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Health Disparities in Females With Rheumatic Heart Disease in Central Afghanistan

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Abstract

Health Disparities in Females With Rheumatic Heart Disease in Central Afghanistan

by

Ruhina Najem M.D.

Dissertation Submitted in Partial Fulfillment

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Abstract

This study surveyed healthcare professionals and rheumatic heart disease (RHD) female participants in two hospitals located in central Afghanistan to examine the effects of communication among healthcare professionals, ethnicity and socioeconomic status, and the health quality of life. The social ecological models (SEM) of health promotion was utilized in the individual (communication between healthcare professionals), community (health quality of life), and societal factors (ethnicity and socioeconomic status). Three research questions were explored in this study: the significance of RHD healthcare professional's education to their RHD female patients ages 16 to 45 years; a correlation between ethnicity and socioeconomic status among the targeted participants; and a correlation between health-related quality of life and RHD education among the targeted participants. This study was a cross-sectional quantitative survey design with 138 participants to determine the factors of RHD education, communication training, and beliefs of the targeted population in assessing RHD effects. McNamara's, Pearson's, and Chi test was used for determining correlation and relation of the research variables. The results of this study showed a correlation between healthcare professional communications and RHD but no correlations for ethnicity and socioeconomic status, and health quality of life and RHD. This study promotes positive social change through training healthcare professional to educate their female RHD patients about prevention and living with the disease. This research showed that the onset of healthcare professional education could reduce the effects of the disease. Moreover, the need for funding of the society would also control the RHD effected population.

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Chapter 1: Introduction to the Study

Because of 30 years of war, Afghanistan ranks among the poorest countries in the world. While the unemployment rates of its surrounding neighbors, Iran and Pakistan, stand at 10.5% and 6% respectively, 36% of Afghanistan's population lives below the poverty level and is unemployed (Afghan Public Health Institute Ministry of Public Health [APHI/MoPH], 2011). In a comparison of the gross domestic product (GDP) in the region, Afghanistan has the lowest GDP of about $20.31 billion, while Iran has a GDP of $368.9 billion and Pakistan a GDP of $232.3 billion (World Bank, 2015). To further underscore the challenges faced by the general population, there is a shortage of clean water, housing, and electricity based on a decrease in the annual population growth rate from 5% in 2004 down to 2% in 2012 (APHI/MoPH, 2011; Central Intelligence Agency [CIA], 2012). The ravages of war left many in Afghanistan living in substandard health conditions with inadequate health facilities, insufficient water supplies, poor hygiene and sanitation, unsafe use of illicit drugs, unstable security, and air pollution (APHI/MoPH, 2011). According to APHI/MoPH, the targeted age group in this study is 41.3% male and 46.1% female with the heads of household being disproportionately male: 96.7% are male, and 3.3% are female (APHI/MoPH, 2011). Only 55.6% of the population has access to a clean source of drinking water, 19.4% of the population has access to a toilet or latrine facility, and about 42% of the population has electricity (APHI/MoPH, 2011). One in five women who live in the capital region accounts for 36% of women residing in Central Afghanistan (APHI/MoPH, 2011). Another point that plays

a critical role in shaping attitude and behavior, especially with respect to socioeconomic status, and health and well-being, is educational access. The illiteracy rate for women living in Central Afghanistan is a staggering 67% (BBC News, 2014). In addition to the ill effects of poor living conditions, the low socioeconomic status of women in this region exacerbates the effects of RHD as shown in Figure 1.

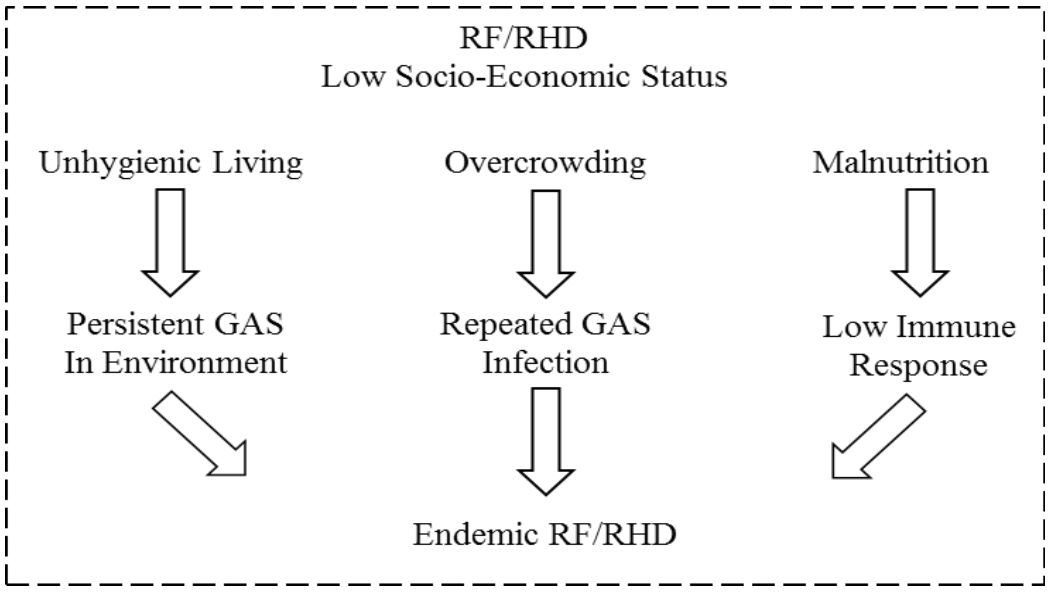

Figure 1. Rheumatic fever and rheumatic heart disease socioeconomic status. From "Rheumatic fever & rheumatic heart disease: The last 50 years," by R.K. Kumar and R. Tandon, 2013, *Indian Journal of Medical Research, 137*(4), p. 657.

Introduction

Acute Rheumatic Fever (ARF) is acquired through an immunological reaction to an infection from bacterium group A streptococcus (GAS) that develops generalized inflammatory reactions on specific areas of the body, mainly on the joints, skin, brain, and heart (Crapetis, Brown, Maguire, & Walsh, 2012). Patients with ARF experience high levels of pain, report being unwell, and are often in need of hospitalization (Crapetis

et al., 2012). Although ARF does not have a permanent effect on the skin, brain, and joints, it does inflict permanent damage on the heart and the aortic and/or mitral valves. This condition progresses into Rheumatic Heart Disease (RHD) (Crapetis et al., 2012). While the majority of RHD deaths and cases are preventable globally, there are still 15.6 million people living with or diagnosed with RHD, and about 2.2 million deaths are attributed to the disease annually (Wyber, Zühlke, & Carapetis, 2014). Because the true burden of the disease is unknown, the reported mortality rates globally may be underestimated (Crapetis et al., 2012).

In general, there is a critical need to examine the health situation of women in Afghanistan, especially concerning heart disease and RHD. The life expectancy of women living in Afghanistan is 44 years—which is among the lowest in the world and about 33 years lower than the global average. Maternal mortality is 1,800 per 100,000 of births—which is among the highest in the world (Bezruchka, 2012; Pendray, 2012). The risk factors for the life expectancy of women include depression, post-traumatic stress disorder, anxiety, heart disease, gender violence, education, and access to health services (APHI/MoPH, 2011; Pendray, 2012). Afghanistan has the worst disability-adjusted life years (DALYs), which is based on mortality due to premature deaths, disabilities, and health-adjusted life expectancy (Shahraz et al., 2014). These risk factors affect economic productivity and the health of future Afghan generations (Pendray, 2012). Developing countries, such as Afghanistan, have a greater need to examine the cost-effectiveness of competing for health issues with insufficient or limited budgets. Beyond monetary costs, opening conversations with the Afghan government to review societal gain regarding

health benefits, increased longevity, preventing days absent due to illness or disability, and the gain of healthy years of life (World Health Organization [WHO], 2015). The third highest cause of death in Afghanistan is heart disease, which includes RHD (WHO, 2015).

Background

Wyber, Zuhike, and Carapetis (2014) presented a case for global investment in Rheumatic Heart Disease control as a noncommunicable and preventable cardiovascular disease, which could be averted through effective and early intervention. The authors cited a 2005 review of Rheumatic Heart Disease burden by reviewing 57 studies. The study showed that about 15.6 million preventable cases worldwide cause an estimate of 233,000 deaths annually (Wyber et al., 2014). Moreover, Wyber et al. asserted the neglect of RHD by civil society, funding agencies, government, and patient advocates to other prominent community diseases.

Watkins and Daskalakis (2015) found that the economic impact of RHD in developing countries was between 2 and 4 trillion dollars in 2010. Moreover, the donor funding level for RHD research is a million times less than the economic cost of the disease in developing countries (Watkins & Daskalakis, 2015). This article concludes that an increase in private and public sector spending on productive RHD control and prevention would result in a remarkable return on investment (Watkins & Daskalakis, 2015).

Statement of the Problem

Streptococcus bacteria cause RHD because of three factors that affect females between the ages of 16 to 45 years living in Central Afghanistan. The first factor relates the significant difference in relation to RHD and the frequency of communication of healthcare professional with their RHD female patients in Central Afghanistan, and the second factor correlates ethnicity (Pashtun, Tajik, Uzbek, and Hazara) and socioeconomic status (poverty and poor versus middle and wealthy class) with RHD. The final factor involves the association between health-related quality of life of females between the ages of 16 to 45 years living in Central Afghanistan due to RHD. Central Afghanistan (see Figure 2) consists of the provinces of Bamyan, Ghazni, Kabul, Kapisa, Logar, Parvan, and Wardak (Afghanistan Information Management Services [AIMS], 2014). The specific problem for this study is to determine the frequency of communication of healthcare professionals with their patients concerning RHD, the ethnicity and socioeconomic status in relation to RHD, and the health quality of life for females with RHD.

