.4)	2 (1.3)	2 (1.6)	3 (3.2)	0 (0)	0 (0)	0 (0)
$20,000-$35,000	77 (15.2)	20 (13.2)	16 (12.5)	10 (10.6)	27 (27.8)	2 (10.0)	2 (11.8)
$36,000-$50,000	69 (13.6)	15 (9.9)	4 (3.1)	15 (16.0)	31 (32.0)	3 (15.0)	1 (5.9)
$51,000-$75,000	158 (31.2)	50 (33.1)	31 (24.2)	43 (45.7)	23 (23.7)	7 (35.0)	4 (23.5)
$76,000-$100,000	147 (29.0)	58 (38.4)	49 (38.3)	12 (12.8)	13 (13.4)	7 (35.0)	8 (47.1)
>100,000	49 (9.7)	6 (4.0)	26 (20.3)	11 (11.7)	3 (3.1)	1 (5.0)	2 (11.8)

Asian region: Pakistan (16.4%), India (5.7%), Bangladesh (11%), Other (0.4%)
Caribbean region: Guyana (11%), Trinidad (3.7%), Other (1%)
***Middle Eastern region/ North African region: Saudi Arabia (5.3%), Jordan (2%), other (11.4%)**
African region: Nigeria (2.2%), other (1.6%)
Other regions: European (3.4%), Canada (0.4%)
This category includes part time students, housewives, and retired persons

Mosque Level of Attendance

Mosque attendance varied and was measured by how often participants attended Friday prayers, how many times they went to the mosque per week, and whether other family members attended mosque. Nearly 63% participants reported always attending weekly Friday religious services. Males had a significantly higher rate of weekly attendance than females (χ^2: 39.247, $p < 0.001$). However, it is important to note that

attendance at Friday prayers at the mosque is mandatory for men but not for women. The highest attendance rate was for participants aged 35-64 years old. This age group had a significantly higher attendance rate (52.9%) compared to any other age groups (F: 8.76, $p = 0.001$). Table 4 summarizes mosque attendance responses.

Table 4. Mosque attendance frequency

Variable	**Frequency (%)**	**Frequency (%)**	**Frequency (%)**
	Male	**Female**	**Total**
Friday prayers attendee			
Always	263 (84.8)	56 (28.4)	319 (62.9)
Sometimes	36 (11.6)	90 (45.7)	126 (24.9)
Rarely	44 (3.5)	51 (25.9)	62 (12.2)
Mosque attendance per week			
1	107 (34)	124 (62.9)	231 (45.6)
2	41 (13.2)	34 (17.3)	75 (14.8)
3 or more	162 (52.3)	39 (19.8)	201 (39.6)
Household member mosque attendance			
Yes (all)	227 (73.2)	161 (82.1)	388 (76.5)
No	81 (26.3)	35 (17.9)	116 (22.9)
Attendance by age group	Once a week	More than once a week	
18-34 years	102 (44.2)	88 (31.9)	190 (37.5)
35-64 years	115 (49.8)	153 (55.4)	268 (52.9)
65 years and older	14 (6.1)	35 (12.57)	49 (9.7)

Overall General Health Status

Chronic disease.

The prevalence of chronic diseases was self-reported (Table 5). Approximately 63% of participants reported having no chronic disease, while 20% reported having one chronic disease, and 17% reported having at least two chronic conditions. The most commonly reported conditions were diabetes, high cholesterol, and high blood pressure (Table 4).

Male participants had a higher prevalence of diabetes than females (15.2% vs. 8.1%; χ^2: 5.4 $p = 0.012$). They also had a higher prevalence of heart disease when

compared to females (6.5% vs. 2.5%; χ^2: 3.94, $p = 0.034$), higher prevalence of high cholesterol (20% vs. 12.7%; χ^2: 4.53, $p = 0.021$), and higher prevalence of high blood pressure (18.7% vs. 12.2%; χ^2: 3.79 $p = 0.033$). (Table 3)

The 35-64 age group had significantly higher prevalence of chronic disease 103 (55.7%) compared to other age groups (F: 28 (55.7%), $p < 0.001$); in this age group, there was higher prevalence of diabetes 39 (61.9%) (χ^2: 50.658, p value = 0.001), cholesterol 52 (59.8%) (χ^2: 53.130, p value = 0.001), and hypertension 43 (52.4%) (χ^2: 100.209, p value = 0.001). Prevalence of depression for the entire studied population was lower than expected, given results discussed below for the SF-36 mental health subscales Only 19 respondents, 3.7% of the sample, self-reported depression. Of note, 14 of 19 participants reporting depression, were in the younger age group, 18 to 34 years old, and represented 74% of those reporting this condition. (Table 3).

Table 5. Chronic Disease Status by gender identity and age group

Variable **Chronic condition status**	**Male** **n (%)**	**Female** **n (%)**	**Total** **N (%)**	
No Chronic Disease	185 (60)	137 (70)	322 (63.5)	
One Chronic Disease	65 (21)	36 (18)	101 (20)	
Two Chronic Disease	26 (8)	9 (4.5)	35 (7)	
Three or more Chronic Diseases	34 (11)	15 (7.5)	49 (9.5)	
Type of Chronic Disease by gender identity				***p* value***
High cholesterol	62 (20)	25 (12.7)	87 (17.2)	0.021
High blood pressure	58 (18.7)	24 (12.2)	82 (16.2)	0.033
Diabetes	47 (15.2)	16 (8.1)	63 (12.4)	0.012
Heart disease	20 (6.5)	5 (2.5)	25 (4.9)	0.034
Arthritis	18 (5.8)	11 (5.6)	29 (5.7)	0.541
Depression	9 (2.9)	10 (5.1)	19 (3.7)	0.155
Cancer	9 (2.9)	5 (2.5)	14 (2.8)	0.521
Kidney disease	10 (3.2)	2 (1)	12 (2.4)	0.094

Type of chronic condition by age group	18-34 years	35-64 Years	65 and above	
	f (%)	f (%)	f (%)	*p* value**
Diabetes	3 (4.8)	39 (61.9)	21 (33.3)	0.001
High cholesterol	11 (12.6)	52 (59.8)	24 (27.6)	0.001
High blood pressure	8 (9.8)	43 (52.4)	31 (37.8)	0.001
Depression	14 (73.7)	5 (26.3)	0 (0)	0.003
Family member chronic condition status (*n* = 507)				
	Frequency	**%**		
High blood pressure	114	22.5		
High cholesterol	96	18.9		
Diabetes	91	17.9		
Heart disease	28	5.5		
Depression	24	4.7		
Cancer	21	4.1		

Note.
*** *p* value is based on Chi Square test**
**** *p* value is based on ANOVA test**

Alcohol, tobacco and diet.

Participants completed a series of questions about their tobacco use, alcohol, and dietary habits. They were asked specifically what type of tobacco products they use, how often they use it, if they consume alcohol or any foods or drinks listed in Table 6. Smoking and alcohol use rates were 9.3% and 2.6%, respectively. Men had higher prevalence of smoking than women, 12.3% compared to 4.6% (χ^2: 13.258, $p = 0.001$). When separated by race and ethnicity, individuals from the MENA region had higher rate of smoking than any other groups (20.4%). One-way ANOVA statistics showed that MENA had a significantly higher rate of smoking than any other group (F: 4.037, $p < 0.001$). A summary of participants' responses is presented in Table. 6

Table 6. Alcohol, tobacco status by gender identity and region

Variable	Male n (%)	Female n (%)	Total n (%)	
Smoking or using tobacco products by gender identity (*n* = 507)				***p* value***
Yes	38 (12.3)	9 (4.6)	47 (9.3)	0.001
No	262 (84.5)	187 (94.9)	449 (88.6)	
Quit	10 (3.2)	1 (0.5)	11 (2.2)	
How often (*n* = 48)				
Every day	21 (53.8)	2 (22.2)	23 (47.9)	
Some days	9 (23.1)	2 (22.2)	11 (22.9)	
Rarely	9 (23.1)	5 (55.6)	14 (29.2)	
Type of tobacco product				
Cigarettes	28 (63.4)	3 (10.0)	31 (52.9)	
Cigar Pipe	3 (4.9)	0 (0)	2 (3.9)	
Water pipe (hookah)	9 (17.1)	8 (80.0)	15 (29.4)	
Electronic cigarette	5 (7.3)	1 (10.0)	4 (7.8)	
Chewing	4 (7.3)	0 (0)	3 (5.9)	
Alcohol	7 (2.3)	6 (3.0)	13 (2.6)	

Smoking or using tobacco products by region

	U.S. Born	South Asian	South American	MENA	African	Other	
	n (%)	**n (%)**	**n (%)**	**n (%)**	**n (%)**	**n (%)**	***p* value****
Yes	11 (7.3)	9 (7)	7 (7.4)	20 (21)	0 (0)	0 (0)	0.001
No	137 (90.7)	114 (25.4)	86 (19.2)	76 (78)	19 (95)	17 (100)	
Quit	3 (2)	5 (3.9)	1 (1.1)	1 (1)	1 (5)	0 (0)	

Note.
*** *p* value is based on Chi Square test**
**** *p* value is based on ANOVA test**

Weight and BMI.

Participants were asked to complete a weight assessment that consisted of two items. One required participants' impression of their weight by asking them to determine which of the following four categories best described their weight: underweight, normal, overweight, or very overweight. Furthermore, participants were also asked to provide their weight and height in for the researcher to estimate their BMI. When BMI was estimated, participants' average BMI fell into the overweight category at 26 kg/m^2

(SD=4.63, range=18-86). When comparing estimated BMI to participants' perceptions of their weight, there were important differences. Only 28.8% reported they were overweight, though BMI estimates indicated 43% were overweight. Similarly, only 1% reported their weight as obese, though BMI estimates indicate 17.6 % were obese. As expected, men had a higher BMI than women: 26.5 kg/m^2 vs. 25.4 kg/m^2 (χ^2: 10.65, *p* value = 0.014) (Table 7b). Women were significantly more likely to perceive their weight category correctly than men (χ^2: 161.223, *p* value = 0.001); most men underestimated their weight category when compared with their estimated BMI (χ^2: 155.4174.129, *p* value = 0.001). A summary of participants' responses is found in Table (7a).

Table 7. Self-assessed BMI vs. Estimated BMI

	Self-Assessed BMI			**Estimated BMI**		
BMI Classifications	**Male *n* (%)**	**Female *n* (%)**	**Total N (%)**	**Male* *n* (%)**	**Female *n* (%)**	**Total N (%)**
Underweight	16 (5.2)	10 (5.1)	26 (5.1)	11 (3.5)	12 (6.5)	23 (4.5)
Normal	202 (65.2)	129 (65.5)	331 (65.3)	94 (30.3)	83 (42.1)	177 (34.9)
Overweight	89 (28.7)	57 (28.9)	146 (28.8)	145 (46.8)	73 (37.1)	218 (43)
Very overweight (Obese)	3 (1)	1(0.5)	4 (0.8)	60 (19.4)	29 (14.7)	89 (17.6)
Self-Assessed BMI (*n* = 507), Estimated BMI (*n* = 507) Mean= 26 kg/m^2 (SD=4.64, range=14.1-53.16 kg/m^2).						

Table 7a. Gender identity differences in estimated BMI

	Estimated BMI		
BMI Classifications	**Male *n* (%)**	**Female *n* (%)**	***P* value***
Underweight	11 (3.5)	12 (6.5)	0.014
Normal	94 (30.3)	83 (42.1)	0.014
Overweight	145 (46.8)	73 (37.1)	0.014
Very overweight (Obese)	60 (19.4)	29 (14.7)	0.014
Note. *** *p* value is based on Chi Square test**			

Table 7b. Comparing estimated BMI to participants' perceptions of their weight (Self-Assessed BMI)

	Self-Assessed BMI		**Estimated BMI**		
BMI Classifications	**Male *n* (%)**	**Female *n* (%)**	**Male *n* (%)**	**Female *n* (%)**	***P* value***
Underweight	16 (5.2)	10 (5.1)	11 (3.5)	12 (6.5)	0.001
Normal	202 (65.2)	129 (65.5)	94 (30.3)	83 (42.1)	0.001
Overweight	89 (28.7)	57 (28.9)	145 (46.8)	73 (37.1)	0.001
Very overweight (Obese)	3 (1)	1(0.5)	60 (19.4)	29 (14.7)	0.001

Note.
*** *p* value is based on Chi Square test**

Quality of life

The health assessment section of the survey focused on participants' perceptions about their overall health status and practices. For example, participants were asked in this section to answer statements related to their emotional and physical health status. These questions were part of the SF-36 health survey. An internal consistency coefficient of the scale scores was calculated to determine the internal consistency and reliability of the scale. The analyses resulted in a Cronbach's α of 0.88, which reflects high internal consistency and reliability (Tavakol & Dennick, 2011).

A frequency distribution of each of the SF-36 subscales is described in Table 8. Participants' scores were higher in areas related to physical functioning, social functioning, physical role, and emotional roles; medium level scores in pain and emotional well-being; and lower scores in general health perception, health change, and energy/fatigue.

Table 8. Health-Related Quality of Life (SF-36) on a Scale of 0 to 100

Domain	Items (N)	Mean (SD)
Social functioning	2	83.2 (21.1)
Physical functioning	10	82.0 (20.5)
Role Functioning / Physical	4	81.9 (30.9)
Role Functioning Emotional role	3	81.5 (33.2)
Pain	2	79.8 (20.8)
Emotional well-being	5	72.7 (18.7)
General health	5	67.0 (16.6)
Energy/ fatigue	4	63.4 (18.4)
Health Change	1	57.4 (22.2)

Table 9 summarizes the current study's sample means and standard deviations of each subscale of the SF-36 instrument and provides a basis for comparison of these data with a similar study conducted among Muslim Americans in 2012 by Jadalla and Lee, and with the general U.S. population in 2000 (Ware, Snow, Kosinski & Gandek, 2000). These studies used the same scale and the results are comparable suggesting similarities between these two Muslim samples. Results presented for the South Florida sample are also comparable to those identified for the U.S. population.

Table 9. Descriptive Statistics of the SF-36 scales: Current Study Sample, Jadalla and Lee, and General U.S. Population

	Study sample (n=507)	Jadalla and Lee (2012) (n=297)	Ware, Snow, Kosinski, and Gandek (2000) General U.S. Population (N=1982)
Domain	**Mean (SD)**	**Mean (SD)**	**Mean (SD)**
Physical functioning	82.0 (20.5)	78.8 (26.8)	84.2 (23.3)
Role Functioning / Physical	81.9 (30.9)	76.4 (31.8)	81.0 (34.0)
Role Functioning Emotional role	81.5 (33.2)	74.6 (38.5)	81.3 (33.0)
Energy/ fatigue	63.4 (18.4)	61.6 (18.5)	63.4 (18.4)
Emotional well-being	72.7 (18.7)	67.52 (17.6)	74.7 (18.0)
Social functioning	83.2 (21.1)	77.2 (24.1)	83.3 (22.7)
Pain	79.8 (20.8)	79.9 (21.8)	75.2 (23.7)
General health	67.0 (16.6)	66.0 (17.6)	72.0 (20.3)

To investigate what variables predicted physical and mental health among mosque participants, GEE mosque-level analysis was employed to understand to what extent the survey's independent variables could predict participants' physical and mental health after controlling for gender identity, BMI, and employment status. Participants' physical health and emotional wellbeing/mental health were included in the analyses as separate dependent variables. Significant predictors and odds ratios are reported here for each, Table 10 for physical health and Table 11 for emotional wellbeing/mental health.

