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Factors Influencing Physical Activity among Immigrants from South India: A Qualitative Descriptive Study

Jaya Abraham

FACTORS INFLUENCING PHYSICAL ACTIVITY AMONG IMMIGRANTS FROM SOUTH INDIA: A QUALITATIVE DESCRIPTIVE STUDY

A DISSERTATION

SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE

DEGREE OF DOCTOR OF PHILOSOPHY IN NURSING

THE UNIVERSITY OF TEXAS HEALTH SCIENCE CENTER AT HOUSTON

CIZIK SCHOOL OF NURSING

BY

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MAY, 2018

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Date

To the Dean for the School of Nursing:

I am submitting a dissertation written by Jaya Sabu Abraham and entitled "Factors Influencing Physical Activity among Immigrants from South India." I have examined the final copy of this dissertation for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Doctor of Philosophy in Nursing.

Cathy Rozmus, PhD, Committee Chair

We have read this dissertation
and recommend its acceptance:

Accepted

Dean for the School of Nursing

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Factors Influencing Physical Activity among Immigrants from South India

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Abstract

Background: In the United States (U.S), the percentage of diabetes and coronary artery diseases percentage is higher among Asian Indian immigrants compared to other ethnic groups. Although research has been useful in describing patterns of physical activity among South Asian groups, very little is known about the factors influencing physical activity among Asian South Indian (ASI) immigrants. There is very limited research performed on the individual, social, cultural and environmental factors influencing physical activity among ASI immigrants.

Purpose: The study purpose was to explore the factors influencing physical activity with the following primary and secondary aims. The primary aim of this study was to examine factors that can promote or hinder physical activity initiation among ASI immigrants. The secondary aim of the study was to examine individual, social, cultural and environmental factors influencing the maintenance of physical activity among Asian South Indian adults.

Methods: This research was a qualitative descriptive content analysis study based on the Socio-ecological model. In-depth semi-structured individual interviews were conducted on 12 purposively selected ASI immigrants who met the eligibility criteria. Data collection continued until saturation with no new additional information. The interviews were recorded and transcribed verbatim. Nvivo 11 pro was used for data management and

analysis. The codes were categorized into subcategories and main categories based on the ecological model as individual, social and environmental factors.

Results: The factors influencing the initiation and maintenance of physical activity were divided as positively and negatively influencing factors. There were two main categories for the positively influencing factors: the individual facilitators and socio-environmental facilitators. For the negatively influencing factors, there were also two main categories: individual barriers and socio-environmental barriers. There are few additional influencing factors unique to this study compared to the previous research.

Conclusion: The factors influencing physical activity initiation and maintenance were divided as facilitators and barriers. Further research is needed on larger samples to examine the pattern of physical activity between both genders of ASI immigrants. The result of the study may be used to plan culturally appropriate physical activity interventions for ASI immigrants.

Keywords: Physical activity, Socio-ecological model, barriers, facilitators

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Summary of the Study

In the United States (U.S) the prevalence of chronic diseases like diabetes and coronary artery disease has higher percentages among Asian Indians compared to whites and other ethnic groups. Low levels of physical activity are identified as one of the major risk factors leading to central obesity and chronic diseases (Daniel, Wilbur, Marquez, & Farran, 2013; Williams, Stamatakis, Chandola, & Hamer, 2011). As the population of Asian Indians continues to grow, so does the prevalence of chronic health conditions causing increases in health care cost. There is very limited research performed on the individual, social, cultural and environmental factors influencing physical activity among ASI immigrants. The primary aim of this study was to examine factors that can promote or hinder physical activity initiation among ASI immigrants. The secondary aim of the study was to examine individual, social, cultural and environmental factors influencing the maintenance of physical activity among Asian South Indian adults. This qualitative study provided insight into the positively and negatively influencing factors for the initiation and maintenance of physical activity among ASI immigrants. Insightful information was gained with 30-60m individual semi-structured interviews using an interview guide (Appendices B). After obtaining the IRB approval the participants were recruited using a purposive maximum variation sampling to get the positively and negatively influencing factors for the initiation and maintenance of physical activity. Content analysis was used for the data analysis using Nvivo 11 pro. The factors influencing the initiation and maintenance of physical activity were divided as positively and negatively influencing factors. There were two main categories for the positively influencing factors: the individual facilitators and socio-environmental facilitators. For

the negatively influencing factors, there were also two main categories: individual barriers and socio-environmental barriers.

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Factors influencing physical activity among South Indian immigrants

Immigrants from Asia compose 1.1 % of the total population in the Hidalgo County. The percentage increased from 1 % in 2010 to 1.1% in 2015. Asian Indians are one of the largest groups within the Asian immigrant population in Hidalgo County according to the county statistics from 2015 (US Census Bureau, 2015). In the United States (U.S) the prevalence of diabetes among Asian Indian immigrants is 18.3% higher than other ethnic groups (Misra et al., 2010). The prevalence of coronary artery disease in Asian Indians is four times higher than Whites, Asian Indians hovering around 10% as opposed to 2.5 % of Whites in the U.S (Senthilkumar, 2001). A research study by Daniel et al., 2013., found low levels of physical activity among Asian Indians with an average number of daily steps of 6,904.3, which is classified as "low active" physical activity. Low levels of physical activity are identified as one of the major risk factors leading to central obesity and chronic diseases (Daniel, Wilbur, Marquez, & Farran, 2013; Williams, Stamatakis, Chandola, & Hamer, 2011). As the population of Asian Indians continues to grow, so does the prevalence of chronic health conditions causing increases in health care cost (Jepson, Harris, Bowes, Robertson & Sheikh, 2012; Tang, Mason, Kushner, Tirodkar, Khurana & Kandula, 2012). Physical inactivity and sedentary life styles are modifiable factors, and regular physical activity can potentially improve health outcomes by reducing cardiovascular diseases, stroke, and other chronic health conditions (Babakus & Thompson, 2012; Williams et al., 2011).

The World Health Organization (WHO) conducted an evaluation in 2009 on the global health risks for mortality revealing physical inactivity as the fourth leading risk factor, accounting for an estimated 6% of annual global deaths, or in other terms, around 3.2

million annual deaths (WHO, 2009). Several qualitative studies performed in western countries examined the physical activity among Asian populations with diabetes and chronic health conditions (Keval, 2009; Lawton, Ahmad, Hanna, Douglas, & Hallowell, 2006; Sriskantharajah, & Kai, 2007). One qualitative study was performed in Central Texas among Asian Indian women examining barriers and facilitators to physical activity. Health awareness, motivation and chance of social interaction were motivating factors and the dress code; beliefs about women's role, time and climate were mentioned as barriers (Chan, 2014). Although research has been useful in describing patterns of physical activity among South Asian groups, very little is known about the factors influencing physical activity or lack thereof among ASI immigrants. There is very limited research performed on the individual, social, cultural and environmental factors influencing physical activity among this population (Fischbacher, Hunt & Alexander, 2004; Lawton et al., 2006). A more in depth qualitative study exploring the factors influencing physical activity among ASI immigrants between the ages 30- 60 years is essential in understanding what motivates or prevents people from engaging in physical activity.

Research Aims

The primary aim of this study is to examine factors that can promote or hinder physical activity initiation among ASI immigrants. Examining individual, social, cultural and environmental factors, both positive and negative, should be beneficial in planning physical activity programs in helping the population overcome negative influencing factors (Hornea, Skeltonb, Speeda & Todd, 2013).

The secondary aim of the study is to examine individual, social, cultural and environmental factors influencing maintenance of exercise among Asian South Indian adults. Understanding the factors that affect maintaining a regular exercise schedule should be beneficial in planning physical activity programs in a way that helps the population integrate physical activity programs into their lifestyles (Hornea et al., 2013). The goal of this study is to recognize the factors influencing the initiation and maintenance of physical activity among ASI immigrant adults, which will aid in planning future physical activity intervention programs specifically for ASI adults in the Rio Grande Valley. The expected outcome of this study is to establish culturally appropriate and uncomplicated physical activity programs for both male and female ASI immigrants 30 to 60 years old by incorporating the findings from this study.

Significance

According to the US Census Bureau Profile of General Population, the Asian Indian population constitutes around 2 million people and continues to increase. Asian Indians are the second largest subgroup among South Asians in the U.S. (US Census Bureau, 2010). Asian Indians comprise 16.4% of the Asian American population, the majority being first generation immigrants from India between 30-65 years of age. This population is unique with different languages and cultural practices compared to other Asians (Misra, 2009; Misra et al., 2010). Those who were born in the Indian sub-continent and now live in western countries have substantially higher mortality and morbidity rates from coronary heart disease (CHD), hypertension and stroke (Fischbacher et al., 2004). The population is also at risk for diabetes and, insulin resistance from central obesity at a lower body mass index (Thomas, & Ashcraft, 2013). Genetic factors are important;

however, the increased incidence of these diseases is strongly associated with central obesity, which can stem from low levels of physical activity (Bardell, George, Bhoday, Tuomainen, Qureshi, & Kai, 2015; Lucas, Murray, & Kinra, 2013).

The extensive morbidity and disability caused by chronic diseases create complications, leading to significant financial costs. Since sedentary life styles and physical inactivity are two major contributing factors to chronic disease, physical activity programs should be planned in a way that overcomes barriers and promotes the motivating factors (Chapman, Qureshi, & Kai, 2013). The results of a population-based survey in 2010 examining physical activity levels among Asian American adults by focusing on physical activity during leisure time suggest that Asians are the least physically active ethnic group (Kao, Carvalho, & Lee, 2012). Sedentary lifestyles are as high as 60% among South Asians in United States. The increasing mortality rate along with increasing prevalence of cardiovascular and metabolic disease is an indication of low levels of physical activity among South Asians (Ranasinghe et al., 2013). An integrative review of prior studies that examined physical activity behavior of South Asian Indians found that physical activity is considerably low among South Asian Indian men and women (Daniel et al, 2013). A research study conducted by Hayes et al. showed lower levels of physical activity are more prevalent among South Asian men and women when compared to their white counterparts'. The study demonstrated physical activity of 48% and 36% respectively among native white men and women compared to 18% and 17% respectively among South Asian men and women (Hayes et al., 2002). Lack of time, limited availability of family and social support are some of the contributing factors (Daniel et al., 2013). Regular physical activity lowers blood pressure, aids in weight loss, reduces

visceral fat, and improves insulin sensitivity. Therefore, regular physical activity is beneficial in preventing early onset diabetes, hypertension, coronary artery disease and stroke, and thereby, health care cost (Ranasinghe et al., 2013).

Physical activity is defined as "any bodily movement produced by skeletal muscles that substantially elevates energy expenditure" (Caspersen, Powell, & Christenson, 1985). American College of Sports Medicine (ACSM) suggests 30 minutes of moderate-intensity physical activity five days a week or vigorous intensity physical activity for 20m three days/week for adults aged 18-65 years to promote and maintain health (Haskell, Lee, Pate, Powell, & Blair, 2007). Physical activities like brisk walking, gardening, and swimming are considered beneficial; causing energy expenditure (Allender et al., 2006). There are qualitative studies examining barriers associated with physical activity among people with chronic diseases. The studies identified some barriers as time limitations, fear of injury, and lack of culturally appropriate facilities for physical activities (Keval, 2009; Lawton et al., 2006). There is currently very little evidence of successful physical activity interventions amongst South Asian groups (Kao et al., 2012; Lawton et al., 2006). There are many factors that influence health behaviors including individual, social and environmental factors, as well as cultural beliefs and practices. Culture itself is an interaction of many factors that affect the way people perceive and act. Understanding the population's perception of health, lifestyles, attitudes, and beliefs will help program planners implement successful interventions to meet the needs of the target population. Understanding barriers and motivators to physical activity is essential in planning successful health promotion programs among ASI immigrants in the United States (Lucas, Murray, & Kinra, 2013). Previous research

studies show cultural influence on the physical activity behavior of Asian Indians. Participants expressed exercise beyond daily work as "selfish" activity. Exercise specific dress code, exercising in public and lack of culturally appropriate facilities to exercise were also concerns (Sriskantharajah & Kai, 2007). Participants mainly women expressed concern about lack of availability of single-sex facilities with same-sex instructors, especially while swimming and exposing bodies and preferred women only exercise centers. Concern about religiously and culturally inappropriate dresses that exposes the body while exercising was also a concern for women and preferred centers where people could wear culturally and religiously appropriate dresses that don't expose body (Lawton et al., 2006; Sriskantharajah & Kai, 2007). Other research studies showed certain beliefs about physical activity since participants expressed that physical activity is part of the daily house hold work and no extra time is allotted for it. The participants also expressed spending time to take care of the family is more culturally appropriate than setting aside time for exercise (Kalavar, Kolt, Giles, & Driver, 2004; Kumar, 2011).

The research studies conducted previously among Asian American adults show that Asian immigrants are less active than US-born Asians. This finding calls to incorporate more culturally-oriented physical activity interventions to promote physical activity among Asian American immigrants (Kao et al., 2012). According to qualitative research and lifestyle surveys sponsored by health education authorities in England, there are ethnic barriers to physical activity among South Asians. Even though the issues are common for all the populations, there are factors affecting physical activity among South Asians specifically, like lack of time, culturally inappropriate exercise centers, and social obligations causing negative attitudes (Johnson, 2010; Keval, 2009; Lawton et al., 2006;

Lucas et al.,2013; Seefeldt, Malina, & Clark, 2012). Although several studies have investigated common barriers among the Asian Indian population, there is very little information available on the factors influencing physical activity among ASI immigrants. There are differences between people's way of living, life style practices, language, religious beliefs and cultural practices among Asian Indians based on the state or region they are from (Misra, 2009). An in-depth qualitative approach using individual interviews will be beneficial in exploring the differences in perception of various barriers including individual, social, cultural and environmental factors positively and negatively influencing physical activity among ASI immigrants.

Innovation

This qualitative study is innovative since the study explores factors influencing initiation and maintenance of physical activity among ASI immigrant adults. There are many qualitative studies done among Asian immigrants, including Indians, Pakistanis and Bangladeshis, in western countries examining the physical activity patterns as well as barriers. These are three separate countries with differences ranging from cultural beliefs, religion, customs and practices, depending on the geographical area. Even within India, there are differences among regional populations regarding language, culture, food practices and religion (Misra, 2009). People from North India differ from South Indians, and grouping all types of Asian Indians together or implementing a common physical activity program may not be successful. Previous research was focusing on barriers to physical activity among South Asians with chronic diseases which may be different from the general population since this study focus on people with or without chronic disease except people with physical disability; which is exclusion for this study. This study will

provide insight into ways to develop successful physical activity programs for ASI immigrants, which fulfills the future implication of the study.

Approach

The study will be based on the Ecological Model. The ecological model was chosen for this study because it accounts for the many factors involved in promoting sedentary life style patterns in human behavior. It is based on the evidence that no single factor can explain the behavior of populations. This framework views the factors influencing physical activity at different levels (McLeroy, Bibeau, Steckler, & Glanz, 1988). The model hypothesizes that physical activity is influenced by individual, social, and environmental factors. Individual factors include biological, psychological, and behavioral influences, social addressing family or peer support and culture. Environmental includes exercise facilities or accessibility to facilities. Since the study is based on the ecological model, the researcher will address the characteristics of physical activity at multiple levels and consider the integration and interaction of the factors at the individual, social and environmental level to understand fully the factors that affect physical activity participation (Hefferon, Murphy, McLeod, Mutrie, & Campbell, 2013; Humbert et al., 2006; McLeroy et al., 1988).

Design

The design of the study will be a qualitative descriptive ethnographic approach. Ethnography involves the description and interpretation of cultural behavior. A qualitative design approach was chosen because the study involves identifying the factors, barriers, issues and opinions of participants (Polit & Beck, 2012; Savage, 2006). The qualitative approach will help the researcher in understanding the influencing factors

in depth. The ethnographic approach was chosen for this study since culture plays a major role among the factors influencing physical activity (Savage, 2006). The researcher will carry out 30-60-minute individual interview as well as extensive field work during the process of data collection and will be writing diaries, memos, and field notes while collecting the data. The collected information as well as the diaries, memos and field notes will be stored in a locked cabinet with researcher only access (Fain, 2015; Hefferon et al., 2013; Humbert et al., 2006; Im et al., 2012; Jancey, 2009; Polit & Bck, 2012).

Ethical Consideration

Institutional Review Board (IRB) approval will be obtained from the University of Texas Health Science Center Houston IRB. The aims and procedure of the study will be explained to the participants prior to obtaining consent. The nature of the study, as well as their right to withdraw at any time will be explained in detail to the participants prior to obtaining consent. Thereafter, a written informed consent will be obtained from each participant prior to their involvement in the study. A verbal consent also will be obtained prior to the interview and audio recording of the responses. The participants will be assigned code numbers originally and reassign a random number later for de-identification. All informed consents, demographic information and code numbers will be stored in a locked cabinet at the University of Rio Grande Valley office with access to researcher only.

Sample and Setting

Participants will be recruited using purposive sampling approach from a group of volunteers until saturation, where in-depth information from the participants will be obtained and the opinions from the participants become repetitive in nature with no

additional information. Thorough information from the participants will be obtained using an interview guide with an emergent design. The researcher is expecting an estimated sample size of 16-20 participants with a possible equal number of men and women (Polit & Beck, 2012). The study recruitment information will be shared through distributing flyers and word-of-mouth at the three Indian churches, one Hindu temple, and the Indian Association of the Rio Grande Valley. An additional email message and invitation to participate in the study will be sent to the Indian Association of Rio Grande Valley members and their friends. Flyers will be posted on the bulletin boards of all Indian faith institutions, Indian grocery shops and at the Indian Association of Rio Grande Valley office. ASI immigrants who meet the inclusion and exclusion criteria will be recruited for the study, with a possibly equal number of men and women (Humbert et al., 2006; Hefferon et al., 2013; Jancey, Clarke, Howat, Maycock, & Lee, 2009; Polit & Beck, 2012).