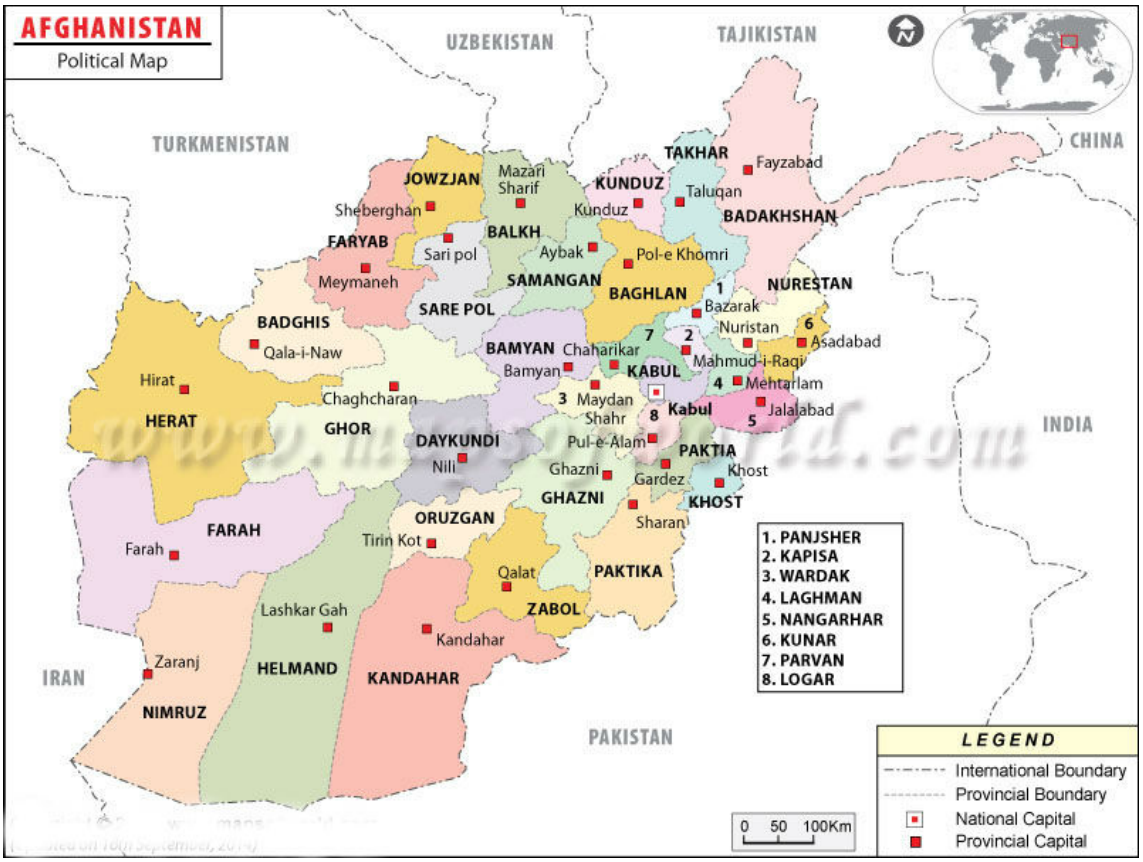

Figure 2. Afghanistan provinces. **Retrieved from**

http://www.mapsofworld.com/afghanistan/afghanistan-political-map.html

Purpose of the Study

The purpose of this cross-sectional quantitative study is to determine the correlations between the frequency of communication of health professionals with their RHD female patients in Central Afghanistan, the ethnicity and socioeconomic status, and the health quality of life with RHD of females between the ages of 16 to 45 years living in Central Afghanistan. The frequency of communication of healthcare professionals concerning RHD, ethnicity and socioeconomic status, and health quality of life for females are the independent variables while RHD is the dependent variable.

Research Questions and Hypotheses

The next three research questions and hypotheses were derived from the review of existing literature in the area of RHD and women in Afghanistan.

Research Question #1: Are there significant differences in RHD healthcare professional's education to their RHD female patients ages 16 to 45 in regards to pre and post-intervention?

$H_0$1: There are significant differences in RHD healthcare professional's education to their RHD female patients ages 16 to 45 in regards to pre and post-intervention.

$H_1$1: There are no significant differences in RHD healthcare professional's education to their RHD female patients ages 16 to 45 in regards to pre and post-intervention.

Research Question #2: Is there a correlation between ethnicity (Pashtun, Tajik, Uzbek, and Hazara) and socioeconomic status (poverty and poor versus middle and wealthy class) among females ages 16 to 45 years with RHD?

$H_0$2: There is a correlation between ethnicity (Pashtun, Tajik, Uzbek, and Hazara) and socioeconomic status (poverty and poor versus middle and wealthy class) among females ages 16 to 45 years with RHD.

$H_1$2: There is no correlation between ethnicity (Pashtun, Tajik, Uzbek, and Hazara) and socioeconomic status (poverty and poor versus middle and wealthy class) among females ages 16 to 45 years with RHD.

Research Question #3*:* Is there a correlation between health-related quality of life and RHD education among females ages 16 to 45 years with RHD?

$H_0$3: There a correlation between health-related quality of life and RHD education among females ages 16 to 45 years with RHD.

$H_1$3: There no correlation between health-related quality of life and RHD education among females ages 16 to 45 years with RHD.

Theoretical Framework

This research will look at the application framework from both the individual level and the healthcare system organizational level to answer the research questions; therefore, a model with multiple interactions would be required. This research will apply the social ecological models (SEM) of health promotion to understand the overarching, broad paradigm concerning the individual, community, and societal factors (Lawrence, 2014). SEM would address interpersonal (cultural, social), intrapersonal (psychological, biological), community, organizational, cultural, environmental, and public policy factors that affect health (Lawrence, 2014). SEM would be used to explain the relationship of incidents of RHD to the frequency of communication of healthcare professionals with their patients, association with ethnicity and socioeconomic status, and the health quality of life. At the individual level, the risk factors would include nonmodifiable risks such as race, age, and genetic code; the modifiable risks would include behavior changes such as nutritional status, education, and lack of health services (Kennedy, 2014). Community and societal factors that are required to change are the population nutrition status, availability of healthcare, reduce poverty rate, and increase literacy (Kennedy, 2014). SEM individual level identifies personal and biological risk factors that increase the person’s ability to develop RHD which includes education, age, income, and family

history and the prevention at this strategic level is to promote life skills training and education (Centers for Disease Control and Prevention [CDC], 2015).

The next level of SEM is the relationship which may cause a higher risk of acquiring RHD through interaction between family, partners, and social circle-peers and the prevention at this level would target family-focused prevention programs, peer and mentoring programs by trained healthcare professionals designed to reduce the spread of RHD (CDC, 2015). The third level of SEM is a community which explores neighborhoods, workplace, or school settings that increase RHD risk factors and the prevention at this level is designed to reduce social isolation, improve housing and economic opportunities in the neighborhoods, and increase family-focused or parenting health prevention programs (CDC, 2015). The last level of SEM is societal risk factors, which included cultural and social norms that manage the severity of RHD are an environment where RHD can become life-threatening (CDC, 2015).

Definition of Terms

Acute Rheumatic Fever (ARF): is the immunological reaction to an infection from bacterium groups A streptococcus (Crapetis et al., 2012).

Group A Streptococcus (GAS): is defined as a bacterium that when untreated can cause a broad collection of infections (CDC, 2015).

Post-Traumatic Stress Disorder: is the feeling of frightened or stressed under nondangerous situations (National Institutes of Health, 2013).

Rheumatic Heart Disease (RHD): is defined as the permanent damage to the aortic and/or mitral heart valves.

Significance

The researchers of this study could possibly demonstrate that there is a correlation between improvements in the frequency communication of healthcare professionals with their patients, association of ethnicity (Pashtun, Tajik, Uzbek, and Hazara) and socioeconomic status (poverty and poor versus middle and wealthy class), and increased health quality of life due to a reduction in the incidences of RHD. The correlation factors can be defined regarding survey response, numbers that can be statistically analyzed to deduce or imply cause and effect based on RHD risk factors (Scott & Mazhindu, 2014). Published results of this study could potentially identify cues and provide information to the Afghan government, allowing for better training for healthcare professionals, strength health information system, restore, and update healthcare facility to better serve the health needs of their citizens (WHO, 2015). This hospital-based study intends to assess female RHD patients between the ages of 16 to 45 and healthcare professional training to increase communication to reduce the incident of RHD in the region of Central Afghanistan. Heart and stroke disease account for a third of all female mortality worldwide at 8.6 million deaths, and within the category of heart disease, RHD accounts for 2.2 million deaths annually (World Heart Federation, 2012). This study may also promote positive social change by providing greater momentum for public health movements for reducing RHD in Central Afghanistan. The outcome of this study combined with existing research, could prompt dialog between lobbyists, activists, and Afghan policy-makers.

Assumptions and Limitations

The assumptions of this study are the willingness of the volunteer participants not to be biased because of social norms and social class status. Those participants who come from a lower social background than the staff of the medical personnel may not be inclined to speak negatively about the medical personnel; moreover, the cultural stigma that the medical personnel is always correct would bias the participant's response to survey questions. The other assumption in this study is that the statistical analysis method is the most applicable to this study. The assumption of healthcare professionals is not properly communicating with patients who have RHD may not be entirely factual. Finally, this study assumes that women's knowledge of rheumatic fever and heart disease effects are limited to the possible type of treatment. Women without knowledge of RHD are assumed to have low health quality of life.

This study limitation would be the generalization of the findings to other districts of Afghanistan due to regional differences. An additional limitation is the application of this study finding for females to apply to males. This study utilized hospital-based sampling, which limited the participants that have RHD and who have the means to travel to this study public health facility (Riaz et al., 2013).

Summary

There have been researches that establish the rise of RHD and developing countries (WHO, 2015). RHD is a preventable disease (unlike most noncommunicable diseases) that could be averted by proper education of the community, training of healthcare professionals, cultural structure changes, and government oversight and

funding (WHO, 2015). There is a high financial cost of RHD, which would justify government involvement, and strengthening of the healthcare system; moreover, RHD is a factor of health equity for women in Afghanistan. In Afghanistan, where women life expectancy is low, and the effect of cultural and government suppression causes a rise in RHD cases. Afghanistan ranks first in the world in deaths due to RHD at 27.57 per 100,000 people (WHO, 2015).

