

ASSESSMENT OF THE HEALTH STATUS AND NEEDS OF BAHRAINI WOMEN

by

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## **Dedication**

This dissertation is dedicated to my husband, Juma AL-BinKhalil, and my daughters' Sarah and Muneera without whom this work could not have been completed. Importantly, this work is dedicated to the courageous women who participated in the study and were willing to share their thoughts and concerns to advance the health of Bahraini women.

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## **Abstract**

Women's health is increasingly recognized as an area that has emerged because of an increase in women's demand for unique health care services that consider gender, life circumstances, education, and religion, economic and socio-cultural environments. Women's health problems in Bahrain are varied and create a major challenge for the health system, increasing demand on health centers and requiring provision of comprehensive health services for women throughout their life span. Lack of women's involvement in planning health care services and health policies, along with limited research and literature regarding women's health in Bahrain, has resulted in health disparities such as increased chronic diseases. This study was guided by a conceptual framework for comprehensive women's health that includes comprehensive women's health care as the desired outcome. The three major constructs related to comprehensive women's health outcomes include personal factors, the health system factors, and social-economic and cultural factors.

This was a cross-sectional study designed to examine the perceived and actual health status, health practices and needs for Bahraini women aged 18 to 64 years, while examining the reliability and validity of the SF-36 scale with Bahraini population, during the period August to October 2009. The SF-36 Health Status Survey (Arabic Version) a structured questionnaire, and medical chart reviews for chronic conditions were used. In addition women blood pressure, weight and height were measured. A systematic random sample of 258 women was selected from local health centers. The SF-36 perceived

health status scale was found to be reliable and valid when used with this population, however the reliability of the scale could be improved if the scale were modified to the local Bahraini dialect. The perceived health status scores for Bahraini women were similar to the Arabic populations and different from US populations. Obesity, anemia, hyperlipidemia, diabetes and hypertension were identified as the most common women's health problems in Bahrain. Results showed that 70% of the women were overweight or obese and the number of chronic conditions they had was a significant determinant of their health status. Health seeking behaviors indicated lower use of preventive services with only 16% receiving mammograms and 31% receiving Pap smears. Bahraini women identified access to women's health specialists, annual screening for chronic conditions, nutritional, health education, and exercise programs as their highest priority health care needs. Recommendations to re-examine the SF-36 scale when modified to the local language, re-evaluation of women's health services, and planning future services according to their health status and need to improve the health of Bahraini women.

## **CHAPTER I**

### **Introduction**

Women play a major role in determining the health of the community since women are often health caregivers and recipients at the same time. Therefore, women's health professionals must place a higher priority on understanding a woman's health care needs (Hill & Mullett, 2005). The health of the population is influenced by the demographic characteristics and socioeconomic status of that community, types of health care services available, quality and types of health care providers, medical technology, and health knowledge available (Abbasi, 1999; Kaplan et al., 2005).

Women's health care services are an imperative global health need. However, providing comprehensive women's health services across women's life spans challenges health systems in both developed and developing countries (Raymond et al, 2005). The demand for individualized services, which are in accordance with women's age, education, socio-economic status, culture, health practices, and existing health care services is essential. The World Health Organization (WHO, 2006) has determined women's empowerment to be related to quality of life and human rights. Thus, promoting women's health by enabling them to increase control over health determinants and make choices consistent with a woman's personal values and preferences significantly improves well-being.

One objective of the WHO and World Bank (Abbasi, 1999; WHO, 2007) is to improve women's contributions to the local economy by ensuring adequate health care

services. The WHO and World Bank currently work in conjunction with various countries to enhance the performance of healthcare systems by promoting equitable access and use of affordable, effective, well managed, good quality, gender equitable, population based preventive and curative health services, which are responsive to client needs (Abbasi, 1999; WHO, 2007).

This descriptive study examined women's health status and needs in Bahrain. It provided valuable data in regard to current women's health problems, needs, and health practices. In order to reshape the current women's health care services in Bahrain the study utilized a conceptual framework based on Steinwach's framework of Health Assessment Measures in Policy and Research (Steinwach, 1989) and the Longino gender specific view (Curd & Cover, 1998). Steinwach's framework explains the basic determinants of health status as environment, genetic, behavioral and biological factors, and identifies health care needs that develop as a result of these factors. Longino identifies two aspects of objective science, the empirical evidence of the theory that is the scientific evidence, and the non-empirical elements related to the culture, social structure, or socioeconomic interests of the context-- scientists' individual work (Curd & Cover, 1998; Longino & Kohlstedt, 1997).

## **Background**

The Kingdom of Bahrain, a constitutional Monarchy, is a group of islands in the Persian Gulf, encompassing 720.1 Sq. Km. Bahrain's population is 1,039,297; 50% of the population is female (57.4% aged 15-44 years, 27.6% below 15 years), (Bahrain Ministry of Health, 2007) and participates in a national health care system which provides free medical services to its constituents through 18 health centers. Health care services in



Bahrain started in the previous century and were primarily limited to Public Health Department activities.

Previously, women's health care services were directed towards maternal and child care, (e.g., pregnancy, delivery, and child vaccinations). With the political, social, and economic changes occurring during the discovery of oil in Bahrain in the early 1930's, community health care services developed, serving the new growing community needs. However, this service development was still limited to infectious diseases, reproductive health, and child care (Ministry of Health Statistics, 2006). At present, the health care services in Bahrain have advanced to meet the populations' industrial, economic, educational, and developmental needs. With the start of the "United Nations Decade for Women 1976" the Ministry of Health in Bahrain has adopted some WHO health programs to improve the quality of women's lives.

The Government in Bahrain is strongly committed to achieving health for all through the adoption of strategies and policies of primary health care services, in accordance with WHO standards (Bahrain Health Strategy Framework for Action Report, 2007). However, the health care system is challenged with a continuously increasing population and a shortage of health manpower. Bahrain has 18 hospitals with a 2,000 bed capacity, resulting in 28.1 beds per 10,000 people. Moreover, for each 10,000 people there are 27.2 physicians, 4.1 dentists, and 52.9 nurses. The nurse per doctor ratio is 1.9 to 1 (Bahrain Ministry of Health Statistics, 2006).

Although the Ministry of Health provides the majority of women's health services, private practices involving fee for service and health insurance plans are increasing, which is evidenced by rapid growth in the number of private clinics and

hospitals on the islands (Bahrain Ministry of Health Statistics, 2006). Bahraini women health statistics are considered among the healthiest people in the developing world (WHO, 2007), having an infant mortality rate of 8.9% per 1,000 live births. Prenatal mortality is 10.2 per 1,000 live births, and the life expectancy for females is 77 years at birth. The health care system is well organized with the percentage of gross disposable national income (GDN), with respect to health is 3.7%. In comparison, the gross national income/product is \$14,758 US dollars per capita, (Ministry of Health Statistics, 2006).

While health services focus primarily on reproductive health, Bahraini women have unique social, cultural, and economic needs; therefore, individual health care services for these women, rather than merely reproductive health or disease management need to be addressed. Women's health problems in Bahrain are varied and create a major challenge for the health system, increasing demand on health centers, and requiring provision of comprehensive health services for women throughout their life spans. Additionally, lack of women's involvement in planning health care services and health policies, along with limited research regarding women's health needs in Bahrain have resulted in pressing health disparities such as increased chronic diseases.

### **Statement of the Problem**

Women's health care needs in Bahrain have evolved during the new millennium due to an increase in a number of factors. These include: the population's increased life expectancy, more health awareness, increased level of education, rapid nuclear family growth, political and socio-economic involvement such as an active women's movement, and greater use of technology. Furthermore, women residing in Bahrain provide care, act as family head, and oftentimes are the primary breadwinners (Bahrain Supreme Women's

Council, 2007). Despite the exemplary health statistics in Bahrain, coupled with well-organized health care services, increasing health issues confront Bahraini women. Endocrine disorders, hypertension, anemia, and reproductive problems top the list of common health problems for women in Bahrain (Ministry of Health Statistics, 2006). Moreover, social and cultural practices such as early marriage, increased number of children, limited health information, multiple roles and responsibilities for the extended family, increased violence against women, and low status have significantly affected Bahraini women's health status (Al-Mahroos & Al-Roomi, 1997; Alnsari, & Masusdi, 2006; Mckeigue, 1997; Moosa, 2002; Musager & Al-Manai, 2002 ; Musager & Al-Roomi, 1997).