Table 10. GEE analysis examining relationships between self-reported physical health and educational attainment, household income, and chronic diseases (n=507)

Independent Variable	**B**	***P* value**	**OR**	**95% C.I.**	
				Lower	**Upper**
18 years of education and higher	0.977	0.002	2.6	1.45	4.86
13- 17 years of education	0.631	0.001	1.89	1.44	2.45
12 years of education and lower	0[a]	-----	1	-----	-----
Household income >$100,000	0[a]	-----	1	-----	-----
Household income $76,000 - $100,000	0.35	0.94	1.03	0.42	2.57
Household income $51,000 - $75,000	-0.087	0.837	0.916	0.39	2.10
Household income $36,000 - $50,000	-0.006	0.99	0.99	0.326	3.034
Household income $20,000 - $35,000	0.262	0.50	1.30	0.60	2.79
Household income <$20,000	2.0	0.001	7.369	2.20	24.66
Has three or more chronic diseases	0[a]	-----	1	-----	-----
Has two chronic diseases	-0.89	0.089	0.41	0.15	1.15
Has one chronic disease	-0.962	0.001	0.38	0.22	0.65
Has no chronic diseases	-0.994	0.001	0.37	0.21	0.67

Note. B = beta. a= reference value. *P* value = significance. OR = Odds Ratio. C.I Confidence Interval. $p<0.05$ (**controlled for gender identity, employment status, and BMI**)

Results of the GEE analysis indicated that in the full model containing all predictors, shown in Table 8, participants with household incomes lower than $20,000 scored lower on physical health than those with household incomes equal to or higher than $20,000. In addition, participants with higher education scored higher in physical health than those with less education. Results shown in Table 10 indicate an upward trend for the benefits

of higher education. Moreover, participants reporting no chronic diseases were more likely to score higher on physical health than those with chronic diseases.

Table 11. GEE analysis examining relationships between SF-36 mental health subscale score, stratified by age group and educational attainment (n=507)

Independent Variable	B	*P* value	OR	95% C.I.	
				Lower	Upper
Age 60 Years and above	1.105	.030	3.018	1.115	8.169
Age 50-59 Years	.533	.238	1.704	.703	4.126
Age 40-49 Years	.557	.060	1.746	.977	3.119
Age 29-39 Years	.095	.777	1.100	.570	2.121
Age 18-28 Years	-.086	.774	.917	.509	1.654
18 years of education and higher	.885	.001	2.422	1.445	4.062
13- 17 years of education	.296	.176	1.344	.876	2.063
12 years of education and lower	0[a]	-----	1	-----	-----

Note. B = beta. a= reference value. *P* value = significance. OR = Odds Ratio. C.I Confidence Interval. p<0.05 (**controlled for gender identity, employment status, household income**)

Results of the GEE analysis for mental health/emotional wellbeing showed that participants over 60 years of age had mental health scores that were three times worse than other age groups (Table 11). In addition, those with 18 years or more of education had 2.4 times poorer mental health than those who had less than 18 years of education.

Perception of Health

Several questions were asked to assess the self-perception of participants' health. When participants were asked to describe their health, 11.8% reported excellent health, 38.5%, very good health, 36.9%, good health, 12.2%, fair health, and 0.6% poor health. When participants were asked to compare their health to what it was one year ago, 15.6% reported that their health was better, 10.3%, that their health was somewhat better, 64.3%, and that their health was about the same, 8.1%, that their health was worse now, and 1.8% that their health was much worse than a year ago.

When participants were asked to compare their health to others in their community, 21.3% reported that their health was equivalent to others, while 8.1% thought others were healthier, and 23.3% reported not knowing. Moreover, when asked if they believe others are healthier, 36.5% reported mostly true and 10.8% indicated mostly false.

Stigma and Stereotypes

Participants completed a seven-question stress, stigma, and stereotype questionnaire (see Chapter II), where they were given the option to indicate if they ever felt stereotyped, how frequently they felt stereotyped, and if they felt stressed when stereotyped (Table 12). They were also asked if they felt stressed when praying in public, if stigma caused them stress and if so, whether it had an impact on their participation in mosque activities. When asked if they ever felt stereotyped because of faith/religion, 242 participants (47.7%) reported ever feeling stereotyped. When asked how frequently they felt stereotyped, 202 (40%) reported frequently felt stereotyped, and 187 (36.8%) felt stressed when stereotyped. Furthermore, 40.4% of participants reported feeling stressed when praying in public and 35% avoided praying in public due to behaviors from non-Muslims that caused them stress. In reference to stigmatization, 35.5% reported feeling stigmatized due to their faith and religion. Approximately 64.4% did not find that stigma prevented them from participating in mosque social activities and observing their religion, which suggests that the mosque environment was perceived as generally stress-free, and a safe place.

Table 12. Proportions of Participants, by Sex, Reporting Faith-Related Stereotyping, Stress, and Stigma

	Male (%)	Female (%)	Total (%)
Have you ever felt stereotyped because of your faith/religion?			
Yes	151 (48.7%)	91 (46.2%)	242 (47.7)
No	159 (51.3)	106 (53.8%)	265 (52.3)
How frequently do you feel stereotyped?			
Always	11 (3.5%)	10 (5.1%)	21 (4.1)
Sometimes	112 (36.1%)	69 (35.0%)	181 (35.7)
Rarely	100 (32.3%)	69 (35.0%)	169 (33.3)
Never	87 (28.1%)	49 (1.3%)	136 (26.8)
When stereotyped, do you feel stressed?			
Always	12 (3.9%)	10 (5.1%)	22 (4.3)
Sometimes	88 (28.4%)	77 (39.1%)	165 (32.5)
Rarely	81 (26.1%)	45 (22.8%)	126 (24.9)
Never	129 (29.6%)	65 (33.5%)	194 (38.3)
Do you experience stress when praying in public?			
Always	23 (7.4%)	18 (9.21%)	41 (8.1)
Sometimes	99 (31.9%)	64 (32.5%)	163 (32.1)
Rarely	70 (22.6%)	43 (21.8%)	113 (22.3)
Never	118 (38.1%)	72 (36.5%)	190 (37.5)
Do you avoid praying in public because of behaviors that stress you?			
Always	22 (7.1%)	13 (6.6%)	35 (6.9)
Sometimes	83 (26.8%)	59 (30.0 %)	142 (28.0)
Rarely	54 (17.4%)	40 (20.3%)	94 (18.5)
Never	151 (48.7%)	85 (43.1%)	236 (46.5)
Have you ever felt stigmatized because of your faith/religion?			
Always	6 (1.9%)	7 (3.6%)	13 (2.6)
Sometimes	100 (32.5%)	67 (34.4%)	167 (32.9)
Rarely	70 (22.7%)	50 (25.4%)	120 (23.7)
Never	132 (42.9%)	73 (37.1%)	207 (40.89)
Does stigma prevent you from participating in mosque social activities or observing your religion?			

Always	12 (3.9)	3 (1.5%)	15 (3.0)
Sometimes	37 (11.9)	32 (16.2%)	69 (13.6)
Rarely	53 (17.1)	42 (21.3%)	95 (18.7)
Never	205 (67.1%)	120 (60.9%)	328 (64.7)

To investigate further, if stigma and stereotypes affected self-reported mental and physical health, the Stress due to Stigma and Stereotype Scale was employed. Table 13 summarizes the scale findings. The construction of scale and scoring is fully discussed in chapter 2, (page. 34).

Table 13. Proportions of Participants Reporting Varying Degrees of Stereotyping or Stigma-Related Stress and/or Discrimination (n=507)

Variable	**Male (%)**	**Female (%)**	**All (%)**
Always stressed and/or discriminated	69 (22.3%)	48 (24.4%)	117 (23.1%)
Sometimes stressed and/or discriminated	94 (30.3%)	66 (33.5%)	160 (31.6%)
Rarely stressed and/ or discriminated	105 (33.9%)	64 (32.5%)	169 (33.3%)
Never stressed and/or discriminated	42 (13.5%)	19 (9.6%)	61 (12.0%)

Furthermore, to investigate what variables predicted stress due to stigma and stereotype among mosque participants, GEE mosque-level analysis was employed, while controlling for sociodemographic status (gender identity, employment status, household income and school years completed). Participants' stress due to stereotype and stigma was the dependent variable. Significant predictors and odds ratios are reported in Table 14.

Table 14. GEE analysis examining relationships between stress due to stigma stereotype by age-group, birthplace (U.S. vs. other) and emotional wellbeing *(n=507)*

Independent Variable	B	*P* value	OR	95% C.I.	
				Lower	Upper
Age 18-34 Years	1.133	.001	3.106	1.988	4.851
Age 35-64 Years	.190	.425	1.209	.758	1.927
Age 65 Years and above	.068	.883	1.070	.431	2.658
Born in the US	.447	.016	1.564	1.086	2.252
Born outside the U.S.	0[a]	-----	1	-----	-----
Low emotional wellbeing	.486	.022	1.626	1.071	2.468
High emotional wellbeing	0[a]	-----	1	-----	-----

Note. B = beta. a= reference value. *P* value = significance. OR = Odds Ratio. C.I Confidence Interval. p<0.05 (**controlled for gender identity, employment status, household income, and school years completed**)

Results of the GEE analysis indicated that participants aged 18-34 years felt three times more stressed from stigma and/or stereotyping than those of other ages. Moreover, U.S.-born participants felt 1.6 times more stress from stigma and stereotype than those born elsewhere. Finally, participants with low scores on the emotional wellbeing subscale felt 1.6 times more stress from stigma and stereotype than those with higher scores.

Willingness to Participate in Health Programs at the Mosque

Participants were asked to rate their interest in participating in future free health programs at their mosque and to choose from one of four responses: "extremely interested," "interested," "not interested," and "not at all interested." Most participants (n=401; 79.1%) were interested in participating in future free health programs at their mosque while 106 (20.9%) said that they were not interested (Table 15). There was no significant difference in interest levels between men and women ($\chi^2 = 0.071$, $p = 0.790$). Participants with heart disease were significantly more interested in attending a health program at the mosque than those reporting other chronic conditions ($\chi^2 = 4.546$, $p = 0.019$).

Table 15. Participant-reported interest in participating in future free health programs at the mosque.

Variable	Frequency	Percentage	*P* value*
Extremely Interested	112	22.1	0.019
Interested	289	57.0	
Not interested	80	15.8	
Not at all interested	26	5.1	

Note.
*** *p* value is based on Chi Square test**

As may be expected, participants who had chronic diseases were more interested in participating in mosque health programs than those without chronic diseases (82.2% vs. 77.3%; Table 16). With reference to age groups, the highest level of interest was among participants aged 35-64 years old (51.5%) (Table 17).

Table 16. Interest in participating in health programs at the mosque by chronic disease presence

Variable		
Interest by chronic condition	**Yes (%)**	**No (%)**
Has a chronic disease	152 (82.2)	33 (17.8)
No chronic disease	249 (77.3)	73 (22.7)

Table 17 Interest in participating in health programs at the mosque by age group

Variable	**Yes (%)**	**No (%)**
Interested by age group		
18-34 years	153 (38.2)	37 (34.9)
35-64 years	207 (51.6)	61 (57.5)
65 years and older	41 (10.2)	8 (7.5)

In further attempting to identify additional factors other than age and number of chronic conditions associated with interest and willingness to join a health program at the mosque, additional predictors were investigated. Preliminary analysis identified additional predictor variables in the model, controlling for sociodemographic status (gender identity, employment, household income, and school years completed). To

understand to what extent weight, chronic disease and SF-36 role limitations due to physical health subscale (selected proxy variables for health status), age, and frequency of mosque attendance predicted participants' health program interest, GEE mosque-level analysis was used. Significant predictors as well as odds ratio are reported in Table 18.

Table 18. GEE analysis examining relationships between the interest of joining a health program at the mosque and independent variables (n=507)

Independent Variable	**β**	***P* value**	**OR**	**95% C.I.**	
				Lower	**Upper**
Obese	1.495	0.011	4.461	1.411	14.100
Overweight	.879	0.231	2.408	0.572	10.146
Normal	1.145	0.092	3.144	0.830	11.913
Underweight	0[a]	.	1	.	.
Age 60 Years and above	-0.446	0.309	0.640	0.271	1.513
Age 50-59 Years	0.645	0.022	1.907	1.099	3.307
Age 40-49 Years	0.239	0.490	1.270	0.645	2.499
Age 29-39 Years	-0.044	0.860	0.957	0.586	1.562
Age 18-28 Years	0[a]	------	1	------	------
Low role limitation due to physical health	-0.708	0.002	2.030	1.286	3.204
High role limitation due to physical health	0[a]	-----	1	------	-----
Attended the mosque once a week	-3.160	0.001	0.042	0.008	0.225
Attended the mosque twice a week	-2.842	0.001	0.058	0.017	0.202
Attended the mosque three or more a week	-2.711	0.001	0.066	0.016	0.282

Note. B = beta. a= reference value. *P* value = significance. OR = Odds Ratio. C.I Confidence Interval. p<0.05 (**controlled for gender identity, employment status, household income, and school years completed**)

Generalized Estimating Equation (GEE) analysis indicated that those who were obese were 4.5 times more likely to be interested in having a health program at the mosque than those who were not obese. In addition, those aged 50-59 years were more interested in participating in a health program at the mosque than those in other age groups. Moreover, those who were physically challenged or disabled (low role limitations due to physical health) were twice as likely to not be interested in a health program at the

mosque. Finally, participants who attended mosque more than three times a week were more interested in having a health program at the mosque than those who attended mosque only once a week.

Summary

Though findings presented here are further elaborated in Chapter V, while the chapter's most salient findings are briefly summarized below to facilitate the transition to the qualitative data presented in Chapter IV.