Inclusion Criteria

Adult ASI immigrants 30-60 years

First generation South Indians

Lives in Hidalgo County, Rio Grande Valley

Understands, writes and speaks English

Exclusion Criteria

People with chronic diseases causing physical disabilities that prevent them from engaging in physical activities

First generation ASI immigrants are chosen since the population has unique characteristics, culture, and physical activity patterns. The study is aimed towards ASI

immigrants of Rio Grande Valley since the populations are recent immigrants but represent most of the immigrants from 2000-2010.

Setting

The setting for this study will be participant's homes or convenient locations of participant's choice. Individual interviews will be conducted at participant's home or prior announced locations based on their preference and convenience.

Data Collection Procedures and Timeline

Demographic information including name, age, mailing address, email, gender, years of migration to United States, education, marital status, and occupation, will be collected after obtaining consent for participation but prior to individual interviews (Appendix A). Interview guide (Appendix B) with questions addressing the factors influencing initiation and maintenance of physical activity will be used for individual interviews. The researcher will conduct individual, in-depth, semi-structured interviews with an emergent design with open questions as well as probing questions and reframed questions to elicit in-depth information about the influencing factors to physical activity (Baheiraei, Mirghafourvand, Charandabi, & Mohammadi, 2013; Humbert, 2006). Because the nature of the study is to understand the influencing factors that impact the physical activity patterns of ASI immigrants, all of the participants will be encouraged to share their thoughts about barriers and motivators influencing physical activity.

After obtaining informed consent, the researcher will carry out a 30-60-minute semi-structured research interview with the participants. The participants will be informed about the anonymity of the research process and their right to withdraw from the study. The interview sites will be based on the participant's convenience (Humbert et al., 2006;

Hefferon et al., 2013; Im et al., 2012; Jancey et al., 2009; Polit & Beck, 2012). The questions will be in English since the populations at Rio Grande Valley are recent immigrants below 60 years with the ability to understand and speak English. The participants will be first asked general questions like "What do you hear about physical activity or exercise?", "What is your understanding about physical activity?", "What kind of physical activity do people from your community engage in?" and "What kind of physical activities do you engage in other than daily household work?". The data collection will be based on the interview guide (Appendix B), asking more focused questions like "Can you list any personal factors that influence you positively or negatively in engaging in PA?". Exploratory and probing questions, like "What do you mean by that or please expound on that?" will be used to elicit more in-depth opinions and understandings (Baheiraei et al., 2013). The researcher will maintain field notes and take notes of the non-verbal expressions of the participants during the interview. The researcher will make sure the environment is conducive for the participants to express their opinions, ensuring privacy for individual interviews.

The researcher will carry out extensive field work before data collection by observing the population in natural settings during picnics or tournaments where people engage in moderate to vigorous physical activities to identify possible participants for the study. The researcher will be writing diaries, memos, and field notes while collecting the data on these occasions. The collected information as well as the diaries, memos and field notes will be stored in a locked cabinet with researcher only access (Humbert et al., 2006; Hefferon et al., 2013; Im et al., 2012; Jancey et al., 2009; Polit & Beck, 2012). Each interview will be approximately 30-60 minutes in length. Participants will be verbally

reminded of the research process and how the data will be stored and used (Hefferon et al., 2013; Im et al., 2012; Jancey et al., 2009). All interviews will occur at the participants' convenient time, during holidays, outside of work or on weekends. At the conclusion of each interview, the researcher will recap the major points and ask the participants if their opinions had been captured correctly. All the interviews will be audiotaped with the participant's permission and transcribed verbatim (Humbert et al., 2006; Polit & Beck, 2012).

The researcher will keep diaries, memos, field notes and a reflexive journal to record thoughts about each interview, paying special attention to ideas and issues to be discussed, and the similarities and differences among the interviews. Each interview will be audiotaped with participant permission and fully transcribed verbatim (Humbert et al., 2006; Polit & Beck, 2012). The framework by Lincoln & Cuba, 1985, will be used to maintain the trustworthiness and reliability of data collection. Credibility or reliability of the data collection will be maintained by persistent observation, comprehensive field notes, reflexive journaling, data saturation, careful documentation, and triangulation of data collection method. Transferability will be retained by data saturation and by keeping comprehensive field notes. Carefully documenting data during data collection will be done to maintain dependability and confirmability. (Polit & Bck, 2012).

Timeline

The time line for the data collection and analysis for this study is expected to be 20 weeks.

Data Analysis

Data analysis will be an ongoing process that begins with the first interview and continues throughout the study. The thematic analysis method will be implemented for the data analysis in this study (Polit & Beck, 2012). The audiotapes will be transcribed by the researcher or by a professional transcriptionist, encrypted and validated by the researcher. The researcher will review and validate the transcripts of the interviews. The transcript will be read and re-read to understand the participant's dialogue during the analysis process. The transcript will also be broken down into smaller units and line-by-line coding will be done after thorough reading of the transcript. All the codes will be summarized in a code book. The words or sentences that capture the critical issues and thoughts identified by the participants will be marked and analyzed carefully. Nvivo will be used for data management and analysis. The data analysis and coding will involve identifying special patterns in the ideas and thoughts emerged from participant's thoughts. The thoughts and ideas will be grouped into themes based on the ecological model as individual, social and environmental factors (Bethancourt, Rosenberg, Beatty, & Arterburn, 2014; McLeroy et al., 1988).

The researcher will look for the ecological model, individual, social and environmental factors influencing physical activity (McLeroy et al., 1988). The themes will be based on the ecological model factors and the identified data will be categorized into themes that will be further analyzed (Hefferon et al., 2013; Im et al., 2012; Jancey et al., 2009; Polit & Beck, 2012). The trustworthiness of data analysis will be maintained based on the framework by Lincoln & Cuba, 1985. The researcher will transcribe the interviews, maintaining trustworthiness and reliability. The researcher will meticulously listen to

each tape and go through each transcript carefully while transcribing the collected data to maintain reliability of transcription. The credibility or reliability of transcription will be preserved by transcription rigor and thick and vivid description. Development of code book, inter-coder check and thick description will be used to conserve authenticity and transferability. Careful transcription of collected data will be used throughout to sustain confirmability and dependability. Throughout the process, the researcher will meticulously analyze the purpose, methods and analysis of the study while reflecting critically on self and write diaries, memos, field notes and a log to maintain reliability and trustworthiness. The researcher will take every effort to keep reflexive notes, self-interrogation to enquire deeply and to understand the experiences through the lens of participants (Polit & beck, 2012).

Discussion

The initiation of successful physical activity programs depends on considering many factors at individual, social, and environmental levels. Identifying and paying attention to multiple factors including barriers and motivators may help in the development of successful physical activity programs among the target population (Seefeldt et al., 2012).

The strength of the study is the involvement of multiple influencing factors, including barriers and facilitators based on the ecological perspective. Culture will be explored in detail throughout the study and will be an added strength since cultural influence is tremendous in the initiation and maintenance of physical activity among ASI immigrants. Researchers prior knowledge about the Asian South Indian community is an added strength since there is access to the community and may elicit more in depth data. The limitations of the study include, even though every effort is taken to minimize the bias,

researcher's prior knowledge about the cultural issues and influencing factors may impact the results. Age limitation and the subjects' varied perceptions of physical activity may cause bias in the result as well.

The implication of the study will be to plan and promote successful culturally appropriate physical activity and health promotion interventions for Asian South Indian first generation immigrants. The study may give way to look at the factors influencing physical activity among first and second generation ASI immigrants in the U.S. Investigation of the different barriers and facilitators among both genders through quantitative cross sectional survey research may provide insight into the factors that needs to be considered while planning physical activity programs for the ASI population in the future. A future study about acculturation, physical activity and dietary changes among Asian Indians in the Rio Grande Valley may be planned based on this study as well. This particular group of population is aging, and the lack of physical activity may cause many health problems and increased financial costs. Health promotion intervention and education programs may be planned based on this study results to initiate and sustain physical activity programs among the target population.

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Appendix A

Demographic Data Sheet

Demographic Data Sheet

Name: ----------

Mailing Address: ----------

Telephone: ----------

E-mail: ----------

Date of Birth: ----------

Country of birth: ----------

Gender

O Male

O Female

Religion

O Hindu

O Muslim

O Christian

O Other

Education

O Elementary or Middle school

O High School

O college

O Graduation or higher

O Professional degree

Employment status

O professional Job

O business

O teaching

O other jobs

O Unemployed

Marital status

O single

O Married

Years of migration

O -------- Please enter years of migration to U.S

List any chronic disease causing physical disabilities preventing physical activity participation

Appendix B

Interview Guide

Interview Guide

The questions for the interview will include:

What are the things you have heard about physical activity?"

What type of physical activities do you think Asian South Indians participate? What kind of physical activities do you engage in other than the household work?

What are the factors that might keep ASI Immigrants from engaging in physical activity? Can you list and explain those issues in regards to your daily life that prevents you from engaging in physical activities?

On a typical day how much time is spent watching T.V or computer/sitting on a couch?

Can you share some thoughts about the disadvantages of being sedentary?

Can you list any personal factors that influence you positively or negatively in starting and maintaining PA?

How do family and friends influence you in starting and maintaining physical activities?

What is your preference for physical activity? A group setting or physical activity by your own? Why?

Are there convenient places to engage in physical activities in this area? What is your habit of utilizing those facilities? What is the influence of these facilities in starting and maintaining PA?

What are the cultural beliefs or social factors that interfere with starting and maintaining PA? Any gender issues with starting and maintaining PA? or utilizing exercise facilities?

Do you have a plan to overcome the factors that prevents you from engaging in physical activities? If so, what is your plan?

Factors influencing physical activity among South Indian immigrants

In the United States (U.S) the prevalence of diabetes among Asian Indian immigrants is 18.3% higher than other ethnic groups (Misra et al., 2010). The prevalence of coronary artery disease in Asian Indians is four times higher than Whites, Asian Indians hovering around 10% as opposed to 2.5 % of Whites in the U.S (Senthilkumar, 2001). Low levels of physical activity are identified as one of the major risk factors leading to central obesity and chronic diseases (Daniel, Wilbur, Marquez, & Farran, 2013; Williams, Stamatakis, Chandola, & Hamer, 2011). A research study by Daniel et al., 2013, found low levels of physical activity among Asian Indians with an average number of daily steps of 6,904.3, which is classified as "low active" physical activity. As the population of Asian Indians continues to grow, so does the prevalence of chronic health conditions causing increases in health care cost (Jepson, Harris, Bowes, Robertson & Sheikh, 2012; Tang, Mason, Kushner, Tirodkar, Khurana & Kandula, 2012).

Physical inactivity and sedentary life styles are modifiable factors, and regular physical activity can potentially improve health outcomes by reducing cardiovascular diseases, stroke, and other chronic health conditions (Babakus & Thompson, 2012; Williams et al., 2011). The World Health Organization (WHO) conducted an evaluation in 2009 on the global health risks for mortality revealing physical inactivity as the fourth leading risk factor, accounting for an estimated 6% of annual global deaths, or in other terms, around 3.2 million annual deaths (WHO, 2009). Several qualitative studies performed in western countries examined the physical activity among Asian populations with diabetes and chronic health conditions (Keval, 2009; Lawton, Ahmad, Hanna, Douglas, & Hallowell, 2006; Sriskantharajah, & Kai, 2007).

One qualitative study was performed in Central Texas among Asian Indian women examining barriers and facilitators to physical activity. Health awareness, motivation and chance of social interaction were motivating factors and the dress code; beliefs about women's role, time and climate were mentioned as barriers (Chan, 2014). Although research has been useful in describing patterns of physical activity among South Asian groups, very little is known about the factors influencing physical activity or lack thereof among Asian South Indian (ASI) immigrants. There is very limited research performed on the individual, social, cultural and environmental factors influencing physical activity among this population (Fischbacher, Hunt & Alexander, 2004; Lawton et al., 2006). A more in depth qualitative study exploring the factors influencing physical activity among ASI immigrants between the ages 30- 60 years is essential in understanding what motivates or prevents people from engaging in physical activity.

Research Aims

The primary aim of this study was to examine factors that can promote or hinder physical activity initiation among ASI immigrants. Examining individual, social, cultural and environmental factors, both positive and negative, should be beneficial in planning physical activity programs in helping the population overcome negative influencing factors (Hornea, Skeltonb, Speeda & Todd, 2013).

The secondary aim of the study was to examine individual, social, cultural and environmental factors influencing the maintenance of physical activity among Asian South Indian adults. Understanding the factors that influence maintaining a regular physical activity schedule should be beneficial in planning physical activity programs in a

way that helps the population integrate physical activity into their lifestyles (Hornea et al., 2013).

The goal of this study is to recognize the factors influencing the initiation and maintenance of physical activity among ASI immigrant adults, which will aid in planning future physical activity intervention programs specifically for ASI adults in the Rio Grande Valley. The expected outcome of this study is to establish culturally appropriate and uncomplicated physical activity programs for both male and female ASI immigrants 30 to 60 years old by incorporating the findings from this study.

Significance

According to the US Census Bureau Profile of General Population, the Asian Indian population constitutes around 2 million people and continues to increase. Asian Indians are the second largest subgroup among South Asians in the U.S. (US Census Bureau, 2010). Asian Indians comprise 16.4% of the Asian American population, the majority being first generation immigrants from India between 30-65 years of age. This population is unique with different languages and cultural practices compared to other Asians (Misra, 2009; Misra et al., 2010). Those who were born in the Indian sub-continent and now live in western countries have substantially higher mortality and morbidity rates from coronary heart disease (CHD), hypertension and stroke (Fischbacher et al., 2004). The population is also at risk for insulin resistance and diabetes from central obesity at a lower body mass index (Thomas, & Ashcraft, 2013). Genetic factors are important; however, the increased incidence of these diseases is strongly associated with central obesity, which can stem from low levels of physical activity (Bardell, George, Bhoday, Tuomainen, Qureshi, & Kai, 2015; Lucas, Murray, & Kinra, 2013).

The extensive morbidity and disability caused by chronic diseases create complications, leading to significant financial costs. According to Center for Disease Control and Prevention (CDC) in 2012 and 2013, the estimated costs for people with chronic disease were $2.7 trillion of which $316.1 billion were spent for people with cardiovascular diseases and $245 billion were spent for people with diabetes (CDC, 2017). Since sedentary life styles and physical inactivity are two major contributing factors to chronic disease, physical activity programs should be planned in a way that overcomes barriers and promotes the motivating factors (Chapman, Qureshi, & Kai, 2013). The results of a population-based survey in 2010 examining physical activity levels among Asian American adults by focusing on physical activity during leisure time suggested that Asians are the least physically active ethnic group (Kao, Carvalho, & Lee, 2012). Sedentary lifestyles are as high as 60% among South Asians in the United States.

The increasing mortality rate along with increasing prevalence of cardiovascular and metabolic disease is an indication of low levels of physical activity among South Asians (Ranasinghe et al., 2013). An integrative review of prior studies that examined physical activity behavior of South Asian Indians found that physical activity is considerably low among both South Asian Indian men and women (Daniel et al, 2013). A research study conducted by Hayes et al. showed lower levels of physical activity are more prevalent among South Asian men and women when compared to their white counterparts. The study demonstrated physical activity of 48% and 36% respectively among native white men and women compared to 18% and 17% respectively among South Asian men and women (Hayes et al., 2002). Lack of time, limited availability of family and social support are some of the contributing factors (Daniel et al., 2013). Regular physical

activity lowers blood pressure, aids in weight loss, reduces visceral fat, and improves insulin sensitivity. Therefore, regular physical activity is beneficial in preventing early onset diabetes, hypertension, coronary artery disease and stroke, and thereby, health care cost (Ranasinghe et al., 2013).

Physical activity is defined as "any bodily movement produced by skeletal muscles that substantially elevates energy expenditure" (Caspersen, Powell, & Christenson, 1985). The American College of Sports Medicine (ACSM) suggests 30 minutes of moderate-intensity physical activity five days a week or vigorous intensity physical activity for 20minutes three days/week for adults aged 18-65 years to promote and maintain health (Haskell, Lee, Pate, Powell, & Blair, 2007). Physical activities like brisk walking, gardening, and swimming are considered beneficial by causing energy expenditure (Allender et al., 2006). Qualitative studies examining barriers associated with physical activity among people with chronic diseases identified some barriers as time limitations, fear of injury, and lack of culturally appropriate facilities for physical activities (Keval, 2009; Lawton et al., 2006). There is currently very little evidence of successful physical activity interventions amongst South Asian groups (Kao et al., 2012; Lawton et al., 2006).

There are many factors that influence health behaviors including individual, social and environmental factors, as well as cultural beliefs and practices. Culture itself is an interaction of many factors that affect the way people perceive and act. Understanding the population's perception of health, lifestyles, attitudes, and beliefs will help program planners implement successful interventions to meet the needs of the target population. Understanding barriers and motivators to physical activity is essential in planning

successful health promotion programs among ASI immigrants in the United States (Lucas, Murray, & Kinra, 2013).