Chapter 2: Literature Review

Introduction

This literature review examines the research on RHD in Central Afghanistan with an emphasis on the relationship between this disease and the following factors: the frequency of communication of health professionals with their patients, the ethnicity (Pashtun, Tajik, Uzbek, and Hazara) and socioeconomic status (poverty and poor versus middle and wealthy class), and the health quality of life of females between the ages of 16 to 45 years. There are three sections to this literature review: (a) a historical overview of RHD discovery, (b) the implications of earlier research on present research, and (c) the prevalence of RHD in Afghanistan and neighboring countries. The historical review of RHD in the literature will follow the migrations of the disease itself, with its minimalization in the developed countries to its profound impact in developing countries. The current research on RHD in leading developed countries shows the mitigation and control of the disease on the indigenous ethnic populations. Since research on RHD in Afghanistan is limited, this literature review will examine the effects of RHD on Afghanistan's neighboring countries.

This literature review includes peer-reviewed articles, journals, and scholarly books that were retrieved from several electronic databases (such as ProQuest, Google Scholar, PubMed/MEDLINE, Sage, and EBSCO). The search criteria used were the keywords *Rheumatic Heart Disease, Healthcare in Afghanistan, Afghan Women, Rheumatic Heart Disease Prevention, Maternal Mortality, Heart Disease Registry,* and *RHD risk factors* between the years of 1985-2016.

Rheumatic Heart Disease History

The seeming disappearance and appearance of diseases have intrigued people throughout history; some believed that the presence of disease was an act of God and an unequivocal divine reply to the vagaries of human behavior (Gordis, 1985). Over time, however, there were increased efforts to foster a scientific basis for clarifying occurrences of disease, with one effort that endeavored to learn from history to pave the way for a future understanding of the disease (Gordis, 1985).

In the early times, people believed the “rotting of the flesh” was the cause of many unknown diseases; this was called the miasma theory (Hajar, 2016). During Hippocrates times, the idea of contagion took root (whereby the climate, society, and environment account for all infectious disease) and the theory of contagion evolved (Hajar, 2016). Girolamo Fracastoro in 1546 stated that epidemic diseases are a result of transferable microscopic particles that can transmit infection indirect or direct contact or without contact spanning long distances which were called the theory of germ (Hajar, 2016).

When Hippocrates provided the first glimpse of arthritis in 400 BC, this event marked the beginning of thousands of years of research studies that sought to understand what we now know as RHD (Chopra & Nanda, 2013). Over time these numerous studies led eighteenth-century scientists to make the first diagnoses of this condition as acute rheumatism (Chopra & Nanda, 2013). In the late eighteenth century, a British clinician Dr. William Charles Wells made a discovery that associated cardiac illness with “rheumatism of the heart,” a condition in which the patient experienced extreme

breathlessness, palpitation of the heart, and pressure in the chest (Vijayalakshmi, 2011). Wells credited the early British physician Dr. David Pitcaim in 1788 with initially linking rheumatism and heart disease (Vijayalakshmi, 2011). Wells' discovery affirmed Pitcaim's observation and represented a new facet in conventional heart disease (Vijayalakshmi, 2011).

The nineteenth century began the shift of prognoses from the joint pains and fever to the heart for rheumatism; thus, early research showed that cases involving cardiac injury were a result of rheumatism, leading to debility and death (Chopra & Nanda, 2013). In the early nineteenth century, a sergeant-surgeon, David Dundas, reported nine patients with rheumatism and heart disease. Most of the patients suffered increased pulse and anxiety, chest pains, ascites (increased abdominal fluid), peripheral edema, or pleural fluid, resulting in several attacks of acute rheumatism (Jarcho, 1968). Dundas observed that all nine patients had suffered from one or more episodes of rheumatic fever (Jarcho, 1968). The postmortem inspection revealed irregularities in the mitral valve, a condition that is now known to be the cause of RHD (Jarcho, 1968). Despite the increased correlation between heart disease and acute rheumatism, clinicians, and researchers in the nineteenth century still focused on the symptoms of joint pain and fever of rheumatism (Chopra & Nanda, 2013). During the late nineteenth century research began on RHD: medical practitioners attempted to understand the disease by tracking patients who exhibited the symptoms of joint pain and rheumatic fever and correlated the postmortem examination with previously collected data on the patient (Chopra & Nanda, 2013).

Beginning in the twentieth century, researchers and clinicians tried to determine the outcome of the disease rather than diagnose, cure, or contain it. In 1944, T. Duckett Jones published guidelines, known as the Jones Criteria, for the diagnosis of acute ARF (Gordis, 1985). The Jones Criteria was expanded over the years by the American Heart Association (AHA) and led to advances in diagnostic procedures that detect ARF infection, often a precursor to RHD (Stollerman, Markowitz, Taranta, Wannamaker, & Whittemore, 1965). Jones developed three points of view for standardizing diagnostic criteria. The first view examines the lack of standard criteria that cause varying interpretation of the data collected (Gordis, 1985). The second view looks at diagnostic criteria as the foci of any study centered on care and prevention (Gordis, 1985). Finally, the third view affirms the use of standardized diagnostic criteria as a validation of the final prognosis obtained and presented to patients and their families (Gordis, 1985). The main benefit of standardized diagnostic criteria was not an improvement in the clinical management of patients, but rather the collection of important incidence data and the assessment of prevention procedures (Gordis, 1985). The Jones Criteria stated that the presence of two major, or one major and two minor criteria establishes a high probability of RF in patients (Stollerman et al., 1965). The major criteria are carditis (inflammation of the heart), polyarthritis (multiple arthritis joints), chorea (neurological disorder), erythema marginatum (rash associated with ARF), and subcutaneous nodules (lumps on the skin) (Stollerman et al., 1965). The minor criteria are based on clinical symptoms (i.e., they are a preexisting condition of RHD or RF, fever, and arthralgia) and laboratory results, which include acute phase reactants (a release of a concentrated group of

proteins), erythrocyte sedimentation rate (a common hematology test), the C-reactive protein test (a blood test for inflammation in the body), leukocytosis anemia (bone marrow disease), and electrocardiographic changes of prolonging P-R interval (Stollerman et al., 1965). Streptococcal antibody test and isolation of group A streptococci are the final minor criteria associated with laboratory (Stollerman et al., 1965). Although the Jones Criteria proved helpful in minimizing the wrong diagnosis, some patients exhibited conditions which satisfy the Jones Criteria but may not be due to RF (i.e., acute polyarthritis) (Stollerman et al., 1965).

Implications of Research

A host of sociopolitical and economic changes in the 1980s led to a surge of research activity aimed to control RHD; as a result, RHD was virtually eliminated in affluent regions of Europe and North America (Remenyi, Carapetis, Wyber, Taubert, & Mayos, 2013). WHO and AHA spearheaded a substantial proportion of this early research (Remenyl et al., 2013). However, the current social, economic, and human cost of RHD continues to burden many low and middle-income countries, along with some high-income countries with indigenous populations (Remenyl et al., 2013). Countries with high rates of RHD have a disproportionate segment of the population with higher rates of malnutrition, and those in lower socioeconomic brackets suffer more than the rest of the population (Wallace, 2015). The populations with RHD succumb to morbidity due to stroke, congestive heart failure (CHF), and endocarditis (Wallace, 2015). This disease does not have a racial or gender predisposition (Wallace, 2015).

Recent researchers showed that RHD is scarring and inflammation of the heart activated by an autoimmune response to infection with group A streptococci (Burke, 2015). RHD is a treatable, preventable type of cardiovascular disease (CVD) that affects over 32 million people worldwide; moreover, RHD causes 275,000 mortalities annually (Kumar & Tandon, 2013). The disease predominantly affects the most vulnerable and poorest of the world's inhabitants and inflicts a substantial cost on healthcare systems. In places where the disease is pandemic, advanced cases of RHD require expensive surgery for the treatment that is inaccessible in numerous parts of the world (Kumar & Tandon, 2013). RHD can cause pregnancy risk and can progress into major heart damage that can debilitate or even cause death (Kumar & Tandon, 2013).

Researchers determined that molecular mimicry is responsible for the tissue damage that transpires in rheumatic fever, in addition to the involvement of both the cellular and humoral host immunities of a genetically susceptible host (Wallace, 2015). Researchers uncovered this process in the patient's immune system (both T- and B-cell mediated), which cannot differentiate between particular host tissues and the infecting microbe (Wallace, 2015). The key facilitators of RHD are the cytokine Th17 and T helper 1 (Wallace, 2015). Due to the similarity in cell structure between the heart tissue and the bacteria, a person's antibodies may attack the heart valve, and this leads to a leaky valve (regurgitant) or narrowing of the heart valve (stenotic) (Mirabel, Narayanan, & Marijon, 2014). Over time, a damaged heart valve can progress to RHD and possibly death (Mirabel et al., 2014).

RHD occurs due to recurring episodes of RF (sometimes without clinical symptoms) that damages the heart valve, as shown in Figure 3 (Mirabel et al., 2014).