Reviewing the sociodemographic characteristics of the sample, two-thirds were male and married. This is not surprising since recruitment of the sample occurred at mosques and women have no religious obligation to attend mosque services. Participants' average age was 41 years, ranging from 18 to 86 years of age. Most participants were well educated, with an average of 16 years of education, and the majority reported having health insurance. Younger participants (aged 18-28 years) were mostly U.S born. However, over two-thirds of the sample were born outside the U.S. and were ethnically diverse, having immigrated from over 40 countries. Half of the sample was employed, reporting household incomes between $51,000- $75,000. The highest mosque attendance rate was among participants aged 35-64 years old. This age group also had the highest prevalence of chronic conditions. The most commonly reported conditions were diabetes, high cholesterol, and high blood pressure. Most of the sample reported stress attributed to stereotyping and stigma associated with being Muslim in the U.S. Participants' scored low on the SF-36 Quality of Life scale, especially on sub-scales assessing mental/emotional health which led to further investigation in order to identify

factors that contribute to low mental/emotional health. Among the principal factors predicting poor scores on the SF-36 mental health subscale were reporting Muslim-related stigma and stereotype, birth in the U.S., and age less than 34 years. Findings related to mental health, and being U.S.-born and/or younger than 34 years are further explored in Chapter IV through qualitative analysis and fully integrated into the final analysis in Chapter V.

Chapter IV

Qualitative Data Analysis

In this chapter, we report data to address Aims 2 and 3 of the dissertation research study. The purpose of these two aims were to identify factors that influence attitudes toward seeking and using health intervention programs at the mosques. Moreover, interview and focus group data were examined in an effort to expand further our understanding of the quantitative findings discussed in the previous chapter.

The aforementioned qualitative methods, in-depth interviews, and focus groups yielded data useful in exploring individual and organizational perspectives and attitudes on a future possible implementation of a health intervention program at the mosque. Above data were also instrumental in providing insights that informed participants' views on the feasibility of the mosque as a health intervention site and the influence of Islamic practices on daily life activities.

Below we report findings from narrative data gathered and transcribed from focus groups and interviews with Muslim mosque attendees, imams, and board members. Thematic analysis, as outlined by Creswell (2005) was used for analysis and interpretation of the data. Initially, participants' responses were categorized into three broad areas for exploration and preliminary analysis.

1) Challenges and preferences of the mosque as an intervention site;

2) Sense of belonging, accessibility, comfort and mosque environment;

3) Environmental stressors, stereotypes and stigmatization.

These three key areas were further divided into themes and sub-themes that were developed based on the conceptual and experiential similarities of participants' responses, which will be supported and elaborated by participants' quotes. Detailed analysis of the key themes and sub-themes will be discussed in this section.

Location and Participants' Demographics

The focus groups and interviews were conducted between the months of May and August 2018. The focus groups were conducted in four mosques, which were selected at random from the eight mosques. All eight mosques were used for the organizational interviews with the imams and mosque leaders. An overview of participant's demographic characteristics, including socio-economic status, age, nationality, length of time living in the U.S., and educational characteristics can be found in Table 19. Twenty-four participants over the age of 18 participated in these focus groups sessions; there were six individuals in each focus group. Participants were recruited via face-to-face invitations, flyers and announcements from the Imam during Friday prayers. Additionally, eight mosque leaders (Imam or board member) participated in the interviews. Not every participant responded to all categories of questions; the goal of the analysis was to represent the diversity of topics embodied in the emergent themes.

Table 19 Characteristics of the focus groups and interview participants

Variable	**Frequency**	**Percentage**
Gender identity (*n* = 32)		
Male	16	50.0
Female	16	50.0
Age in years (*n* =32)		
18-28	0	0
29–39	2	6.5
40–49	3	9.3
50–59	12	37.5
>60	15	46.7

M = 58.14 , SD = 13.93, range = 33–81 Years		
Marital status (*n* = 32)		
Married	28	87.5
Divorced	0	0
Separated	1	4.1
Widowed	1	4.1
Single	1	4.1
Birth place (*n* = 32)		
Foreign born	30	93.7
Years lived in the U.S. Mean=32.86, Median= 34.50, SD=15.21		
U.S. born	2	6.3
Ethnicity (*n* = 32)		
White	0	0
Black	1	9.4
Arab/Middle Eastern/North African	8	25
Asian	9	28.1
South American/Caribbean	12	37.5
Hispanic/Latino	0	0
Education (*n* = 32)		
less than 12 years of education	2	6.2
12 to15 years of education	12	37.5
16 and 18 years of education	10	31.3
More than 18 years of education	8	25.0
Mean=14.27, Median= 15.5, SD=2.18		
Household Income Mean=88,885, Median= 67,500, SD= 71366.86		
Employment Status		
Full time	14	44.0
Not employed	5	15.4
Not employed not seeking jobs*	13	40.6
*This category includes part time, students, housewife, and retired		

Focus Group Participants' Characteristics

Twenty-four Muslim men and women between the ages of 33 and 81 (M= 58.14, SD = 13.93) participated in four focus groups discussions. Participants were primarily recruited by personal contacts/networks and email. The majority of the participants were first generation immigrants (90.9%). The average number of years in the U.S. was (M = 32.86, SD = 15.21) for first generation immigrants. Three of the participants identified as Arab/Middle Eastern/North African, seven identified as Asian, and one identified as Black, and ten identified as South American/Caribbean. First generation immigrants

originated from Jordan, Pakistan, Guyana, Saudi Arabia, Nigeria, and Lebanon. One of the participants was a second-generation immigrant whose parents were from Guyana. One of the participants was American. The majority of the participants were married.

Data Analysis

The data were collected through in-depth, audio-recorded interviews using a semi-structured interview format for the organizational interviews and a focus group protocol containing pre-set open-ended questions. Data were reviewed and transcribed after the completion of each interview and focus group. Data were entered into NVivo qualitative data analysis Software (QSR International Pty Ltd. Version 11, 2012) for analysis, and interpretation of codes and themes. The protocol utilized during the semi-structured, in-depth interviews and focus groups can be found in Appendix E.

Three major themes related to the lived experiences of Muslims in South Florida emerged, Islam and health; the mosque as an intervention site; and, environmental stressors, stigmatization, and stereotyping. The themes were identified because they appeared to be recurring and prominent throughout the participants' descriptions of their lived experiences. Other categories emerged, but were not salient across the diverse participants. This chapter is structured to present each theme and where appropriate, sub-themes resulting from the analysis are included (Table 20). Data from semi-structured interviews and focus groups were combined whenever appropriate. Selections from the semi-structured interviews and focus groups that best illustrate participants' lived experiences and provide examples for the sub-themes within each theme are presented.

Table20: Major Themes and Sub-themes related to the lived experiences of Muslims in South Florida

Theme	Sub-Theme
Islam and health	Islam as a holistic system Islam, Culture and Daily Activities
Mosque as an intervention site	Challenges, preferences, and accessibility Comfort, easy access of information, and a place to Socialize Privacy Gender related issues Leadership and role models. Duration and preferred time of the health program. Catering for the un-insured and the youth.
Environmental stressors, stigmatization and stereotyping	Discrimination, stigmatization, and stereotype Discrimination in healthcare environment The needs for marital and psychological counseling

Data Analysis Results

Islam and Health

Islam as a Holistic System.

This section illustrates how the daily life activities of both focus groups participants and organizational leaders are influenced by Islamic culture and beliefs about physical and mental health problems. For all participants, whether mosque attendees or organizational leaders, religion is an important aspect of participants' daily lives; daily Islamic practices influence participants' behaviors with regard to healthy activities for the mind and body. Participants reported using specific examples from the Qur'an and

Islamic teaching that influence everyday Muslim life. Moreover, Islamic teaching and the values of religion were a motivating factor for participants, which, they report, have an important role in their health and well-being.

The majority of the participants agreed that religion has significant influence in their daily lives. A male focus group participant said:

> We are encouraged by Islam to take care of our body and teach our kids to exercise and be physically fit [here providing a quote from the Qur'an.] We have been encouraging our kids to exercise and be physically fit, and they actually like physical activity.*

Another focus group participant added:

> Islam is generally everything to everybody so I think Islam is connected well. It is not the healthy bodies only; it is a healthy soul and a healthy mind. Islam preaches about physical healthy body and it help the soul, too.*

Islam, Culture and Daily Activities.

There were mixed attitudes among participants about how health, culture, and Islam are connected, the differences due to varying attitudes about the values and expectations of religion and culture. A woman and an active member of the mosque disclosed that culture and Islamic teaching was important in her family life:

> Culture is something like I believe more on. You know what, it states in Qur'an and Allah has mentioned and commands us about a lot of things, and that when we some time mixes that with cultural and religion, [which cause problems], ..., but if you guys going to work on the developmental issue, medical or social, I think religion and culture both are in the same boat. They should run parallel, like cleanliness is important because of our health. So, we cannot segregate anything from one to other issue they both run parallel. You know, if you wash your hands you know you eat with the same hands if you eat healthy food that will help your

*Quotes are presented as originally spoken by participants. Quotes were not edited.

betterment, and if you exercise, you'll feel better. So, everything runs parallel.*

A mosque board member and leader said that mainly culture, not religion affects individual health:

> I don't think that religion has anything to do with diseases, but it is mainly cultural, diet, and lack of exercise. Actually, religion encourages you to exercise, walk, eat less and be healthy, but as I see the diet and different culture that we have [it] is not healthy our diet is not healthy.*

A focus group participant disclosed that the community has a high prevalence of high blood pressure, diabetes, and arthritis. He believes these diseases are due to the foods they eat, which are high in fat and oil, but are a regular part of the culture. He noted:

> I love Indian food, but the way they make it is so unhealthy, you can see the butter and oil and all of this is so unhealthy. If we can modify it and teach them how to cook healthy, and still tastes as good, that will be great.*

A female participant added:

> I would agree; I think that would be a concern; to change our mind focus towards you know better choices of food we are eating. Instead of the fried and junk food into healthier options.

Mosque as an intervention site

Challenges, preferences, and accessibility.

Most participants expressed their desire to be exposed to health promotion

*Quotes are presented as originally spoken by participants. Quotes were not edited.

programs at the mosque and acknowledged the importance of preventative health services. Several people reflected on how they would appreciate having a health program at the mosque, and have someone from their own community organize and lead health activities as well as act as a motivator for the group. They also felt that the mosque could potentially have a significant role in promoting health, diet, and physical activity. The mosque has always been referred to as a uniting place to Muslims. A focus group participant, a father and a businessperson, said:

> This is our place! I think with regard to the feeling of belonging, and really being accepted by all others. Although we all speak about it as religious part, like we must accept it [that the mosque is a place where one feels a sense of belonging]. Even when we are living in a country that don't discriminate with color and nationality or whatever, but we can still feel it. We can still feel it! And this is the place where we mingle. After Friday prayers when we step out, people are gathering according to their nationality. This is a place where we can have a big impact, I think.*

Moreover, participants believed that mosques are well suited to conduct health programs in several ways since they already provide a range of services to the Muslim community. One of the female focus group participant said:

> I feel the mosque is a good place. Yes, it is not just a place to pray, it is a community center, and it is a place where, for this [mosque], it is a melting pot of different cultures and with the different cultures coming and becoming friends and praying together every day, every year, every month, it builds trust and understanding, and relationship. We want to be healthy together.

Another participant agreed to this statement and added, "The mosque is a dynamic place where we have social connection and interact with friends."

*Quotes are presented as originally spoken by participants. Quotes were not edited.

Comfort, easy access of information, and a place to Socialize.

They all agreed that the mosque is a safe and a comfortable place for them to do such a program especially if this program is tailored for the Muslim community. One male focus group participant said:

> I think having it [health programs] here at the mosque may make everyone feel a little bit more comfortable because you are around people of your own religion and sometimes you're around, you know, other religions and they don't really. . . they can't really understand I guess with the way we eat because our foods are a lot different than the American foods and I guess it would just be in a more comfortable surrounding so I think it's a good idea.*

Another participant added:

> The mosque is a good source where we usually come to and you can get that information from there instead of going around asking if there is a problem that arises and you have the solution right in front of you. And, your mosque it's much more reachable for a lot of people in our community than when you have to go outside and get that information, where to get the help from. And, I think it's a good source to have these resources in the mosque.

The mosque is also the site for social activities that include community service, education, health issues and wellbeing that benefit and relate to the Muslim community. Mosques also create a sense of belonging among Muslim Americans by being the contact point for families, and free social space that create meaningful friendships. One of the participant noted, "The mosque is our comfort zone. In here, people can relate your problem because we have the same identifying properties."

Privacy.

Some focus group participants noted that confidentiality and privacy are

*Quotes are presented as originally spoken by participants. Quotes were not edited.

important factors if a health program is planned at the mosque. They fear personal information will be exposed, especially if the program is in a groups setting that has no private area to discuss individual health results.

One female participant said:

> I personally think that the mosque community needs to list people who you can approach in your own community if they have any health problem, who are experts, and have their phone numbers available to whoever has an arising issue to call them, and get some advice from them, instead of having a general forum. Because if you have a health problem you don't want [it] to be discussed in front of everyone, that is one of the concerns that I had that it is out in the open, there is no privacy.*

Gender related issues.

Understanding environmental influence and barriers to exercise will provide a greater understanding of physical activity behaviors. Muslim females who choose to wear modest attire and hijab to cover their hair have indicated that exercising outdoor in the heat is uncomfortable. Additionally, women prefer privacy when exercising, and avoid being seen by men. These barriers, including feeling uncomfortable due to lack of privacy, and contact with members of the opposite sex were major concerns among female participants. A focus group participant mentioned that the hijab and privacy are barriers to exercise. She said:

> I wear the hijab and do varying few jobs, but when exercising it will be super-hot, and if there are men around you cannot take it off. So, we need some private place where we can be comfortable so we can exercise.*

Moreover, the need for health services tailored for Muslim women, especially the

*Quotes are presented as originally spoken by participants. Quotes were not edited.

young, was another common concern among participants. Many women expressed the need for more culturally and religiously sensitive services at the mosque such as an exercise program to be made available to them. Additionally, the participants mentioned that having groups for social support, where Muslim women can learn from one another, would be beneficial. A female participant said:

> I think that we should focus more on women because in the masjid [mosque] everything is happening for males. They have games for males and they have lecture for males. And then specially for young girls that they don't go to Islamic schools, they go to public schools, they have a lot of issues, and the only person they have is the mother, and sometimes you know mothers don't know what to say or what to do, but we need help on women issues. I think that they should have more activities for girls. They have basketball court for boys [but no designated time for girls].*

Another participant expressed agreement:

> I agree with her, boys do play volleyball and basketball. That's right there's nothing for girls. But yeah that's one thing that we need to formulate the groups for the girls according to their age groups, you know like under 10, and then above 14 groups for volleyball, basketball that can be played within the masjid facility.*

One of the participants noted that by going out to walk around the mosque, other women were encouraged to walk with her, and suggested a group walk.

Additionally, women, when reflecting on these concerns during the focus group, noted that fear of harassment and discrimination prevented them from participation in physical activity outside the mosque. A woman participant said:

> I was so uncomfortable going to the gym because I am wearing the hijab, when I go I try to cover my head and wear the headband so my hair will not show, or put a cap over as a substitute to avoid harassment. I am trying to adapt as much as possible, but still wear Islamic appropriate attire, to safeguard my own personal security.