Lack of women's health knowledge, as well as lack of women's involvement in health care policy-making has led to an increase in health disparities and inadequate planning of health services to meet the women's health needs. For many years, women were systematically excluded from biomedical research and clinical trials; thus, there is a lack of universal health research evidence to guide the health strategy and clinical practice for women in Bahrain. Therefore, providing and facilitating the health care needs of women is the ultimate aim for health services (Abbasi, 1999 & WHO, 2007).

Pertinent evaluation will aid in progressive planning for gender-specific health care services and clinical guidelines in order to better meet Bahraini women's needs. This requires a quality scientific investigation supported by empirical evidence that can be used to create a comprehensive health model in order to inform women's health policies about the needs and the health status of Bahraini women. This study identified women's current health status and health perceptions within their social and economic conditions

which could inform health policy makers, and aid in meeting women's health care needs and future health services. Additionally it contributes to the current knowledge regarding women's health in Bahrain.

### **Purpose**

The primary purpose of this study was to examine the perceived and the actual health status and the health care needs of Bahraini women aged 18 to 64 years. The secondary purpose was to continue developing the reliability and validity for the SF-36 perceived health status scale with an Arab sample.

### **Research Aims and Related Questions**

The specific aims to be addressed in this research were:

Aim1: To assess the perceived health status of Bahraini women.

Research question 1: What is the perceived health status of Bahraini women?

Aim 2: To examine the actual health status of Bahraini women.

Research Question 2: What is the actual health status of Bahraini women?

Research Question 3: What are the most common health problems of Bahraini women?

Aim3: To explore the health-seeking behavior of Bahraini women.

Research Question 4: What are the types of health-seeking behaviors of Bahraini women?

Research Question 5: What are the barriers women face in obtaining health care services?

Aim 4: To identify the types of health service needs of Bahraini women.

Research Question 6: What type of health services do Bahraini women need?

Aim 5: To identify the relationship between the perceived women's health status in women in different age groups (i.e., young, middle and older)?

Research Question 7: Is there a relationship between the perceived women's health status and age?

Aim 6: To examine the relationship between women's perceived health status and marital status, level of education, income, chronic condition, Body Mass Index, and number of children.

Research Question 8: Is there a relationship between women's health status and age, marital status, level of education, income, chronic condition, Body Mass Index, blood pressure and number of children?

Research Question 9: Which variable is the best predictor (age, marital status, level of education, income, chronic condition, Body Mass Index, blood pressure and number of children) of women's health status?

### **Significance**

This study identified Bahraini women's current health status and most common health problems while considering their social and economic conditions. This information will allow policy makers to re-examine the current health policy and services provided for women, and provide empirical evidence to establish future women's health policies aimed at meeting health care needs and planning of health services. Re-examining the current health services utilizations may provide evidence for policy makers to develop more effective utilization of resources, which may ultimately result in cost saving. Additionally, the study explored vital aspects of women's health in Bahrain, such as women's health practices and examined the relationship between the health care system

and women. These findings will assist health administrators to identify the types of health services needed, the category of health care providers required, their qualifications and training, and health care facilities required to provide these services. For example, the need for women's health services, such as a women's health specialist at the health center level was identified as a first priority by Bahraini women. This research will contribute to the body of knowledge for health care professionals interested in women's health as well as the general medical and scientific community in Bahrain and the Middle East. It will also establish baseline data for women's health care and provide information for health policy in order to focus specifically on the needs of Bahraini women.

### **Definition of Key Terms and Variables**

In this section definitions for various terms used in this study are provided, both conceptually and operationally.

Health status refers to the measured element of health, whether it is a physiological or biological status, mental status, physical and social functioning, or health behavior or attitude (Bergner & Rothman, 1987). The U.S. Department of Health and Human Services refers to health status as the level of either illness or wellness of a population at a particular time (U.S. Department of Public Health, 2007). Moreover, health status has been defined as a description and/or measurement of the health of an individual or population (New Zealand Ministry of Health, 2007).

Health status may be measured by various methods for different purposes; for example, self-reported health is an indicator of overall health status. It can reflect aspects of health not captured in other measures, such as hidden disease, disease severity, aspects of positive health status, physiological and psychological reserves, and social and mental

function. These measurements could be used to examine a population's general health, clinical interventions and their effects, changes in the healthcare delivery system, health promotion activities, and their effects (Bergner & Rothman, 1987). Another broad definition was put forward by Stokes and colleagues (1982) that describe health as a state of anatomical integrity, the ability to perform family obligations, community roles, work, deal with physical and social stress, a feeling of well-being, freedom from disease risk; it is best measured by determining health status and risk status. Ware, Kosinski & Keller (1994) reported wide consensus between researchers regarding measuring health status as physical, mental, social, role functioning, and health perceptions as a comprehensive health status assessment method. This study applies this definition for health status measurement, utilizing the SF-36 scale, medical chart review for documented chronic condition, selected physical and physiological measurements such as blood pressure, height and weight and supplemental questionnaire, to obtain the best health status estimates.

Perceived health status refers to the percentage of the population, 15 years of age and above, who report their health to be good or poor. In addition, the perceived health status is seen as self-reported health by the individual (e.g., his/her subjective feeling of well-being,) whether it is good or poor (Ware et al., 1994). Full standardization in the measurement of perceived health status has not yet been developed (Bergner & Rothman, 1987). However, several methods have been shown to be effective in measuring and reporting the overall perceived health status, for example, the sickness impact index, and the quality of life indicators such as the SF-36.

Additionally, measuring the perceived health status is a method by which health authorities can assess the overall aspects of health. Though subjective or self-reported health status is not a substitute for more objective indicators, it completes the assessment process. Subjective reporting of self-perceived health introduces a consumer perspective into population health monitoring, revealing aspects of health that may not become apparent with measures that are more traditional (Bergner & Rothman, 1987). In this study the perceived health status was measured using the generic SF-36 health assessment questionnaire.

Actual health status refers to currently existing health in fact and not merely its potential. Therefore, actual health refers to the current health status evident by actual measures (National Association of County and City Health Officials, 2007). For example, an individual may perceive himself/herself as having good health, while he/she in fact may have poor health, experiencing uncontrolled diabetes. Empirical evidence such as physiological measurement, presented signs and symptoms and clinical examinations are the major determinants of actual health status. In this study, actual health status was assessed through documented medical conditions in the participants' medical charts and the participants' physiological measurements, including weight, height, and blood pressure.

Health seeking behavior refers to any action that has significant impact on health (Stokes et al., 1982). Therefore, any action taken by an ill individual that is intended to change or improve the health condition is considered a health seeking behavior. It may involve the use of traditional medicine, family advice, self-medication, or health care services (Ahmed, Adams, Chowdhury & Bhuiya, 2003; Chrisman, 1997). In this study



the health seeking behavior was identified by examining the health services used over the last six months obtained through structured interviews. The participants' subjective feedback related to health services utilization was examined, which include number of visits made to a clinic or a physician's office during the last six months and the past year, as well as herbal medicines, or any home remedies.

Common health problems refers to conditions measured in terms of disability, disease, death, or risk that are believed to persist in the future and are undesirable (National Association of County and City Health Officials, 2007). Another simple definition for common health problems is ill health, a state in which one is unable to function normally and without pain (Princeton, 2007). The common health problems that were considered in this study were the reported diagnosed medical conditions.

Health needs are defined as vital components of well-being, which in the context of vulnerability, are commonly lacking in appropriate quantity and/or quality (United Nations Development for Population, 2007). Furthermore, health needs refer to individuals' requirements to achieve, maintain, or improve health. Health needs assessment pertains to a process designed to establish the health requirements of a particular population, (New Zealand Ministry of Health, 2007). In this study the health care needs were identified through participant answers reported in a structured interview. (e.g., "What do you consider to be your current health care needs?").