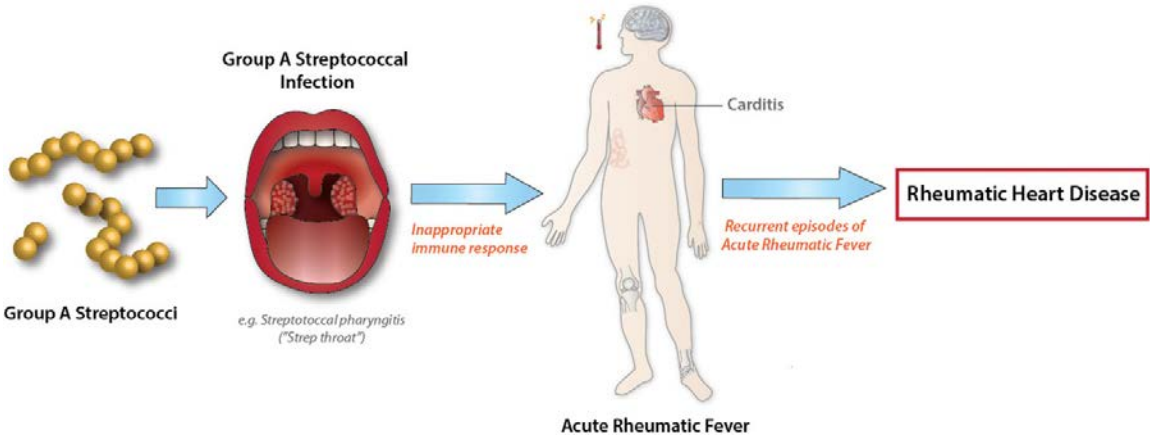

Figure 3. Schematic representation of the pathogenesis to RHD. It is adapted from "Historical aspects of rheumatic fever" by A. Steer. 2015. *Journal of Paediatrics and Child Health 51*, p. 22

Most of the cases of RHD affect the left side valve (mitral) of the heart. Thus, the right-sided valve is seldom injured directly (Mirabel et al., 2014). The manifestation of RHD results in leakage of blood from the heart ventricle (lower chamber) to the atrium (upper chamber) which over the span of several years can enlarge the heart before finally leading to heart failure (Mirabel et al., 2014). One-quarter of all disabilities caused by cancer equates to the total number of disabilities caused by RHD (Mirabel et al., 2014). Another research study showed the occurrence of a severe form of RHD in the absence of NKX2-5, a vertebrate homeobox gene that regulates many transcriptional factors involved in cardiac development, or of Smad-6, a gene that regulates cardiac homeostasis (Lu, et al., 2016).

Due to the low socioeconomic status of RHD-affected countries, advanced treatment for the disease is not feasible (World Heart Federation [WHF], 2016). Advanced cases of RHD require costly surgery; thus, the lack of disease prevention in the RHD-impacted countries reflect on the inequality and failure of their respective healthcare systems (WHF, 2016). In developed countries, such as those in North America and Europe, RHD is virtually non-existent; however, the disease remains common in the Middle East, South and Central Asia, Africa, the South Pacific, and in impoverished areas of developed nations (WHF, 2016). The universally accepted and most cost-effective method of RHD control is the application of secondary prophylaxis and improved clinical care utilizing register-based RHD programs (Carapetis & Zuhlke, 2011). Regardless of the WHF and the WHO recommendations to establish these strategies, national programs in developing countries are yet to be established (Carapetis & Zuhlke, 2011). Current research, as well as political advocacy and public health programs, is centered on developing nations and subpopulations within developed nations where RHD burdens are high (Carapetis & Zuhlke, 2011). Some current cases of RHD within developed nations can be found among the indigenous populations of New Zealand and Australia, as well as the poorer regions of South Africa and Brazil (Carapetis & Zuhlke, 2011). Brazil is home to one of the leading institutions in global RF pathogenesis research; the African method to control RHD involves several countries to promote screening and surgery (Carapetis & Zuhlke, 2011). India, Brazil, and South Africa have partnered to combat RHD, and the Pacific Island nations (Tonga, Samoa, and Fiji as the leaders) have teamed up to advance the research into RHD (Carapetis &

Zuhlke, 2011). A raised awareness of RHD, advocacy, and political will are challenges of minimizing and controlling the burden of RHD (Carapetis & Zuhlke, 2011). The required funding is relatively small by international standards; for example, RHD control programs represent only a small segment of the cost of staging heart valve surgery on acute RHD patients (Carapetis & Zuhlke, 2011).

The traditional key indicator of population health is longevity and causes of mortality; however, these indicators do not provide information concerning the quality of the mental, social, and physical domains of life (U. S. Department of Health & Human Services [HHS], 2011). Measurement of population health with mortality and morbidity often fails to reflect the individual's perspective on well-being and health (Slabaugh et al., 2016). Since health occurs outside the realm of medical facilities, a singular and holistic measure of health that is representative of an entire population would aid in understanding the quality of life in communities (Slabaugh et al., 2016). The characteristic of life in the context of disease and health is referred to as Health-Related Quality of Life (HRQoL) to distinguish it from other characteristics of quality of life (Slabaugh et al., 2016). HRQoL refers to perceived mental and physical health over time (CDC, 2016); it is multidimensional and subjective, involving occupational and physical function, social interaction, psychological condition, and somatic sensation (HHS, 2011). RHD treatment has been correlated with low HRQoL values, as it requires long-term prophylactic therapy (including a painful intramuscular injection) that can cause numerous psychological disorders and patient dropout (Monib et al., 2013). A patient's quality of life can also deteriorate in the presence of cardiopathies, which can cause

psychological and functional limitations (Monib et al., 2013). Individuals with RHD who are aged 30 years and above have shown decreased HRQoL than other age groups; moreover, individuals receiving monthly treatments have a significantly poorer HRQoL in comparison with other periods of treatment (Monib et al., 2013). The research also indicates that individuals with RHD who received intervention were roughly seven and a half times more likely to have a good level of perception than before intervention (Monib et al., 2013).

Waltkins, Mvundura, Norura, and Mayosi (2015) have identified five main impediments to the overall improvement of control and prevention of RHD. First, there is a limited supply of anti-streptococcal vaccine for the prevention of ARF (Watkins et al., 2015). Second, there are socioeconomic constraints such as malnutrition, poverty, poor housing, and overcrowding (Watkins et al., 2015). Third, healthcare providers have limited expertise in the management and prevention of RHD (Watkins et al., 2015). Fourth, patients and community members have a low level of education, involvement, and awareness of RHD (Watkins et al., 2015). Finally, patients fail to adhere to secondary prophylaxis (Watkins et al., 2015). The most effective method of prevention and control of RHD require healthcare personnel training, health education for patients, dissemination of information, community participation, epidemiological surveillance, and evaluation of activities (Watkins et al., 2015).

Afghanistan and Neighboring Countries

There is not very much research concerning RHD in Afghanistan in peer-reviewed journals, although it is ranked number one in the world at 27.57% for age-standardized

death rates due to the disease (World Life Expectancy, 2016). In Afghanistan the public confidence in the local healthcare system to control or cure the disease is low, and the lack of adequate healthcare facilities and pharmaceuticals to combat this disease is limited (Stanikzai, n.d.); thus, many patients take a risky journey to neighboring countries for treatment (Stanikzai, n.d.). Due to the lack of proper computerized systems and treatment facilities, the death rate caused by RHD in Afghanistan is underestimated and believed to be high due to the lack of education among the population concerning the disease (Stanikzai, n.d.). Half the maternal deaths worldwide are accounted by size countries, and the most prominent instance of maternal death is in Afghanistan, accounting for less than 1% of total births worldwide and about 6% of maternal deaths globally (Hogan et al., 2010). Because research on RHD in Afghanistan is limited, it is instructive to examine the incidence of RHD in neighboring countries: Turkmenistan ranks number 15 with 10.18%, Iran at number 33 with 8.27%, Pakistan at number 42 with 7.52%, Tajikistan at number 46 with 0.77%, and Uzbekistan at number 50 with 0.87% (World Life Expectancy, 2016). Research gathered on RHD in Pakistan demonstrates that lack of adherence to the RHD treatment protocol results in treatment failure and recurrence of the disease (Ishaq, Ishaq, Khan, & Al-Juniad, 2016). Other studies in the same region, such as in Bangladesh, have shown that the disease has made an epidemiological transition to communicable from noncommunicable disease and that RHD deaths have increased at an alarming rate in this population (Islam & Majumber, 2016).

Summary

With the present focus on preventing premature cardiovascular mortality, RHD characterizes a disorder amenable to effective and early intervention (Wyber, Zühlke, & Carapetis, 2014). Global, national, state, and local jurisdictions need new policies to reduce the number of cases of RHD. Twenty years ago, cardiovascular researcher Dr. Mark J. Eisenberg made a compelling argument to control RHD by eliminating vertical programs for the control of RHD given the present time of basic healthcare (Eisenberg, 1993). The article suggests a cost-effective and straightforward measure to reduce RHD in all countries, and the application of the proposal has the potential to reduce RHD cases (Wyber et al., 2014).

Various organizations have mission statements to combat, minimize, and control the burden of RHD worldwide (Carapetis, 2015). The World Heart Federation is targeting a 25% reduction in mortality due to RHD by 2025; The organization RHD Resource for Human Development aims to help the development and expansion of community-based research and programs to produce a positive influence in society (Biedron, 2016). RHD control efforts have all the factors to be a priority in the international community, but the importance of RHD for disease control at a higher level lacks recognition (Carapetis, 2015). A significant number of international organizations (i.e., United Nations) have ignored RHD, receiving about 0.1% of global development and research funding for neglected diseases, and only a few affected countries have established coordinated strategies to control and implement programs (Carapetis, 2015).

Advocacy and a research plan would have two components: the development of a global RHD agenda, and the sharing of an information platform between affected nations (Carapetis & Zuhlke, 2011). The key elements would include communicating the RHD control methods to key decision makers, establishing RHD control strategies by showing the burden and benefits of prevention, ensuring adequate support through registries and educational material, technical support, and reliable supplies of quality penicillin (Carapetis & Zuhlke, 2011). The control strategies would include combining primary and chronic care, maintaining an RHD registry to track the disease outcomes, improving the delivery of secondary prophylaxis, and minimizing barriers to adherence to treatment (Carapetis & Zuhlke, 2011). Additional strategies include implantable penicillin (a small microchip implanted under the skin to deliver medication), statistics of program effectiveness for RHD control, the economics and burden of RHD control, and cardiac surgery in developing nations (Carapetis & Zuhlke, 2011).

The relative inactivity or status quo of RHD research for the future is unacceptable because any delay in RHD research progress will only worsen the demands of global health programming or funding to combat RHD control (Wyber, Zühlke, & Carapetis, 2014).