*Quotes are presented as originally spoken by participants. Quotes were not edited.

Leadership and role models.

Several people mentioned they would appreciate having someone lead activities and serve as a motivator, such as someone from the community who could organize activities. One focus group participant mentioned that religious centers should take on a leadership role in promoting physical activity; he also emphasized that the imam should serve as a role model. He said:

> If the Imam does it, in my opinion, which will be really a huge encouragement especially if a young imam do these programs. One of the young Imams used to play with the youth, and more youth used to come just to play with him, which is a good encouragement for physical exercise. I think the Imam would be great role model. If the Imam is there, everybody will come.*

However, several participants mentioned in the discussions that there were not many role models around for them. Many families appeared to do little physical activity together; they have also noticed that this is common in the local Muslim community.

> Having a trainer, somebody will take that charge on responsibility of grouping everybody. We encourage our kids to do physical activity, but myself and my wife really do nothing, and this is not a good encouragement. So, we need to lead by example.*

Duration and preferred time of the health program.

Most focus group participants and organizational leaders agreed that timing and duration of the health intervention was important. They reported not wanting long classes, and preferred that classes be held on a weekly basis, for example, being offered twice a week.

*Quotes are presented as originally spoken by participants. Quotes were not edited.

A board member, a leader in one of the mosques, said:

> Usually Friday is good time, but the problem is people work on Friday. There is no particular day, but if you make good advertisement any day, let's say Friday night or Saturday night, people will come and make it. Like especially if advertised as a health fair night. Also avoid summer time, Christmas and holidays are not good times for the program because people usually travel.*

When asked about the most suitable day and time to hold a health program, another leader recommended Sunday school and suggested avoiding implementing health programs in holiday breaks. He said, "Most people after Friday prayer may have to go back to work and it might be difficult to keep them, so ideally I think the best time would be Sunday school. During Sunday school, a special class could be maybe not going over 15-20 minutes."

Catering for the uninsured and the youth.

Most focus group participants and interviewees think that it is a good thing to have a health program within the Masjid that focus on young people and the uninsured, more than the older generation, because they think that they will never get sick. They agreed that the older generation "may be more likely to have good doctors and have insurance" a few noted. While most agreed with the above, they stressed the importance of services for individuals who do not have access to health insurance. Such a program at the mosque, they suggested, could assist the uninsured in seeking guidance for health problems and health-related issues, particularly if it is organized and coordinated by the mosque. This approach would help the mosque identify the health conditions of the

*Quotes are presented as originally spoken by participants. Quotes were not edited.

congregation. It was suggested that such effort would assist in determining how many people have insurance, since there is no hard data available on the health of the Muslim community in South Florida. Commenting on the lack of health programs available to the Muslim community, a focus group participant said:

> We have to make friendly messages tailored towards our children so they can at least come to the mosque and be comfortable, and then once they come in they can find out that there is some help, and if needed they can anonymously reach someone in our community for help.*

Environmental Stressors, Stigmatization, Stereotyping, and Social Support

Discrimination, stigmatization, and stereotype.

Some of the participants perceived being discriminated and treated with lack of respect and dignity. Many noted feelings of stress, anxiety, and negative media induced fears caused by stigma and stereotyping. One focus group participant expressed her fear, saying:

> I feel uncomfortable going to the gym because I am wearing the hijab. I tried to go and cover my head with a headband so my hair will not show and put a cap over as a substitute to avoid harassment. I try to adapt as much as possible, but still keeping my attire Islamic appropriate. I do the best I can to safeguard my own person security.*

Another disclosed her constant worries about her daughter and noted always walking with her to school fearing someone will hurt her because she wears the hijab.

> My kids go to school and they are wearing hijab. Guess it depends on how you're trained in to make them strong and you know. . . it's the hijab as part of you. You're dressed, so you can't go without a hijab and you have to be proud you wear your hijab and then you know sometimes they have some issues. For example, my

*Quotes are presented as originally spoken by participants. Quotes were not edited.

> daughter is in middle school, and she had some issues where one of the kids pull her scarf. I reported this incident to the principal and she took care of it right away.*

Several men and women from the focus groups expressed feeling compelled to smile and wave at strangers, hoping that they combat the stereotypes of Islam that the media present. These findings suggest that Muslims, particularly women who wear hijab, feel discrimination. These perceptions may lead to psychological and physical illness resulting from stress and depression.

Discrimination in healthcare environment.

Some focus group participants reported they were discriminated against in a healthcare setting. A woman noted that she experienced discrimination at her local clinic. She said:

> The [clinic that I go to has three] doctors; the two male doctors don't have a problem with me. The female doctor on the other hand, she refuses to take me for a consultation because I am a Muslim. That is why I prefer to see another doctor.

Some participants noted, "It is their duty to make themselves appear in a positive light" and that each is "representing other Muslims whether they like it or not." They said they feel comfortable at the mosque and they find it a supportive place for the Muslim community.

> I live 40 years. I think we can handle it. I would base my conversation based on Islam and I would pick up something from the Quran or hadith to answer any question, which is, really cleared life for us. If anybody would really come to talk to me, I will keep the argument with better manner, and I will reflect, I'm an ambassador of my religion.

*Quotes are presented as originally spoken by participants. Quotes were not edited.

The needs for marital and psychological counseling.

Focus group data, supported by some interviewees, strongly indicate the need for marital and psychological counseling, particularly for the younger individuals within the Muslim community; this issue was noted as a common problem in all focus groups. Some mosques have an Imam as a counselor—the only resource available to many. Some participants noted that the imam has limited skills in counseling and health programs and expressed the importance of focusing not only on physical health, but also on psychological issues. One participant clearly expressed this position when she commented:

> We need psychological health program and not only physical, and then under psychological counseling we can bring it down into different aspects. Among the older people, it can be domestic. There are a lot of domestic issues in the community and then when you go down to the level of students because I have been in the school, there is a lot of children that need psychological counseling. So, we need to put that as a priority because if we don't take care of psychological issues we're going to lose the kids.*

The importance of marital educational programs at the mosque was stressed by most participants. Marital counseling for newlyweds was expressed as an important need by most participants. They agreed, "The Imam plays a significant role in influencing many domestic decisions." The majority of women in this study emphasized a need for marital counseling within the community, particularly from someone who could relate to Islamic teaching. One participant said:

> Having a Muslim would be a better option as a counselor. They would understand more and understand where the other person is coming from. But I would suggest that we have counseling for our younger groups that are about to get married.*

*Quotes are presented as originally spoken by participants. Quotes were not edited.

Another participant agreed with the previous statement and added:

> We merely need to organize sessions for the youngsters and assign a peer-to-peer counselor. If the community can organize peer-to-peer counseling that is [the] only thing [that] will ever work for the younger generation. Similarly, we can assign a health coach for health problems.

Overwhelmingly, findings from focus groups indicated a need for marital counseling among mosque attendees, highlighting "the need to offer marital workshops, a private help line, and peer coaching within the Mosque community." Participants also noted, "Confidentiality is important, especially when family matters are involved." Participants offered helpful suggestions to reduce the marital problem, suggesting, "Increasing awareness through marital counseling services and expanded delivery of these services." Suggestions ranged from "training religious leaders, organizing seminars, and providing access to professional private counseling."

Summary

Data presented in this chapter summarized findings and results from focus groups and organizational interviews. From eight participating mosques, four were randomly selected to participate in the focus group component of the study. Twenty-four Muslim men and women racially and ethnically diverse, between the ages of 33 and 81 (M= 58.14, SD = 13.93) participated in four focus groups and eight mosque leader (Imam or board member) were interviewed, Most participants were first generation immigrants, with an average of 32 years in the U.S.. As already noted, data were collected through in-depth audio-recorded interviews using an open-ended format for the interviews. A semi-structured interview format was used in conducting organizational interviews eight

organizational interviews at each of the selected mosques. As already indicated, three major themes emerged related to the lived experiences of Muslims in South Florida: Islam and health; the mosque as an intervention site; and, environmental stressors, stigmatization, and stereotyping. Findings presented in this chapter combined data from organizational interviews and focus groups. Selection from both methods were chosen in supporting the themes that emerged during data analysis. These themes are summarized below.

Islam as a Holistic System. Participants expressed the daily influence of Islamic culture and beliefs on their life activities. They agree on religion being an important aspect of their daily lives. The influence of Islamic practices were evident in illustrating the importance of healthy minds, bodies and overall well-being. Most acknowledged the significance and influence of religion in their daily lives; however, participants expressed mixed attitudes when discussing the connection among health, culture, and Islam, implying that cultural practices related to diet and lack of exercise and not religion are the major factor underlying poor health.

Mosque as an Intervention Site. In general, focus group participants were strongly interested in the possibility of implementing health promotion and health education programs at the mosque. In their comments, they emphasized the importance of preventative health services at the mosque, which they found to be an important place for bringing Muslims together and serving as a uniting force. In this capacity, they see the mosque as the place to promote healthy living, whether addressing physical or mental conditions. Participants indicated that the mosque provides a sense of belonging,

comfort, relatedness, unity, especially given that it is a melting pot of different cultures. They agreed that the mosque could potentially have a significant role in promoting health, diet, and physical activity. They welcomed the opportunity to have a health program at the mosque, led by someone from their own community who, in their opinion, would serve as the best organizational motivator. Despite strong interest and enthusiasm, focus group participants stressed the fear that their personal health information could be exposed and hence their personal privacy compromised. They strongly recommended that if such a program were to be developed, strict privacy protocols had to be in place and enforced by the mosque.

Gender related issues arose in the context of discussing the mosque as an intervention site. Here, women identified barriers to exercise that prevent women from engaging in physical activity at the mosque. These barriers included Muslim women attire, together with the hijab, which made exercise uncomfortable and lack of a women only designated private space for physical activity and programs.

Lack of role models for physical activity and healthy living were identified as important barriers to physical activity at the mosque. This reference was made specifically to the need for mosque leaders to identify a leader who could coordinate and lead activities in addition and serve as a "role model" and motivator. Identifying someone from the community who could serve as a role model and leader to support this effort was considered an important contribution by the mosque toward the health of their congregations.

Finally, most focus group participants and organizational leaders agreed that timing and duration of the health intervention was important. Short and weekly classes to be held during the regular school year were preferred. Participants agreed that health programs within the mosque should focus on young people and the uninsured emphasizing that older generation may be more likely to have good doctors and have insurance. They suggested that such a program at the mosque would help the mosque identify the health conditions of the congregation, and could assist the uninsured in seeking guidance for health problems and health-related issues.

Environmental Stressors, Stigmatization, Stereotyping, and Social Support. Participants indicated feelings of stress, anxiety, depression and fear resulting from media coverage that promotes Muslim stereotyping. These were also blamed for physical illnesses. Additionally, they emphasized the need for marital and psychological counseling, which should be organized and delivered at the mosque. In particular, they suggested these programs should give priority to the young and newlyweds. They indicated that currently the Imam serves as counselor and the only resource available to many. Some participants noted that the imam has limited skills in counseling and delivering health programs and expressed the importance of focusing not only on physical health, but also on psychological issues. They also expressed the need of marital workshops, a private help line, and peer coaching and training mosque leaders.

CHAPTER V

Feasibility Study and Conclusion

Study aims and findings presented in this dissertation represent an effort to inform on the health profile of the Muslim mosque attendee (MMA) population in Miami Dade and Broward Counties (South Florida). This effort was driven by the overarching future goal of conducting currently non- existing formal health interventions at South Florida mosques. The initial planning steps, indicated by the PRECEDE-PROCEED model, were used to yield the feasibility study, proposed in this work. Results presented here fulfill all the necessary assessment phases of the PRECEDE-PROCEED model in informing the design of a health intervention.

This final chapter integrates the study's findings into the feasibility study proposed in Chapter 1. The finished product of the dissertation should provide the foundation for the design of future interventions in the targeted community (MMA). We integrate results from each of the study's methods into each assessment phase of the PRECEDE-PROCEED Model: the survey (Phases 1 & 2), the focus groups (Phases 3 & 4) and the organizational interviews (Phase 4). The completed feasibility study closes with a broad discussion on recommendations for the future design and implementation of health programs in the studied community. Finally, we note similarities and differences that, though not anticipated, surfaced between findings for the studied community and those from published research on Muslims in the United States and close by summarizing the current study's limitations.

The Feasibility Study

Phase I – IV of the PRECEDE-PROCEED Model

As indicated earlier, we relied on the PRECEDE-PROCEED Model to provide the theoretical framework for the feasibility study presented here and to organize the summary findings that complement each phase of the model. Findings discussed in Chapter 3 and Chapter 4 yielded a health profile and needs assessment of the MMA population in South Florida. These data complement the first three phases of the model: Social Assessment (Phase 1), Epidemiological Assessment (Phase 2), and components of the Behavioral and Environmental Assessment (Phase 3). Additionally, data from Chapter 4 are used when supporting components of the Environmental Assessment (Phase 3), and Organizational Assessment (Phase 4).

We use findings from the feasibility study conducted in this dissertation to highlight the contribution of the study toward the future design of health education and intervention programs with the South Florida MMA community. Given this objective, the purpose of findings presented here is to guide future programs and interventions with this community by briefly summarizing and highlighting findings that directly address their planning, design and delivery.

Phase I of the PRECEDE-PROCEED Model: Social Assessment

We begin by first discussing findings relevant to the Social Assessment Phase (Phase 1) of the study. Sociodemographic data obtained through the surveys completed by 507 MMA members indicate that males (66%) were overrepresented in the survey phase of the study. This is not surprising since a major recruitment effort was conducted before and after Friday prayers and women have no religious obligation to attend

mosques. This notwithstanding, 34% of the women sampled were recruited during Friday prayers; however, additional recruitment at mosque social activities and Sunday school proved fruitful in recruiting large numbers of women. Participants' median age was 41 years and in general, they were well educated with an average of 16 years of schooling. The majority reported having health insurance, important for intervention planning. Two thirds of mosque attendees are foreign born, highlighting the importance of addressing diversity in the congregation, over 40 countries were listed as place of birth. Half of the sample were employed with the other half including homemakers, students of different ages and retirees. In summary, when considering the socio demographic profile of this population in the planning of an intervention, we note that it is mostly middle class, middle age, highly educated and very diverse. This diversity is of utmost importance when planning a mosque intervention and needs to be strongly considered and addressed in its design and delivery.

Finally, when considering recruitment efforts targeting health education and intervention programs, we advise on the importance of recruiting women in a wide range of mosque social activities and Sunday school; these are times when they as likely to attend, as during Friday prayers. We also call attention to the contrasting participation of women in the different phases of data collection; while men largely exceeded women in their survey participation; women, on the other hand, constituted the majority of focus group participants. We recommend not ignoring gender preferences in the planning and delivering of health programs, whereby women may show a preference for one delivery mode, while men may choose another.