## **CHAPTER II**

### **Review of Literature**

This literature review focuses on research conducted on women in Bahrain and the Middle East. Prior to addressing the aforementioned research, a general presentation of various definitions of women's health, women's health indicators, women's health models, and current advances in women's health will be presented.

Researchers have defined health in non-uniform ways over the years, yet every definition relates to how health is measured (Bergner & Rothman, 1987). The World Health Organization broadly defines health as a state of complete physical, social, and mental well-being, and not merely the absence of disease or infirmity (WHO, 1994). This is the primary definition used as the basis for the construct of health by researchers. Additionally, the constitution of the WHO has defined health as a resource of power for everyday life and not as the main object of living; it is a positive concept emphasizing the social and personal resources as well as the physical capabilities (WHO, 2007).

Moreover, Health Canada perceives the WHO definition as general, and considers health as a basic and dynamic force in our daily lives, influenced by our circumstances, beliefs, culture, social, economic, and physical environments (Health Canada, 2007). This study defines health as a combination of both the Health Canada and WHO definitions, namely a state of physical, social, and mental well-being, and not merely the absence of disease, within the daily dynamic force of our life circumstances, beliefs, and culture, social, economic, and physical environments.

Women's health has been defined by various researchers and clinicians who have come to recognize that women's health extends across the life span and is best viewed from a comprehensive, bio-psychosocial framework, (Raymond et al., 2005). The following are definitions of women's health, which reflect the researchers' perspectives. The American College of Women's Health Physicians (1996) describes women's health as gender informed practice, centered on the whole woman's life that is concurrently affected by her environment. Although this definition has important aspects pertaining to women's health, its framework is vague. The United Nations Platform for Action defines health as:

"A state of complete physical, mental, and social well-being and not merely the absences of diseases or infirmity. And women's health involves their emotional, social and physical wellbeing and is determined by the social, political, and economical context of their lives, as well as by biology" (U.N. Platform for Action, Beijing, 1995, para. 89).

Additionally, Hill and Mullett (2005) reported on Anderson's research and described women's health beyond the limits of purely reproductive health, including areas as psychological health, social functioning, sexual health, family and relationships, modes for treatment, and counseling (Anderson, 2001). Anderson's definition added additional aspects beyond the reproductive women's health model, yet failed to encompass the totality of women's diverse health needs. A more recent definition by the World Health Organization Department of Gender and Women's Health described women's health as:

"A state of complete mental, physical, spiritual and social well-being" for all female infants, girls and women regardless of age, socioeconomic class, race, ethnicity and geographic location" (WHO, 2007, page 1 ).

This definition provides a substantial framework with which to build a broader women's health program; however, Hill and Mullett put forth the most comprehensive definition for women's health. A women-centered approach to care accomplishes the following: it recognizes the significance of gender differences; values women's experiences in identifying their problems and health goals; acknowledges women's diversity in race, ethnicity, culture, sexual preference, education, and access to healthcare; supports empowerment of women and as respected members of the community; nourishes women's values of caring and sharing; and works to change the context of women's health problems (Hill & Mullett, 2005).

The previous literature clearly defines women's health, but in order to evaluate adequately women's health care needs, general health status must be defined and measured. Health status, in general, is referred to at the level of the individual, group, or population as subjectively assessed by the objective measures (Health Canada, 2007; WHO, 2007).

### **Women's Health Indicators**

Globally, women's health is measured through the World Health Organization Health Indicators regarding prenatal mortality, prenatal morbidity, maternal mortality, and maternal morbidity. Although these statistics may reflect women's health status in general, they are limited to a woman's reproductive role with no specification for women's quality of life and health over the life span (Meleis & Im, 2002; Reid, 2002). Other health statistics for various diseases, including breast and uterine cancer, diabetes, and hypertension, are not accurately reported and may not be accessible on a global level in developing countries. A standard screening for prenatal and postnatal care, as well as

pre-menopausal and menopausal care, has been established. Yet, in this paradigm, women's health is measured in relation to women's sexual and reproductive roles. For example, Pap smears and clinical breast exams are the main component of any well-woman exam.

There are standard women's health tests put forward by the WHO and by the United States Government Office for Women's Health. Some of the health tests' measures are: complete physical exams, cardiovascular evaluations, blood tests for cholesterol, mammograms, Pap smears, colonoscopy, and treadmill testing. Health insurance status, family history, age and health care providers play an important role in determining the type of standard test selected for each woman. While these measurements address specific aspects of women's health, women's health researchers find these measurements typically rely on the biomedical model, viewing health as independent from social, economic, and cultural environments within which the women live (Bingham, 2006). Currently, there are different methods for women's health measurement, yet none of them specifically measure women's health status in a comprehensive way; this has resulted in measuring women's health using the indicators described next.

According to the United States Public Health Data Standards Consortium and the Centers for Disease Control (CDC), general health status indicators include infant mortality rate, death rates for selected diseases, incidence rates for selected infectious diseases, pregnancy and birth-related measures, as well as childhood poverty and air quality (United States Public Health Data Standards Consortium and CDC, 2007). They also describe health status as an overall evaluation of an individual's degree of wellness

or illness with a number of indicators including quality of life and functionality. A form frequently used for health status evaluation purposes is the SF-36, according to the WHO (2007). The United States Department of Health and Human Services in recent years has used the following as women's health indicators: women's demographics; mortality; access to care; infections and chronic diseases; reproductive health; maternal health; violence and abuse and prevention. Application of these indicators is crucial to improve the women's health services around the globe.

### **Women's Health Models**

Clinicians and health care delivery systems have provided women's health care services within the framework of several models over time: the biomedical model; the reproductive model; the morality model; the grandmother model (Hills & Mullett, 2004; Meleis & Im, 2002). Each model has strengths and weaknesses, but none of these models provided comprehensive care for women or a coherent research agenda. These models have limited the scope of health care services that could be provided (see Appendix 1). The comprehensive or integrated model centered around women provides the following: treats women with respect; accepts and acknowledges the diversity of women; acknowledges women as predominant caregivers and child rearers; actively considers and explores the impact of the social, economic, societal, and environmental factors on women's lives; recognizes women's difficulty in accessing health care services; recognizes the gender imbalance in many societies, gives women information to facilitate their ability to make informed choices; allows self-determination to manage the issue of whether a family member or significant others will be in attendance during consultation; and seeks cooperation with mutually supportive health professionals in order to promote

synergic collaborations, continuity and quality of care (WHO, 2007; Hills & Mullett, 2005). The current global women's health problems implicitly accentuate the imperative necessity for a comprehensive women's health model.

### **Specific Needs for a Comprehensive Women's Health Model**

There are specific reasons why a global focus on women's health is mandatory at this time. Several reasons have increased the demand for an integrated comprehensive women's health model. Obvious physical differences are evident between men and women. Researchers have observed that women differ from men in patterns of illnesses, diseases, and mortality, and their interaction with the health system. According to the National Institutes of Health in the USA (NIH News Word on Health, April, 2003), Dr. Legato, a cardiologist who founded and directed the department for Gender-specific Medicine at Columbia University College of Physicians and Surgeons, states:

“Gender matters. For example, women with myocardial infarction present with diffused chest pain, with/without nausea and faintness, while men usually present with the typical sharp chest compression radiating to the neck, jaw, and arm.” (Wamala et al., 2001, page 2).

Notably, women's low economic status often makes them unable to acquire health services. Seventy percent of the world's 1.3 billion poor, living on less than \$1 per day, are women. Additionally, the low social status of women frequently makes them more vulnerable to poor health (e.g., in many parts of the world, women eat less, eat last and survive on leftovers). The maternal mortality rates continue to rise in many countries despite promises and initiatives to reduce what are largely preventable deaths. Moreover, communicable diseases such as TB, malaria, and HIV-AIDS persist, particularly in developing countries. Further complicating the aforementioned factors, the introduction

of user fees has resulted in decreased use of services and increased maternal mortalities (WHO, 2007). In addition, gender-based violence faced by an overwhelming number of women worldwide has wide-ranging consequences for women's health and the health system.