Previous research studies show cultural influence on the physical activity behavior of Asian Indians. In an exploratory qualitative research study, participants expressed exercise beyond daily work as "selfish" activity. Exercise specific dress code, exercising in public and lack of culturally appropriate facilities to exercise also were concerns (Sriskantharajah & Kai, 2007). Participants mainly women expressed concern about lack of availability of single-sex facilities with same-sex instructors, especially while swimming and exposing bodies and preferred women only exercise centers. Concern about religiously and culturally inappropriate dresses that exposes the body while exercising also was a concern for women who preferred centers where people could wear culturally and religiously appropriate dresses that do not expose their body (Lawton et al., 2006; Sriskantharajah & Kai, 2007). Other research participants have expressed that physical activity is part of their daily household work and no extra time is allotted for it. The participants also expressed spending time to take care of the family is more culturally appropriate than setting aside extra time for physical activity (Kalavar, Kolt, Giles, & Driver, 2004; Kumar, 2011).

The research studies conducted previously among Asian American adults show that Asian immigrants are less active than US-born Asians. This finding suggests more culturally oriented physical activity interventions to promote physical activity among Asian American immigrants (Kao et al., 2012). According to qualitative research and lifestyle surveys sponsored by health education authorities in England, there are ethnic barriers to physical activity among South Asians. Even though the issues are common for

all the populations, there are factors affecting physical activity among South Asians specifically, like lack of time, culturally inappropriate exercise centers, and social obligations causing negative attitudes (Johnson, 2010; Keval, 2009; Lawton et al., 2006; Lucas et al.,2013; Seefeldt, Malina, & Clark, 2012). Although several studies have investigated common barriers among the Asian Indian population, there is very little information available on the factors influencing physical activity among ASI immigrants. There are differences between people's way of living, life style practices, language, religious beliefs and cultural practices among Asian Indians based on the state or region they are migrated from (Misra, 2009). An in-depth qualitative approach using individual interviews was beneficial in exploring the differences in perception of various barriers including individual, social, cultural and environmental factors positively and negatively influencing physical activity among ASI immigrants.

Innovation

This qualitative study is innovative since the study explored factors influencing initiation and maintenance of physical activity among ASI immigrant adults. There are many qualitative studies done among Asian immigrants, including Indians, Pakistanis and Bangladeshis, in western countries examining the physical activity patterns as well as barriers. These are three separate countries with differences in cultural beliefs, religion, customs and practices. Even within India, there are differences among regional populations regarding language, culture, food practices and religion (Misra, 2009). People from North India differ from South Indians, and grouping all types of Asian Indians together or implementing a common physical activity program may not be successful. Previous research focused on barriers to physical activity among South Asians

with chronic diseases, while this study focus on people without chronic diseases. This study provides insight into ways to develop successful physical activity programs for ASI immigrants.

Approach

The study was based on the Socio-ecological model because it accounts for the many factors involved in promoting sedentary life style patterns in human behavior. It is based on the evidence that no single factor can explain the behavior of populations. This framework views the factors influencing physical activity at different levels (McLeroy, Bibeau, Steckler, & Glanz, 1988). The model hypothesizes that physical activity is influenced by individual, social, and environmental factors. Individual factors include biological, psychological, and behavioral influences. Social factors addressing family support, friend's support and culture. Environmental factors include nearby and far away exercise facilities as well as good and bad weather conditions. Since the study was based on the ecological model, the researcher addressed physical activity at multiple levels and considered the integration and interaction of the factors at the individual, social and environmental level to understand fully the factors that affect physical activity initiation and maintenance (Hefferon, Murphy, McLeod, Mutrie, & Campbell, 2013; Humbert et al., 2006; McLeroy et al., 1988).

Methodology

The design of the study was a qualitative descriptive content analysis approach. A qualitative design approach was chosen because the study involved identifying the factors, barriers, issues and opinions of participants since the participants live in a southern U.S state where climate and culture are influencing factors (Polit & Beck, 2012;

Savage, 2006). The qualitative approach aided the researcher in understanding the influencing factors in depth. Content analysis was used in this research to classify themes into categories out of the collected data to describe the phenomena (Elo & Kyngas, 2008). The researcher carried out a 30-60-minute individual interview with the participants during the process of data collection and wrote memos, and field notes while collecting the data.

Ethical Consideration

Institutional Review Board (IRB) approval was obtained prior to data collection. The aims and procedure of the study were explained to the participants prior to obtaining consent. The nature of the study, as well as their right to withdraw at any time was explained in detail to the participants prior to obtaining consent. Thereafter, a written informed consent was obtained from interview participants prior to their involvement in the study. A verbal consent also was obtained prior to the interview and audio recording of the responses. The participants were assigned code numbers originally and reassigned a random number later for de-identification. The collected information, memos, field notes, informed consents and coded numbers were stored in a locked cabinet with researcher only access.

Sample and Setting

Participants were recruited using a purposive maximum variation sampling approach from a group of volunteers until saturation, defined as the point when relevant information was obtained and the opinions from the participants became repetitive in nature with no new additional data. Thorough information from the participants was obtained using an interview guide with an emergent design. The study recruitment

information was shared through distributing flyers and word-of-mouth at three Indian churches, one Hindu temple, and an Indian Association in the south central U.S. An additional email message and invitation to participate in the study was sent to the Indian Association members and their friends. Flyers were posted on the bulletin boards of all Indian faith institutions, Indian grocery shops and at the Indian Association office. ASI immigrants who met the inclusion and exclusion criteria were recruited for the study.

Inclusion Criteria

Adult ASI immigrants 30-60 years

First generation South Indians

Understands, writes and speaks English

Exclusion Criteria

People with chronic diseases causing physical disabilities that prevent them from engaging in physical activities

First generation ASI immigrants were chosen since the population has unique characteristics, culture, and physical activity patterns. The setting for this study was participant's homes or convenient locations of participant's choice.

Data Collection Procedures

Demographic information including name, age, mailing address, email, gender, years since migration to United States, education, marital status, and occupation, were collected after obtaining consent for participation but prior to individual interviews (Appendix A). An interview guide (Appendix B) with questions addressing the factors influencing initiation and maintenance of physical activity was used for individual interviews. The researcher conducted individual, in-depth, semi-structured interviews with an emergent

design with open questions as well as probing questions and reframed questions to elicit in-depth information about the influencing factors to physical activity (Baheiraei, Mirghafourvand, Charandabi, & Mohammadi, 2013; Humbert, 2006). Because the nature of the study is to understand the influencing factors that impact the physical activity patterns of ASI immigrants, all of the participants were encouraged to share their thoughts about barriers and motivators influencing physical activity.

After obtaining informed consent, the researcher carried out a 30-60-minute semi-structured interview with the participants. The participants were informed about the research process and their right to withdraw from the study. The questions were in English since the participants were below 60 years with the ability to understand and speak English. The participants were first asked general questions such as "What do you hear about physical activity or exercise?", "What is your understanding about physical activity?", "What kind of physical activity do people from your community engage in?" and "What kind of physical activities do you engage in other than daily household work?". The data collection was based on the interview guide (Appendix B), asking more focused questions like "Can you list any personal factors that influence you positively or negatively in initiating and maintaining physical activity?" Exploratory and probing questions, like "What do you mean by that or please expound on that?" were used to elicit more in-depth opinions and understandings (Baheiraei et al., 2013). The researcher took notes of the non-verbal expressions of the participants during the interview. The interviews were conducted in an environment conducive for the participants to express their opinions while, ensuring privacy for individual interviews.

The researcher carried out extensive field work before data collection by observing the population during picnics and tournaments where people engaged in moderate to vigorous physical activities. All interviews occurred at the participants' convenient time, during holidays, outside of work or on weekends. Participants were verbally reminded of the research process and how the data are stored and used. All the interviews were audiotaped with the participant's permission and transcribed verbatim. The framework by Lincoln & Guba (1985) was used to maintain the trustworthiness and reliability of data collection and analysis. Credibility or reliability of the data collection was maintained by persistent observation, comprehensive field notes, data saturation, and careful documentation (Lincoln & Guba, 1985).

Data Analysis

The data analysis was an ongoing process that started with the first interview and continued throughout the study. The content analysis method was implemented for the data analysis in this study. The interviews were audiotaped and non- verbal facial expressions were written down. The researcher transcribed the audiotapes, and the transcripts were read multiple times and coded line-by-line. All the codes were summarized into a codebook and analyzed multiple times. Nvivo 11 pro was used for data management and analysis. The codes were categorized into subcategories and main categories based on the ecological model as individual, social and environmental factors (Bethancourt, Rosenberg, Beatty, & Arterburn, 2014; McLeroy et al., 1988). The researcher transcribed the interviews, maintaining trustworthiness and reliability. The researcher meticulously listened to each tape and went through each transcript carefully while transcribing the collected data to maintain reliability of transcription. Development

of codebook, and thick descriptions were used to conserve authenticity and transferability. Throughout the process, the researcher meticulously analyzed the purpose, methods and analysis of the study, while reflecting critically on self to maintain reliability and trustworthiness (Lincoln & Guba, 1985).

Results

Data collection was based on the semi- structured interview guide and 12 interviews were conducted according to the availability of participants. The participants were six males and six females, who were immigrants from South India. All the participants were employed and were from different religious beliefs. Six of the participants had professional degrees and the other six participants had graduate degrees or higher educational qualifications. Six of the participants had professional jobs, three were involved in business, and the other three had other jobs. All the participants were married. The demographic information is given below

Demographic characteristics		Number	Percentage
Gender	Male	6	50
	Female	6	50
Religion	Christian	6	50
	Hindu	5	41.7
	Muslim	1	8.33
	Other	0	0
Education	Elementary or Middle school	0	0
	High school	0	0
	College	0	0

	Graduation or Higher	6	50
	Professional degree	6	50
Employment	Professional job	6	50
	Business	3	25
	Teaching	0	0
	Other jobs	3	25
	Unemployed	0	0
Marital status	Married	12	100
	Single	0	0
Years of migration	More than 10 years	12	100
	Less than 10 years	0	0

After the analysis of the interview data and field notes, factors influencing physical activity were categorized into positively influencing factors or facilitators, and negatively influencing factors or barriers. Influencing factors to initiation and maintenance of physical activity were categorized into positively and negatively influencing factors.

Initiation of Physical Activity.

The factors influencing the initiation of physical activities were identified and separated into positively or negatively influencing factors, based on the response from the participants. The model below describes the individual and socio-environmental factors.

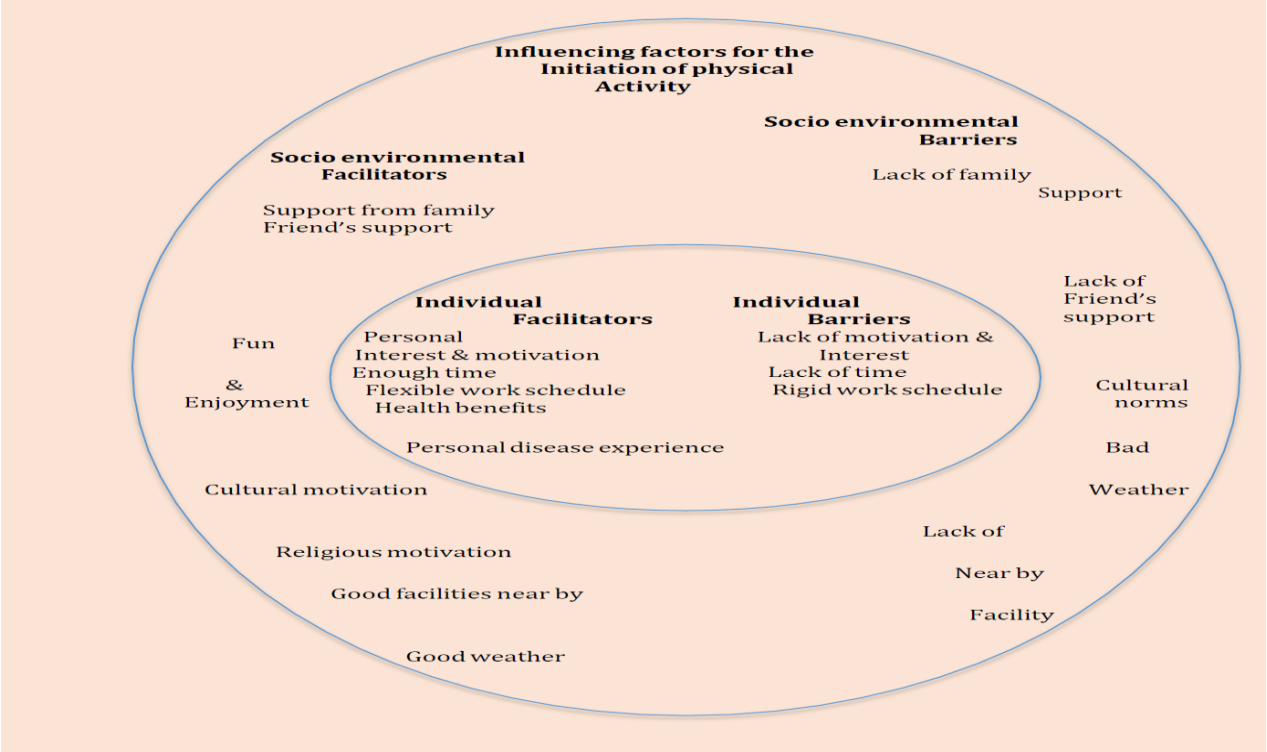

Figure 1. Influencing factors for the initiation of physical activity.

For the positively influencing factors, there were two main categories: the individual facilitators and socio-environmental facilitators. For the negatively influencing factors, there were also two main categories: individual barriers and socio-environmental barriers.

Individual Facilitators.

Individual facilitators are personal factors that influence physical activity positively. Personal interest and motivation, enough time, flexible work schedule, health benefits and personal disease experience were identified as subcategories.

Personal interest and motivation was mentioned by participants as a facilitating factor for the initiation of physical activity. One participant responded *"Physical activity is good for health and I think I started doing physical activity because I had an interest in physical activity. My interest was a strong motivation for me to start using the walking trails."*

Some of the participants with no family responsibilities or small children responded to having enough time. The categories included under having enough time were "getting time always", "no family responsibility", and "grown-up children", as evidenced by a participant response: *"I started physical activity since I have time now, my children are grown up, they are in college, less house- hold work, so I am getting enough time and that is the main reason I started going for walking and taking time for swimming."*

Many participants mentioned a good work schedule and time as a positively influencing factor to initiate physical activities. One participant responded *"I have a very good work schedule now, I go for work at 7 and come back by 4 pm and I have enough time to go to the park and walk or jog now. I started engaging in physical activity after I changed my job."*

Health benefits were mentioned as a facilitator by participants for the initiation of physical activity. One participant mentioned "P*hysical activity has many health benefits, it prevents diseases, gives energy, and helps to maintain fitness and that is the main reason I started doing physical activity, like walking in the park.*" Family history of diseases like diabetes, hypertension or heart diseases, and direct experience of complications, such as amputations and kidney failures, rising from the above stated diseases were mentioned as positively influencing factors for the initiation of physical activity by participants. One participant stated: *"I have a lot of bad experience, when I was young, my father had a stroke. I think that was because of the lack of physical activity and not only that one of my neighbor, I saw, her leg got amputated by the doctors because of diabetes. That is also I think because of the lack of physical activity. I saw that personally and I don't want to be in that situation. That is why I started separating time*

for physical activity." Another participant mentioned about the family history of diseases *"I have family history of diseases, in my family my father has diabetes and hypertension and I have seen him suffering, I have every possibility of getting those diseases and I want to prevent it as far as I can and that is a great motivation for me for the initiation of physical activities."* Direct evidence shows that participants are aware of complications and how those complications can affect their lives. These complications prove to be positively influencing factors for physical activity.

Socio-environmental Facilitators.

The socio-environmental facilitators included: support and interactions from family and friends, cultural motivation, religious motivation, quality and proximity of facilities, and weather conditions. "Support and interactions from family and friends" had several subcategories, which included: "support from spouse", "support from children", "support from friends", "physical activity as fun and enjoyment because of the friends and family interactions". Family support and influence were identified as motivating factors facilitating physical activity behavior. "Support from the spouse" was a critical factor mentioned by both women and men. One of the participants, a woman, mentioned, "*I never used to do physical activity but my husband used to go for walking and convinced me to join him when he walks, he also helps me with household work, his support and interaction is the main reasons for me to start going to the park with him and get some physical activity*", showing that her husband's support was the main reason for her to start physical activity. Support from other family members was also mentioned as a facilitating factor. One of the participants stated, *"My kids are engaged in physical activities, they always call me and encourage me to start doing some physical activities.*

They always say about the positive energy they get after their workout which truly inspired me to start using the walking trail. My kids are concerned about my health and encouraged me to start walking and jogging."