Moreover, most participants reported stress related to perceived or real stereotyping and stigma associated with being Muslim in the U.S. These findings are further supported by low scores on the mental and emotional subscales of the SF-36 Quality of life scale and the constructed stress related stigma stereotype scale, presented in Chapter 3. Major factors predicting poor scores on the SF-36 were the mental health subscale, the reporting of Muslim-related stigma and stereotype, birth in the U.S., and younger than 34 years of age. Participants aged 18-34 years felt three times more stressed from stigma and/or stereotyping than those in other age categories. Moreover, U.S.-born participants felt 1.6 times more stress from stigma and stereotype than those born elsewhere. Survey findings presented above suggest the need for future mental health interventions with populations displaying these at risk conditions, U.S. birth and younger than 34 years of age.

Phase 3 of the PRECEDE-PROCEED Model: Behavioral and Environmental Assessment

Above findings on mental health were further investigated during focus groups sessions that explored components of the behavioral and environmental assessment relevant to Phase 3 of the PRECEDE-PROCEED Model. Focus groups data disclosed participants' feelings of stress, anxiety, depression and fear resulting from media coverage that promotes negative Muslim stereotyping. These were further supported and expanded in these sessions where participants blamed above emotional hazards for their physical illnesses. Further, when asked for suggestions to address their reported emotional and mental states, they indicated the need for marital and psychological counseling; and suggested that mosques should organize and deliver these programs. In particular, they recommended the prioritization of programs, such as helplines, social

support groups and psychological counseling targeted to the young (usually U.S. born) and newlyweds.

Moreover, during these sessions, participants indicated that the Imam serves currently as counselor and the only resource available to the congregation, suggesting that the Imam has limited skills in counseling and delivering health programs. They spoke to the importance of focusing not only on physical health, but also on psychological issues, reiterating earlier comments that stressed the need for marital workshops, a private helpline, peer coaching and the training of mosque leaders. Survey findings when combined with focus group results reinforce and strengthen the urgency for the mosque to develop and implement psychological programs addressing these mental health conditions, with particular emphasis on psychological counseling for younger members of the congregation.

When referring to environmental considerations, the second part of Phase 3 of the model, the mosque was suggested as the most appropriate and desirable site for social activities, especially those that include community service, education, health issues and emotional wellbeing that relate to and benefit the Muslim community. Survey findings indicate that participants found the mosque as the best and most adequate site for any type of intervention, whether physical or mental health related. Moreover, a large majority of participants (80%) were interested in attending future free health programs at their mosques. Among those most interested in participating, eighty two percent (82.2%) reported chronic diseases. Additional analysis indicated that those who were obese were 4.5 times more likely to be interested in having a health program at the mosque than

those who were not, thus reinforcing the need for a physical activity and weight management program indicated earlier.

Further contributing to the environmental assessment, we emphasize that frequency of mosque attendance must be considered when anticipating program interest and attendance. Participants attending the mosque over three times a week were more interested in having a health program at the mosque than those attending only once a week or less.

Besides the above focus group recommendations on preferences for mental health interventions, additional comments emerged relative to physical health and their perceived role of the mosque in addressing these concerns. As with mental health counseling programs, focus group participants were also strongly interested in the possibility of implementing nutritional and physical activity promotion programs at the mosque. In their comments, they emphasized the importance of implementing preventative health services at the mosque, which they found had the potential to enhance the importance of the mosque as the place that brings together the Muslim community. In this capacity, they see the mosque as the best place to promote healthy living and well-being, whether addressing physical, social or mental conditions. Participants indicated that the mosque provides a sense of belonging, comfort, relatedness, unity; "it is where the melting pot comes together." In their views, "all the various nationalities and diverse cultures represented at the mosque come together and spin around its center." They agreed that the mosque could play a significant role in promoting overall good health and in particular, diet, and physical activity. They welcomed the opportunity to have a health program at the mosque, led by someone from their own community. In their opinion, a

mosque member would serve as the best organizational motivator. Participants strongly emphasized the need for the mosque organizational leadership to identify a possible mentor and leader to coordinate and lead activities. They further observed that this person could serve as a possible "healthy lifestyle role model," which they found all mosques lacked.

The recommendation for a "healthy lifestyle role model" should be considered when considering developing and implementing health interventions at the mosques. In fact, such an effort could begin by first identifying a willing mosque member to serve in that capacity and provide the leadership necessary to organize, even if small at first, a health related program. This could be an early first step undertaken during the planning of a health intervention program at the mosque.

Phase 4 of the PRECEDE-PROCEED Model: Educational and Organizational Assessment

When assessing the educational and organizational structure of the mosque, Phase 4 of the model, interviews were conducted with the mosque leadership to investigate further their response to survey findings and focus group suggestions. When informed by the researcher of focus group recommendations for educational programs and role models, the leadership welcomed these ideas, agreeing with recommendations to organize and support health education programs at the mosque. Likewise, the leadership strongly supported the suggestion for the identification of a role model to lead the effort. Representatives from three mosques noted that they thought the best role model would be a dedicated mosque member with a background in the health professions to lead their mosques effort.

In further assessing, the educational and environmental factors (Phases 3 and 4 of the model) important to the design and implementation of a health education program, most focus group participants and organizational leaders agreed that timing and duration of the health education or intervention were important. Both sets of groups agreed that the best alternatives were short and weekly classes, held during the regular school year. The leadership indicated that the suggested programs were very much needed. Interestingly, the leadership coincided with the membership in their concern for the young who they noted were less likely to take their health seriously. Focus group participants also expressed concerns over the uninsured and indicated that the mosque should make an effort to assist this group by providing guidance for health related problems. Here participants offered yet another possible intervention and group for consideration by the mosque congregation and organization.

Despite strong interest and enthusiasm for mosque organized health interventions and educational programs, focus group participants also stressed fear that their personal health information could be exposed and hence their personal privacy compromised. They strongly recommended that if such a program were to be developed, strict privacy protocols had to be in place and enforced by the mosque. The latter is an important consideration that needs to be addressed in the planning process by the mosque.

Gender related obstacles emerged as another important component of the environmental assessment. Female focus group participants identified cultural and physical barriers that hinder their engagement in physical activity at the mosques. Among these were Muslim women attire and the hijab, which made exercise

uncomfortable and difficult. Women also reported throughout the focus groups sessions about the lack of facilities at the mosque that hinder women from engaging in physical activity. Among these, they mentioned the absence of women only designated spaces for physical activity and programs. The lack of designated private spaces for women to exercise included indoor and outdoor mosque facilities. Even when the mosque has large grounds, their opportunity to exercise outdoors is limited. They were eager to point to differences between men and women in the use of mosque outdoor facilities. While men extensively use mosque grounds to play basketball or soccer, the use of these outdoor spaces for physical activity are not as accessible to women. Women agreed when indicating that the local mosques were not making an effort to provide a covered or protected space for them to engage in outdoor physical activities. Even when considering the possibility of group walks, they noted, their cultural and religious attire make them visible to outsiders and thus they fear harassment from those driving or walking by. This fear greatly diminishes their desire to engage in outdoor activities. Finally, women referred to cultural norms on female modesty when observing the lack of privacy for women to exercise indoors at the mosque. This was an important concern, especially when stressing the lack of privacy in mosque public spaces, which makes them visible while exercising. Above comments reinforce the need for mosques to designate or coordinate protected indoor and outdoor spaces for women where they can comfortably engage in physical activity. The latter is an important consideration when designing and implementing health educational and intervention programs at the mosque and an important contribution to this effort from the feasibility study presented here.

Finally, when organizational leaders were asked about place, day and time to implement health programs at the mosque, they suggested Sunday school, the standard school year and the exclusion of holiday breaks. Focus group participants and mosque leaders agreed in their opinion that Fridays was not a good day, even when this is the day that brings in a very large number of congregants. An Imam noted, "Most people after Friday prayer may have to go back to work and it might be difficult to keep them, so ideally I think the best time would be Sunday school. During Sunday school, a special class could be arranged especially one that does not go over 15-20 minutes." He indicated further, that in his opinion, long classes were not appealing and that any intervention or education planning needs to address time and frequency in their considerations. However, if the suggested 15 to 20 minute duration were to be shared by other mosques, program time duration could become an item in need of negotiation in implementing health promotions program at the mosque, since it is well known that most programs, even the shortest, require a minimum of 30 minutes of physical exercise to yield benefits.

In sum, we note that results from this feasibility study indicate a strong interest on the implementation of health intervention and education programs at the mosque. Survey and focus group participants agreed that the mosque was the best place in which to conduct these programs. Interviews with organizational leaders from each of the eight largest mosques in South Florida confirm the mosques' willingness to organize and deliver these programs to the community, albeit some direct involvement from the leadership of when and how to organize and deliver these programs. In general, there was a strong interest among all those who participated in the study and the willingness to implement these programs at the mosques.

Conclusion

Five hundred and seven (n=507) Muslim participants were recruited through eight mosques in South Florida to participate in the survey phase of the study. Twenty-four (n=24) mosque attendees were additionally recruited to participate in four focus groups; and eight (n= 8) organizational leaders engaged in face interviews with the researcher. Following the sequential explanatory mixed methods approach, we first conducted the quantitative survey, this effort was followed by focus groups and interview discussions held with mosque organizational leaders. Survey participants were queried on sociodemographic variables, physical and mental health conditions, and willingness to participate in health education programs. Participants were asked to complete a health assessment instrument (SF-36) and a structured scale on stereotype and stigma. When appropriate, statistical analysis took into account the cluster design, controlling for the sum of all intra-cluster variances and considering the assumption that participants from one mosque were nested within it. Mixed effects or other covariance components modeling were used to investigate simultaneous relationships within and between levels of grouped data, thereby making it more efficient at accounting for variance among variables at different levels. Chi-square analyses were conducted to assess whether relationships between health status and demographic variables obtained statistical significance. Hierarchical logistic regression analysis was employed to test the association of the predictor variables and outcome variables to account for ICC, and GEE statistical methods were employed. Thematic qualitative analysis was employed in analyzing focus group and interview data.

Salient findings emerged from data obtained through the three research methods used in the study: survey, focus groups and interviews, and these were discussed in Chapters 3, 4 and summarized above when elaborating on important results yielded by the feasibility study. The latter is expected to provide the foundation necessary to develop and implement much needed interventions and educational programs at the largest mosques in South Florida. In what follows, we move beyond the feasibility study and its application to local mosques in South Florida, as already detailed and discussed, and comment on the demographic similarities that surfaced between the local population studied and other Muslim regional populations in the United States.

In discussing similarities that emerged between this study and others conducted in the United States, it is important to highlight the socio demographic characteristics and limitations of the studied population presented here. The sample for this study was recruited from the Muslim population currently attending the largest and most diverse mosques in South Florida. As such, our study is a multi-cluster design, whereby the eight largest mosques that met the study's eligibility criteria constitute the universe of the mosques included as clusters. We note that the clusters represent the universe of the eight largest mosques in South Florida. Open recruitment was conducted at each mosque. The final sample size, n= 507, largely exceeded the n= 380 participants necessary to power the study (sample size calculations on page 36). Though not representative of the at large South Florida Muslim population, we are confident that our sample is representative of Muslim mosque attendees at the largest South Florida mosques. Recruitment at each mosque, whether for the survey or focus groups, was completely

open and not purposeful or convenience. Everyone eighteen years and over attending the mosque was invited to take the survey or participate in the focus groups. Signs advertising the study were posted on bulletin boards and on the recruitment table. There were also announcements by the Imam after Friday prayers. As in all survey studies, the sample is biased toward those who volunteered to take the survey. This problem affects all survey studies, regardless of the scientific sampling design. Attempts were made to minimize the social desirability response bias; still we expect some social desirability bias in their responses. Focus groups participants, unlike participants in most focus group research, were not purposively selected. They too constituted the universe attending the eight large mosques in South Florida, freely volunteering to participate, and not selected because of any special condition or situation. There were no economic or other incentives for participants in any phase of the study. Finally, the only group purposefully selected were the organizational leaders representing the universe of the organizational structure of the eight mosques that met the selection criteria.

Given the constraints limiting the representativeness of the study sample, still it is worth noting that the sociodemographic diversity of the study's survey sample is comparable to what the Council on Islamic American Relationship (CAIR, 2004) and the Pew Forum on Religious and Public Life (PEW, 2015) report for South Florida Muslims. These organizations found the largest Muslim groups in South Florida to be South Asian, followed by Middle Eastern and North African (MENA). Similarly, the largest groups in this study sample were South Asians (24.7%) and Middle Eastern and North African (13.3%). Moreover, birthplaces reported by above two studies list over 30 countries as

birthplaces for Muslim Americans (CAIR, 2004; PEW, 2015). Participants in our study were also very diverse, reporting over 40 countries as their places of birth.

Moreover, regional studies on U.S. Muslims demographics characterize these populations as young, with high levels of education and stable income (Kulwicki, Miller, & Schim, 2000; Dallo & Borrell, 2006; PEW, 2015; Mogahed, & Chouhoud, 2017). Consistently with the above, survey results for the South Florida population indicate similar median level of education and stable incomes (Table 3 in Chapter 3). Contrasting the similarities found in socio demographic characteristics, major differences are found in prevalence of chronic diseases, general physical and mental health, cigarette smoking and alcohol use between our population and that reported in other regional studies (El-Sayed, & Galea, 2009; Husain, 2017). The reported prevalence of hypertension, heart disease, and diabetes in our sample were lower than those reported in other regional studies conducted on Muslim Americans in the U.S (El-Sayed, & Galea, 2009; Husain, 2017). Additionally, the reported prevalence of chronic diseases in our sample were lower than the clinical measures documented for Muslim Americans in other studies (Mogahed, & Chouhoud, 2017; Kulwicki, Miller, & Schim, 2000; Dallo & Borrell, 2006). It is possible that the latter points to underreporting of these conditions by our sampled population, since our study was based on self-reported data. However, it could also be related to our study's relative young age of participants (M= 41 years) and their high level of education.

In general, the overall SF36 scores for this study did not differ from SF36 scores reported for the general U.S. population in 2000 (Ware, Snow, Kosinski & Gandek,

2000). Moreover, scores for the SF36 for this study were similar to scores obtained for another Muslim regional study by Jadalla & Lee (2012),

In comparing findings from our study with those obtained by other studies on U.S. Muslims, we sought to provide a general point of reference for informing on differences and similarities between our findings and those of other studies on U.S. Muslims. This effort is meant to be a small attempt to underscore some differences and similarities among these groups while recognizing that ours is only but a small attempt to provide baseline data for much needed intervention and education programs in the targeted community, South Florida mosque attendees. As such, we fully understand our limitations, which are many and discussed below.