The WHO presented a recent study of 10 different countries which tackled the issue of domestic violence against women. According to study results, 15% of Japanese interviewees and 70% of Ethiopian female interviewees were subjected to physical or sexual violence during their lifetime, perpetrated by an intimate male partner. The violence of those in the "ever abused" group (about 20% of women in Ethiopia to more than 50% in Peru) was severe enough to result in physical injury including fractures and eye damage. Also, a high number of abused women suffered secondary ailments such as depression and reproductive health disorders. Nearly half of the women surveyed in Thailand have been battered or sexually assaulted by their partner, which authorities often dismiss as a private matter. A much grimmer picture emerged in Bangladesh, where an average of 57% of women surveyed had been either physically or sexually assaulted. WHO representatives explained that abuse has become an endemic problem; in fact, it is a public health problem in every society around the world, and calls for urgent action. Violence against women represents an added burden on already struggling health systems in developing countries (Garcia et al., 2005).

Women's life circumstances include their living conditions, availability of time, number of children, job obligations, and social relationships with family members and community (Meleis & Im, 2002). For example, preventive measures such as exercise are not practiced; therefore, physical inactivity can lead to health problems in women of all



ages, despite the acknowledged positive effect of exercise on health. Because of work responsibilities, childcare or economic problems women do not engage in physical exercise. There also exists a prevalence of typecasting women by a biased health system, which tends to treat women and men based on longstanding traditional roles and attitudes. Typecasting refers to the presumed belief by health care providers that women use health care services more frequently than men, and present non-serious complaints, presumed to be psychosocial problems. Furthermore, typecasting has affected women, both as users of the health care system and as caregivers, resulting in the discrepant practices.

Different practices include the area of narrowness of focus (i.e., health care services have overlooked women's health care problems, without consideration for their life circumstances). Additionally, there is circumvention of women, which means exclusion, translated into reduced access to resources (e.g., when the health systems' rules and regulations deny women's health needs and work against their life circumstances). Furthermore, there is under-representation of women from governance, research, business and education (e.g., women are treated as men when it is inappropriate and likewise women are treated differently than men when it is also inappropriate).

Meleis and Im (2002) explained that women are marginalized because of their gender. Their work is given less value; thus, they become voiceless and live with many myths, limited by life at the periphery. Their marginality is doubled and/or tripled when it is connected to their race, ethnicity, sexuality, and age. The health systems and current practices render women vulnerable and at risk, viewing women from women's history of oppression, resulting in fragmented health care services. Women's health is connected to

their marginality in their societies and their culture groups. A study pertaining to Korean immigrant women concluded that they neglected and ignored their menopausal symptoms because they were in the margin of the society and because they were in the margin of their ethnic group (Im & Meleis, 1999). Remediation through empowerment of women and community change, emphasizing simple strategies aimed at prevention, through health promotion and disease prevention is suggested in studies (Johnson et al., 2005). It is noteworthy that these complex dynamics apply to women around the globe, in both developed and developing countries.

### **Current Global Advances in the Area of Women's Health**

Historically, research has focused on prevention and treatment, especially regarding reproductive health and ways to control it as well as on sexually transmitted diseases (Bingham, 2006; Klima, 2001). The unrelenting focus on reproduction in traditional care as it pertains to women, results in medicalization of birthing and menopause, overlooking women's health problems and contributing to less than optimal care. Women's experiences with traditional medical care are impacted substantially by this fragmentation, resulting in inefficient and inappropriate care delivery (Anderson, Weisman, Scholle, Binko & Schneider, 2001; Clancy & Massion, 1992; Hoffman, Maraldo, Coons, & Johnson, 1997; Weisman, Curbow & Khoury, 1995). It is out of these deficiencies that the women-centered approaches have evolved as successful alternatives (Hills & Mullett, 2005).

Current women's health research focuses on health policy and services that provide gender specific care, utilizing a holistic approach to identify high-risk issues for women such as neoplasm, cardiovascular diseases, osteoporosis, and endocrine disorders.

The National Institute of Nursing Research has identified priorities in nursing research in two areas: first, preventing and treating chronic diseases, and second, identifying the effect of sex on genetic functions and health response (Bingham, 2006). Current advances in the area of women's health include the U.S. Department of Health and Human Services Office on Women's Health (U.S. DHHSOWH), an increase in the number of women's health centers, and an increase in women's health programs at the graduate level in both the U.S. and Canada; there are also signs of global emergence. The Department of Gender, Women and Health (GWH) of WHO emphasizes the following strategies in the women's health area: augment knowledge and evidence on how sex differences and gender inequalities affect specific health problems, health services, and positive responses; establish tools to promote and expand health sector policies, interventions, and programs at the regional and national level that systematically address gender concerns, including gender-based violence; promote skills and build capacity within and outside of WHO in order to encourage policies and programs that are more responsive to barriers affecting women's ability to lead healthy lives, receive and benefit from health care services; increase public understanding of gender issues by developing advocacy materials and activities; create an awareness and provide support to local health community members to design and promote gender-sensitive health policies and strategies (WHO GWH, 2007).

Women's health research is evolving as a result of increased nurse scientist involvement in research to aid in greater understanding of women's health issues across the life span. The most recent publication of the National Institute of Nursing Research in the area of women's health is related to prevention and treatment of chronic conditions,

health conditions, responses related to gender, and health disparities among women (Bingham, 2006). These efforts are targeted at improving preventive screenings and satisfaction, recommending gender-specific services, and offering potential cost savings (U.S. DHHSOWH, 2007).

In addition, the development of a women's health organization at the national and international levels has encouraged advancement in the area of public awareness towards women's health. They bring attention to and create understanding of women's health issues; encourage women to get regular check-ups; provide free or reduced screening for women; educate women about steps they can take to improve their physical and mental health; and prevent diseases (U.S. DHHSOWH, 2007). Most importantly they empower women & give voices to their concerns. Simultaneously, recent and ongoing studies continue to embrace the needs of women on a global scale and advances continue with regard to women's health.

### **Women's Health Studies From the Middle East**

The gap in medical or nursing literature regarding women's health in Bahrain necessitated review of Middle Eastern women's health as well as the international literature. Middle Eastern countries generally share the same culture, social norms, religion, and health care practices; therefore, review of the Middle Eastern women's health literature is relevant. Women's health studies in the Middle East are evolving; however, publication is limited to Arab countries and local medical journals, which create a challenge for researchers.

Elnekave and Gross (2004) examined the experience of Arab Israeli women in the contemporary Israeli health care system, following the implementation of a national

health insurance law. This mixed-method study used a semi-structured interview with 849 women in one large Muslim Arab Israeli village, and simultaneously conducted phone interviews, having an 83% response rate. Findings indicated Arab women had poor self-assessed health, lower rates of care by primary care physicians, and frequently ignored medical care in comparison to Jewish women. The major factors contributing to the Arab women's health care were the threat of physical and social exposure, difficulty communicating with male physicians, the unequal power distribution between genders within the family, and unwanted imposition of health care surveillance by Israeli authorities. The researchers recognized the need for adoption of primary health care services that are culturally and politically sensitive (Elnekave & Gross, 2004).

In the United Arab Emirates' city of AL-Ain, which is in close proximity to Bahrain, a cross-sectional survey of 535 women was conducted to determine the reproductive and life style characteristics in this representative sample to guide the development of a health program (Carter et al., 2004). The authors reported that the women did not smoke, and disclosed having good health. Eighty four percent of the women in this study reported being active; in spite of this, the obesity rate was high and women reported having chronic diseases. Moreover, the obesity prevalence was associated positively with age and negatively with education. Postmenopausal women had significantly more chronic diseases and a higher percentage of body fat. The study recommended health services that were directed to prevention and treatment of obesity, and improving the general health status for postmenopausal women. A more significant study recently published examined the women's health needs in the Emirates, strongly emphasized the need for comprehensive care, health education, a community center for

social services, and well-women clinics to provide inclusive care under one roof (Winslow & Honein, 2007).