Social interaction was mentioned as a facilitator to initiate physical activity. One of the participants mentioned that group activity was a motivation to start physical activity because physical activity is more enjoyable with people. The participant stated, *"I never used to engage in physical activities. Now there is a group that meets together 3-4 days/wk and engages in different kinds of activities. It is a lot of fun when we do engage in physical activities as a group. The time goes fast when it is with a group of people. That is the main motivation for me to join this group and start getting some physical activity."*

Cultural motivation is another subcategory and included cultural practices like yoga and classical dance. One participant stated *"Yoga is a part of our Indian tradition and culture. It gives physical and mental fitness. It is very hard to keep our cultural and traditional beliefs here when everything is very different here but I would like to keep some traditional beliefs and cultures which benefit me. Yoga is a motivation for me and I started doing yoga to get some physical activity as well as to keep my tradition."* Two women mentioned classical dance as a form of physical activity: One woman stated, "*Classical dance is a form of Indian cultural arts, I like dancing and that is the main reason I started dancing, it is a group activity and it burns calories.*"

Religious motivation was one of the subcategories. One of the participants mentioned, *"Religious beliefs are my motivation to start physical activities. The Bible says bodily exercise profits us. So Bible encourages us to do physical activities and that is one reason*

I started walking and swimming to get some physical activity." Another participant mentioned, *"My religion always promotes physical activity. I belong to Hindu religion and suryanamaskaram is a part of worship in Hindu religion, which includes series of range of motion and bending of our body. My religious beliefs motivated me to initiate suryanamaskaram to worship as well as to get the needed physical activity."*

The availability of park and other facilities was mentioned as a facilitator to initiate physical activities. One of the participants stated, *"I moved from my old house and now I live closer to a park. I never used to do physical activities but since park is very close to my house now I feel motivated to walk to the park and engage in some jogging and walking."* The participants mentioned good weather as a facilitator for the initiation of physical activity. One of the participants stated *"Here in the valley the weather is always good, even though the summer is hot. Still I like the weather. Since I moved here from New York, I started walking in the park or jog because of the weather. Good weather motivates me to go outside to the park and walk for some time."*

Individual Barriers.

Individual barriers are personal factors that prevent people from initiating physical activities. 'Lack of motivation and interest", "lack of time" and "work schedule" were some of the subcategories identified.

"Lack of motivation and interest" was mentioned by some of the participants as a negatively influencing factor for the initiation of physical activity. One of the participants stated, *"I know physical activity is good for my health but I don't have the motivation to engage in physical activity. I find some reason not to start physical activity and I think I don't have enough motivation to drag myself to start engaging in some kind of physical*

activity." Physical tiredness was another factor mentioned by working women. One of the participant stated, *"I have a 12 hour work and I am very tired after work to start doing physical activity. I think I get enough physical activity at work since it involves lot of walking."*

The participants mentioned "lack of time' as a major factor negatively influencing physical activity initiation. "Lack of time" includes family responsibility and house hold work. One of the participants stated, *"It is hard to find time for physical activity with my busy daily life, I am a working woman, I also have so much work to finish at home and I have small kids, I have to take care of them, cook for them, take them to school, bring them back, then help them with their homework. Basically I would say I cannot find a single minute for myself to start physical activity."*

"Work schedule" is another factor mentioned by some of the participants as a negatively influencing factor for the initiation of physical activity. One of the participants stated, *"I work from 7 am to 7 pm and it is hard to find time for physical activity after my work. If I have a work that end in the evening at 5 pm may be I will start physical activity".*

Socio-environmental Barriers.

Social and environmental barriers were factors expressed by the participants as a reason for not initiating physical activities. "Lack of family support", "lack of social support", "cultural norms", "weather", and "lack of facility" near the house were some subcategories identified.

Some women mentioned "lack of family support" as a barrier in initiating physical activity. *"I have a lot of house- hold work to finish and my husband does not help with any house- hold work since he works as well so it is hard for me to find time to start*

physical activities. Family responsibility is more important than physical activity in our culture." Lack of support from friends was mentioned as a barrier for the initiation of physical activity. One participant responded as follows, *"I think I need friends who can motivate me who can come with me, push me and motivate me to go for walking or jogging. If they call me come on, we can go for walking or jogging, and come with me to walk in the park or to do some physical activity in the gym. That will help me to start doing some physical activity."* Another participant mentioned that *"I need support from my friends who can really push me to start engaging in some kind of physical activity but we have different days of work which makes it really hard for us to meet together to do physical activity. So I have no physical activity schedule now other than house- hold work."*

Cultural norms were mentioned as another barrier to physical activity. The women mentioned that it is not a tradition for the South Asians to wear exercise dresses and walk in public. *"I am not comfortable wearing jogging dress, tight fitting clothes or shorts and walk in the park or go to gym since my cultural traditions are different. I am very concerned about the dress code and that really prevents me from starting physical activities."* Another participant stated *"Women, they don't go out alone when it is dark to a park or gym; I think it is cultural or traditional norms we have seen when we grew up, I think I carry some of those norms still. Actually, there are no restrictions here in U.S as women, but I still carry those norms. So after coming back from work I do not want to go outside when it is dark. I think that is a real barrier for me to start physical activity."*

Hot and humid weather was mentioned as an environmental factor preventing people from engaging in physical activities. *"The weather is so humid and hot that I have to wait*

till late at night to walk and I do not prefer to go out to park that late when my family is home. I think that is one of the reasons for not starting physical activity." Lack of a facility near the house was another barrier. One woman mentioned, *"I do not have the motivation to drive to gym or park since I live little far from such facilities. If I live near to a park at walkable distance I think I would start going to the park for a walk."*

Maintenance of Physical Activity.

Maintenance of physical activity among ASI immigrants was another aim of this study. The influencing factors were again divided in to facilitators and barriers. Under the facilitators, the main categories were individual facilitators and socio-environmental facilitators. The categories under barriers were individual and socio-environmental barriers. The model below describes the facilitators and the barriers for the maintenance of physical activity.

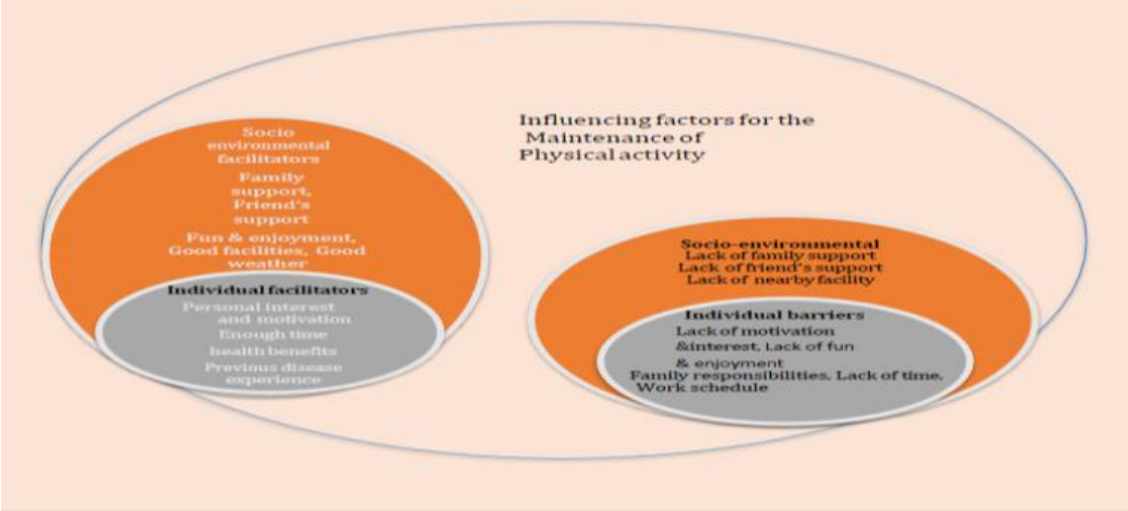

Figure 2. Influencing factors for the maintenance of physical activity.

Personal interest and motivation, enough time, health benefits, previous disease experiences were some of the subcategories identified under individual facilitators. Socio-environmental facilitators were identified from subcategories like "family

support", "friend support", "fun and enjoyment", "good nearby facilities", and "good weather".

Individual Facilitators.

Personal interest and motivation is a subcategory that influences the maintenance of physical activity. Participants mentioned personal interest and motivation as one major factor in continuing the physical activity. One of the participants responded, "*I like to walk in the park every day in the morning and in the evening, it is a part of my daily routine now, I think I have the motivation to continue physical activity, if I don't do it I feel guilty.*"

Having enough time was another motivating factor for the continuation of physical activities mentioned by participants. One participant expressed, "*I come home at 5pm everyday so I have enough time to go outside to the park for a walk every evening. Since I have plenty of time I would like to continue my physical activity."*

Health benefits were a major factor mentioned by many participants as a positively influencing factor for the continuation of physical activity. One participant mentioned, "*Physical activity gives me energy. If I walk in the morning for some time I will be very energetic that whole day, which is a real motivation for me to continue doing some kind of physical activity every day.*"

Previous disease experience for family members and family history of disease was a motivation for participants to continue physical activity. One participant mentioned, "*I have family history of diabetes. I do not have diabetes now and I do not want to develop diabetes, if I do not continue doing physical activities it is like putting water for diabetes to grow. That is one of my motivations to continue physical activity as a daily routine."*

Another participant mentioned that "*My father had diabetes; he never used to do physical activities. Even my mother and family encourage him to do physical activity. He developed kidney failure and died at the age of 50 years. I do not want to be in that situation that is my motivation to continue the physical activity as a part of my life."*

Socio-environmental facilitators.

Socio-environmental facilitators were identified from the subcategories of family support, friend's support, fun and enjoyment, good nearby facilities and good weather.

Family support was mentioned as one of the major factors for continuing physical activities. A woman mentioned that her husband always supported her by motivating and encouraging her to engage in physical activities. The woman stated as follows: "*My husband always motivated me to continue my physical activity. He also joins with me when I walk or jog. His support is a motivating factor for me to continue my physical activities*."

Support from other family members also was mentioned as facilitating factor. One of the participants stated "*I go for a walk because of my mother, my mother wanted to walk in the evening and she wants me to join with her every day to keep my health. I think I continue my physical activity because of her."*

Support from friends was another identified subcategory. Motivation from friends was a crucial factor in the continuation of physical activity. One participant mentioned "*We have a group of friends, we meet every day at our church and play badminton and if I am not going, my friends force me to go with them, so that is a real inspiration for me to continue the physical activity".*

Fun and enjoyment was another factor supporting the continuation of physical activity. One participant stated, "*I like to continue physical activity because it is fun and enjoyment, we are a group of friends, we walk together in the park, it is really fun when we talk and walk, the time goes fast, we get enough physical activity as well as enjoyment for that day. It is a real motivation for me to continue my physical activity.*"

Another factor mentioned by participants that influence positively on the continuation of physical activity was good nearby facilities. One participant mentioned, "*I have a park closer to my home 5 minutes away, I can walk to the park so I like to go for a walk every day, I am happy with that and like to continue with that.*"

Good weather was mentioned as a subcategory as well, as evidenced by one participant's response, "*Weather is always good in this area compared to where I lived before, that gives me positive energy to go out to park and walk every morning and evening.*"

Factors negatively influencing the continuation of physical activity were identified as barriers. Different subcategories were identified under barriers to physical activity continuation and grouped under individual barriers and socio environmental barriers. The subcategories under individual barriers were lack of motivation and interest, lack of fun and enjoyment, family responsibilities, lack of time and work schedule. The socio environmental barriers were identified from subcategories like lack of family support, lack of friend's support and lack of facilities nearby.

Individual Barriers.

Lack of motivation and interest was one subcategory identified for not continuing physical activity. One participant mentioned, *"In the past I started some physical activity like walking but I do not have the motivation to continue the physical activity daily. I*

start walking or jogging for one or two days then after that I find some reason not to continue my physical activity."

Lack of fun and enjoyment was another factor mentioned by participants for not continuing physical activity. One participant responded, *"I started physical activity in the past and after 2 days I stopped because it was boring to walk alone, may be if I have a company then I might continue walking since I have someone to talk to while getting my physical activity."*

Family responsibilities were mentioned as another factor for not able to continue physical activities. One woman mentioned, *"I have a lot of work at home and usually I am tired after my house hold work to go for extra physical activity. I may go for walking one day, next day I have a lot of house hold work and no more time left, so it is very hard for me to continue physical activity."*

Lack of time was mentioned as a subcategory as well. One woman mentioned, "*I would say that family responsibilities, looking after kids, cooking, I also told you that I'm studying, I have to work for the homework, lot of responsibilities, I am really a caught up mom and it is very hard to continue physical activities."* Work schedule was another factor mentioned by participants, "*Of course, my work, my work is a problem. I told you earlier I work 7-7, and after 7 I don't have enough time and interest to go for physical activity every day especially when I work. So it is hard to continue physical activity"*

Socio-environmental Factors.

Lack of support from family, lack of support from friends and lack of nearby facilities were subcategories identified. Lack of support from family members was mentioned as one of the subcategories for not continuing physical activities. One woman mentioned, "*I*

did start walking in the park but I couldn't continue since I have to take care of my kids and finish house hold work. My husband couldn't help me at that time since he works. So I don't get enough support from my family to continue my physical activity."

Lack of support from friends was another negatively influencing factor mentioned by participants. One of the participant stated, *"I do not have friends who can really motivate me to go for a walk every day, I had a friend and we used to engage in jogging, but she moved from this area since then I do not continue my physical activity."*

Lack of nearby facilities was another subcategory identified. One participant mentioned "*I go to the park for a walk once in a while and not regularly since they are a little far away. If it is nearby, walkable distance may be I will go every day and continue to get some physical activity."*

Discussion

The present study about the factors affecting physical activity is one of the first studies conducted among Asian South Indian Immigrants in the U.S. The initiation and maintenance of successful physical activity programs depends on consideration of many factors at individual, social, and environmental levels. Identifying and paying attention to multiple factors, including barriers and facilitators, may help in the development of successful physical activity programs among the target population (Seefeldt et al., 2012). In a previous study by Mathews et al. in 2015, the commonly reported barriers were lack of time, motivation, and interest, and not being used to the culture of walking. Facilitators of physical activity were seeing others walking, walking in pairs, and pleasant walking routes (Mathews, Lakshmi, Ravindran, Pratt & Thankappan, 2015). Some of these factors

are similar in the present study. However, there are some factors unique to the present study.

Personal interest and motivation, enough time, flexible work schedule, perceived health benefits and personal disease experience were individual facilitating factors in initiating physical activity in the present study. Similar factors such as personal interest and motivation, enough time, perceived health benefits and previous disease experience were identified as individual facilitating factors in maintaining physical activity in the present study. Participants with enough time and little to no family responsibilities, participants with perceived health benefits, and participants who had personal experience with chronic diseases or family history of diseases, were motivated to initiate and maintain physical activities. The socio-environmental factors positively influencing physical activity include social support and interactions from family and friends, fun and enjoyment, cultural motivation, religious motivation, nearby good facilities and good weather in the present study. Participants were motivated from the support of spouse and friends in initiating physical activities. Participants also were motivated to initiate physical activity through cultural and religious traditions, like yoga and classical dance, which are unique findings in this study. Parks or gyms at walkable distances were a positively influencing factor mentioned by the participants in initiating physical activities. Good weather was another motivating factor mentioned by many participants. Similar factors, such as support from friends and family, fun and enjoyment, good nearby facilities and good weather were identified as influencing factors to maintain physical activity in the present study.

Lack of motivation and interest, lack of time and rigid work schedules were individual barriers to the initiation of physical activity. Similarly, lack of motivation and interest, lack of fun and enjoyment, family responsibilities, lack of time and work schedule were some of the negatively influencing individual factors in maintaining physical activity as expressed by the participants. Lack of motivation from physical tiredness was one of the factors mentioned by the participants. Lack of time from various family responsibilities and work schedule was another negatively influencing factor mentioned by the participants in maintaining physical activities.

Socio-environmental barriers in initiating physical activity included lack of family support, lack of support from friends, cultural norms, weather, and lack of a facility near their house. Similar factors like lack of family support, lack of support from friends and lack of nearby facilities were identified as barriers to maintaining physical activity in the present study. Lack of support or encouragement from family members or friends was mentioned by many participants, especially women, as a negatively influencing factor in not initiating and maintaining physical activity. Cultural and traditional beliefs or practices were mentioned by some participants as negatively influencing factors. Even though there are no religious or cultural restrictions here, they still follow cultural and traditional practices, like not going outside home when it is dark. Women have a major family role as caretakers and are traditionally not used to taking extra time for physical activity. Bad weather conditions and faraway facilities also were factors mentioned by the participants as reasons for not initiating and maintaining physical activities.

Women with small children who have many family responsibilities mentioned lack of time as a negatively influencing factor. Lack of time was not a major factor for men, even

with small children. Those with rigid work schedules coupled with family responsibilities expressed lack of time as well. Men and women with grown up children and less family responsibilities found time daily to do physical activity and were motivated to continue. Participants with a good work schedule, like an 8-5 job, found time for their physical activities and made it a part of their daily routine. Participants with family history of diseases or witnessed other people suffering also were motivated to continue physical activities. Physical activity as fun and enjoyment because of the group activity was a major influencing factor for initiating and continuing physical activity. Most of the participants preferred group activity because of the influence and motivation from family or friends. Far away facilities and bad weather were negatively influencing factors of physical activity.

A strength of the findings of this study is in the involvement of multiple influencing factors, including barriers and facilitators based on the ecological perspective. Culture was explored in detail throughout the study and will be an added strength, since cultural influence is tremendous in the initiation and maintenance of physical activity among ASI immigrants. Researcher's prior knowledge about the Asian South Indian community is an added strength, since there is access to the community and the opportunity to collect more in-depth data. The limitations of the study include researcher's prior knowledge about cultural issues and influencing factors, regardless of effort taken to minimize biases. Another limitation is that all the participants are well educated, employed and married and the results of this qualitative study are difficult to generalize across different populations.

The results of the study can be used to plan and promote successful culturally appropriate physical activity and health promotion interventions for Asian South Indian first generation immigrants. Physical activity programs including traditional and cultural dances and yoga may overcome some of the barriers. Implementing culturally feasible physical activity programs in faith based institutions may help ASI immigrants especially women to overcome some of the barriers like dress code. Planning group activities including friends also may help people to overcome some of the identified barriers.