Chapter 3: Research Method

Introduction

The purpose of this study is to determine and investigate the extent to which the frequency of communication of health professionals with their patients in Central Afghanistan to support patient education, the effects of ethnicity (Pashtun, Tajik, Uzbek, and Hazara) and socioeconomic status (poverty and poor versus middle and wealthy class), and the health quality of life of females between the ages of 16 to 45 years living in Central Afghanistan. This study is a quantitative survey design to determine the factors of RHD education, communication training, and beliefs of the targeted population in assessing RHD effects. One productive model for understanding the particular concerns associated with RHD includes the analysis of social and ecological factors within an evaluative context. This study relies upon Bronfenberner's SEM of health promotion to understand the overarching, broad paradigm concerning the individual, community, and societal factors (Lawrence, 2014). The SEM characterizes the individual's intrapersonal influences as a complex network of attitudes, behavior, character, and knowledge; thus, social-ecological influences play a greater role in changing the individual's behavior on an interpersonal, intrapersonal, organizational, public policy, and community level (Bronfenbrenner, 1994). At the center of SEM is the psychological and biological makeup that is based on genetic and individual developmental history which includes five different systems ranging from the innermost interaction to the interaction of environment in time (Bronfenbrenner, 1994). The microsystem involves the immediate social and physical environment of an individual in a face-to-face setting

(Bronfenbrenner, 1994). This level categorizes biological and personal history influences that motivate people to change, which might include education, age, income, and psychological outlook such as depression (CDC, 2014). The mesosystems defines the process and linkage of two or more system within the development of the individual (Bronfenbrenner, 1994). This level assesses close associations such as partners, family members, and friends that contribute to the participants' experience (CDC, 2014). The exosystems are similar to the mesosystem, but the linkage and process of one of the system are outside the individual development (Bronfenbrenner, 1994). This level examines the settings, such as neighborhood, and workplace in which social relationships occur (CDC, 2014). The macrosystems encompass the microsystem, mesosystem, and exosystem characterized by the individual belief system, knowledge base, material resources, culture, lifestyles, and life options (Bronfenbrenner, 1994). This level explores the broad societal factors that create a climate of change (CDC, 2014). Finally, the chronosystems attributes individual development on the surrounding environment over historical time (Bronfenbrenner, 1994).

The employment of SEM could help strengthen the participants' resolve to control and prevent RHD; moreover, there are also other far-reaching benefits as the SEM studies the complicated interaction amongst the individual, family, community, and societal factors (see Figure 4, CDC, 2014). The high mortality and morbidity rate of women in Afghanistan, who are estimated to have an average life expectancy of 44 years, justifies the need to focus on this population (Bezruchka, 2012; Pendray, 2012).

Figure 4. CDC social ecological model framework**.** Adapted from *The social-ecological model: A framework for prevention*. Retrieved from http://www.cdc.gov/violenceprevention/overview/social-ecologicalmodel.html

This chapter establishes the framework of this study design and offers details concerning the data collection and analysis process. First, this study design is reiterated to confirm the purpose of this study. Second, the paradigm and justification of using a quantitative design method in health sciences are discussed to define the research design and approach. The third section provides specific information concerning data collection setting and sample size for this quantitative method. The fourth section discusses the instrumentation used during this research. The fifth section discusses the analysis methodology employed to make a valid determination of the data collected. The final section deals with ethical considerations in carrying out this research.

Purpose of the Study

The purpose of this study is to determine the frequency of healthcare education by their healthcare professional pre and postintervention, the correlation between ethnicity (Pashtun, Tajik, Uzbek, and Hazara) and socioeconomic status (poverty and poor versus middle and wealthy class) of the patients, and the relationship between health-related

quality of life and RHD knowledge among the patients of females 16 to 45 years with RHD living in Central Afghanistan. A cross-sectional quantitative research method is employed to determine prevalence following a primary and secondary survey to correlate the independent variables in relation to the dependent variable. This research is constrained to the location of two hospitals in Kabul Afghanistan due to the current state of war and the physical wellbeing of the researcher. Moreover, the time constrain is limited to the length of time allowed from my full-time job, taking care of an elderly parent, and the funds for this research.

Research Design and Approach

This study will use medical records and a cross-sectional questionnaire survey quantitative design to examine the factors of the frequency of communication for healthcare professionals, ethnicity (Pashtun, Tajik, Uzbek, and Hazara) and socioeconomic status (poverty and poor versus middle and wealthy class), and health quality of life of females between the ages of 16 to 45 years living in Central Afghanistan affected by RHD. The health quality of life will be determined with a retroactive survey of reviewing the individuals who had RHD. The survey methods will include the examination of medical records and a survey questionnaire for determining the frequency of communication of healthcare professionals while the ethnicity (Pashtun, Tajik, Uzbek, and Hazara) and socioeconomic status (poverty and poor versus middle and wealthy class) will be determined using a retroactive patient questionnaire survey. The basic design elements are taken account by this study which includes the time when

considering the cause and consequent effect, a program which will be the causality, measures to identify the effects, and the participants (Trochim, 2000).

Setting and Sample Settings

This study will take place in Central Afghanistan across seven provinces located in the western part of Afghanistan. The targeted age group of this study, which is women between the ages of 16 and 45, constitutes 46.1% of the population of Afghanistan. Central Afghanistan accounts for 36% of the women living in Afghanistan, and 20% of them reside in the capital region (Kabul) which is one of the provinces of Central Afghanistan (APHI/MoPH, 2011). The head of household is disproportionately male at 96.7% and 3.3% female (APHI/MoPH, 2011). Around 55.6% of Central Afghanistan have clean sources of drinking water, while 19.4% have access to latrines or toilet facilities, and finally, 42% of the population has access to electricity (APHI/MoPH, 2011). Finally, a staggering 67% of women living in Central Afghanistan are illiterate (BBC News, 2014). The total poverty rate for Afghanistan is 36% who cannot meet basic consumption needs (World Bank, 2012).

Participants

Participants are selected based on their current health status and residency. Participants will be recruited from the two major hospitals in Central Afghanistan. The sampling frame will be performed on a volunteer basis by participants that meet the study requirements. The frequency of communication of healthcare professionals will include healthcare professionals who work directly with RHD patients, and who are amenable to taking part in this study (they will be assessed based on the frequency of communication

of RHD education with a pre and post-intervention). The second type of participants will be female patients between the ages of 16 to 45 residing in Central Afghanistan who have RHD. The second set of participants will be on a volunteer basis. The two hospitals in Central Afghanistan have signed a contract to allow this research to take place in their facility and to allow their staff to partake in the research.

The study sample size is determined using the G*Power software package recommendation (Faul, 2014). This software package performs high precision statistical power analyses for standard statistical tests, for example, F tests, chi-square tests, and *t* tests (Faul, 2014). The parameters of the G*Power are shown in Table 1, which produced a sample size of 138 participants.

Table 1

*G*Power Sample Size Results*

F tests	Linear multiple regression: Fixed model, R^2 deviation from zero	
Analysis:	A priori: Compute required sample size	
Input:	Effect size f^2	0.15
	α err prob	0.05
	Power (1-β err prob)	0.95
	Number of predictors	5
Output:	Noncentrality parameter λ	20.7000000
	Critical F	2.2828562
	Numerator df	5
	Denominator df	132
	Total sample size	138
	Actual power	0.9507643

Note: f^2 represents the statistical effective size; α is the probability of error; β is the probability of making a Type II error

Procedures

Since certain parts of Afghanistan are still considered to be a war zone, it is important to minimize travel. Therefore, the collection of data is either in the hospital or by phone, if possible. Volunteers who have been identified by the hospitals to help in this study will be trained to understand the purpose of this study and the procedures when dealing with the participants. There will be two-questionnaire surveys administered by the researcher: the first will be to the patient participants who will answer a series of Likert surveys to determine the ethnicity (Pashtun, Tajik, Uzbek, and Hazara) and socioeconomic status (poverty and poor versus middle and wealthy class), and health quality of life association. The second surveys will also be a Likert scale targeting healthcare professionals to determine the frequency of communication. Volunteers who have been trained to interact with the participant's information will be stationed at the two hospitals to administer and gather the participants' surveys. The participants will complete the survey at the moment of distribution so as assure full participation in the study. The information for all these surveys will be entered into a Microsoft Excel document on a password-protected computer. The data will be exported from Excel to Statistical Package for the Social Science (SPSS) for analysis.

Operational Definition of Variables

The data were collected through patient and healthcare professionals response surveys concerning RHD healthcare education, the correlation between ethnicity (Pashtun, Tajik, Uzbek, and Hazara) and socioeconomic status (poverty and poor versus middle and wealthy class), and health-related quality of life. The survey questions are

shown in Table 2 and Table 3. The independent variables are healthcare professionals education concerning RHD pre and post-intervention, ethnicity (Pashtun, Tajik, Uzbek, and Hazara) and socioeconomic status (poverty and poor versus middle and wealthy class), and health quality of life for females while RHD is the dependent variable. The McNemar's test will show the significant difference in relation to RHD and the frequency of communication of healthcare professional with their RHD female patients in a before and after intervention assessment. The chi-square test will be utilized to test the association between socioeconomic status (poverty and poor versus middle and wealthy class) and ethnicity (Pashtun, Tajik, Uzbek, and Hazara) while the McNemar's test and Kolmogorov-Smirnoff test will be used for the health-related quality of life responses. The variable scores are calculated using the Likert survey where the data will be using the McNemar's, Kolmogorov-Smirnoff, and chi-square statistical tests to find a correlation between the variables. For example, for the survey question for the education knowledge variable is: How would you assess your knowledge about RHD? The variable/scale score is calculated by assign integer values to the answers in the question where the value of the score means zero is none, one is little knowledge, two is some knowledge, and three is a lot of knowledge.