Another needs assessment study used a focus group among urban women conducted in Bali, Indonesia. This study noted that although women's health problems were reproductive, 42% did not seek help from a medical provider, and more than 85% used modern contraception methods (IUD & Depo-Provera). However, only 10.6% had ever used a condom. Although 52.2% of women never received any information about HIV/ AIDS and 69% had not been counselled about sexually transmitted diseases (STDs), 73.1% of respondents were satisfied with the women's health services. They indicated the need for more information on HIV, AIDS, and STDs (Patten & Associates, 1998).

Another group study was conducted to examine the effectiveness of the focus group method in the Arab culture. Six focus groups, each consisting of 10 participants, for a total of 60 women, shared their feelings regarding health practices. The women saw the focus group as a way to channel their health care needs and concerns to the higher authorities (Winslow, Honein & Elzubeir, 2002).

A significant study examined factors affecting the women's health status of two ethnic groups in Kolkata City, India, finding that the diverse socioeconomic status in various cultural groups in traditional Indian societies reflects a more complex situation with women's status and their health. Factors identified as responsible for the differential health status of women included income, culture, education, religion, living condition, and location. To help improve women's health, the researchers recommended equal health care services (Ghosh & Bharati, 2005).

It is well documented that women's status is a major socio-cultural determinant of health and the low status of Middle Eastern women has resulted in health inequality, a higher rate of mental illness in women, and differences in the quality of care between male and female children. Furthermore, gender discrimination limits women's autonomy and health care choices (Assai et al., 2006). According to the World Health Organization, women's empowerment is related to quality of life, which requires freedom of choice, dignity, and respect. Women's lack of involvement in outlining Middle Eastern health promotion agendas has led to greater disparities. In order to improve health status, women's empowerment and their involvement in identifying their own health care needs is essential. Likewise, informing policy makers and facilitating future health care services with regard to women's health assessment is the first step in decreasing health disparities and promoting a healthy life style (WHO, 2006).

### **Women's Health Services, Problem, Policies, and Needs in Bahrain**

Bahrain women's health statistics and studies indicate that women's health problems are creating a major challenge for the health system, increasing the demand on the health centers to provide comprehensive health services for women throughout their life span (Bahrain Ministry of Health Annual Report, 2006). Complex women's health problems are evidenced in Bahrain; though health statistics are commendable, and are accompanied by well-organized health care services. However, Bahraini women still face mounting health problems.

The leading causes of death are cardiovascular, endocrine disorders, and neoplasm, respectively. However, women's health problems mainly concern reproductive, and blood disorders (e.g, anemia), thalasemia, sickle cell disease,

psychological issues, cardiovascular, and endocrine disorders. The most common causes of maternal deaths result from hemorrhage, pulmonary embolism, and hypertensive disorders of pregnancy. Sickle cell disease is the underlying cause of one third of maternal deaths. Due to the high rate of intermarriages within the close extended family, hemoglobinopathy is a major common problem (Bahrain Ministry of Health Statistics, 2006). There is evidence of an increasing obesity rate among Bahraini women, as opposed to the statistics on men. Nevertheless, women live longer, developing chronic diseases such as diabetes and hypertension (Al-Mahroos, Al-roomi,& Paul, 2000; Alnsari & Masusdi, 2006; Musager & Al-Manai, 2002; Musager & Al-Roomi, 1997). Due to social and lifestyle factors, there is well-documented evidence of increased obesity and diabetes in elder females aged 50-79 (Al-Manni & Musager, 2002). Socio-cultural practices such as early marriage and an increase in the number of children has also affected women's health.

According to the results of the National Nutritional Survey in Bahrain it was revealed that 37.3% of women aged 19 years and above, have low hemoglobin (HB<12gm/dl) and are anemic (Moosa, 2002). Moreover, a study was conducted to determine the social demographic factors associated with obesity in Bahrain, which found that females had greater fat deposits. In addition, being married with a high number of children (i.e., greater than seven) and ownership of a car was associated with obesity (Khalfan et al., 1996). Furthermore, chronic diseases are found more often in women than men according to a cross-sectional community study of 201 Bahraini elderly aged 65 years (Musager, 2004).



Another health concern is mental health problems, which are overlooked and understudied. A one-year cohort study of 67 overdose attempts among Bahraini men and women, aged 15 to 24, reported 105 per 100,000 population; this is a lower rate than the U.S. and Europe, yet higher than the regional rate. In addition, there is evidence of a higher overdose attempt rate among females than males, and the most common identified problems related to overdose are difficulties with parents, school or work, social isolation, and problems with boy/girl friends (Al-Ansari et al., 1997). Concurrently, social-cultural practices such as intermarriage between extended family members have resulted in an augmentation of the magnitude of blood disorders and congenital abnormalities in Bahrain (Al Arrayed, 2005; Rajab, Issa, Mohammed & Ajami, 2006).

There is a void in the area of health education programs in Bahrain schools and health centers with particular respect to sex education, as well as cultural barriers regarding open discussion pertinent to sexual health issues. This has complicated factors surrounding prevention and treatment of sexually transmitted diseases. Perhaps due in part to the social stigma concerning sexually transmitted diseases in this community, there is a lack of data with reference to the number of reported and unreported cases of syphilis, gonococcal infection, and others by the Ministry of Health Statistics. An 11% HPV infection rate and a doubling of HIV/AIDS cases since 1990, with sexual contact as their main transmission method means such infections could become widespread, creating a situation of crisis in the future (Al-Hadad, Baig, & Ebrahim, 1997; Al-Sandi et al., 2003; Hajjaj et al., 2006).

Different aforementioned health concerns regarding women may be partially due to an additional socio-cultural practice, where women's human rights are less valued in a

male-dominated community leading to increased abuse and violence against women; this phenomenon is documented in a survey of 600 married Bahraini women by the Bahrain Society to Resist Family Violence. The survey showed the following: 29% of women suffered spousal abuse; 89% of divorced women had been subjected to violence; 43% internalized pain through tears; 4.5% sought assistance from the legal system; 92% did not seek any type of assistance; 62% did not believe they needed assistance (Amnesty International, 2007).

Bahraini women's life circumstances contribute to a reduction of access or motivation to take preventive measures for safeguarding health. Women of all ages do not engage sufficiently in physical activity, despite the positive effect on health, because of work responsibilities, childcare, or economic problems as well as the social expectation to be at home most of the time.

A prospective study implemented in Bahrain reported lifestyle changes such as health education, exercise, and a low calorie diet help patients to reduce weight (Masuadi & Alnasir, 2006). Women-only facilities, both private and public, are increasing in Bahrain, with wide acceptance among different women age groups. The facilities function as health clubs, open for 12 hours a day. Any woman can sign up without prior fitness testing or sport exams, with very limited preparation or instruction given by the facility staff. However, these facilities lack standards and follow-up monitoring by professional organizations.

The Bahrain Ministry of Health's strategic goal is to ensure the provision of accessible, preventive, curative, and palliative health care services to the community throughout each individual's lifetime (Bahrain Health Strategy Framework for Action

Report, 2007). The existing policies and practices primarily provide free lifelong services for family planning and reproductive health (i.e., pre-marital, prenatal, and postnatal). The family physician system is applied in Bahrain where every family has an assigned physician for follow-up and monitoring. When a couple decides to marry they are required by law to have pre-marriage counseling and testing, which is provided by the family physician of the local health center.

Prenatal care and follow-up begin for any pregnant woman starting at 12 weeks of gestation. The family physician or the community health nurse will refer the pregnant women for the needed service appointments. Postnatal and family planning services are offered at 6 weeks after delivery or sooner if the woman's condition requires. However, policies pertaining to women's health in general are within the family care policies. Currently, there is no standalone women's health policy in Bahrain.

Moreover, the Ministry of Health is adopting the strategic goals of the World Health Organization (WHO) with reference to primary care and maternal and child health. In 2004 a new compulsory law regarding pre-marital testing and counseling came into effect for the residents of Bahrain including non-Bahrainis. However, women's involvement in the health care services planning and health policies is limited to application of the WHO standards of prenatal, postnatal and family planning.

Overall women's health wellness programs and health needs in Bahrain need to be assessed to meet the women's requirements for specific services instead of providing health services according to health system policy. The provision of health care services according to the health system has resulted in a gap in research regarding women's health

in Bahrain. Clear policies addressing the unique needs of women and their health are currently in the formative stages.