The findings suggest the use of culturally appropriate group activities be planned between groups of friends. Opportunity for participation should be made available to all the ASI immigrants in appropriate settings like places attached to Indian faith based institutions where people have easy access and culturally appropriate environment for participation. Based on the study results, future research studies differentiating the factors influencing physical activity initiation among first and second generation Asian South Indian population may benefit culturally appropriate physical activity programs among this population. A quantitative study measuring physical activity among this population may release more information about the kinds of physical activity and the pattern of physical activity among the population. Investigation of the different barriers and facilitators among both genders through quantitative cross sectional survey research may provide more insight into the factors that needs to be considered while planning physical activity programs for the ASI population in the future. This particular group of population is aging, and the lack of physical activity may cause many health problems and increased financial costs. Health promotion intervention and education programs may be planned

based on this study results to initiate and sustain physical activity programs among the target population.

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Appendix A

Demographic Data Sheet

Demographic Data Sheet

Name: ----------

Mailing Address: ----------

Telephone: ----------

E-mail: ----------

Date of Birth: ----------

Country of birth: ----------

Gender

O Male

O Female

Religion

O Hindu

O Muslim

O Christian

O Other

Education

O Elementary or Middle school

O High School

O college

O Graduation or higher

O Professional degree

Employment status

O professional Job

O business

O teaching

O other jobs

O Unemployed

Marital status

O single

O Married

Years of migration

O -------- Please enter years of migration to U.S

List any chronic disease causing physical disabilities preventing physical activity participation

Appendix B

Interview Guide

Interview Guide

The questions for the interview will include:

What are the things you have heard about physical activity?"

What type of physical activities do you think Asian South Indians participate? What kind of physical activities do you engage in other than the household work?

What are the factors that might keep ASI Immigrants from engaging in physical activity? Can you list and explain those issues in regards to your daily life that prevents you from engaging in physical activities?

On a typical day how much time is spent watching T.V or computer/sitting on a couch?

Can you share some thoughts about the disadvantages of being sedentary?

Can you list any personal factors that influence you positively or negatively in starting and maintaining PA?

How do family and friends influence you in starting and maintaining physical activities?

What is your preference for physical activity? A group setting or physical activity by your own? Why?

Are there convenient places to engage in physical activities in this area? What is your habit of utilizing those facilities? What is the influence of these facilities in starting and maintaining PA?

What are the cultural beliefs or social factors that interfere with starting and maintaining PA? Any gender issues with starting and maintaining PA? or utilizing exercise facilities?

Do you have a plan to overcome the factors that prevents you from engaging in physical activities? If so, what is your plan?

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New York, NY 10017
USA

To Whom It May Concern,
I am writing to submit our manuscript entitled "Influencing factors to physical activity among Asian South Indian Immigrants" for consideration for publication in Nursing Research and Practice. The research study that produced this manuscript was driven by our desire to examine the influencing factors for the initiation and maintenance of physical activity among Asian South Indian immigrants residing in Southern Texas. We believe that the publication of this manuscript will contribute to the goal of the journal especially as nursing research has not sufficiently explored this topic in previous studies. There is no conflict of interest with the manuscript and no letters of permission to reproduce previously published materials.

We appreciate your consideration of our manuscript for review. We look forward to hearing from you. Please feel free to contact me at Jayamol.Sabu@uth.tmc.edu

Thank you,

Jaya Sabu Abraham, PhD(c), RN, MSN, FNP-BC
Corresponding Author.
University of Texas Houston Health Science Center

Manuscript A

Factors influencing physical activity among immigrants from South India: A qualitative descriptive study

Abstract

Background: In the United States (U.S), the percentage of diabetes and coronary artery diseases percentage is higher among Asian Indian immigrants compared to other ethnic groups. Although research has been useful in describing patterns of physical activity among South Asian groups, very little is known about the factors influencing physical activity among Asian South Indian (ASI) immigrants. There is very limited research performed on the individual, social, cultural and environmental factors influencing physical activity among ASI immigrants.

Purpose: The study purpose was to explore the factors influencing physical activity with the following primary and secondary aims. The primary aim of this study was to examine factors that can promote or hinder physical activity initiation among ASI immigrants. The secondary aim of the study was to examine individual, social, cultural and environmental factors influencing the maintenance of physical activity among Asian South Indian adults.

Methods: This research was a qualitative descriptive content analysis study based on the Socio-ecological model. In-depth semi-structured individual interviews were conducted on 12 purposively selected ASI immigrants who met the eligibility criteria. Data collection continued until saturation with no new additional information. The interviews were recorded and transcribed verbatim. Nvivo 11 pro was used for data management and analysis. The codes were categorized into subcategories and main categories based on the ecological model as individual, social and environmental factors.

Result: The factors influencing the initiation and maintenance of physical activity were divided as positively and negatively influencing factors. There were two main categories

for the positively and negatively influencing factors: the individual facilitators and socio-environmental facilitators. There are few additional influencing factors unique to this study compared to the previous research.

Conclusion: The factors influencing physical activity initiation and maintenance were divided as facilitators and barriers. Further research is needed on larger samples to examine the pattern of physical activity between both genders of ASI immigrants. The result of the study may be used to plan culturally appropriate physical activity interventions for ASI immigrants.

Keywords: Physical activity, Socio-ecological model, barriers, facilitator

Introduction

In the United States (U.S) the prevalence of diabetes among Asian Indian immigrants is 18.3% higher than other ethnic groups (Misra et al., 2010). The prevalence of coronary artery disease in Asian Indians is four times higher than Whites, Asian Indians hovering around 10% as opposed to 2.5 % of Whites in the U.S (Senthilkumar, 2001). Low levels of physical activity are identified as one of the major risk factors leading to central obesity and chronic diseases (Daniel, Wilbur, Marquez, & Farran, 2013; Williams, Stamatakis, Chandola, & Hamer, 2011). A research study by Daniel et al., 2013, found low levels of physical activity among Asian Indians with an average number of daily steps of 6,904.3, which is classified as “low active” physical activity. As the population of Asian Indians continues to grow, so does the prevalence of chronic health conditions causing increases in health care cost (Jepson, Harris, Bowes, Robertson & Sheikh, 2012; Tang, Mason, Kushner, Tirodkar, Khurana & Kandula, 2012).

Physical inactivity and sedentary life styles are modifiable factors, and regular physical activity can potentially improve health outcomes by reducing cardiovascular diseases, stroke, and other chronic health conditions (Babakus & Thompson, 2012; Williams et al., 2011). The World Health Organization (WHO) conducted an evaluation in 2009 on the global health risks for mortality revealing physical inactivity as the fourth leading risk factor, accounting for an estimated 6% of annual global deaths, or in other terms, around 3.2 million annual deaths (WHO, 2009). Several qualitative studies performed in western countries examined the physical activity among Asian populations with diabetes and chronic health conditions (Keval, 2009; Lawton, Ahmad, Hanna, Douglas, & Hallowell, 2006; Sriskantharajah, & Kai, 2007). One qualitative study was performed in Central Texas among Asian Indian women examining barriers and facilitators to physical activity. Health awareness, motivation and chance of social interaction were motivating factors and the dress code; beliefs about women's role, time and climate were mentioned as barriers (Chan, 2014). Although research has been useful in describing patterns of physical activity among South Asian groups, very little is known about the factors influencing physical activity or lack thereof among Asian South Indian (ASI) immigrants. There is very limited research performed on the individual, social, cultural and environmental factors influencing physical activity among this population (Fischbacher, Hunt & Alexander, 2004; Lawton et al., 2006). A more in depth qualitative study exploring the factors influencing physical activity among ASI immigrants between the ages 30- 60 years is essential in understanding what motivates or prevents people from engaging in physical activity.

Background

According to the US Census Bureau Profile of General Population, the Asian Indian population constitutes around 2 million people and continues to increase. Asian Indians are the second largest subgroup among South Asians in the U.S. (US Census Bureau, 2010). Asian Indians comprise 16.4% of the Asian American population, the majority being first generation immigrants from India between 30-65 years of age. This population is unique with different languages and cultural practices compared to other Asians (Misra, 2009; Misra et al., 2010). Those who were born in the Indian sub-continent and now live in western countries have substantially higher mortality and morbidity rates from coronary heart disease (CHD), hypertension and stroke (Fischbacher et al., 2004). The population is also at risk for insulin resistance and diabetes from central obesity at a lower body mass index (Thomas, & Ashcraft, 2013). Genetic factors are important; however, the increased incidence of these diseases is strongly associated with central obesity, which can stem from low levels of physical activity (Bardell, George, Bhoday, Tuomainen, Qureshi, & Kai, 2015; Lucas, Murray, & Kinra, 2013).

The extensive morbidity and disability caused by chronic diseases create complications, leading to significant financial costs. According to Center for Disease Control and Prevention (CDC) in 2012 and 2013, the estimated costs for people with chronic disease were $2.7 trillion of which $316.1 billion were spent for people with cardiovascular diseases and $245 billion were spent for people with diabetes (CDC, 2017). Since sedentary life styles and physical inactivity are two major contributing factors to chronic disease, physical activity programs should be planned in a way that overcomes barriers and promotes the motivating factors (Chapman, Qureshi, & Kai, 2013). The results of a

population-based survey in 2010 examining physical activity levels among Asian American adults by focusing on physical activity during leisure time suggested that Asians are the least physically active ethnic group (Kao, Carvalho, & Lee, 2012). Sedentary lifestyles are as high as 60% among South Asians in the United States.

The increasing mortality rate along with increasing prevalence of cardiovascular and metabolic disease is an indication of low levels of physical activity among South Asians (Ranasinghe et al., 2013). An integrative review of prior studies that examined physical activity behavior of South Asian Indians found that physical activity is considerably low among both South Asian Indian men and women (Daniel et al, 2013). A research study conducted by Hayes et al. showed lower levels of physical activity are more prevalent among South Asian men and women when compared to their white counterparts. The study demonstrated physical activity of 48% and 36% respectively among native white men and women compared to 18% and 17% respectively among South Asian men and women (Hayes et al., 2002). Lack of time, limited availability of family and social support are some of the contributing factors (Daniel et al., 2013). Regular physical activity lowers blood pressure, aids in weight loss, reduces visceral fat, and improves insulin sensitivity. Therefore, regular physical activity is beneficial in preventing early onset diabetes, hypertension, coronary artery disease and stroke, and thereby, health care cost (Ranasinghe et al., 2013).

Physical activity is defined as "any bodily movement produced by skeletal muscles that substantially elevates energy expenditure" (Caspersen, Powell, & Christenson, 1985). The American College of Sports Medicine (ACSM) suggests 30 minutes of moderate-intensity physical activity five days a week or vigorous intensity physical activity for

20minutes three days/week for adults aged 18-65 years to promote and maintain health (Haskell, Lee, Pate, Powell, & Blair, 2007). Physical activities like brisk walking, gardening, and swimming are considered beneficial by causing energy expenditure (Allender et al., 2006). Qualitative studies examining barriers associated with physical activity among people with chronic diseases identified some barriers as time limitations, fear of injury, and lack of culturally appropriate facilities for physical activities (Keval, 2009; Lawton et al., 2006). There is currently very little evidence of successful physical activity interventions amongst South Asian groups (Kao et al., 2012; Lawton et al., 2006).

There are many factors that influence health behaviors including individual, social and environmental factors, as well as cultural beliefs and practices. Culture itself is an interaction of many factors that affect the way people perceive and act. Understanding the population's perception of health, lifestyles, attitudes, and beliefs will help program planners implement successful interventions to meet the needs of the target population. Understanding barriers and motivators to physical activity is essential in planning successful health promotion programs among ASI immigrants in the United States (Lucas, Murray, & Kinra, 2013).

Previous research studies show cultural influence on the physical activity behavior of Asian Indians. In an exploratory qualitative research study, participants expressed exercise beyond daily work as "selfish" activity. Exercise specific dress code, exercising in public and lack of culturally appropriate facilities to exercise also were concerns (Sriskantharajah & Kai, 2007). Participants mainly women expressed concern about lack of availability of single-sex facilities with same-sex instructors, especially while

swimming and exposing bodies and preferred women only exercise centers. Concern about religiously and culturally inappropriate dresses that exposes the body while exercising also was a concern for women who preferred centers where people could wear culturally and religiously appropriate dresses that do not expose their body (Lawton et al., 2006; Sriskantharajah & Kai, 2007). Other research participants have expressed that physical activity is part of their daily household work and no extra time is allotted for it. The participants also expressed spending time to take care of the family is more culturally appropriate than setting aside extra time for physical activity (Kalavar, Kolt, Giles, & Driver, 2004; Kumar, 2011).

The research studies conducted previously among Asian American adults show that Asian immigrants are less active than US-born Asians. This finding suggests more culturally oriented physical activity interventions to promote physical activity among Asian American immigrants (Kao et al., 2012). According to qualitative research and lifestyle surveys sponsored by health education authorities in England, there are ethnic barriers to physical activity among South Asians. Even though the issues are common for all the populations, there are factors affecting physical activity among South Asians specifically, like lack of time, culturally inappropriate exercise centers, and social obligations causing negative attitudes (Johnson, 2010; Keval, 2009; Lawton et al., 2006; Lucas et al.,2013; Seefeldt, Malina, & Clark, 2012).

Research Aims

This qualitative study aims to examine the influencing factors for the initiation and maintenance of physical activity among Asian South Indian immigrants residing in Southern Texas. Although several studies have investigated common barriers among the

Asian Indian population, there is very little information available on the factors influencing physical activity among ASI immigrants. There are differences between people's way of living, life style practices, language, religious beliefs and cultural practices among Asian Indians based on the state or region they are migrated from (Misra, 2009). An in-depth qualitative approach using individual interviews was beneficial in exploring the differences in perception of various barriers including individual, social, cultural and environmental factors positively and negatively influencing physical activity among ASI immigrants.

The primary aim of this study was to examine factors that can promote or hinder physical activity initiation among ASI immigrants. Examining individual, social, cultural and environmental factors, both positive and negative, should be beneficial in planning physical activity programs in helping the population overcome negative influencing factors (Hornea, Skeltonb, Speeda & Todd, 2013).

The secondary aim of the study was to examine individual, social, cultural and environmental factors influencing the maintenance of physical activity among Asian South Indian adults. Understanding the factors that influence maintaining a regular physical activity schedule should be beneficial in planning physical activity programs in a way that helps the population integrate physical activity into their lifestyles (Hornea et al., 2013).

The goal of this study is to recognize the factors influencing the initiation and maintenance of physical activity among ASI immigrant adults, which will aid in planning future physical activity intervention programs specifically for ASI adults in the Rio Grande Valley. The expected outcome of this study is to establish culturally appropriate

and uncomplicated physical activity programs for both male and female ASI immigrants 30 to 60 years old by incorporating the findings from this study.

Methodology

The design of the study was a qualitative descriptive content analysis approach. A qualitative design approach was chosen because the study involved identifying the factors, barriers, issues and opinions of participants since the participants live in a southern U.S state where climate and culture are influencing factors (Polit & Beck, 2012; Savage, 2006). The qualitative approach aided the researcher in understanding the influencing factors in depth. Content analysis was used in this research to classify themes into categories out of the collected data to describe the phenomena (Elo & Kyngas, 2008). The researcher carried out a 30-60-minute individual interview with the participants during the process of data collection and wrote memos, and field notes while collecting the data. This qualitative study is innovative since the study explored factors influencing initiation and maintenance of physical activity among ASI immigrant adults. There are many qualitative studies done among Asian immigrants, including Indians, Pakistanis and Bangladeshis, in western countries examining the physical activity patterns as well as barriers. These are three separate countries with differences in cultural beliefs, religion, customs and practices. Even within India, there are differences among regional populations regarding language, culture, food practices and religion (Misra, 2009). People from North India differ from South Indians, and grouping all types of Asian Indians together or implementing a common physical activity program may not be successful. Previous research focused on barriers to physical activity among South Asians with chronic diseases, while this study focus on people without chronic diseases. This

study provides insight into ways to develop successful physical activity programs for ASI immigrants.

Approach

The study was based on the Socio-ecological model because it accounts for the many factors involved in promoting sedentary life style patterns in human behavior. It is based on the evidence that no single factor can explain the behavior of populations. This framework views the factors influencing physical activity at different levels (McLeroy, Bibeau, Steckler, & Glanz, 1988). The model hypothesizes that physical activity is influenced by individual, social, and environmental factors. Individual factors include biological, psychological, and behavioral influences. Social factors addressing family support, friend's support and culture. Environmental factors include nearby and far away exercise facilities as well as good and bad weather conditions. Since the study was based on the ecological model, the researcher addressed physical activity at multiple levels and considered the integration and interaction of the factors at the individual, social and environmental level to understand fully the factors that affect physical activity initiation and maintenance (Hefferon, Murphy, McLeod, Mutrie, & Campbell, 2013; Humbert et al., 2006; McLeroy et al., 1988).

Ethical Consideration

Institutional Review Board (IRB) approval was obtained prior to data collection. The aims and procedure of the study were explained to the participants prior to obtaining consent. The nature of the study, as well as their right to withdraw at any time was explained in detail to the participants prior to obtaining consent. Thereafter, a written informed consent was obtained from interview participants prior to their involvement in

the study. A verbal consent also was obtained prior to the interview and audio recording of the responses. The participants were assigned code numbers originally and reassigned a random number later for de-identification. The collected information, memos, field notes, informed consents and coded numbers were stored in a locked cabinet with researcher only access.