Instrumentation

The instrument is a broad term that defines the measurement device (test, survey, questionnaire, etc.) of a study while the instrumentation is the sequence of action that develops, tests, and utilizes the device (Balbaa, ElGuindy, Pericak, Yacoub, and Schwalm, 2015). The instrumentation utilized by this study is a survey requiring the

participants to answer various questions regarding relationships, environment, ethnicity, socioeconomic status, education, and state of mind. A few of the survey questions were designed to assess the participant's knowledge about RHD. This survey uses a Likert-type instrument to assess the participants standing relative to the study focus. The survey developed by Balbaa, Pericak, Yacoub, and Schwalm is utilized to measure the participants' general knowledge and beliefs concerning RHD. This survey had been developed and reviewed by a panel of epidemiologists, cardiologists, and researchers; moreover, the survey had been peer-reviewed and published in other studies (Balbaa, ElGuindy, Pericak, Yacoub, and Schwalm, 2015). The survey that addresses the frequency of communication of healthcare professional is shown in Table 2, while the survey that addresses the patient ethnicity and socioeconomic status, and health-related quality of life is shown in Table 3. Both surveys will be cross-referenced with the participant's answers for validity with their hospital records. The healthcare survey will be validated based on a pre-test and post-test survey on the same day and the same participants; thus, limiting the possibility of bias and interference.

Table 2

Survey for the Frequency of Healthcare Professional

Question(s)	Answer(s)	Comment(s)
Frequency of Healthcare Professional Training		
How much training have you received to treat and educate RHD patients?	0=No Training 1=Little Training 2=Some Training 3=a lot of Training	
How often do you receive RHD training?	0=None 1=only once 2=once a year 3=once a month 4=every week	
How often does the RHD patient or family ask you about the disease?	0=None 1=somewhat 2=most of the time 3=all the time	
Do you follow prescribed procedures when working with RHD patients?	0=No 1=Yes	
How important is training for non-medical and medical staff who deal with RHD patients?	0=Not important 1=somewhat important 2=important 3=very important	
Do you educate families or communities about RHD?	0=No 1=Yes	
Ethnicity and Socioeconomic Status		
Do you ask and record patient ethnicity and socioeconomic status?	0=No 1=Yes	
Health Quality of Life		
Do you ask the patient with RHD about their health quality of life?	0=No 1=Yes	

Table 3

Survey for Ethnicity and Socioeconomic Status, and Health Quality of Life of Patients

Question(s)	Answer(s)	Comment(s)
Ethnicity and Socioeconomic Status		
Are you receiving any outside financial help for your RHD?	0=None 1=somewhat 2=most of the time 3=all the time	
What is your socioeconomic status?	0=poverty 1=poor class 2=middle class 3=wealthy class	
Has your socioeconomic status changed?	0=No 1=Yes	
What is your ethnicity?	0=Pashtun 1= Tajik 2= Uzbek 3= Hazara 4=Other	
Health Quality of Life		
Does your healthcare professional talk to you about RHD?	0=No 1=Yes	
How often does your healthcare professional talk to you about RHD?	0=None 1=somewhat 2=most of the time 3=all the time	
How would you assess your knowledge about RHD?	0=None 1=little knowledge 2=some knowledge 3=a lot of knowledge	
Do you receive enough information about RHD to help you manage this disease?	0=No 1=Yes	
How much is your life hindered by RHD?	0=None 1=somewhat 2=most of the time 3=all the time	
Can you manage your routine daily task?	0=No 1=Yes	

Analysis

The analysis stems from the study research questions, which ask about the significant differences between the rate of RHD in Central Afghanistan and the frequency

of communication of healthcare professionals with their patients in a pre and post intervention survey, the correlation between ethnicity (Pashtun, Tajik, Uzbek, and Hazara) and socioeconomic status (poverty and poor versus middle and wealthy class) relative to RHD in females ages 16 to 45 years living in Central Afghanistan, and correlation between RHD and the health quality of life (by decreasing disabilities to improve their daily life tasks) through RHD education in patients by healthcare professionals. The research sample size is determined using 15% statistical effective size, 5% probability of error, 95% power (1 - β), with the number of predictors of 5, which yield a total sampling size of 138 participants. The data entry will be performed using the Microsoft Excel 2010 spreadsheet and exported the data into a Statistical Package for the Social Science (SPSS) software package. A combination of statistical analysis will be performed which includes McNemar's test for paired nominal data (Laerd Statistics, 2018), a descriptive statistics for variables in research questions (Laerd Statistics, 2017), Kolmogorov-Smirnov for a nonparametric test to determine equality of continuous probability distribution (MIT, 2015). Chi-square to determine statistical significance between a pre and post survey answers, and Pearson correlation analysis to determine the association of variables and frequency of occurrence (KSU, 2018). The statistic test will determine the statistical significance of the data to answer the study hypothesis that there is a statistically significant correlation between the frequency of communication of healthcare professionals, ethnicity (Pashtun, Tajik, Uzbek, and Hazara) and socioeconomic status (poverty and poor versus middle and wealthy class), and health quality of life with the incidence of RHD for females living in Central Afghanistan

between the ages of 16 to 45.

Ethical Considerations

The highest ethical standards and principles had been applied by the research during this study. The participants were treated fairly and ethically as is required by the Office for Human Research Protections (OHRP) which is regulated by the U.S. Department of Health and Human Services (HHS) for human subjects involved in research (Office for Human Research Protections [OHRP], 2016). A review of the proposal had been approved by the Walden University Institutional Review Board (IRB) to perform this study. The IRB approval number is 05-04-18-0358913. The recruitment of participants is selected carefully, such that no coercion or family objection occurred. All participants who were under the age of 18 years had both their and parental or guardian consent to participate in this study. All participants 18 years or older needed their consent to participate. Care is taken to explain to the participants their involvement is voluntary, and they may discontinue their participation at any time. The researcher explained all the risks, expectations, and procedures associated with this study with no physical or psychological harm to the participants. Participants were made aware of the confidentiality of their information, both physical and psychological. The participants received a contract to sign signifying their willingness to take part in this research. The participant's identity will not be recorded for this survey. I will destroy all the data collected for this study after five years, which will be on a password-protected computer and hard drive. The research question includes:

Research Question #1: Are there significant differences in RHD healthcare professional's education to their RHD female patients ages 16 to 45 in regards to pre and post-intervention?

$H_0$1: There are significant differences in RHD healthcare professional's education to their RHD female patients ages 16 to 45 in regards to pre and post-intervention.

$H_1$1: There are no significant differences in RHD healthcare professional's education to their RHD female patients ages 16 to 45 in regards to pre and post-intervention.

Research Question #2: Is there a correlation between ethnicity (Pashtun, Tajik, Uzbek, and Hazara) and socioeconomic status (poverty and poor versus middle and wealthy class) among females ages 16 to 45 years with RHD?

$H_0$2: There is a correlation between ethnicity (Pashtun, Tajik, Uzbek, and Hazara) and socioeconomic status (poverty and poor versus middle and wealthy class) among females ages 16 to 45 years with RHD.

$H_1$2: There is no correlation between ethnicity (Pashtun, Tajik, Uzbek, and Hazara) and socioeconomic status (poverty and poor versus middle and wealthy class) among females ages 16 to 45 years with RHD.

Research Question #3*:* Is there a correlation between health-related quality of life and RHD education among females ages 16 to 45 years with RHD?

$H_0$3: There a correlation between health-related quality of life and RHD education among females ages 16 to 45 years with RHD.

$H_1$3: There no correlation between health-related quality of life and RHD

education among females ages 16 to 45 years with RHD.

Summary

This chapter outlined the research methodology incorporated to answer the research questions. A cross-sectional questionnaire survey quantitative design was used to examine the factors relating to the research questions. The question centered on the Social Ecological Model could answer the social economic, gender, and ethnic consideration when examining females living in Central Afghanistan between the ages of 16 to 45. Moreover, this chapter showed the purpose of this study, research design and approach, the instrumentation, analysis, and ethical consideration. The purpose of Chapter 4 is to analyze the results and validate the method used in Chapter 3. In addition, there are no plans for a follow-up procedure to return to this research; however, I feel that more is needed in terms of medical help for the woman of Afghanistan.

Chapter 4: Results

Introduction

The purpose of my study is to determine and investigate the extent to which the frequency of communication of health professionals with their patients in Central Afghanistan to support patient education in a pre and post intervention, the effects of ethnicity and socioeconomic status, and the health quality of life of females between the ages of 16 to 45 years living in Central Afghanistan. This study is a quantitative survey design to determine the factors of RHD education, communication training, and beliefs of the targeted population in assessing RHD effects. The research questions are as follows:

Research Question #1: Are there significant differences in RHD healthcare professional's education to their RHD female patients ages 16 to 45 in regards to pre and post-intervention?

Research Question #2: Is there a correlation between ethnicity (Pashtun, Tajik, Uzbek, and Hazara) and socioeconomic status (poverty and poor versus middle and wealthy class) among females ages 16 to 45 years with RHD?

Research Question #3*:* Is there a correlation between health-related quality of life and RHD education among females ages 16 to 45 years with RHD?

This chapter will cover the research setting (as mentioned in Chapter 3), the demographics of the research data, data collection (the means or steps of the research data collected), data analysis (the analysis tools and method for analyzing the data), and results (complete statistic results and conclusion).

Setting

The general populations of this study were healthcare professionals and female patients between the ages of 16 to 48 years living in central Afghanistan with RHD as specified in Chapter 3. The samples were selected from the population of patients and healthcare professionals at two hospitals in Kabul. The candidates of healthcare workers volunteered for this study though hospital announcement and employee news boards. Patients were selected based on this study criterion and their willingness to participate. Both healthcare professionals and patients to participated sign a consent form and were informed about the study. In each hospital meeting room, the participating healthcare professional gathered to take a pre and postsurvey intervention. On the other hand, the patients were seen privately in a hospital room office dedicated to this study. Both hospitals catered to everyone in the Central Afghanistan area, and they specialized in cardiology procedures.

Demographics

The participant size and ethnic background varied in the two hospitals. All the healthcare professionals lived in the Kabul city limits; however, the patients varied in geographical habitation within Central Afghanistan, with the majority living in the Kabul city limits. The majority of patients in my study were of poor or poverty status (67.4%); while the largest ethnic category was Tajik (32.6%), see Table 8.