First, this study is a cross-sectional design; thus, causality cannot be established. Second, the cluster sampling method, while widely used in large and distinguished national studies, considerably limits individual generalizability, given limitations imposed by the cluster design. Therefore, caution should be exercised in generalizing the findings of this study. Third, data for chronic disease are based on participants' self-report and anthropometry, rather than by clinical measures; thus, the reported rates of chronic diseases and weight in the sample may not match their actual prevalence. Despite these limitations, this study contributes to the understanding of MMA residents of South Florida, and expands the body of current knowledge on the health profile of this population in the United States. This is especially the case, given that the sample size in this study was considerably larger to the samples obtained by similar regional studies reporting on Muslim American health. Moreover, it is our opinion that our study, guided

by the PRECEDE-PROCEED model, is well situated to contribute to future studies that aim at designing health promotion and disease prevention studies for U.S. Muslims, especially those who are mosque attendees. Finally, findings from this formative research may be of immediate accessibility to South Florida mosques interested in providing health programs to their congregations, since it lays out the foundation for design these programs.

References

Aboul-Enein, B. H. (2016). Health-promoting verses as mentioned in the Holy Quran. *Journal of Religion and Health*, *55*(3), 821-829.

Abu-Ras, W., Gheith, A., & Cournos, F. (2008). The imam's role in mental health promotion: A study at 22 mosques in New York City's Muslim community. *Journal of Muslim Mental Health, 3*(2), 155-176.

Ahmed, S., & Reddy, L. (2007). Understanding the mental health needs of American Muslims: Recommendations and considerations for practice. *Journal of Multicultural Counseling and Development, 35*, 207-218. doi:

Al-Khayat, M. H. (1997) Health: An Islamic Perspective. *Alexandria: World Health Organization, Regional Office for the Eastern Mediterranean*, Retrieved from http://www.emro.who.int/Publications/HealthEdReligion/ IslamicPerspective/Chapter1.htm. Oct. 2006.

Al-Krenawi, A., Graham, J. R., Ophir, M., & Kandah, J. (2001). Ethnic and gender differences in mental health utilization: the case of Muslim Jordanian and Moroccan Jewish Israeli out-patient psychiatric patients. *International Journal of Social Psychiatry*, *47*(3), 42-54.

Amer, M. M., & Bagasra, A. (2013). Psychological research with Muslim Americans in the age of Islamophobia: Trends, challenges, and recommendations. *American Psychologist, 68*(3), 134.

Arab American Institute Foundation. (2011). Florida: State's rank by Arab American population: Census estimated Arab American population. Retrieved March 5, 2018 at https://d3n8a8pro7vhmx.cloudfront.net/aai/pages/7706/attachments/ original/1461272153/Florida_2015.pdf?1461272153

Anderson, L. M., Scrimshaw, S. C., Fullilove, M. T., Fielding, J. E., Normand, J., & Task Force on Community Preventive Services. (2003). Culturally competent healthcare systems: A systematic review. *American journal of preventive medicine*, *24*(3), 68-79.

Aqeel, A. I. A. (2010). Prevention and Care of Genetic Disorders: An Islamic Perspective. In *Genetic Disorders among Arab Populations* (pp. 705-723). Springer, Berlin, Heidelberg.

Arousell, J., & Carlbom, A. (2016). Culture and religious beliefs in relation to reproductive health. *Best Practice & Research Clinical Obstetrics & Gynaecology*, *32*, 77-87.

Aswad, M. (2001). Health survey of the Arab, Muslim, and Chaldean American communities in Michigan. Michigan Department of Community Health. Retrieved March 28, 2014 at http://www.accesscommunity.org/sites/default/files/documents/health_and_research_cente_19.pdf.

Arfken, C., Ahmed, S., & Abu-Ras, W. (2013). Under the influence: Alcohol use among Muslim college students. ISPU Report. Retrieved November 3, 2015 at http://www.ispu.org/pdfs/ISPU_Report_Alcohol_Arfken_WEB.pdf

Arfken, C.L., Arnetz, B.B., Fakhouri, M., Ventimiglia, M.J., & Jamil, H. (2011). Alcohol use among Arab Americans: What is the prevalence? *Journal of Immigrant and Minority Health, 13*(4), 713-718.

Athar, S. (2005). Ramadan fasting and Muslim patients. Retrieved December 22, 2017, from http://www.iccservices.org.uk/pdf/Medical_Aspects_Of_Islamic_Fasting%20_3_.pdf

Awad, G. (2010). The impact of acculturation and religious identification on perceived discrimination for Arab/Middle Eastern Americans. *Cultural Diversity and Ethnic Minority Psychology*, 16, 59–67. doi:10.1037/a0016675

Banerjee, A. T., Landry, M., Zawi, M., Childerhose, D., Stephens, N., Shafique, A., & Price, J. (2017). A pilot examination of a mosque-based physical activity intervention for South Asian Muslim women in Ontario, Canada. *Journal of immigrant and minority health*, *19*(2), 349-357.

Bener, A., & Mohammad, R. R. (2017). Global distribution of consanguinity and their impact on complex diseases: Genetic disorders from an endogamous population. *Egyptian Journal of Medical Human Genetics*, *18*(4), 315-320.

Bronfenbrenner, U. (1979). *The ecology of human development: Experiments by nature and design*. Cambridge, MA: Harvard University Press.

Berkman, L. F., & Glass, T. (2000). Social integration, social networks, social support, and health. *Social Epidemiology*, *1*, 137-173.

Bandura, A. (1989). Human agency in social cognitive theory. *American Psychologist, 44*, 1175-1184.

Centers for Disease Control and Prevention (CDC) (2017). State, Tribal, Local & Territorial Public Health Professionals Gateway. *Assessment & Planning Models, Frameworks & Tools*. https://www.cdc.gov/stltpublichealth/cha/assessment.html

Centers for Disease Control and Prevention (CDC). (2014). Behavioral Risk Factor Surveillance System. *About BRFSS*. Retrieved from https://www.cdc.gov/brfss/about/index.htm

Council on American Islamic Relations. (2004). *The American Mosque 2011, Part 1: Basic Characteristics of The American Mosque And Attitudes Of Mosque Leaders*. Retrieved from https://www.cair.com/images/pdf/The-American-Mosque-2011-part-1.pdf

Creswell, J. W., & Creswell, J. D. (2017). *Research design: Qualitative, quantitative, and mixed methods approaches*. Location? Sage Publications.

Cunningham, S. A., Ruben, J. D., & Narayan, K. V. (2008). Health of foreign-born people in the United States: A review. *Health & Place, 14*(4), 623-635

Borrell, L. N., Dallo, F. J., & White, K. (2006). Education and diabetes in a racially and ethnically diverse population. *American Journal of Public Health, 96*(9), 1637-1642.

Dodani, S. (2011). Community-based participatory research approaches for hypertension control and prevention in churches. *International Journal of Hypertension*, 273120. doi:10.4061/2011/273120.

Dodani, S., Sullivan, D., Pankey, S., & Champagne, C. (2011). HEALS: A faith-based hypertension control and prevention program for African American churches: Training of church leaders as program interventionists. *International Journal of Hypertension*, 820101. doi:10.4061/2011/820101.

Ernst & Young. (2009). *The World Takaful Report 2009*. Retrieved December 22, 2017, from http://www.iefpedia.com/english/wp-content/uploads/2009/09/The-World-Takaful-report-2009.pdf

Eldridge, S., & Kerry, S. (2012). *A practical guide to cluster randomised trials in health services research* (Vol. 120). John Wiley & Sons.

El-Sayed, A. M., & Galea, S. (2009). The health of Arab-Americans living in the United States: a systematic review of the literature. *BMC Public Health*, *9*(1), 272.

Fatena (2010), *Mosque: Institution as a Community Development*, Available at: http://www.bukisa.com/articles/302783_mosqueinstitutionasacommunitydevelopment#ixzz1APXeKCDA

Florida Population (2017). Retrieved November 23, 2017, from http://worldpopulationreview.com /states/florida-population/

Frankovic K. (2015). Muslim Americans widely seen as victims of discrimination. *London, United Kingdom: Economist/YouGov*. Retrieved from https://today.yougov.com/news/2015/02/20/muslim-americans-widely-seen-victims-discriminatio/

Gharries, B. A. (2011). Human genetics and Islam: scientific and medical aspects. *The Journal of IMA*, *43*(2), 83.

Ghouri, N., Atcha, M., & Sheikh, A. (2006). Influence of Islam on smoking among Muslims. *Bmj*, *332*(7536), 291-294.

Gielen, A. C., McDonald, E. M., Gary, T. L., & Bone, L. R. (2008). Using the precede-proceed model to apply health behavior theories. *Health behavior and health education: Theory, research, and practice*, *4*, 407-29.

Gliem, J. A., & Gliem, R. R. (2003). Calculating, interpreting, and reporting Cronbach's alpha reliability coefficient for Likert-type scales. *Presented at the Midwest Research-to-Practice Conference in Adult, Continuing, and Community Education, The Ohio State University.* Retrieved from https://scholarworks.iupui.edu/bitstream/handle/1805/344/Gliem+&+Gliem.pdf?sequence=1

Green, L. W. (1974). Toward cost-benefit evaluations of health education: Some concepts, methods, and examples. *Health Education Monographs*, *2*(1_suppl), 34-64.

Green, L. W., Kreuter, M. W., Deeds, S. G., Partridge, K. B., & Bartlett, E. (1980). *Health education planning: a diagnostic approach.* Palo Alto, Calif: Mayfield Press.

Gupta, R., Gupta, V. P., Prakash, H., Sarna, M., & Sharma, A. K. (2002). Hindu-Muslim differences in the prevalence of coronary heart disease and risk factors. *Journal of the Indian Medical Association*, *100*(4), 227-230.

Hasnain, M., Connell, K. J., Menon, U., & Tranmer, P. A. (2011). Patient-centered care for Muslim women: provider and patient perspectives. *Journal of Women's Health*, *20*(1), 73-83.

Hammoud, M. M., White, C. B., & Fetters, M. D. (2005). Opening cultural doors: Providing culturally sensitive healthcare to Arab American and American Muslim patients. *American Journal of Obstetrics & Gynecology*, *193*(4), 1307-1311.

Hodge, D. R., Zidan, T., & Husain, A. (2015). Depression among Muslims in the United States: Examining the role of discrimination and spirituality as risk and protective factors. *Social work*, *61*(1), 45-52.

Howell, S. (2011). Muslims as Moving Targets: External Scrutiny and Internal Critique in Detroit's Mosques. *Arab Detroit 9/11: life in the terror decade,* 151-185.

Husain, A. (2017). Islam in the 21st century: Challenges and opportunities for social work with Muslims. *Journal of Religion & Spirituality in Social Work: Social Thought*, 36(1–2), 1–5.

Inhorn, M. C. (2016). Multiculturalism in Muslim America? The case of health disparities and discrimination in "Arab Detroit," Michigan. In *New Horizons of Muslim Diaspora in North America and Europe* (pp. 177-187). Palgrave Macmillan, New York.

Inhorn, M. C., & Serour, G. I. (2011). Islam, medicine, and Arab-Muslim refugee health in America after 9/11. *The Lancet*, *378*(9794), 935-943.

Isgandarova, N. (2005). Islamic spiritual care in a health care setting. In A. Meier, T. St. J. O'Connor, and P. L. VanKatwyk (Eds.), *Spirituality and health: multidisciplinary explorations* (pp.85-100). Waterloo, Ontario, Canada: Wilfrid Laurier University Press.

Jadalla, A., & Lee, J. (2012). The relationship between acculturation and general health of Arab Americans. *Journal of Transcultural Nursing*, *23*(2), 159-165.

Kagimu, M., Marum, E., Wabwire-Mangen, F., Nakyanjo, N., Walakira, Y., & Hogle, J. (1998). Evaluation of the effectiveness of AIDS health education intervention in the Muslim community in Uganda. *AIDS Education and Prevention*.

Khawaldeh, A.I. (2008). *Predictors of colorectal cancer screening among Arab Americans: The role of fatalism.* Ann Arbor, MI: ProQuest, LLC.

Killawi, A., Heisler, M., Hamid, H., & Padela, A. I. (2015). Using CBPR for health research in American Muslim mosque communities: Lessons learned. Progress Community Health Partnerships, 9, 65-74. doi:10.1353/cpr.2015.0007

Kulwicki, A. D., Miller, J., & Schim, S. M. (2000). Collaborative partnership for culture care: Enhancing health services for the Arab community. *Journal of Transcultural Nursing*, *11*(1), 31-39.

Kunst, J. R., Tajamal, H., Sam, D. L., & Ulleberg, P. (2012). Coping with Islamophobia: The effects of religious stigma on Muslim minorities' identity formation. *International Journal of Intercultural Relations*, *36*(4), 518-532.

Kwok, J., Atencio, J., Ullah, J., Crupi, R., Chen, D., Roth, A. R. & Brondolo, E. (2011). The Perceived Ethnic Discrimination Questionnaire—Community Version: Validation in a multiethnic Asian sample. *Cultural Diversity and Ethnic Minority Psychology, 17*(3), 271.

Laird, L. D., Amer, M. M., Barnett, E. D., & Barnes, L. L. (2007). Muslim patients and health disparities in the UK and the US. *Archives of Disease in Childhood*, *92*(10), 922-926.

Lawrence, P., & Rozmus, C. (2001). Culturally sensitive care of the Muslim patient. *Journal of Transcultural Nursing*, *12*(3), 228-233.

Little, R. J. (1988). Missing-data adjustments in large surveys. *Journal of Business & Economic Statistics*, *6*(3), 287-296.

Masud, H. (2010). Takaful: an innovative approach to insurance and Islamic Finance. University Of Pennsylvania Journal Of International Law, 32. 1133-1164.

Maynard, M., Baker, G., & Harding, S. (2017). Exploring childhood obesity prevention among diverse ethnic groups in schools and places of worship: Recruitment, acceptability and feasibility of data collection and intervention components. *Preventive medicine reports*, *6*, 130-136.

Matin, M., & LeBaron, S. (2004). Attitudes toward cervical cancer screening among Muslim women: a pilot study. *Women & Health*, *39*(3), 63-77.

Mogahed, D., & Chouhoud, C. (2018). *American Muslim Poll 2018: Pride and Prejudice Featuring the First-Ever National American Islamophobia Index*, The Institute for Social Policy and Understanding (ISPU). Retrieved from https://www.ispu.org/american-muslim-poll-2018-full-report/

Mohammadi, N., Jones, T., & Evans, D. (2008). Participant recruitment from minority religious groups: the case of the Islamic population in South Australia. *International Nursing Review*, *55*(4), 393-398.the health beliefs of Muslim women. *Online Journal of Health Ethics*, *10*(2), 5.

Mustafa, Y., Baker, D., Puligari, P., Melody, T., Yeung, J., & Gao-Smith, F. (2017). The role of imams and mosques in health promotion in Western societies—a systematic review protocol. *Systematic reviews*, *6*(1), 25.

Nelson, A., Stith, A. Y., & Smedley, B. D. (2002). Unequal treatment: confronting racial and ethnic disparities in health care. *Journal of the National Medical Association*, *94*(8), 666.