Sample and Setting

Participants were recruited using a purposive maximum variation sampling approach from a group of volunteers until saturation, defined as the point when relevant information was obtained and the opinions from the participants became repetitive in nature with no new additional data. Thorough information from the participants was obtained using an interview guide with an emergent design. The study recruitment information was shared through distributing flyers and word-of-mouth at three Indian churches, one Hindu temple, and an Indian Association in the south central U.S. An additional email message and invitation to participate in the study was sent to the Indian Association members and their friends. Flyers were posted on the bulletin boards of all Indian faith institutions, Indian grocery shops and at the Indian Association office. ASI immigrants who met the inclusion and exclusion criteria were recruited for the study.

Inclusion criteria

Adult ASI immigrants 30-60 years

First generation South Indians

Understands, writes and speaks English

Exclusion Criteria

People with chronic diseases causing physical disabilities that prevent them from engaging in physical activities

First generation ASI immigrants were chosen since the population has unique characteristics, culture, and physical activity patterns. The setting for this study was participant's homes or convenient locations of participant's choice.

Data Collection Procedures

Demographic information including name, age, mailing address, email, gender, years since migration to United States, education, marital status, and occupation, were collected after obtaining consent for participation but prior to individual interviews (Appendix A). An interview guide (Appendix B) with questions addressing the factors influencing initiation and maintenance of physical activity was used for individual interviews. The researcher conducted individual, in-depth, semi-structured interviews with an emergent design with open questions as well as probing questions and reframed questions to elicit in-depth information about the influencing factors to physical activity (Baheiraei, Mirghafourvand, Charandabi, & Mohammadi, 2013; Humbert, 2006). Because the nature of the study is to understand the influencing factors that impact the physical activity patterns of ASI immigrants, all of the participants were encouraged to share their thoughts about barriers and motivators influencing physical activity.

After obtaining informed consent, the researcher carried out a 30-60-minute semi-structured interview with the participants. The participants were informed about the research process and their right to withdraw from the study. The questions were in English since the participants were below 60 years with the ability to understand and

speak English. The participants were first asked general questions such as “What do you hear about physical activity or exercise?”, “What is your understanding about physical activity?”, “What kind of physical activity do people from your community engage in?” and “What kind of physical activities do you engage in other than daily household work?”. The data collection was based on the interview guide (Appendix B), asking more focused questions like “Can you list any personal factors that influence you positively or negatively in initiating and maintaining physical activity?” Exploratory and probing questions, like “What do you mean by that or please expound on that?” were used to elicit more in-depth opinions and understandings (Baheiraei et al., 2013). The researcher took notes of the non-verbal expressions of the participants during the interview. The interviews were conducted in an environment conducive for the participants to express their opinions while, ensuring privacy for individual interviews.

The researcher carried out extensive field work before data collection by observing the population during picnics and tournaments where people engaged in moderate to vigorous physical activities. All interviews occurred at the participants’ convenient time, during holidays, outside of work or on weekends. Participants were verbally reminded of the research process and how the data are stored and used. All the interviews were audiotaped with the participant’s permission and transcribed verbatim. The framework by Lincoln & Guba (1985) was used to maintain the trustworthiness and reliability of data collection and analysis. Credibility or reliability of the data collection was maintained by persistent observation, comprehensive field notes, data saturation, and careful documentation (Lincoln & Guba, 1985).

Data Analysis

The data analysis was an ongoing process that started with the first interview and continued throughout the study. The content analysis method was implemented for the data analysis in this study. The interviews were audiotaped and non- verbal facial expressions were written down. The researcher transcribed the audiotapes, and the transcripts were read multiple times and coded line-by-line. All the codes were summarized into a codebook and analyzed multiple times. Nvivo 11 pro was used for data management and analysis. The codes were categorized into subcategories and main categories based on the ecological model as individual, social and environmental factors (Bethancourt, Rosenberg, Beatty, & Arterburn, 2014; McLeroy et al., 1988). The researcher transcribed the interviews, maintaining trustworthiness and reliability. The researcher meticulously listened to each tape and went through each transcript carefully while transcribing the collected data to maintain reliability of transcription. Development of codebook, and thick descriptions were used to conserve authenticity and transferability. Throughout the process, the researcher meticulously analyzed the purpose, methods and analysis of the study, while reflecting critically on self to maintain reliability and trustworthiness (Lincoln & Guba, 1985).

Results

Data collection was based on the semi- structured interview guide and 12 interviews were conducted according to the availability of participants. The participants were six males and six females, who were immigrants from South India. All the participants were employed and were from different religious beliefs. Six of the participants had professional degrees and the other six participants had graduate degrees or higher

educational qualifications. Six of the participants had professional jobs, three were involved in business, and the other three had other jobs. All the participants were married. The demographic information is given below

Demographic characteristics		Number	Percentage
Gender	Male	6	50
	Female	6	50
Religion	Christian	6	50
	Hindu	5	41.7
	Muslim	1	8.33
	Other	0	0
Education	Elementary or Middle school	0	0
	High school	0	0
	College	0	0
	Graduation or Higher	6	50
	Professional degree	6	50
Employment	Professional job	6	50
	Business	3	25
	Teaching	0	0
	Other jobs	3	25
	Unemployed	0	0
Marital status	Married	12	100
	Single	0	0
Years of migration	More than 10 years	12	100

	Less than 10 years	0	0

After the analysis of the interview data and field notes, factors influencing physical activity were categorized into positively influencing factors or facilitators, and negatively influencing factors or barriers. Influencing factors to initiation and maintenance of physical activity were categorized into positively and negatively influencing factors.

Initiation of Physical Activity.

The factors influencing the initiation of physical activities were identified and separated into positively or negatively influencing factors, based on the response from the participants. The model below describes the individual and socio-environmental factors.

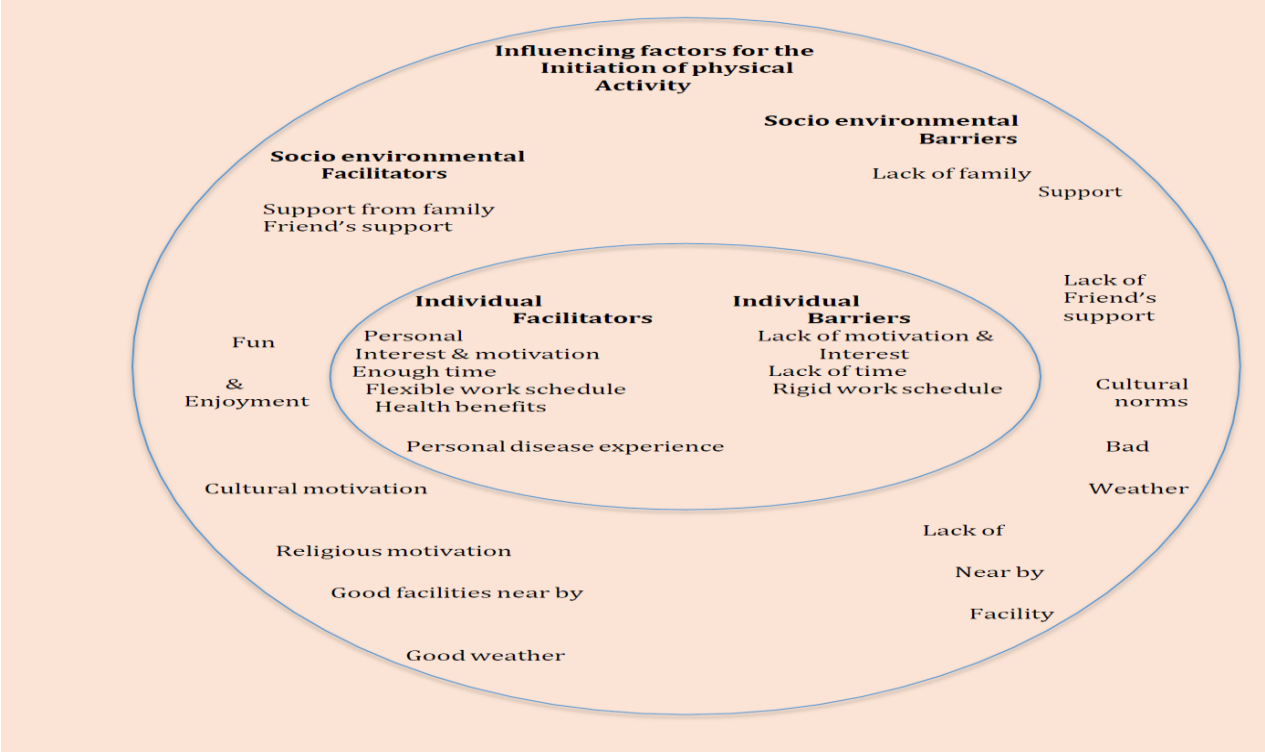

Figure 1. Influencing factors for the initiation of physical activity.

For the positively influencing factors, there were two main categories: the individual facilitators and socio-environmental facilitators. For the negatively influencing factors, there were also two main categories: individual barriers and socio-environmental barriers.

Individual Facilitators.

Individual facilitators are personal factors that influence physical activity positively. Personal interest and motivation, enough time, flexible work schedule, health benefits and personal disease experience were identified as subcategories.

Personal interest and motivation was mentioned by participants as a facilitating factor for the initiation of physical activity. One participant responded *"Physical activity is good for health and I think I started doing physical activity because I had an interest in physical activity. My interest was a strong motivation for me to start using the walking trails."*

Some of the participants with no family responsibilities or small children responded to having enough time. The categories included under having enough time were "getting time always", "no family responsibility", and "grown-up children", as evidenced by a participant response: *"I started physical activity since I have time now, my children are grown up, they are in college, less house- hold work, so I am getting enough time and that is the main reason I started going for walking and taking time for swimming."*

Many participants mentioned a good work schedule and time as a positively influencing factor to initiate physical activities. One participant responded *"I have a very good work schedule now, I go for work at 7 and come back by 4 pm and I have enough time to go to the park and walk or jog now. I started engaging in physical activity after I changed my job."*

Health benefits were mentioned as a facilitator by participants for the initiation of physical activity. One participant mentioned "P*hysical activity has many health benefits, it prevents diseases, gives energy, and helps to maintain fitness and that is the main reason I started doing physical activity, like walking in the park.*" Family history of diseases like diabetes, hypertension or heart diseases, and direct experience of complications, such as amputations and kidney failures, rising from the above stated diseases were mentioned as positively influencing factors for the initiation of physical activity by participants. One participant stated: *"I have a lot of bad experience, when I was young, my father had a stroke. I think that was because of the lack of physical activity and not only that one of my neighbor, I saw, her leg got amputated by the doctors because of diabetes. That is also I think because of the lack of physical activity. I saw that personally and I don't want to be in that situation. That is why I started separating time for physical activity."* Another participant mentioned about the family history of diseases *"I have family history of diseases, in my family my father has diabetes and hypertension and I have seen him suffering, I have every possibility of getting those diseases and I want to prevent it as far as I can and that is a great motivation for me for the initiation of physical activities."* Direct evidence shows that participants are aware of complications and how those complications can affect their lives. These complications prove to be positively influencing factors for physical activity.

Socio-environmental Facilitators.

The socio-environmental facilitators included: support and interactions from family and friends, cultural motivation, religious motivation, quality and proximity of facilities, and weather conditions. "Support and interactions from family and friends" had several

subcategories, which included: “support from spouse”, “support from children”, “support from friends”, “physical activity as fun and enjoyment because of the friends and family interactions”. Family support and influence were identified as motivating factors facilitating physical activity behavior. “Support from the spouse” was a critical factor mentioned by both women and men. One of the participants, a woman, mentioned, “*I never used to do physical activity but my husband used to go for walking and convinced me to join him when he walks, he also helps me with household work, his support and interaction is the main reasons for me to start going to the park with him and get some physical activity*”, showing that her husband’s support was the main reason for her to start physical activity. Support from other family members was also mentioned as a facilitating factor. One of the participants stated, *“My kids are engaged in physical activities, they always call me and encourage me to start doing some physical activities. They always say about the positive energy they get after their workout which truly inspired me to start using the walking trail. My kids are concerned about my health and encouraged me to start walking and jogging.”*

Social interaction was mentioned as a facilitator to initiate physical activity. One of the participants mentioned that group activity was a motivation to start physical activity because physical activity is more enjoyable with people. The participant stated, *“I never used to engage in physical activities. Now there is a group that meets together 3-4 days/wk and engages in different kinds of activities. It is a lot of fun when we do engage in physical activities as a group. The time goes fast when it is with a group of people. That is the main motivation for me to join this group and start getting some physical activity.”*

Cultural motivation is another subcategory and included cultural practices like yoga and classical dance. One participant stated *"Yoga is a part of our Indian tradition and culture. It gives physical and mental fitness. It is very hard to keep our cultural and traditional beliefs here when everything is very different here but I would like to keep some traditional beliefs and cultures which benefit me. Yoga is a motivation for me and I started doing yoga to get some physical activity as well as to keep my tradition."* Two women mentioned classical dance as a form of physical activity: One woman stated, "*Classical dance is a form of Indian cultural arts, I like dancing and that is the main reason I started dancing, it is a group activity and it burns calories.*"

Religious motivation was one of the subcategories. One of the participants mentioned, *"Religious beliefs are my motivation to start physical activities. The Bible says bodily exercise profits us. So Bible encourages us to do physical activities and that is one reason I started walking and swimming to get some physical activity."* Another participant mentioned, *"My religion always promotes physical activity. I belong to Hindu religion and suryanamaskaram is a part of worship in Hindu religion, which includes series of range of motion and bending of our body. My religious beliefs motivated me to initiate suryanamaskaram to worship as well as to get the needed physical activity."*

The availability of park and other facilities was mentioned as a facilitator to initiate physical activities. One of the participants stated, *"I moved from my old house and now I live closer to a park. I never used to do physical activities but since park is very close to my house now I feel motivated to walk to the park and engage in some jogging and walking."* The participants mentioned good weather as a facilitator for the initiation of physical activity. One of the participants stated *"Here in the valley the weather is always*

good, even though the summer is hot. Still I like the weather. Since I moved here from New York, I started walking in the park or jog because of the weather. Good weather motivates me to go outside to the park and walk for some time."

Individual Barriers.

Individual barriers are personal factors that prevent people from initiating physical activities. 'Lack of motivation and interest", "lack of time" and "work schedule" were some of the subcategories identified.

"Lack of motivation and interest" was mentioned by some of the participants as a negatively influencing factor for the initiation of physical activity. One of the participants stated, *"I know physical activity is good for my health but I don't have the motivation to engage in physical activity. I find some reason not to start physical activity and I think I don't have enough motivation to drag myself to start engaging in some kind of physical activity."* Physical tiredness was another factor mentioned by working women. One of the participant stated, *"I have a 12 hour work and I am very tired after work to start doing physical activity. I think I get enough physical activity at work since it involves lot of walking."*

The participants mentioned "lack of time' as a major factor negatively influencing physical activity initiation. "Lack of time" includes family responsibility and house hold work. One of the participants stated, *"It is hard to find time for physical activity with my busy daily life, I am a working woman, I also have so much work to finish at home and I have small kids, I have to take care of them, cook for them, take them to school, bring them back, then help them with their homework. Basically I would say I cannot find a single minute for myself to start physical activity."*

"Work schedule" is another factor mentioned by some of the participants as a negatively influencing factor for the initiation of physical activity. One of the participants stated, *"I work from 7 am to 7 pm and it is hard to find time for physical activity after my work. If I have a work that end in the evening at 5 pm may be I will start physical activity".*

Socio-environmental Barriers.

Social and environmental barriers were factors expressed by the participants as a reason for not initiating physical activities. "Lack of family support", "lack of social support", "cultural norms", "weather", and "lack of facility" near the house were some subcategories identified.

Some women mentioned "lack of family support" as a barrier in initiating physical activity. *"I have a lot of house- hold work to finish and my husband does not help with any house- hold work since he works as well so it is hard for me to find time to start physical activities. Family responsibility is more important than physical activity in our culture."* Lack of support from friends was mentioned as a barrier for the initiation of physical activity. One participant responded as follows, *"I think I need friends who can motivate me who can come with me, push me and motivate me to go for walking or jogging. If they call me come on, we can go for walking or jogging, and come with me to walk in the park or to do some physical activity in the gym. That will help me to start doing some physical activity."* Another participant mentioned that *"I need support from my friends who can really push me to start engaging in some kind of physical activity but we have different days of work which makes it really hard for us to meet together to do physical activity. So I have no physical activity schedule now other than house- hold work."*

Cultural norms were mentioned as another barrier to physical activity. The women mentioned that it is not a tradition for the South Asians to wear exercise dresses and walk in public. *"I am not comfortable wearing jogging dress, tight fitting clothes or shorts and walk in the park or go to gym since my cultural traditions are different. I am very concerned about the dress code and that really prevents me from starting physical activities."* Another participant stated *"Women, they don't go out alone when it is dark to a park or gym; I think it is cultural or traditional norms we have seen when we grew up, I think I carry some of those norms still. Actually, there are no restrictions here in U.S as women, but I still carry those norms. So after coming back from work I do not want to go outside when it is dark. I think that is a real barrier for me to start physical activity."* Hot and humid weather was mentioned as an environmental factor preventing people from engaging in physical activities. *"The weather is so humid and hot that I have to wait till late at night to walk and I do not prefer to go out to park that late when my family is home. I think that is one of the reasons for not starting physical activity."* Lack of a facility near the house was another barrier. One woman mentioned, *"I do not have the motivation to drive to gym or park since I live little far from such facilities. If I live near to a park at walkable distance I think I would start going to the park for a walk."*

Maintenance of Physical Activity.

Maintenance of physical activity among ASI immigrants was another aim of this study. The influencing factors were again divided in to facilitators and barriers. Under the facilitators, the main categories were individual facilitators and socio-environmental facilitators. The categories under barriers were individual and socio-environmental

barriers. The model below describes the facilitators and the barriers for the maintenance of physical activity.