Health research is evolving in Bahrain as a result of emerging medical universities and increased awareness by health professionals. However, publication is still limited to local and regional medical journals. The existing research pertains to reproductive health and annual reviews of case studies in the local hospitals. Therefore, there is a gap in the health literature regarding women's health studies in Bahrain. The most recent epidemiological study is the 27-year-old maternal health study which requires updated research (Bahrain Ministry of Health, 2006). This research lists the most common gynecological complaints as dysmenorrhea, vaginal discharge, and irregular periods. Based on clinical examination, laboratory, and radiological investigation, the diagnoses were inflammatory disorders of the cervix, vagina, and vulva.

Although the literacy rate in Bahrain is high at 92%, and females outnumber males in all the earliest stages of education and 83% of Bahraini females are at the college level, prevailing social views arising from the stigma that women are emotional beings better suited to the home and family cast doubts on female employment. Thus, women are expected to "sacrifice" their own happiness and fulfillment on behalf of their families (Assai et al., 2006).

The intent of promoting women's health is to enable increased control by women over determinants of health, allowing them to make choices that are consistent with their personal values and preferences, thereby improving well-being. The Bahrain Health Services use state of the art equipment, computerized medical records, and highly qualified health care professionals, yet women's health care services are in the early

developmental stages. Existing health care services pertaining to women include premarital counseling, testing for genetic diseases, prenatal, and postnatal care (Bahrain Ministry of Health Report, 2006). Annual well-women exams, which include complete physicals, blood testing for diabetes and cholesterol levels, mammograms, and pap smears are not yet standardized procedures. Currently, health care services are available at no cost for women; services are provided by nurse-midwives who administer prenatal care only, and family physicians who provide primary care, postnatal care, family planning, and chronic disease management. In addition, gynecological and other health problems are often treated by family physicians at health centers, while referral to a specialist depends on the woman's condition and availability of an appointment. Despite the above, comprehensive women's health is not practiced in Bahrain and women's health experts are not available.

Thus, women's health care is provided by primary care physicians (e.g., family physicians), and women are referred to specialty consultants whenever needed. For example, referrals are made to obstetricians and gynecologists for reproductive or gynecological health problems, and internal medicine specialists for any other medical health problems. This has created fragmentation of services and increased women's uncertainty and trust in the health system, while increasing financial and time costs (Hill & Mullett, 2005; Meleis & Im, 2002).

In summary, there are social and societal issues which impact women's health in Bahrain; some are lack of preventive care, women's knowledge, gender, and women's roles and responsibilities. Early marriage, increased number of children, high prevalence of chronic conditions, increased violence against women, lack of involvement in health

care planning, education, and research further complicate the women's health status. Most importantly, there is a lack of women's health research, woman-specific health policies, health education and comprehensive women's health services.

According to previous literature review, enormous health problems are strongly evidenced among Bahraini women and it is imperative to ascertain the effect of these factors upon women's health. Studying the socio-cultural issues related to women's health is beyond the scope of this study. Therefore, measuring women's health status is a priority at this time. Measuring women's health has been a challenge for clinicians and researchers. Since a standardized comprehensive measurement of women's health status has not yet been developed, this necessitates employment of the best estimate measurement for physical, mental, psychological, and social well-being within the women's life context.

## **CHAPTER III**

### **Development of Conceptual Framework**

Women's health status and needs are determined by specific social, cultural, economic, religious, ethnic, and health practice patterns related to each woman's particular community. Therefore, understanding these determinants within a theoretical framework will aid in providing the best comprehensive health care services. The conceptual framework for this study is based on Steinwach's framework of Health Assessment Measures in Policy and Research (Steinwach, 1989) and the Longino gender specific view (Curd & Cover, 1998).

Steinwach's framework explains the basic determinants of health status as environment, genetics, behaviors, and biological factors; and health care needs develop as a result of these factors. It describes how health status relates to met or unmet health needs provided by the health services. These health services are administered according to the existing health, financial, and technological policies (Figure 1). Although there is limited control over the genetic and environmental factors, measurement of the biological and behavioral factors will aid in determining the health status.

Steinwach (1989) describes the relation between health status measures relative to the health care needs and health outcomes using a generic health status measurement, SF-36, which contains the following components: physical functioning, mental functioning, and social functioning (Figure 2).

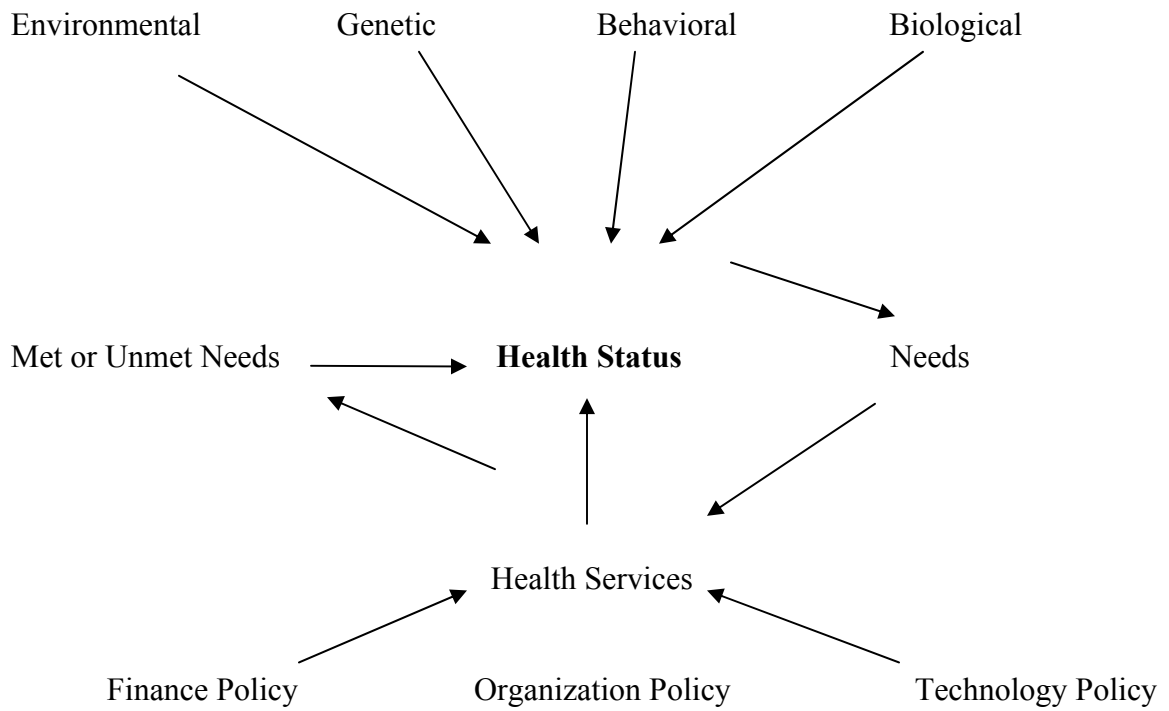


Figure 1: Steinwach's Conceptual Framework

Source: Steinwach, D. M, (1989). Health Assessment Measures in Policy and Research. *Medical Care*, (27) (3).