Data Collection

After receiving approval from IRB (05-04-18-0358913), I proceeded to perform the data collection. I had traveled to Kabul Afghanistan to visit the two hospitals for which I had received signed contract to collect data. Each hospital reserved a room to interview participants. Moreover, each hospital reserved a conference room to work with the healthcare profession participants. This plan is consistent with the data collect describe in Chapter 3.

The participating healthcare professional assembled in a conference room. A pre-test survey was administrated and collected, followed by a training RHD. Following the presentation, I administrated and collected the post-test survey. The completed survey was placed in a folder and kept by me at all times.

I administered and collected the data from the participating patients. The participating patients took the survey in a closed-door office. I checked the response and maintained the stored survey.

Data Analysis

The survey questionnaires used the Likert scale for the responses. Each response to the questionnaires started with zero and added one to the next choice of the question. The survey was administrated and collected by myself in hardcopy paper form. I transcribed the information from the completed paper survey to Microsoft Excel, which was password protected spreadsheet. The spreadsheet was uploaded into SPSS to perform the statistical data analysis.

Results

The total time of the data collection took ten days; each day involved seeing patients and interfacing with healthcare professionals. The participation was 100% for both patient participants, and healthcare profession participants and all went as planned from Chapter 3. The presentation of the data analysis results is in this section for each research question.

Research Question #1: Are there significant differences in RHD healthcare professional's education to their RHD female patients ages 16 to 45 in regards to pre and post-intervention?

The McNemar's test shows that the proportion of healthcare providers who follow procedures (educating) when working with RHD patients at the pre-test is significantly different from the proportion of healthcare providers who follow procedures when working with RHD patients at the post-test, $p = .02$. At the pre-test, 52% of healthcare providers indicated that they follow prescribed procedures when working with RHD patients. At the post-test, 78% of healthcare providers indicated that they followed the prescribed procedures; see Table 4 that shows the purpose is this table is to identify the number of healthcare providers who follow prescribed procedures before and after the intervention.

Table 4

Survey Response: Healthcare Professional Follow Procedures

	No (post)	Yes (post)
No (pre)	4	18
Yes (pre)	6	18

The McNemar's test shows that the proportion of healthcare providers who educate families or communities about RHD is not significantly different at pre-test from the proportion of healthcare providers who educate families or communities about RHD at the posttest, $p = .17$. At the pretest, 65% of healthcare providers indicated that they educate families or communities about RHD. At the posttest, 80% of healthcare providers indicated that they educate families or communities about RHD, see Table 5 that shows the purpose is to identify the number of healthcare providers who educate families/communities about RHD before and after the intervention.

Table 5

Survey Response: Healthcare Professional Educate Patients

	No (post)	Yes (post)
No (pre)	3	13
Yes (pre)	6	24

The McNemar's test shows that the proportion of healthcare providers who ask RHD patients about their health quality of life is not significantly different at pre-test

from the proportion of healthcare providers who ask RHD patients about their health quality of life at the post-test, p = .63. At the pre-test, 67% of healthcare providers indicated that they ask RHD patients about their health quality of life. At the post-test, 74% of healthcare providers indicated that they ask RHD patients about their health quality of life, see Table 6 that shows the purpose is to identify the number of healthcare providers who ask patients about their health quality of life before and after the intervention.

Table 6

Survey Response: Healthcare Professional and Patient's Health Quality of Life

	No (post)	Yes (post)
No (pre)	3	13
Yes (pre)	6	24

Research Question #2: Is there a correlation between ethnicity (Pashtun, Tajik, Uzbek, and Hazara) and socioeconomic status (poverty and poor versus middle and wealthy class) among females ages 16 to 45 years with RHD?

To examine the socioeconomic status and ethnicity of patients with RHD, the researcher utilized the chi-square analysis. In order to do this analysis, I combined poverty and poor and middle and wealthy class in order to increase cell sizes. I also excluded people who identified as "other" for ethnicity because their cell size was too small; see Table 7 which shows the result of the chi-square analysis showing no

significant association between socioeconomic status and ethnicity, $X2(3) = 1.14$, $p = .77$. The majority of participants in the study were poor or in poverty (67.4%). The largest ethnic category was Tajik (32.6%); see Table 8, which shows the socioeconomic status and ethnicity of the patients with RHD in the data set.

Table 7

Survey Response: Cross tabulation of ethnicity and socioeconomic status

	Pashtun	Tajik	Uzbek	Hazara	Total
Poverty/poor					
N	14	22	12	12	60
%	77.8%	73.3%	63.2%	75.0%	72.3%
Middle/wealthy					
N	4	8	7	4	23
%	22.2%	26.7%	36.8%	25.0%	27.7%
Total					
N	18	30	19	16	83
%	100.0%	100.0%	100.0%	100.0%	100.0%

Table 8

Survey Response: Patient Socioeconomic Status and Patient Ethnicity

Socioeconomic status	**N**	**%**
Poverty	5	5.4
Poor class	57	62.0
Middle class	29	31.5
Wealthy class	1	1.1
Ethnicity	**N**	**%**
Pashtun	18	19.6
Tajik	30	32.6
Uzbek	19	20.7
Hazara	16	17.4
Other	9	9.8

Research Question #3*:* Is there a correlation between health-related quality of life and RHD education among females ages 16 to 45 years with RHD?

Descriptive statistics for variables in research question see Table 9 that shows the purpose is to provide some descriptive information about the variables of interest among the patient data set (frequency of healthcare providers talking to patients about RHD, knowledge of RHD, and quality of life).

Table 9

Survey Response: Patient Education Health Quality of Life

Variable	N	M	SD	Observed range
How often does your healthcare professional talk to you about RHD?	92	1.11	.86	0-3
How would you assess your knowledge about RHD?	92	1.14	.83	0-3
Quality of Life	92	1.16	.89	0-3

The assumption of correlations:

A linear relationship between IV and DV: tested with scatterplots see Figure 5 and Figure 6.

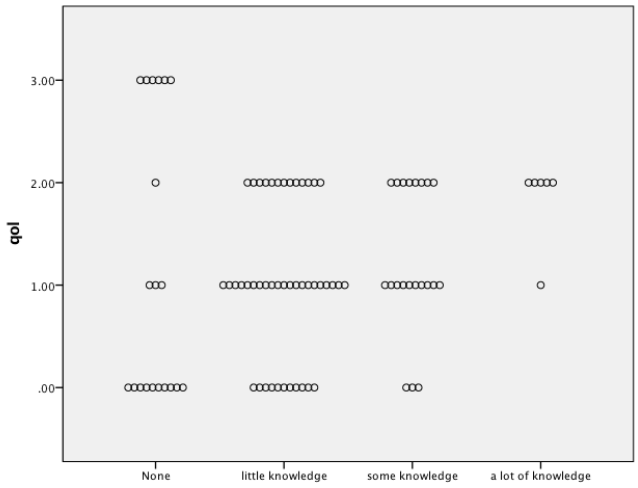

Figure 5. Linear relationship patient knowledge about RHD.

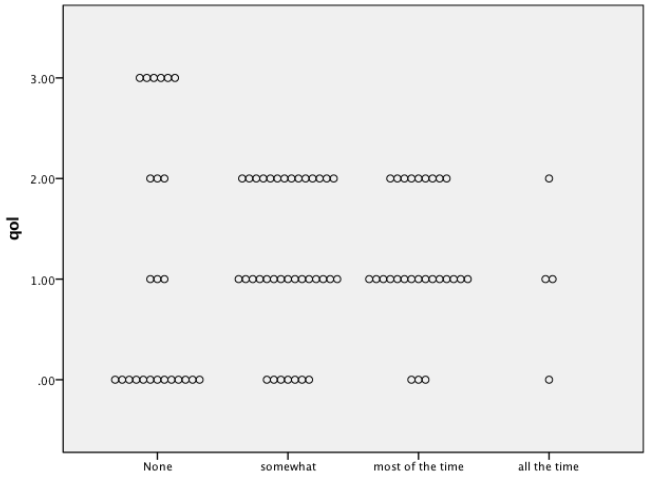

Figure 6. Linear relationship healthcare talk about RHD.

Normal distribution: tested with Kolmogorov-Smirnoff (see Table 10 which shows the purpose is to test the assumption of normality before performing Pearson correlations; although the Kolmogorov-Smirnoff test indicates deviations from normality,

the histograms appear mostly normal; therefore, the researcher will proceed with Pearson correlation analysis) and histograms (see Figure 7, Figure 8, and Figure 9).

Table 10

Survey Response: Survey Question Kolmogorov-Smirnov

Variable	Test statistic	df	p-value
How often does your healthcare professional talk to you about RHD?	.21	92	<.001
How would you assess your knowledge about RHD?	.27	92	<.001
Quality of Life	.21	92	<.001

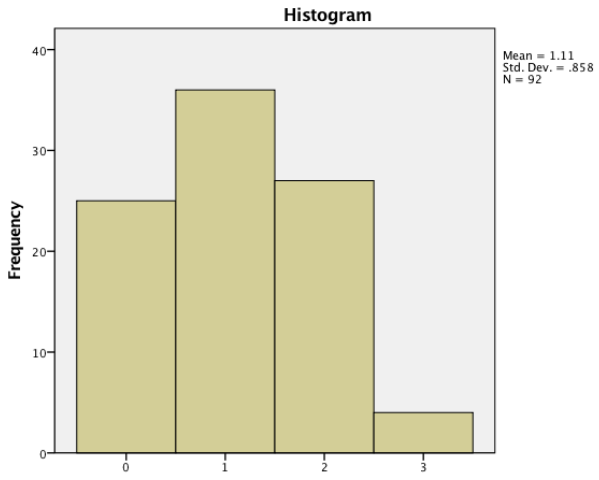

Figure 7. Histogram healthcare talk about RHD.