Nunnally, J. C., & Bernstein, I. H. (1994). *Psychometric Theory (McGraw-Hill Series in Psychology)* (Vol. 3). New York: McGraw-Hill.

Odeh Yosef, A. R. (2008). Health beliefs, practice, and priorities for health care of Arab Muslims in the United States: Implications for nursing care. *Journal of Transcultural Nursing*, *19*(3), 284-291.

Padela, A., Gunter, K., & Killawi, A. (2011). Meeting the healthcare needs of American Muslims: Challenges and strategies for healthcare settings. *Institute for Social Policy and Understanding.* Retrieved from at: http://ispu.org/pdfs/620_ISPU_ Report_Aasim%20Padela_final.pdf.

Padela, A. I., Gunter, K., Killawi, A., & Heisler, M. (2012). Religious values and healthcare accommodations: voices from the American Muslim community. *Journal of general internal medicine*, *27*(6), 708-715.

Padela, A., & Heisler, M. (2010) The association of perceived abuse and discrimination after September 11, 2001, with psychological distress, level of happiness, and health status among Arab Americans. *American Journal of Public Health*, *100*(2), 284-291. doi: 10.2105/AJPH.2009.164954

Padela, A. I., & Zaganjor, H. (2014). Relationships between Islamic religiosity and attitude toward deceased organ donation among American Muslims: a pilot study. *Transplantation*, *97*(12), 1292-1299.

Padela, A. I., Malik, S., & Ahmed, N. (2018). Acceptability of Friday sermons as a modality for health promotion and education. *Journal of immigrant and minority health*, *20*(5), 1075-1084.

Padela, A. I., & Raza, A. (2014). American Muslim health disparities: the state of the Medline literature. *Journal of Health Disparities Research and Practice*, *8*(1), 1.

Peek, L. (2011). *Behind the backlash: Muslim Americans after 9/11*. Philadelphia, PA: Temple University Press.

Pew Forum on Religious and Public Life. (2009). *Views of religious similarities and differences: Muslims widely seen as facing discrimination.* Retrieved from http://www.pewforum.org/uploadedfiles/Topics/Religious_Affiliation/Muslim/survey0909.pdf

Pew Forum on Religious and Public Life. (2009). *New estimates show U.S. Muslim population continues to grow.* Retrieved from http://www.pewresearch.org/fact-tank/2018/01/03/new-estimates-show-u-s-muslim-population-continues-to-grow/

Pew Forum on Religious and Public Life. (2015). *America's Changing Religious Landscape.* Retrieved from http://www.pewforum.org/2015/05/12/americas-changing-religious-landscape/

Pew Research Center. (January 2016). A new estimate of the U.S. Muslim population. Retrieved from http://www.pewresearch.org/fact-tank/2016/01/06/a-new-estimateof-the-u-s-Muslim-population/

Price, J., Banerjee, A. T., Zawi, M., Childerhose, D., & Landry, M. (2016). Effectiveness of a Mosque-Based Physical Activity intervention for South Asian Muslim Women–a Pilot Study. *Canadian Journal of Cardiology*, *32*(4), S5-S6.

Qureshi, B. (2002). Diabetes in Ramadan. *Journal of the Royal Society of Medicine*, *95*(10), 489-490.

Remington, P., Smith, M., Williamson, D., Anda, R., Gentry, E. & Hogelin, G. (1988). Design, characteristics, and usefulness of state-based behavioral risk factor surveillance: 1981-1997. Public Health Reports, 103, 366-375.

Rippy, A. E., & Newman, E. (2008). Adaptation of a scale of race-related stress for use with Muslim Americans. Journal of Muslim Mental Health, 3(1), 53-68.

Rosen, L., Manor, O., Engelhard, D., & Zucker, D. (2006). In defense of the randomized controlled trial for health promotion research. *American Journal of Public Health, 96*(7), 1181-1186.

Rumun, A. J. (2014). Influence of religious beliefs on healthcare practice. *International Journal of Education Research*, *2*(4), 37-48

Ryan, R.M., Patrick, H., Deci, E.L., & Williams, G.C. (2008). Facilitating health behavior change and its maintenance: Interventions based on health determination theory. *The European Health Psychologist, 10*(1), 1-5.

Samari, G. (2016). Islamophobia and public health in the United States. American journal of public health, 106(11), 1920-1925.

Shah, S. M., Ayash, C., Pharaon, N. A., & Gany, F. M. (2008). Arab American immigrants in New York: health care and cancer knowledge, attitudes, and beliefs. *Journal of Immigrant and Minority Health*, *10*(5), 429-436.

Schmitt, M. T., Branscombe, N. R., Kobrynowicz, D., & Owen, S. (2002). Perceiving discrimination against one's gender group has different implications for well-being in women and men. *Personality and Social Psychology Bulletin, 28*(2), 197-210.

Stein, A. D., Lederman, R. I., & Shea, S. (1993). The Behavioral Risk Factor Surveillance System questionnaire: its reliability in a statewide sample. *American Journal of Public Health*, *83*(12), 1768-1772.

Tavakol, M., & Dennick, R. (2011). Making sense of Cronbach's alpha. *International journal of medical education*, *2*, 53–55 doi: 10.5116/ijme.4dfb.8dfd.

Tober, D. M., & Budiani, D. (2007). Introduction: Why Islam, Health and the Body? *Body & Society*, *13*(3), 1–13. https://doi.org/10.1177/1357034X07082249

United States Department of State. (2009). *Being Muslim in America*. Washington D.C.: Bureau of International Information on Programs. Retrieved from http://www.america.gov/publications/books/being-muslim-in-america.html

U.S. Census Bureau. (n.d.), *Florida State & County QuickFacts.* Retrieved November 23, 2017, from https://web.archive.org/web/20130704215925/http://quickfacts.census.gov:80/qfd/states/12000.html

Grammich, C., Hadaway, K., Houseal, R., Jones, D .E., Krindatch, A., Stanley, R. & Taylor, R. H..(2012). *2010 U.S. Religion Census: Religious Congregations & Membership Study.* Association of Statisticians of American Religious Bodies. Retrieved November 22, 2017, from http://www.usreligioncensus.org/compare.php

Vu, M., Azmat, A., Radejko, T., & Padela, A. I. (2016). Predictors of delayed healthcare seeking among American Muslim women. *Journal of Women's Health*, *25*(6), 586-593.

Vu, M., Muhammad, H., Peek, M. E., & Padela, A. I. (2018). Muslim women's perspectives on designing mosque-based women's health interventions—An exploratory qualitative study. *Women & Health*, *58*(3), 334-346.

Walton, L., Akram, F., & Hossain, F. (2014). Health beliefs of Muslim women and implications for health care providers: exploratory study on the health beliefs of Muslim women. *Online Journal of Health Ethics*, 10(2), 5.

Ware Jr, J. E., & Sherbourne, C. D. (1992). The MOS 36-item short-form health survey (SF-36): I. Conceptual framework and item selection. *Medical care*, 473-483.

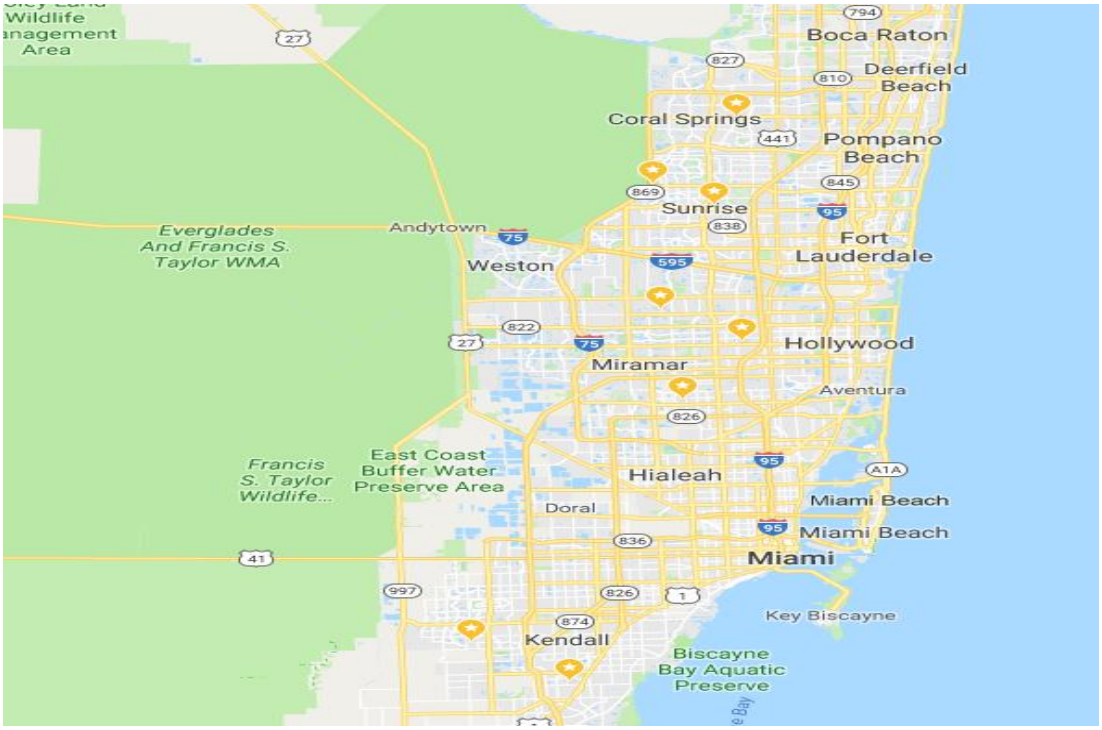
Ware Jr, J. E. (2000). SF-36 health survey update. *Spine*, *25*(24), 3130-3139.

Wu, S., Crespi, C. M., & Wong, W. K. (2012). Comparison of methods for estimating the intraclass correlation coefficient for binary responses in cancer prevention cluster randomized trials. *Contemporary Clinical Trials*, *33*(5), 869-880.

Yanek, L. R., Becker, D. M., Moy, T. F., Gittelsohn, J., & Koffman, D. M. (2001). Project Joy: Faith based cardiovascular health promotion for African-American women. *Public Health Reports, 116,* 68 81. http://dx.doi.org/10.1093/phr/116.S1.68

APPENDICES

Appendix A: Map of Target Area



Appendix B: IRB approval letter

FIU | FLORIDA INTERNATIONAL UNIVERSITY

Office of Research Integrity
Research Compliance, MARC 414

MEMORANDUM

To: Dr. Elena Bastida

CC: Bandar Alsaif
Amani Othmani

From: Maria Melendez-Vargas, MIBA, IRB Coordinator

Date: October 31, 2018

Protocol Title: "Exploring the feasibility of implementing mosque based health promotion programs: A Mixed Methods Approach"

The Social and Behavioral Institutional Review Board of Florida International University has approved your study for the use of human subjects via the **Expedited Review** process. Your study was found to be in compliance with this institution's Federal Wide Assurance (00000060).

IRB Protocol Approval #:	IRB-17-0333-CR01	**IRB Approval Date:**	10/26/18
TOPAZ Reference #:	105944	**IRB Expiration Date:**	10/25/19

As a requirement of IRB Approval you are required to:

1) Submit an IRB Amendment Form for all proposed additions or changes in the procedures involving human subjects. All additions and changes must be reviewed and approved by the IRB prior to implementation.
2) Promptly submit an IRB Event Report Form for every serious or unusual or unanticipated adverse event, problems with the rights or welfare of the human subjects, and/or deviations from the approved protocol.
3) Utilize copies of the date stamped consent document(s) for obtaining consent from subjects (unless waived by the IRB). Signed consent documents must be retained for at least three years after the completion of the study.
4) **Receive annual review and re-approval of your study prior to your IRB expiration date**. Submit the IRB Renewal Form at least 30 days in advance of the study's expiration date.
5) Submit an IRB Project Completion Report Form when the study is finished or discontinued.

HIPAA Privacy Rule: N/A

Special Conditions: N/A

For further information, you may visit the IRB website at http://research.fiu.edu/irb.

MMV/em

Appendix C: Questionnaire

	Variables	Indicators	Measures
Independent Variable (Predisposing factors)	Gender identity	Gender?	1= Male 2= Female
	relationship status	Current relationship status?	1= Single 2= Married 3= Divorced 4= Separated 5= Widowed
	Country of origin	Were you born in the United States or in another country?	1= United States 2= Another country (Please specify)
	Race and ethnicity	Race and/or ethnicity?	1= White 2= Black 3= Arab/Middle Eastern/North African 4= Asian 5= Other (please specify)
	Hispanic or Latino	Hispanic/Latino	1= Yes 2= No
	Group identity	Do you identify with a national or regional group?	Please specify:
	Age (years)	Age in Years	Continues variable
	Education level	How many school years have you completed?	Choose from (0-22+)
Independent Variable (Enabling factors)	Employment status	Are you now employed?	1= Full time 2= Part time 3= Full time Student 4= Not employed & not a student 5= Housewife 6= Retired
	level of religious commitment	Do you attend Friday prayers?	1= Always 2= Sometimes 3= Rarely
		How many times do you come to the mosque per week?	Choose from (1-7)
		Including yourself, how many people live in your household?	Continues variable (Please specify)
		Do they all go to the mosque?	1= Yes

			2= No 3= Some
Health assessment	Smoking status	Do you smoke or use any tobacco products?	1= Yes 2= No 3= Quit
		If Yes, how often?	1= Every Day 2= Some Days 3= Rarely
		12b. What do you use? (Please check all apply)	1= Cigarettes 2= Cigar Pipe 3= Water pipe (hookah) 4= Electronic cigarette 5= Pouch 6= Chewing
		Does a family member smoke at Home?	1= Yes 2= No 3= Quit
	Diet habits	Do you consume any of the food or drinks below? (Please check all apply)	1= Canned food 2= Processed meats 3= sodas, e.g. Coca Cola, 4= Alcohol beverages 5= Red meat 6= Energy drinks 7= Fried fast food 8= White rice 9= Fruit flavored juices 10= Coffee 11= Foods high in salt 12= Foods high in sugar 13= Vegetables 14= Grains 15= Fruits
		How many glasses of water (8 oz.) do you drink a day?	Choose from (0-8+)
	Self-image	Do you consider your weight?	1= Underweight 2= Normal 3= Over weigh

			4= very over weight
Health assessment	BMI	Can you provide an accurate measurement of your weight and height?	Weight _____ lbs _____ Kg Height _____ Feet, Inches _____ cm
	Chronic disease status	Has a doctor, nurse, or other health professional ever told you or a member of your household that you had any of the following?	Diabetes Asthma Emphysema/COPD /Lung disease Heart disease High Cholesterol Cancer High Blood Pressure Rheumatic Disase Stroke Depression Kidney Diseease Arthritis Other Condition
	In general, would you say your health is?		1= Excellent 2= Very good 3= Good 4= Fair 5= Poor
	Compared to one year ago, how would you rate your health now?		1= Much better now than one year ago 2= Somewhat better now than one year ago 3= About the same 4= Somewhat worse now than one year ago 5= Much worse now than one year ago