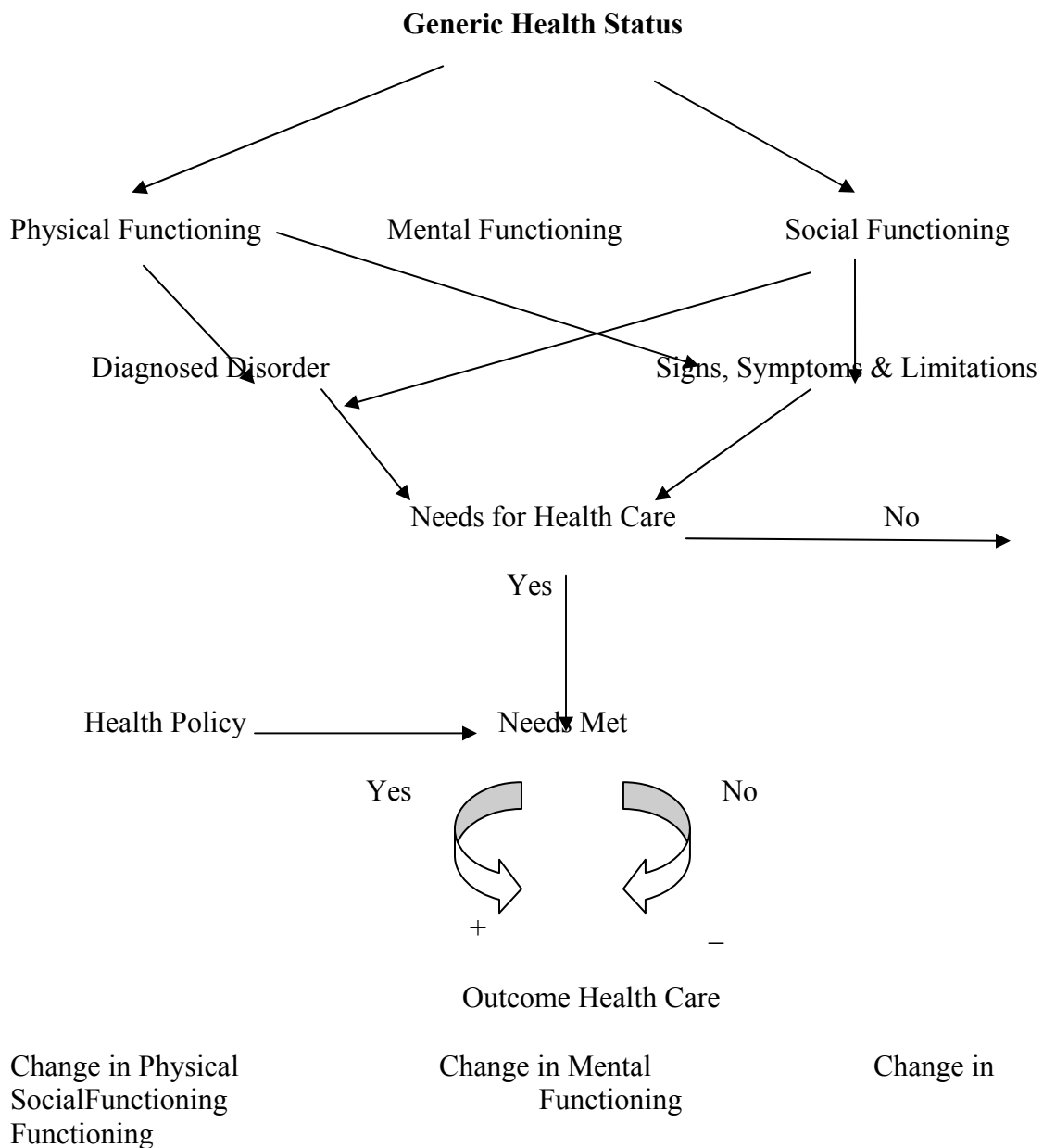


Figure 2: Steinwach's Framework Relating Health Status Measures to Needs for Care and Health Outcomes.  
 Source: Steinwach, D. M, (1989). Health Assessment Measures in Policy and Research. *Medical Care*,(27)—(3).

Steinwach's framework measures perceived and actual health status; however, it is limited, evaluating one aspect of the current health status. Thus, to examine the women's health status and provide comprehensive women's health services it is

important to include a gender-specific framework. The Longino view (Curd & Cover, 1998; Longino & Kohlstedt, 1997) has clearly identified two aspects of objective science.

First are the non-empirical elements related to the culture, social structure, or socioeconomic interests of the context within which individual scientists work. Second is the context of justification related to the empirical evidence of the theory that is the scientific evidence (Curd & Cover, 1998; Longino & Kohlstedt, 1997). Longino's criteria (Curd & Cover, 1998) for objectivity of science has a multidisciplinary framework which includes empirical evidence (i.e., health status) and the social dimensions (i.e., social, educational, cultural, political, religious, and economic) of women's lives (Curd & Cover, 19998; Longino & Kohlstedt, 1997). Although the recent recognition of the need and the importance of such a model have been clear, the medical community has ignored the social context of women's lives for centuries, which has resulted in more health disparities among women and marginalization. Adoption of Longino's scientific objectivity for future research in the area of women's health is necessary for the development of a more balanced ideal scientific body of knowledge (Curd and Cover, 1998; Longino & Kohlstedt, 1997).

### **Application of Proposed Conceptual Framework**

This research utilizes a combination of Steinwach's framework modified by the Longino view of science to examine the women's health status and health care needs; it focuses specifically on women's health care needs as opposed to the original model which focuses purely on need for health care.

Therefore, the modification pertains to identification of the following two aspects of objective science: first, via utilization of the perceived health status and supplemental

questionnaire, the non-empirical elements related to demographics, social-economic structure, and health care utilization practices and health needs will be determined within the context of individual women's lives. Second, the empirical evidence of women's health status will be included in this study by obtaining women's physiological measurements such as height and weight, blood pressure, and medical chart review for diagnosed chronic conditions. Therefore, by adopting the modified combination of Steinwach's framework and the Longino view of science (Figure 3) women's health needs will be determined by their age, social status, education, health perception, health seeking behavior, and her health status. The following assumptions are made:

1. A woman's age and menopausal status will determine the health care needs for her developmental stage;
2. Education level will facilitate the communication with her, and effectively meet her expectation;
3. Medical history will identify her health priorities;
4. Social status will determine her specific social needs;
5. Economic status will enable determination of the health care services according to budget;
6. Religion and culture will aid in understanding the hindering and promoting beliefs that affect a women's health practices and be able to meet her special religious and cultural needs during the plan of care;
7. Health status will aid in identifying her health problem(s) and act accordingly.