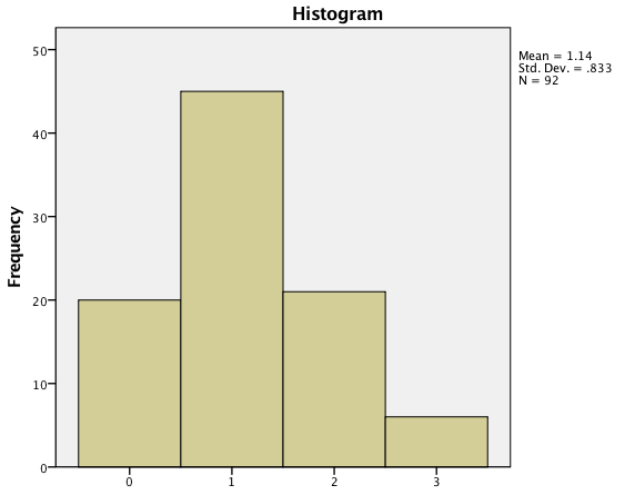

Figure 8. Histogram patient knowledge about RHD.

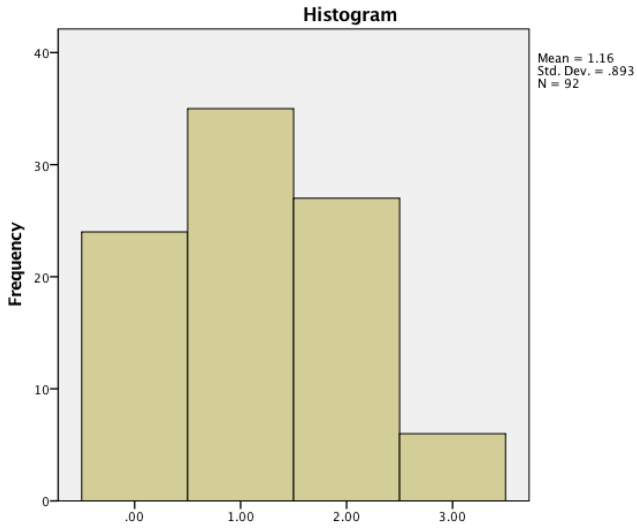

Figure 9. Histogram patient health quality of life.

Since the scatterplots are not showing a linear relationship and the normality tests of the histogram does not indicate a normal distribution, a Spearman Rank correlation is performed (see Table 11). The Spearman Rank correlation showed that there is not a

significant correlation between frequency of healthcare professional talking to patient about RHD and quality of life, Spearman rank correlation = .09, p-value = .42, or between knowledge of RHD and quality of life, Spearman rank correlation = .18, *p*-value = .08.

Table 11

Spearman Rank Correlations

			Quality of Life
Spearman's rho	How often does your healthcare professional talk to you about RHD?	Correlation Coefficient	.086
		Sig. (2-tailed)	.416
		N	92
	How would you assess your knowledge about RHD?	Correlation Coefficient	.181
		Sig. (2-tailed)	.084
		N	92

Although the Kolmogorov-Smirnov test indicates deviations from normality, the histograms appear mostly normal. Therefore, the researcher will proceed with Pearson correlation analysis between healthcare education and quality of life; see Table 12 which shows the purpose is to identify the correlation between healthcare education (frequency of healthcare provider talking to a patient about RHD and knowledge of RHD) and quality of life.

Table 12

Survey Response: Survey Question Patient Health Quality of Life

	Quality of life
How often does your healthcare professional talk to you about RHD?	.03
How would you assess your knowledge about RHD?	.15

There is not a significant correlation between frequency of healthcare professional talking to a patient about RHD and quality of life, $r = .03$, $p > .05$, or between knowledge of RHD and quality of life, $r = .15$, $p > .05$.

Summary

This chapter outlined the research analyses of the data results to answer these research questions. The research question one:

Research Question #1: Are there significant differences in RHD healthcare professional's education to their RHD female patients ages 16 to 45 in regards to pre and post-intervention?

The data showed that healthcare providers did improve in their education efforts from pre-test to post-test. The second research question:

Research Question #2: Is there a correlation between ethnicity (Pashtun, Tajik, Uzbek, and Hazara) and socioeconomic status (poverty and poor versus middle and wealthy class) among females ages 16 to 45 years with RHD?

The data showed that there was no significant correlation between the poverty and poor class versus middle and wealthy class through the chi-square test. The data showed that poor or in poverty had the highest percentage at 67.4% in comparison to another socioeconomic status; moreover, the largest ethnic group was the Tajik at 32.6% was the highest ethnic group via the histogram test. The analysis showed the quantitive number to support (or not support) the research questions; in contrast, the next chapter looks at the discussion and implication of this research to society. The third and last research question:

Research Question #3*:* Is there a correlation between health-related quality of life and RHD education among females ages 16 to 45 years with RHD?

The data analysis concludes that there is not a significant correlation between education with health quality of life among RHD patients.

Chapter 5: Discussion and Implications

Introduction

This study proceeds to find a correlation between the frequency of communication of healthcare professionals pre and post-intervention, ethnicity and socioeconomic, and health quality of life of women between the ages of 16 to 45 years who are living in Central Afghanistan diagnosed with RHD. There are about 15.6 million preventable cases of RHD worldwide, which cause about 233,000 deaths annually (Wyber et al., 2014). The disease mostly affects the poorest of countries (Kumar & Tandon, 2013) and Afghanistan is considered one of the poorest country in the world (World Bank, 2015). The geographical location of Central Afghanistan was chosen for the highest population of women in the country and the capital, Kabul, was selected for the highest population of females in Central Afghanistan (APHI/MoPH, 2011).

This chapter examines this quantitative study that answers the three research questions that were tested, which are:

Research Question #1: Are there significant differences in RHD healthcare professional's education to their RHD female patients ages 16 to 45 in regards to pre and post-intervention?

Research Question #2: Is there a correlation between ethnicity (Pashtun, Tajik, Uzbek, and Hazara) and socioeconomic status (poverty and poor versus middle and wealthy class) among females ages 16 to 45 years with RHD?

Research Question #3*:* Is there a correlation between health-related quality of life and RHD education among females ages 16 to 45 years with RHD?

The outline of this chapter includes an interpretation of the findings as related to this study research questions, the limitation of this study, recommendation, implications of this study, and a summary.

Interpretation of the Findings

The data showed that healthcare providers who talked with their patients about RHD increased following RHD training. This result was shown in the McNemar test that more healthcare professionals follow the procedures. This finding shows that the research question one was validated.

The data showed no correlation between ethnicity and socioeconomic status. The result was shown in the chi-square test that the ethnicity and socioeconomic status was not a criteria of significance. Moreover, the histogram showed the majority of participants were in poverty or poor. Also, the data showed that the largest ethnic group was Tajik. This interpretation shows that research question two was validated to verify a correlation between ethnicity and socioeconomic of the participants.

The data showed no correlation between health-related quality of life and RHD education among females 16 to 45 years with RHD living in Central Afghanistan. This interpretation shows that research question three was not validated for a correlation.

Limitations of the Study

This study did not account for males with RHD, which may show more generalized findings. This study was limited to the capital, Kabul, and two hospitals which might limit the extrapolated generalization for all women in the region and country. Although the sample size was computed to be adequate for this study, the number of participants might have been marginal, which might have biased the prevalence estimate. The incorporation of more organization and hospitals in this study would have reinforced the need for diagonal integration. Another consideration is the participants who did not follow up with the RHD treatment or are not able to make appointments due to many factors such as cost, cultural stigmas, availability of nearby healthcare facilities, and the role of women in the society. The survey question was self-design; thus, it may need a professional organization to review the survey for validity. This study could have included the response of family members of women with RHD, which might shed another side to the health quality of life consideration. Another limitation might have been to examine the relationship between healthcare insurance versus out-of-pocket payment in the pursues of treatment. Finally, funding was limited to the two hospitals, which limited the type and quantity of participants in this study.

This study showed the need for healthcare professional training on RHD and needed to educate their patients on the control of the disease. Moreover, this study showed the need for a stakeholder to act on the crises of RHD in Central Afghanistan and the plight of women living with the disease in Central Afghanistan.

Recommendations

This research highlights the need for RHD control for Afghan women ages 16 to 45 years living in Central Afghanistan. This research utilized the Social Ecological Model (SEM) to help reduce the effects of RHD on the individual, relationship, community, and societal level. Thus, the limitation of this research leads to many recommendations for future research. First, the number of samples might be increased to get a better representation of the population. Second, the geographical limitation can be extended to other major cities within Afghanistan. Third, gender can be extended to the male population. Fourth, the effects of ARF on school-age children that can be prevented through education and early treatment of paraphyletic antibiotics. Other recommendation would include the economical aspect of the disease on families and communities based on current healthcare services available in Afghanistan. With the onset of the internet being so readily available worldwide, a recommendation would be to determine the number of individuals with RHD having access to the internet who world performing research on their disease.

Implications

The implications of this research could help explain some of the disparities of the disease on the population due to socioeconomic reasons, lack of patient healthcare professional interaction, and having a health quality of life. If the government offered healthcare insurance to cover the underprivileged member of society to reduce the effects of RHD on the population, then the population might be encouraged to pursue help for their ailment. This research may open the world to help the plight of society to control

RHD within their community, state, and country to control the spread of RHD within the population. The use of the SEM can be applied by stakeholders to reduce the effects of RHD on the population.

This study also demonstrated the need for healthcare professionals to pursue the RHD specific training that would aid in RHD control and patient education surrounding the disease. Additionally, this study underscores the need for healthcare insurance and availability, as demonstrated by the hospitals for-profit private status. This study also promotes positive social change by providing greater momentum for public health movements for reducing RHD in Central Afghanistan.

Conclusion

RHD is a preventable and controllable disease through education and healthcare services by stakeholders who would reduce the effects of the disease on the population. RHD is a disease of the poor and underprivileged. This research showed that the onset of healthcare professional education could reduce the effects of the disease. Moreover, the need for funding of the society would also control the RHD effected population.

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