	During the past 4 weeks, to what extent has your physical health interfered with your normal social activities with family, friends, neighbors, or groups?	1= Not at all 2= Somewhat 3= Frequently 4= Always
	During the past 4 weeks, have you had any of the following problems with your work or other regular daily activities as a result of your physical health?	
	Cut down the amount of time you spent on work or other activities	1= Yes 2= No
	Accomplished less than you would like	1= Yes 2= No
Health Assessment	Were limited in the kind of work or other activities	1= Yes 2= No
	d. Had difficulty performing the work or other activities (for example, it took extra effort)	1= Yes 2= No
	The following items are about activities you might do during a typical day. For each of the items below, please respond to whether you feel very limited, somewhat limited or not at all	
	Vigorous activities, such as running, lifting heavy objects, participating in strenuous sports	1= Very Limited 2= Somewhat Limited 3= Not Limited at all
	Moderate activities, such as moving a table, pushing a vacuum cleaner, bowling, or playing golf	1= Very Limited 2= Somewhat Limited 3= Not Limited at all
	Lifting or carrying groceries	1= Very Limited 2= Somewhat Limited 3= Not Limited at all
	Climbing several flights of stairs	1= Very Limited 2= Somewhat Limited 3= Not Limited at all
	Bending, kneeling, or stooping	1= Very Limited 2= Somewhat Limited 3= Not Limited at all

	Walking more than a mile	1= Very Limited 2= Somewhat Limited 3= Not Limited at all
	Walking several blocks	1= Very Limited 2= Somewhat Limited 3= Not Limited at all
	Walking one block	1= Very Limited 2= Somewhat Limited 3= Not Limited at all
	Bathing or dressing yourself	1= Very Limited 2= Somewhat Limited 3= Not Limited at all
Health assessment	During the <u>past 4 weeks</u>, to what extent has your emotional health interfered with your normal social activities with family, friends, neighbors, or groups?	1= Not at all 2= Somewhat 3= Frequently 4= Always
Health assessment	During the <u>past 4 weeks</u>, have you had any of the following problems with your work or other regular daily activities <u>as a result of any emotional problems</u> (such as feeling depressed or anxious)?	
	Cut down the amount of time you spent on work or other activities	1= Yes 2= No
	Accomplished less than you would like	1= Yes 2= No
	Didn't do work or other activities as carefully as usual	1= Yes 2= No
	How much <u>bodily pain</u> have you had during the <u>past 4 weeks</u>?	1= None 2= Very mild 3= Mild 4= Moderate 5= Severe 6= Very severe
	During the past 4 weeks, how much did pain interfere with your normal work (including both work outside the home and housework)?	1= Not at all 2= Somewhat 3= Moderately 4= Very much 5= Always

	During the past 4 weeks, how much of your physical health has interfered with your social activities (like visiting with friends, relatives, etc.)?	1= Always 2= Most of the time 3= Some of the time 4= Never
	These questions are about your feelings and experiences during the past 4 weeks. For each question, please give the one answer that comes closest to the way you have been feeling. How much of the time during the past 4 weeks...	
	Did you feel full of enthusiasm?	1= All of the time 2= Most of the time 3= Some of the time 4= None of the time
	Did you experience anxiety and restlessness?	1= All of the time 2= Most of the time 3= Some of the time 4= None of the time
	Did you feel that nothing could cheer you up?	1= All of the time 2= Most of the time 3= Some of the time 4= None of the time
	Did you feel calm and peaceful?	1= All of the time 2= Most of the time 3= Some of the time 4= None of the time
	Did you have a lot of energy?	1= All of the time 2= Most of the time 3= Some of the time 4= None of the time

	Did you feel downhearted and totally exhausted?	1= All of the time 2= Most of the time 3= Some of the time 4= None of the time
	Did you feel worn out?	1= All of the time 2= Most of the time 3= Some of the time 4= None of the time
	Were you a happy person?	1= All of the time 2= Most of the time 3= Some of the time 4= None of the time
	Did you feel tired?	1= All of the time 2= Most of the time 3= Some of the time 4= None of the time
	How interested are you in participating in future free health programs at your mosque?	1= Extremely interested 2= Interested 3= Not interested 4= Not at all interested
	How TRUE or FALSE is each of the following statements for you.	
	I seem to get sick a little easier than other people	1= Definitely true 2= Mostly true 3= Don't know 4= Mostly false 5= Definitely false
	I am as healthy as anybody I know	1= Definitely true 2= Mostly true 3= Don't know 4= Mostly false 5= Definitely false
	I expect my health to get worse	1= Definitely true 2= Mostly true 3= Don't know 4= Mostly false

			5= Definitely false
	My health is excellent		1= Definitely true 2= Mostly true 3= Don't know 4= Mostly false 5= Definitely false
Stereotype and Stigma assessment	Have you ever felt stereotyped because of your faith/religion?		1= Yes 2= No
	If yes, how frequently do you feel stereotyped?		1= Always 2= Sometimes 3= Rarely
	When stereotyped, do you feel stressed?		1= Always 2= Sometimes 3= Rarely 4= Never
	Do you experience stress when praying in public?		1= Always 2= Sometimes 3= Rarely 4= Never
	If yes, do you avoid praying in public because of behaviors that stress you?		1= Always 2= Sometimes 3= Rarely 4= Never
	Have you ever felt stigmatized because of your faith/religion?		1= Always 2= Sometimes 3= Rarely 4= Never
	If yes, does stigma prevent you from participating in mosque social activities or observing your religion?		1= Always 2= Sometimes 3= Rarely 4= Never
Enabling Factors	Insurance status	Currently, do you have health insurance	1= Yes 2= No
		If not, where do you receive health care when needed?	(Please specify)
	Income	What is your annual income?	(Please specify)
		What is your annual household income?	(Please specify)

Appendix D: Focus Group Guideline

1. Can you give me your thoughts please about having a health program here at the mosque that targets healthy lifestyle? Do you think it's a good idea? Great idea, Why?

2. Why do you think that it's a great idea to implement the health program here? When is the best time and day to start a program? How long should the program last?

3. Let's talk about culture. Where and when is culture important when speaking about health?

4. Do you think that Muslims, regarding where they are from, behave differently than other groups? If so, how? If not, why not?

5. Can you tell me in what way do we behave differently? And, in what ways we are just like anybody else?

6. How about food? Is food important for all of us? Tell me about the ways in which food is important? When you think about food, are you also you also thinking that it defines you in some way, part of our identity?

7. Topics for exploration, who cooks at home, if they are singly, do they still cook or do they eat out? If they eat out where? Popular fast food places? If they have children, do they eat cultural foods or do they prefer "American food" fast food. What is the cost of eating healthy? Is it more expensive to eat healthy than non-healthy foods?

   Moving along and thinking of culture,

8. Is there anything about our culture that you believe prevent us from taking some medication, or avoid certain foods? What about our food, should we avoid certain foods to be healthy? What kinds of food do you believe is not good for our health?

9. What about grocery stores? Is there any within walking distance of your house that offers low-price fruits and vegetables?

10. Do you find that vegetables and fruit we eat here are different from the one we get back home?

11. What food choices would you be willing to change/substitute to lower your blood pressure to a healthy level?

12. What changes have you made in your cooking and eating habits since you moved to the state? Do you feel you are eating healthier food or not?

(Physical activity)

13. What about physical activity? Would you prefer? Are you into physical activities such as walking, or group exercises?

14. Are there any barriers to exercise? Can we agree on three barriers?

15. Would you like to organize a group exercise? What type? If we do one here at the mosque, would you attend?

(Doctor Patience relationship and Cultural accommodation)

16. What about you doctor, can you describe your relationship with him/her? What has been your experience?

17. Did your doctor ever recommend a healthy lifestyle change program to you? What kind? For what?

18. How willing are you to go to a doctor clinic for regular check-ups?

19. What is keeping you from going to see a health professional?

20. What do you feel about the healthcare system? Do you experience any discrimination or lack of clinical accommodation for religious preferences?

21. What locations you preferred to get advice about your health and diet

    For example: The mosque, health fairs, family clinics, telemedicine, or home visits.

22. In your opinion, is there any stigma on the Muslim community? (Probe: how is

    that or in what way?)

(Stigma and Stereotyping)

23. In your opinion, is there any stereotyping on the Muslim community? (Probe: what kind of stereotype?)
24. In your opinion, is stereotyping stressful? and where?
25. What are the most stressful stereotypes?
26. How does this stereotyping affect your daily life decisions? (probing: performing wudo'a, prying in public, prying in the airport, wearing hijab)

(Mosque health programs accessibility)

27. Are you ok to be approached in the mosque for a health study or health intervention, and answer questions related to your health and lifestyle? By who? The imam, mosque personnel, or health worker?
28. Will you participate and complete a mosque-based health intervention? What type?
29. Which time and day do you think is best for a health intervention in the mosque?
30. Do you see the imam as a source of authority that can guide you in your medical care or provide advice to you and your family?
31. Would you prefer receiving health information from the Imam or mosque personnel about HTN, diabetes, and healthy life style?
32. Would you prefer to follow health management protocols given by the imam and mosque personnel or by traditional American Physicians? Which one you prefer HTN, Diabetes… etc
33. When you hear that a friend has a high blood pressure what comes to your mind? What does it means to you?
34. When it comes to measuring blood pressure, how often do you think we should measure blood pressure? Should we measure it ourselves or should we seek help from a health professional? Do you feel it is hard to use a blood pressure cuff machine?

35. What type of health educational classes and healthy eating classes would you prefer? Would you prefer to meet here at the mosque? Would you like the mosque to organize these programs and provide the support that you need to improve your current health, your family?

36. Do you prefer healthy eating classes that include a culturally appropriate meals and education on HTN diet, label reading, meal planning, and portion sizes?

37. Would you like health classes on how to monitor your blood pressure, medications intake, and problem solving?

38. Do you think it is difficult to log medication intake and diet?

39. Will you prefer scales and educational materials in English versions or another language?

Appendix E: Interview Questions

1. Based on your experience, is the mosque a feasible location to conduct a health program? Based on your past experience, do you think it's a good idea? Why? Why not?
2. Is there a particular day and time that in your opinion will work well for delivering a healthy living program? Which day? What time? How long should the program last?
3. Would you like to take an active part in conducting and implementing a mosque-based health program? If yes, would you like to work with someone else in organizing a program? Would you like someone else to organize and deliver a program, but not directly lead the program? Have you seen active mosque members interested on starting a program? If so, what type of program would they prefer? Can you think of other Mosque attendees who would be willing to join and help?
4. Will you be willing **to endorse** a health intervention program at the mosque? How? Is it possible to do an announcement in Friday prayers? Would it be possible to make a culturally relevant Friday speech about health and healthy life styles to encourage Muslims to participate?
5. Have you ever been approached by an individual in the mosque who sought your advice on medical treatment or to get your advice about their health status? What was your response?

6. Would you like to identify someone in the congregation who can assist in these matters? For example, provide health advice to the congregation on HTN, diabetes, and other healthy life style techniques such as medication adherence, blood pressure readings, diet, and exercise?
7. Have you thought of organizing a group exercise here at the mosque? What type do you think would be successful? For example, group walking, or a class?
8. What recourses at the mosque are available for the exercise program? Are there any barriers accessing these resources? Can we agree on three barriers?
9. Do you feel it is ok to approach individuals in the mosque for a health study or health intervention? Would they agree to answer questions related to their health and lifestyle? If they do, who is the best person to make this announcement, the imam, mosque personnel, or a health professional? If a health professional should this person be a regular member of the mosque or an outsider brought in for that purpose?
10. What type of a health educational classes and healthy eating classes do you think would be appropriate in the mosque? Is it important to include children? Is it important to design and develop health activities to involve our children?
11. Are there mosque resources available for conducting these classes? Are there any barriers accessing these resources? Can you identify three barriers?
12. Do you feel that a class on healthy eating that includes culturally appropriate meals and education on diet, label reading, meal planning, and portion sizes

would be appropriate in the mosque? What is your recommendation? Why do you think so?

13. Do you feel that a class on monitoring blood pressure, medications intake, and problem solving would be appropriate in the mosque?

(Stigma and Stereotyping)

14. In your opinion, is there any stigma on the Muslim community? (probe: how is that or in what way?)
15. In your opinion, is there any stereotyping on the Muslim community? (Probe: what kind of stereotype?)
16. In your opinion, is stereotyping stressful? and where?
17. What are the most stressful stereotypes?
18. How does this stereotyping affect your daily life decisions? (probing: performing wudo'a, prying in public, prying in the airport, wearing hijab (if participant is female))

(Marriage, domestic, and psychological counseling)

19. Have you ever been approached by an individual in the mosque who sought your advice marriage, or psychological counseling? and or to get your advice about domestic issues? What was your response? Do you have someone to refer then to?

VITA

BANDAR ALSAIF

EDUCATION, ACADEMIC STUDIES & AWARDS:

2018:	PhD in Public Health Student, Florida International University
2014- Present:	Faculty member (Lecturer), University of Hail, Saudi Arabia
2013- Present:	Cardiovascular Master Trainer, American Heart Association, Miami, FL
2011- 2013:	MPH, Health Promotion and Disease Prevention, Florida International University
2007:	Bachelors of Science in Public Health: Community Health Education Portland State University, Portland, OR
2005:	CVT, High Diploma in Cardiovascular, Jeddah, Saudi Arabia
2018:	Academic Leadership Workshop, Washington, DC
2018:	Six Lean Sigma Yellow Belt, Miami, FL
2013:	Regional director award for Distinguished Leadership and Exemplary Service (American Heart Association)
2005:	Basic Life Support Certificate, Jeddah, Saudi Arabia

PUBLICATIONS, COURSES, CONFERENCES, PRESENTATIONS:

2018:	Healthy Aging Summit, Washington, DC
2013:	Global Health & Innovation Conference, New Haven, CT

Weissman, J., Preston, S., Sebekos, E., Latorre, W., Alsaif, B., Krupp, K., Darrow, W. (2016). Associations Between Health and Academic Success at a Florida University: An Exploratory Cross-Sectional Study. *Florida Public Health Review*, 13, 91-98.

Weissman, J., Preston, S., Sebekos, E., Latorre, W., Alsaif, B., Krupp, K., Darrow, W. (May 31-June 4 2016). *Can an on-campus medical home improve academic performance in college students?: An exploratory cross-sectional study.* American College Health Association (ACHA) Annual Meeting, San Francisco, CA; Poster Presentation.

Weissman, J., Preston, S., Sebekos, E., Latorre, W., Alsaif, B., Krupp, K., Darrow, W. (May 31-June 4 2016). *Psychological health and academic success in college students: An exploratory cross-sectional study.* American Public Health Association (A PHA) Annual Meeting, San Francisco, CA; Special ICTHP Poster Session.