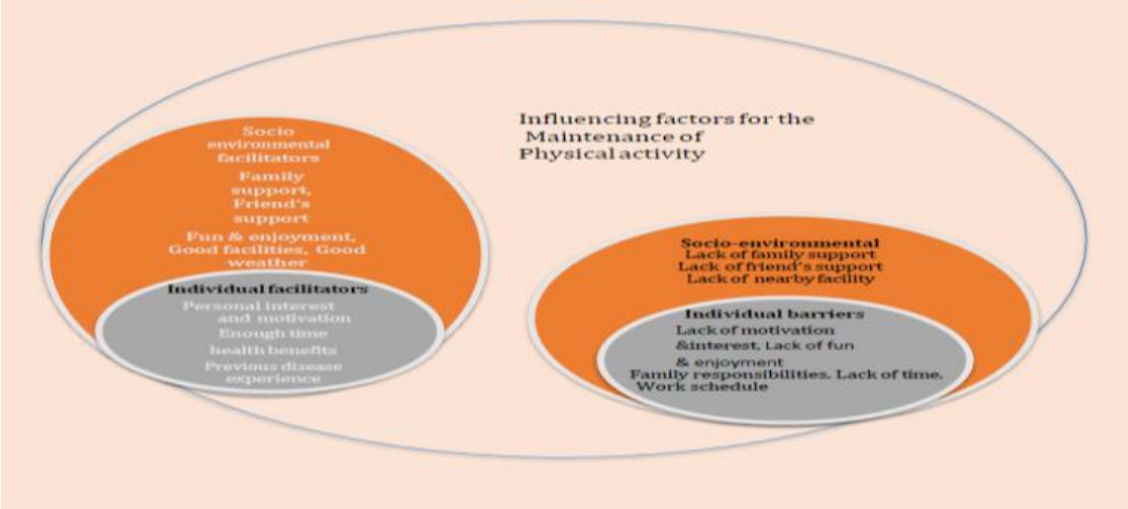

Figure 1. Influencing factors for the maintenance of physical activity.

Personal interest and motivation, enough time, health benefits, previous disease experiences were some of the subcategories identified under individual facilitators. Socio-environmental facilitators were identified from subcategories like "family support", "friend support", "fun and enjoyment", "good nearby facilities", and "good weather".

Individual Facilitators.

Personal interest and motivation is a subcategory that influences the maintenance of physical activity. Participants mentioned personal interest and motivation as one major factor in continuing the physical activity. One of the participants responded, "*I like to walk in the park every day in the morning and in the evening, it is a part of my daily routine now, I think I have the motivation to continue physical activity, if I don't do it I feel guilty.*"

Having enough time was another motivating factor for the continuation of physical activities mentioned by participants. One participant expressed, "*I come home at 5pm everyday so I have enough time to go outside to the park for a walk every evening. Since I have plenty of time I would like to continue my physical activity."*

Health benefits were a major factor mentioned by many participants as a positively influencing factor for the continuation of physical activity. One participant mentioned, "*Physical activity gives me energy. If I walk in the morning for some time I will be very energetic that whole day, which is a real motivation for me to continue doing some kind of physical activity every day.*"

Previous disease experience for family members and family history of disease was a motivation for participants to continue physical activity. One participant mentioned, "*I have family history of diabetes. I do not have diabetes now and I do not want to develop diabetes, if I do not continue doing physical activities it is like putting water for diabetes to grow. That is one of my motivations to continue physical activity as a daily routine."*

Another participant mentioned that "*My father had diabetes; he never used to do physical activities. Even my mother and family encourage him to do physical activity. He developed kidney failure and died at the age of 50 years. I do not want to be in that situation that is my motivation to continue the physical activity as a part of my life."*

Socio-environmental Facilitators.

Socio-environmental facilitators were identified from the subcategories of family support, friend's support, fun and enjoyment, good nearby facilities and good weather.

Family support was mentioned as one of the major factors for continuing physical activities. A woman mentioned that her husband always supported her by motivating and

encouraging her to engage in physical activities. The woman stated as follows: "*My husband always motivated me to continue my physical activity. He also joins with me when I walk or jog. His support is a motivating factor for me to continue my physical activities*."

Support from other family members also was mentioned as facilitating factor. One of the participants stated "*I go for a walk because of my mother, my mother wanted to walk in the evening and she wants me to join with her every day to keep my health. I think I continue my physical activity because of her."*

Support from friends was another identified subcategory. Motivation from friends was a crucial factor in the continuation of physical activity. One participant mentioned "*We have a group of friends, we meet every day at our church and play badminton and if I am not going, my friends force me to go with them, so that is a real inspiration for me to continue the physical activity".*

Fun and enjoyment was another factor supporting the continuation of physical activity. One participant stated, "*I like to continue physical activity because it is fun and enjoyment, we are a group of friends, we walk together in the park, it is really fun when we talk and walk, the time goes fast, we get enough physical activity as well as enjoyment for that day. It is a real motivation for me to continue my physical activity.*"

Another factor mentioned by participants that influence positively on the continuation of physical activity was good nearby facilities. One participant mentioned, "*I have a park closer to my home 5 minutes away, I can walk to the park so I like to go for a walk every day, I am happy with that and like to continue with that.*"

Good weather was mentioned as a subcategory as well, as evidenced by one participant's response, "*Weather is always good in this area compared to where I lived before, that gives me positive energy to go out to park and walk every morning and evening.*"

Factors negatively influencing the continuation of physical activity were identified as barriers. Different subcategories were identified under barriers to physical activity continuation and grouped under individual barriers and socio environmental barriers. The subcategories under individual barriers were lack of motivation and interest, lack of fun and enjoyment, family responsibilities, lack of time and work schedule. The socio environmental barriers were identified from subcategories like lack of family support, lack of friend's support and lack of facilities nearby.

Individual Barriers.

Lack of motivation and interest was one subcategory identified for not continuing physical activity. One participant mentioned, *"In the past I started some physical activity like walking but I do not have the motivation to continue the physical activity daily. I start walking or jogging for one or two days then after that I find some reason not to continue my physical activity."*

Lack of fun and enjoyment was another factor mentioned by participants for not continuing physical activity. One participant responded, *"I started physical activity in the past and after 2 days I stopped because it was boring to walk alone, may be if I have a company then I might continue walking since I have someone to talk to while getting my physical activity."*

Family responsibilities were mentioned as another factor for not able to continue physical activities. One woman mentioned, *"I have a lot of work at home and usually I am tired*

after my house hold work to go for extra physical activity. I may go for walking one day, next day I have a lot of house hold work and no more time left, so it is very hard for me to continue physical activity."

Lack of time was mentioned as a subcategory as well. One woman mentioned, "*I would say that family responsibilities, looking after kids, cooking, I also told you that I'm studying, I have to work for the homework, lot of responsibilities, I am really a caught up mom and it is very hard to continue physical activities."* Work schedule was another factor mentioned by participants, "*Of course, my work, my work is a problem. I told you earlier I work 7-7, and after 7 I don't have enough time and interest to go for physical activity every day especially when I work. So it is hard to continue physical activity"*

Socio-environmental Factors.

Lack of support from family, lack of support from friends and lack of nearby facilities were subcategories identified. Lack of support from family members was mentioned as one of the subcategories for not continuing physical activities. One woman mentioned, "*I did start walking in the park but I couldn't continue since I have to take care of my kids and finish house hold work. My husband couldn't help me at that time since he works. So I don't get enough support from my family to continue my physical activity."*

Lack of support from friends was another negatively influencing factor mentioned by participants. One of the participant stated, *"I do not have friends who can really motivate me to go for a walk every day, I had a friend and we used to engage in jogging, but she moved from this area since then I do not continue my physical activity."*

Lack of nearby facilities was another subcategory identified. One participant mentioned "*I go to the park for a walk once in a while and not regularly since they are a little far*

away. If it is nearby, walkable distance may be I will go every day and continue to get some physical activity."

Discussion

The present study about the factors affecting physical activity is one of the first studies conducted among Asian South Indian Immigrants in the U.S. The initiation and maintenance of successful physical activity programs depends on consideration of many factors at individual, social, and environmental levels. Identifying and paying attention to multiple factors, including barriers and facilitators, may help in the development of successful physical activity programs among the target population (Seefeldt et al., 2012). In a previous study by Mathews et al. in 2015, the commonly reported barriers were lack of time, motivation, and interest, and not being used to the culture of walking. Facilitators of physical activity were seeing others walking, walking in pairs, and pleasant walking routes (Mathews, Lakshmi, Ravindran, Pratt & Thankappan, 2015). Some of these factors are similar in the present study. However, there are some factors unique to the present study.

Personal interest and motivation, enough time, flexible work schedule, perceived health benefits and personal disease experience were individual facilitating factors in initiating physical activity in the present study. Similar factors such as personal interest and motivation, enough time, perceived health benefits and previous disease experience were identified as individual facilitating factors in maintaining physical activity in the present study. Participants with enough time and little to no family responsibilities, participants with perceived health benefits, and participants who had personal experience with chronic diseases or family history of diseases, were motivated to initiate and maintain

physical activities. The socio-environmental factors positively influencing physical activity include social support and interactions from family and friends, fun and enjoyment, cultural motivation, religious motivation, nearby good facilities and good weather in the present study. Participants were motivated from the support of spouse and friends in initiating physical activities. Participants also were motivated to initiate physical activity through cultural and religious traditions, like yoga and classical dance, which are unique findings in this study. Parks or gyms at walkable distances were a positively influencing factor mentioned by the participants in initiating physical activities. Good weather was another motivating factor mentioned by many participants. Similar factors, such as support from friends and family, fun and enjoyment, good nearby facilities and good weather were identified as influencing factors to maintain physical activity in the present study.

Lack of motivation and interest, lack of time and rigid work schedules were individual barriers to the initiation of physical activity. Similarly, lack of motivation and interest, lack of fun and enjoyment, family responsibilities, lack of time and work schedule were some of the negatively influencing individual factors in maintaining physical activity as expressed by the participants. Lack of motivation from physical tiredness was one of the factors mentioned by the participants. Lack of time from various family responsibilities and work schedule was another negatively influencing factor mentioned by the participants in maintaining physical activities.

Socio-environmental barriers in initiating physical activity included lack of family support, lack of support from friends, cultural norms, weather, and lack of a facility near their house. Similar factors like lack of family support, lack of support from friends and

lack of nearby facilities were identified as barriers to maintaining physical activity in the present study. Lack of support or encouragement from family members or friends was mentioned by many participants, especially women, as a negatively influencing factor in not initiating and maintaining physical activity. Cultural and traditional beliefs or practices were mentioned by some participants as negatively influencing factors. Even though there are no religious or cultural restrictions here, they still follow cultural and traditional practices, like not going outside home when it is dark. Women have a major family role as caretakers and are traditionally not used to taking extra time for physical activity. Bad weather conditions and faraway facilities also were factors mentioned by the participants as reasons for not initiating and maintaining physical activities.

Women with small children who have many family responsibilities mentioned lack of time as a negatively influencing factor. Lack of time was not a major factor for men, even with small children. Those with rigid work schedules coupled with family responsibilities expressed lack of time as well. Men and women with grown up children and less family responsibilities found time daily to do physical activity and were motivated to continue. Participants with a good work schedule, like an 8-5 job, found time for their physical activities and made it a part of their daily routine. Participants with family history of diseases or witnessed other people suffering also were motivated to continue physical activities. Physical activity as fun and enjoyment because of the group activity was a major influencing factor for initiating and continuing physical activity. Most of the participants preferred group activity because of the influence and motivation from family or friends. Far away facilities and bad weather were negatively influencing factors of physical activity.

A strength of the findings of this study is in the involvement of multiple influencing factors, including barriers and facilitators based on the ecological perspective. Culture was explored in detail throughout the study and will be an added strength, since cultural influence is tremendous in the initiation and maintenance of physical activity among ASI immigrants. Researcher's prior knowledge about the Asian South Indian community is an added strength, since there is access to the community and the opportunity to collect more in-depth data. The limitations of the study include researcher's prior knowledge about cultural issues and influencing factors, regardless of effort taken to minimize biases. Another limitation is that all the participants are well educated, employed and married and the results of this qualitative study are difficult to generalize across different populations.

The results of the study can be used to plan and promote successful culturally appropriate physical activity and health promotion interventions for Asian South Indian first generation immigrants. Physical activity programs including traditional and cultural dances and yoga may overcome some of the barriers. Implementing culturally feasible physical activity programs in faith based institutions may help ASI immigrants especially women to overcome some of the barriers like dress code. Planning group activities including friends also may help people to overcome some of the identified barriers.

The findings suggest the use of culturally appropriate group activities be planned between groups of friends. Opportunity for participation should be made available to all the ASI immigrants in appropriate settings like places attached to Indian faith based institutions where people have easy access and culturally appropriate environment for participation. Based on the study results, future research studies differentiating the factors influencing

physical activity initiation among first and second generation Asian South Indian population may benefit culturally appropriate physical activity programs among this population. A quantitative study measuring physical activity among this population may release more information about the kinds of physical activity and the pattern of physical activity among the population. Investigation of the different barriers and facilitators among both genders through quantitative cross sectional survey research may provide more insight into the factors that needs to be considered while planning physical activity programs for the ASI population in the future. This particular group of population is aging, and the lack of physical activity may cause many health problems and increased financial costs. Health promotion intervention and education programs may be planned based on this study results to initiate and sustain physical activity programs among the target population

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Appendix A

Demographic Data Sheet

Demographic Data Sheet

Name: ----------

Mailing Address: ----------

Telephone: ----------

E-mail: ----------

Date of Birth: ----------

Country of birth: ----------

Gender

O Male

O Female

Religion

O Hindu

O Muslim

O Christian

O Other

Education

O Elementary or Middle school

O High School

O college

O Graduation or higher

O Professional degree

Employment status

O professional Job

O business

O teaching

O other jobs

O Unemployed

Marital status

O single

O Married

Years of migration

O -------- Please enter years of migration to U.S

List any chronic disease causing physical disabilities preventing physical activity participation

Appendix B

Interview Guide

Interview Guide

The questions for the interview will include:

What are the things you have heard about physical activity?"

What type of physical activities do you think Asian South Indians participate? What kind of physical activities do you engage in other than the household work?

What are the factors that might keep ASI Immigrants from engaging in physical activity? Can you list and explain those issues in regards to your daily life that prevents you from engaging in physical activities?

On a typical day how much time is spent watching T.V or computer/sitting on a couch?

Can you share some thoughts about the disadvantages of being sedentary?

Can you list any personal factors that influence you positively or negatively in starting and maintaining PA?

How do family and friends influence you in starting and maintaining physical activities?

What is your preference for physical activity? A group setting or physical activity by your own? Why?

Are there convenient places to engage in physical activities in this area? What is your habit of utilizing those facilities? What is the influence of these facilities in starting and maintaining PA?

What are the cultural beliefs or social factors that interfere with starting and maintaining PA? Any gender issues with starting and maintaining PA? or utilizing exercise facilities?

Do you have a plan to overcome the factors that prevents you from engaging in physical activities? If so what is your plan?

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INFORMED CONSENT FORM TO TAKE PART IN RESEARCH
Factors Influencing Physical Activity among Immigrants from South India Residing in the Hidalgo County, Rio Grande Valley
HSC-SN-17-0012
Adult

INVITATION TO TAKE PART

You are invited to take part in a research project called, Factors Influencing Physical Activity among Immigrants from South India Residing in The Hidalgo County, Rio Grande Valley, conducted by Jaya Sabu Abraham of the University of Texas Health Science Center at Houston (UTHealth). For this research project, she will be called the Principal Investigator or PI.

Your decision to take part is voluntary. You may refuse to take part or choose to stop taking part, at any time

You may refuse to answer any questions asked or written on any forms. This research project has been reviewed by the Committee for the Protection of Human Subjects (CPHS) of the University of Texas Health Science Center at Houston as HSC-SN-17-0012

PURPOSE

The purpose of this research study is to examine factors that can promote or hinder physical activity initiation and maintenance among Asian South Indian (ASI) immigrants.

This is a local study at Riogrand Valley, Hidalgo County, United States. The study will enroll a total of 15-20 people.

PROCEDURES

If you agree to take part in this study, you will first sign the consent form before undergoing these study procedures. Demographic data sheet including name, age, mailing address, email, gender, years of migration to United States, education, marital status, and occupation, will be collected after obtaining consent for participation but prior to individual interviews. The researcher will conduct a 30-60 minutes' individual, in-depth, semi-structured interview based on an interview guide, open questions as well as probing questions and reframed questions will be used additionally to elicit in-depth information about the influencing factors to physical activity. The researcher will be using exploratory and probing questions, like "What do you mean by that or please expound on that?" to elicit more in-depth opinions and information about the influencing factors to physical activity. The researcher will maintain field notes and take notes of the non-verbal expressions of the participants during the interview. The researcher will make sure the environment is conducive for the participants to express their opinions, ensuring privacy for individual interviews.

TIME COMMITMENT

The total amount of time you will take part in this research study is for a 30-60-minute individual interview.

BENEFITS

You may receive no direct benefit from being in the study; however, your taking part may help Asian South Indian immigrants in the future.

RISKS AND/OR DISCOMFORTS

While on this study, you are not at risk for side effects. There can be confidentiality issues, however the collected information will be de identified as well as all the data will be stored in locked cabinets with PI only access

Questionnaires: You may get tired when we are asking you questions or you are completing questionnaires. You do not have to answer any questions you do not want to answer.

ALTERNATIVES

The only alternative is not to take part in this study.

STUDY WITHDRAWAL

Your decision to take part is voluntary. You may decide to stop taking part in the study at any time until the completion of the interview. A decision not to take part or to stop being a part of the research project will not affect you in any means. If you withdraw from the study, no collected information will be used for this research project.

COSTS, REIMBURSEMENT AND COMPENSATION

If you decide to take part in this research study, you will not incur any additional costs
You will not receive any financial or other benefits associated with this study

CONFIDENTIALITY

Collected information will be de identified as well as all the data will be stored in locked cabinets with PI only access.

QUESTIONS

If you have questions at any time about this research study, please feel free to contact the Jaya Sabu Abraham at 956358 2304 as she will be glad to answer your questions. You can contact the primary investigator to discuss problems, voice concerns, obtain information, and offer input in addition to asking questions about the research.

UT Health
IRB NUMBER: HSC-SN-17-0012
IRB APPROVAL DATE: 05/17/2017

AUTHORIZATION TO USE AND DISCLOSE
PROTECTED HEALTH INFORMATION FOR RESEARCH
UT HEALTH

PATIENT NAME:_____ **DATE OF BIRTH:**_____

Protocol Number and Title: Factors Influencing Physical Activity among Immigrants from South India Residing in The Hidalgo County, Rio Grande Valley

Principal Investigator: Jaya Sabu Abraham

If you sign this document, you give permission to The University of Texas Health Science Center at Houston to use or disclose (release) your health information that identifies you for the research study named above.

The health information that we may use for this research includes certain health information included in the demographic questionnaire attached, Information disclosed is de-identified

The health information listed above may be used by the researcher.

The University of Texas Health Science Center at Houston is required by law to protect your health information. By signing this document, you authorize The University of Texas Health Science Center at Houston to use and/or disclose (release) your health information for this research. Those persons who receive your health information may not be required by Federal privacy laws (such as the Privacy Rule) to protect it and may share your information with others without your permission, if permitted by laws governing them.

If all information that does or can identify you is removed from your health information, the remaining information will no longer be subject to this authorization and may be used or disclosed for other purposes. No publication or public presentation about the research described above will reveal your identity without another authorization from you.

Please note that you do not have to sign this Authorization, but if you do not, you may not participate in this research study.
You may change your mind and revoke (take back) this Authorization at any time. Even if you revoke this Authorization, researchers may still use or disclose health information they already have obtained about you as necessary to maintain the integrity or reliability of the current research. To revoke this Authorization, you must write to:

PI Name: Jaya Sabu Abraham
Address:2709 Denton creek avenue
McAllen, Texas, 78504
PI Fax: 956 926 4019

This Authorization will expire *6* years after the end of the study.

UTHealth
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SIGNATURES

Sign below only if you understand the information given to you about the research and you choose to take part. Make sure that any questions have been answered and that you understand the study. If you have any questions or concerns about your rights as a research subject, call the Committee for the Protection of Human Subjects at (713) 500-7943. You may also call the Committee if you wish to discuss problems, concerns, and questions; obtain information about the research; and offer input about current or past participation in a research study. If you decide to take part in this research study, a copy of this signed consent form will be given to you.

Printed Name of Subject	Signature of Subject	Date
Printed Name of Legally Authorized Representative	Signature of Legally Authorized Representative	Date
Printed Name of Person Obtaining Informed Consent	Signature of Person Obtaining Informed Consent	Date

CPHS STATEMENT: This study (HSC-SN-17-0012) has been reviewed by the Committee for the Protection of Human Subjects (CPHS) of the University of Texas Health Science Center at Houston. For any questions about research subject's rights, or to report a research-related injury, call the CPHS at (713) 500-7943.

UTHealth
IRB NUMBER: HSC-SN-17-0012
IRB APPROVAL DATE: 05/17/2017

SHRI NANAK CENTER & SHIV SHAKTI TEMPLE
2310 W TRENTON ROAD, EDINBURG-78539

To whom it may concern,

I hereby confirms the interest in supporting the research study on the "Factors Influencing Physical Activity among Immigrants from South India Residing in The Hidalgo County, Rio Grande Valley "(HSC-SN-17-0012) at the University of Texas Health Science Center at Houston.

The members of this congregation will be informed of this study through posting and distributing material among people and on the bulletin boards as well as through mass email.

Waiver of screening and recruitment: I will pass on the contact information to you in a secure communications system of those willing to participate in your study and interested to be contacted by you. Interested Members of this organization will be enrolled in to your study and undergo an informed consent process for the study with you.

I am willing to be contacted by you by email and telephone. Please let me know if I can be of further service.

Sincerely

P.A. కళ్యాణ్ కుమార్

Shri Pandit Kalayan Kumar
Chief Priest
Shiv Shakti Temple
2310 W Trenton Road
Edinburg, Texas – 78539
Tele -361-945-4519

UTHealth The University of Texas Health Science Center at Houston

IRB NUMBER: HSC-SN-17-0012
IRB APPROVAL DATE: 05/17/2017

JSJA CORPORATION

(DBA)

UNIVERSAL MARKET

March 15, 2017

Dear Jaya Sabu Abraham,

This letter confirms the support and permission to use our bulletin board to display and distribute the flyer for your research study on the - "Factors Influencing Physical Activity among Immigrants from South India Residing in The Hidalgo County, Rio Grande Valley "(HSC-SN-17-0012) at the University of Texas Health Science Center at Houston.

I am willing to be contacted by you through mail, email or telephone if you need further support.

Sincerely

Joseph Sebastian
President
905 Dove Ave
McAllen, TX
(956) 249-9527

UTHealth The University of Texas

IRB NUMBER: HSC-SN-17-0012
IRB APPROVAL DATE: 05/17/2017

Mar Thoma Congregation of the Rio Grande Valley
1525 North Alamo Road, Alamo TX 78516

Malankara Mar Thoma Syrian Church

LIGHTED TO LIGHTEN

മലങ്കര മാർത്തോമാ സുറിയാനി സഭ

March 5, 2017

Whom It May Concern:

Mrs. Jaya Abraham (HSC-SN-17-0012) has informed me of a study on the "Factors Influencing Physical Activity among Immigrants from South India Residing in The Hidalgo County, Rio Grande Valley, and requested us to write a letter of support on her behalf. This request was announced to the congregation in our last service, and we are very happy to provide the support she has requested. This letter confirms the following:

- I am willing to be contacted by the researcher and others associated with her about the study by mail, electronic mail, fax, and telephone.
- I support informing members of the congregation about the study by posting, discussing, and distributing information about the study on the church bulletin board, newsletters of the congregation, and other forms of communication associated with the congregation.
- Waiver of Screening Recruitment: Other executive committee members of the congregation or I may call potential participants for the study or discuss the study with them and ask if they are willing to be contacted by the researcher or her associates. If they give verbal consent to being contacted by the researcher, I will pass on the contact information using a secure communication method as permitted by waiver for screening and recruitment.
- Participants will be enrolled into the study and undergo an informed consent process for the study.

If I can be of further help please contact me at 956-821-4535 or through my email address john.abraham@utrgv.edu.

Sincerely,

Dr. John P. Abraham
Vice-President
Mar Thoma Congregation, RGV

UTHealth

IRB NUMBER: HSC-SN-17-0012
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MCALLEN
PENTECOSTAL ASSEMBLY

PR. MATHEW ZACHARIAH 2301 Brazos Ave, McAllen, TX 78504

March 14, 2017

Dear Jaya Sabu Abraham,

I hereby confirm the interest in supporting your research study on the "Factors Influencing Physical Activity among Immigrants from South India Residing in The Hidalgo County, Rio Grande Valley "(HSC-SN-17-0012) at the University of Texas Health Science Center at Houston.

The members of this congregation will be informed of this study through posting and distributing material among people and on the bulletin boards as well as through mass email.

Waiver of screening and recruitment: I will pass on the contact information to you in a secure communications system of those willing to participate in your study. Interested Members of this congregation will be enrolled in to your study and undergo an informed consent process for the study with you.

I am willing to be contacted by you by email and telephone. Please let me know if I can be of further service.

Sincerely

Mathew Zachariah

President
Pr. Mathew Zachariah
(914) 420-9541
zmathew44@gmail.com

UTHealth

IRB NUMBER: HSC-SN-17-0012
IRB APPROVAL DATE: 05/17/2017

DIVINE MERCY SYRO MALABAR
CATHOLIC CHURCH
300 WEST CANO STREET, EDINBURG, TX 78539
TEL. & FAX: 956-380-1363
Web: www.malabarparishedinburg.com
Email: divinemercymalabar@gmail.com

March 6, 2017

Dear Jaya Sabu:

It has given me great pleasure to know that you are conducting a research study on "Factors Influencing Physical Activity among Immigrants from South India in the Hidalgo County, Rio Grande Valley" (HSC-SN-17-0012) at the University Of Texas Health Science Center at Houston, Texas. Being the Pastor of the congregation consisting of your subject population, I would extend all possible assistance to you in the research study, which I am sure will benefit the community members. To facilitate the research work, I would confirm the following:

- I am willing to be contacted by you by about the research study by mail, electronic mail, fax and telephone.
- I support informing the members of the congregation about your proposed study by posting and distributing information to the members of the congregation by posting on the bulletin boards, and other routine communication modes followed in the church community.
- Waiver of Screening and Recruitment: If any of the congregation members express interest in participating in your study, I will ask if they are willing to be contacted by you. If they give verbal consent for being contacted, I will pass on their contact information to you in a secure communication system as permitted by your waiver for screening and recruitment.
- Interested members of the church congregation will be enrolled in the study and undergo an informed consent process for the study with you.

If I can be of any further assistance, or provide you with any further information, please do not hesitate to contact me at wphilipose@gmail.com or at 956-380-1363

Yours Sincerely
K.A Philip
Fr. Wilson Antony,
Pastor

IRB NUMBER: HSC-SN-17-0012
IRB APPROVAL DATE: 05/17/2017

IARGV
INDIA ASSOCIATION
OF RIO GRANDE VALLEY

PO Box 5875, McAllen, Texas 78502-5875

March 14th, 2017

Dear Jaya Sabu Abraham,

It was a pleasure to know that you are conducting a research study on "Factors Influencing Physical Activity among Immigrants from South India in Rio Grande valley, Hidalgo County" (HSC-SN-17-0012) at the University Of Texas Health Science Center at Houston.

On behalf of the Board members of The India Association of Rio Grande Valley (The IARGV), I would like to extend my best wishes for your research study that will be beneficial to our community members. To facilitate your research, we will assist in the following way:

- The association will forward a letter/flyer provided by you elaborating your research study with your contact information to members who have subscribed to our emails.
- The members interested in the study will contact you through the information provided by you in the letter/flyer.
- The association at any point will not be sharing its members' contact information for the study.
- Also, the association in any manner will not be held responsible for any conflicts, issues and/or complaints arising from this research study involving its members.

IARGV and its board members wish you all success in your research study.

Please do not hesitate to contact me at theiargv@gmail.com if you have any questions.

Sincerely,

Rajesh Chiramel,
President,
The IARGV.

UTHealth

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Safety plan for the research project "Factors Influencing Physical Activity among Immigrants from South India Residing in The Hidalgo County, Rio Grande Valley "(HSC-SN-17-0012) at the University of Texas Health Science Center at Houston.

Before the trip
I will

- Map out the route with Key maps, mapquest.com, or Google Maps
- Inspect vehicle for safety (tires, overloading, brakes, etc)
- Carry local contact information and local police and EMS contact info
- Call if meeting with someone, prior to departure to verify:
    - the correct address
    - there will be someone there to meet
    - correct parking location

Traveling
I will

- Wear prudent attire, make sure not to appear over or under dressed. Blend in with locals
- Inspect vehicle for safety (tires, overloading, brakes, etc.)
- Project certainty of route and destination
- Avoid "high risk" regions

Parking

I will

- Choose well-lit parking areas
- Look around for loiterers before getting out of motor vehicle
- Always lock valuables and packages out of sight in the vehicle
- Always turn off the ignition, remove the key, and lock the doors after getting out of the vehicle
- Avoid parking next to vans, large SUVs, pickup trucks, or other vehicles whose size and structure can provide concealment
- Exercise caution when using underground or enclosed parking garages and always try to walk in the center aisle, rather than close to parked cars
- Try to park in areas that have an attendant or in locations with heavy pedestrian traffic

On site
I will

- Avoid walking alone whenever possible
- Walk in the middle of the sidewalk and walk facing oncoming traffic
- Attempt to appear confident and purposeful when walking and be alert to the surroundings at all the times
- Carry the purse close to the body, preferably in front. Carry no more money or credit cards than whatever needed
- I will try not to overload myself with packages or other items. Keep hands as free as possible

- Choose busy, well-lit streets and avoid isolated areas, alleys, vacant lots, abandoned buildings, and construction sites
- Wear light colored clothing and carry a flashlight when walking in darkness
- Carry a loud whistle or high-decibel personal alarm to attract attention or summon help if needed
- Be aware of all exits when entering houses and make sure nothing blocks the exits

If something occurs
I will

- Leave if the situation doesn't feel safe
- Contain any anger and fear and speak in an authoritative tone that is loud enough for others to hear, but don't scream or yell.
- Hand them whatever they want, do not resist If the person or persons are attempting a robbery
- Fight and don't stop fighting if the person or persons are attempting a rape

Reporting

- After an incident immediately call the local authorities and provide the following information
    - Who was involved (this includes names or descriptions of unknown individuals)
    - What happened
    - Where the incident occurred (address or other descriptors if address is unknown)
    - When the incident took place
    - Are there any injuries
    - Go to nearest Emergency room for any injuries or exam and testing in case of rape

I will not

- Carry fire arms or other offensive tools that require special training and legal requirements.
- Consume alcohol before or during community based work
- Carry large amounts of cash or valuables
- Carry gifts, cash equivalents or gift certificates since my research do not require to distribute those

Research study

Participants needed for research study

Topic: Factors Influencing Physical Activity among Immigrants from South India Residing in the Hidalgo County, Rio Grande Valley

We are looking for volunteers to take part in this study of Asian South Indian immigrants, between 30-60 years of age, without any physical disabilities, who speak and understand English

As a participant in this study, you would be asked to: fill in the demographic form and participate in an individual interview

Your participation would involve an individual interview session, each of which is approximately 30-60 minutes at your convenient location.
You will not receive any financial or other benefits associated with this study

For more information about this study, or to volunteer for this study,

Please contact:
(Jaya Sabu Abraham)
(The University of Texas Health Science Center at Houston)
at
(956 358 2304)
Email: (Jayamol.sabu@uth.tmc.edu)

The study has been reviewed and approved by the Committee for the Protection of Human Subjects, University of Texas Health Science Center, Houston

IRB NUMBER: HSC-SN-17-0012
IRB APPROVAL DATE: 05/17/2017

CURRICULUM VITAE

Jaya Sabu Abraham, PhD(c), RN, MSN, FNP-BC

The University of Texas School of Nursing
6901 Bertner Avenue
Houston, TX 77030-3901
jayamol.sabu@uth.tmc.edu (956)665-3129

Education

Doctor of Philosophy, Nursing Candidate	The University of Texas Health Science Center at Houston	05/2018
Post Masters Family	Texas A&M-Corpus Christi, TX Nurse Practitioner Course	05/2013
Master of Science in Nursing	University of Texas Pan American, Edinburg, TX	12/2010
Bachelor of Science in Nursing	Fr Muller's College of Nursing, Mangalore, India	08/1992

Professional Licensures

		Expiration
Registered Nurse License	Texas Board of Nursing	03/2020
Advanced Practice Nurse	Texas Board of Nursing	03/2020
Prescriptive Authority	Texas Board of Nursing	03/2020
BLS	American Heart Association	06/2018
ACLS	American Heart Association CCRN	12/2019
APN-FNP-BC	ANCC	08/2018

Professional Experience

Clinical Instructor	University of Texas Rio Grande Valley 1201 W. University Drive Edinburg, TX, 78541	01/15/2011- Present
RN-ICU, Telemetry	Rio Grande Regional Hospital 101 E. Ridge Road McAllen, TX, 78503	06/19/2006- 09/10/2011
RN-MICU	Hamad Medical Corporation P.O Box 3050 Doha, Qatar	11/13/1995- 03/03/2006
RN-Medical Surgical Unit	Ministry of Public Health Ibri Sultanate of Oman	01/30/1995- 10/31/1995
Nursing Tutor Clinical Instructor	Adichunchanagiri Institute of Nursing Bangalore, India	09/03/1993- 01/23/1995
Nursing Tutor Clinical Instructor	P.C Nursing School Bangalore, India	12/01/1992- 06/09/1993

Assignments/Training Programs

UTRGV	Secretary Faculty Development Committee	2017
	Member And Chair Elect Student Development Committee	2017
Hamaad Medical Corp.	Infection Control Workshop	2005
	Preceptorship Training Program	2005
	Pain Management- Train The Trainer Course	2005
	Epilepsy Symposium	2005
	Fire And Safety Workshop	2005

Academic Writings/Presentations

Influencing factors to physical activity among Asian South Indian Immigrants: A descriptive qualitative content analysis (PhD Dissertation)	To be submitted for publication
Cultural factors affecting health-promoting behaviors of diet and physical activity among Asian Indians in Western countries: a systematic search	To be submitted for publication

Professional Memberships/Honors

American Association Of Nurse Practioners	2017
American Nurses Credentialing Center	2013
Sigma Theta Tau International Pi-Omicron Chapter (UTRGV)	2008

References to be provided when required