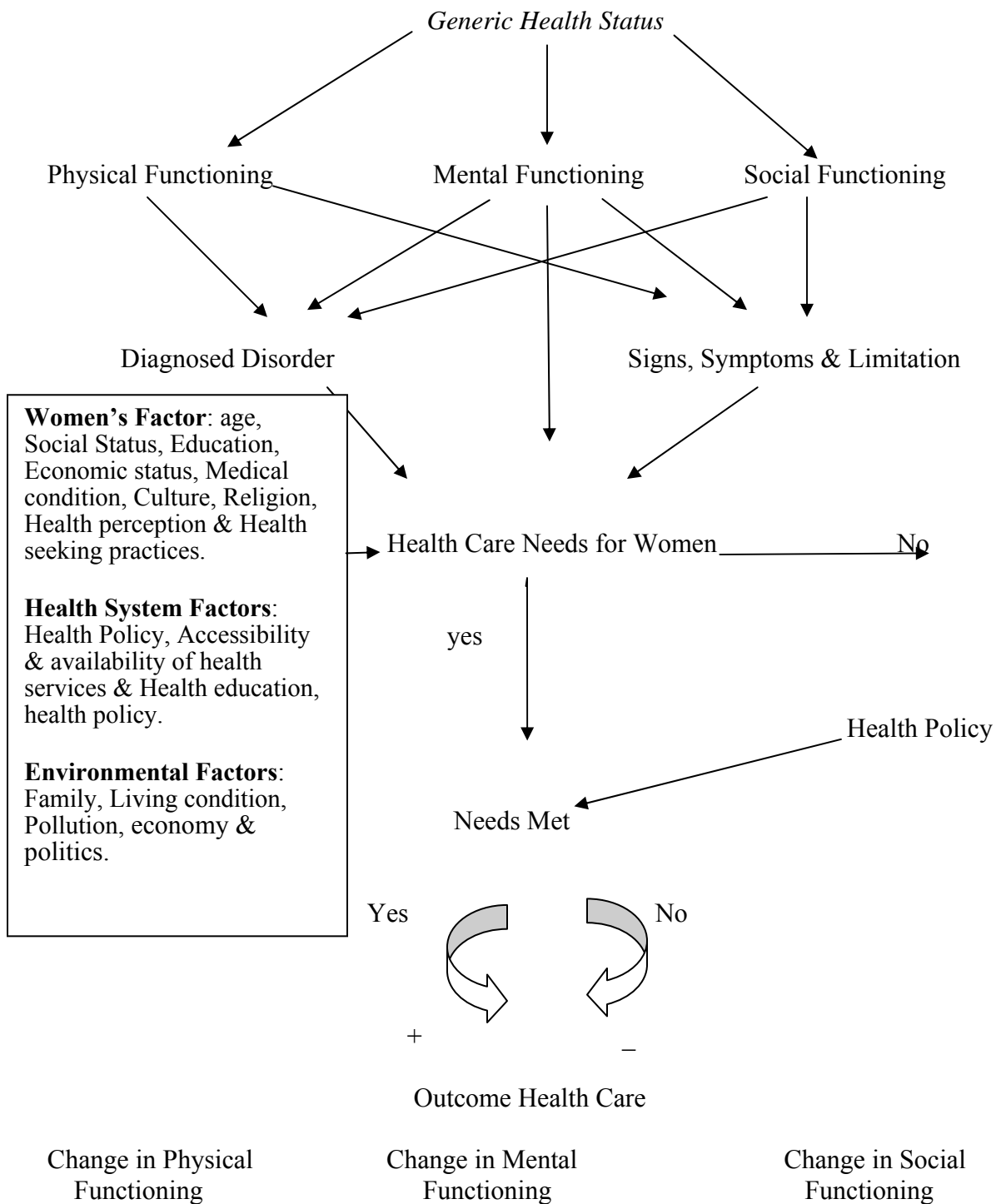


Figure 3: Modified Steinwach's Conceptual Framework for Assessment of the Health Status and Needs for Bahraini Women  
 Source: Steinwach, D. M, (1989). Health Assessment Measures in Policy and Research. *Medical Care*,(27)-(3).

The development of this conceptual framework is based on the assumptions that the women's actual and perceived health status, will be determined by women, health system and environmental factors. The women's factors include age, number of children, health seeking behavior, social and economical status, as well as her life circumstances, gender discrimination, and her medical condition.

Health system factors include availability and accessibility of health services, health knowledge/health education, and health policy. The environmental factors include family, living conditions, population, national economy and politics. These factors will determine the health care services needed. These assumptions will inform and enable policymakers to plan and facilitate the development of women's health programs that provide comprehensive women's health care to meet individual needs. This conceptual framework supports the 2007 WHO definition of women's health and the previous definition of comprehensive women's health.

Essential components of the model include treating women with respect; accepts and acknowledges the diversity of women; acknowledges women as predominant caregivers and child rearers; actively considers and explores the impact of the social, economic, societal, and environmental factors on women's lives; recognizes women's difficulty in accessing health care services; recognizes the gender imbalance in our society, giving women information to facilitate their ability to make informed choices; allows self-determination to manage the issue of whether a family member or significant others will be in attendance during consultation; and seeks cooperation with mutually supportive health professionals in order to promote synergistic collaborations, continuity, and quality of care (Hills & Mullett; 2005WHO, 2007).

The WHO recognizes that social well-being is an essential dimension of the quality of life which requires freedom of choice, dignity and respect. Empowering women by allowing them to have access to basic education and information as well as the right to life are the major elements of human rights. In addition, providing health education and health promotion skills to women is intended to enable them to increase their control over determinants of health and thereby improve their own health as well as their family's health.

Therefore, enhancing women's roles in various sectors such as the economy, education and training, family, health, and environment and their involvement in outlining the agendas of health promotion is vital to empower them; such new roles can achieve the desired goals and meet their needs. Currently, the women's empowerment program in Bahrain is carried out by the Supreme women council; it involves women's rights orientated activities, as well as enhancing Bahraini women's role in the country's politics and development. Bahraini women are taking part in these activities and showing more interest as their awareness increases.

However, measuring the factors that determine the women's health status require examining different dimensions, which are beyond the scope of this study. Therefore, only the described factors will be examined, while recognizing that elements like social, economic, and health services availability and health utilization are highly important.

## CHAPTER IV

### Research Design and Methods

This chapter presents the design and methods used in this study. The chapter describes the research design, variables and instruments, sampling and setting, data collection procedures, including human subject protection and data analysis.

#### Design

This was a cross-sectional, descriptive-correlational study that examined the health status and health needs of Bahraini women. The primary purpose of this study was to examine the perceived and the actual health status and the health care needs of Bahraini women aged 18 to 64 years, who live in Bahrain and used the Ministry of Health primary health services. The secondary purpose was to continue developing the reliability and validity basis for the SF-36 perceived health status scales in the Arab sampling world. The research questions and variables answered were:

- (1) What is the perceived health status of Bahraini women?
- (2) What is the actual health status of Bahraini women?
- (3) What are the most common health problems of Bahraini women?
- (4) What are the types of health-seeking behaviors of Bahraini women?
- (5) What are the barriers women face in obtaining health care services?
- (6) What type of health services do Bahraini women need?
- (7) Is there a relationship between the perceived women's health status and age?

(8) Is there a relationship between women's health status and age, marital status, level of education, income, chronic condition, Body Mass Index, blood pressure and number of children?

(9) Which variable is the best predictor (age, marital status, level of education, income, chronic condition, Body Mass Index, blood pressure and number of children) of women's health status?

The dependent variables were the women's perceived health status scores, their actual health status, and their health needs. The independent variables were the socio-demographic factors, health seeking behavior, and services utilization practices, (Appendix A).

### **Sampling Methods**

The sampling process for this study included several stages to ensure accuracy and confidentiality. Given the correlational design, power analysis was conducted using eta squared ( $\eta^2$ ) as the metric for effect size (Pallant, 2001). Although the entire population was available, resources were limited, and a power of 80% and an alpha of 0.05 were considered acceptable as the limits for error in hypothesis testing. The effect size of the relationship between the independent and dependent variables was estimated to be {Eta Squared = Sum of Squares between groups / Total sum of squares}, the effect size of 0.08 will be considered large effect size, (Pallant, 2001), and based on the preliminary study (Mukhaimer, 2007).

Using these parameters, power analysis suggests a sample size of 192 women is necessary for a significance level at 0.50 and a power of .80 with an estimated effect size of 0.30. To compensate for any refusals or dropouts, the actual sample size was increased



by 20%, i.e., 230 women. This process was conducted utilizing the computer program, Precision Power Analysis, created in 1997 by Borenstein in collaboration with other consultants and updated in year 2000 (Precision Power Analysis web site, 2007).

*Sampling Frame*

To approximate a representative sample, age stratification and sample random sampling process were implemented across five geographic districts. Age stratification was based on; three groups (young 18-35 years, middle age 36-52 years, and older age 53-64 years); female rates within each district population; and the numbers needed in each stratum (Appendix 9 and 10).

The calculation of the percentage and the number of women participants needed in each district was made with assistance from the Central Statistics Office in Bahrain to ensure the percentage of participants was in accordance with the population age proportions. The sample number was achieved by selecting the proportional number of women within each district per age group (Tables 1 and 2).

Table 1

Total Sample from Bahraini Female Population, Stratified by Age

Age group	Sample size	Percentage in Bahraini Population
18-35	134	53.2
36-52	92	36.6
53-64	26	10.3
Total	252	100

Table 2

Sample in all 5 Districts Matched Age & District Proportions of the Bahrain Population.

Age groups (Years)	Capital District 13%	Muharraqe District 18%	Middle District 31%	Northern District 32%	Southern District 05 %	Total 100%
18-35	17	22	43	46	7	34
36-52	13	18	27	30	5	92
53-64	4	5	9	6	1	26
Total	34	45	79	82	13	253

*Random Selection Process*

Participants for the study were selected using a systematic simple random sampling process from each district in Bahrain to be representative sample for Bahraini female population (figure 4). The researcher used a simple systematic random sampling process in the selected health centers, where every fifth family medical record was selected, based on their address within each health center service area. From this family record file, females meeting the selection criteria were contacted via telephone by the researcher and verbal permission was obtained for participation in the study. The selection process was repeated until the required sample size had been obtained.

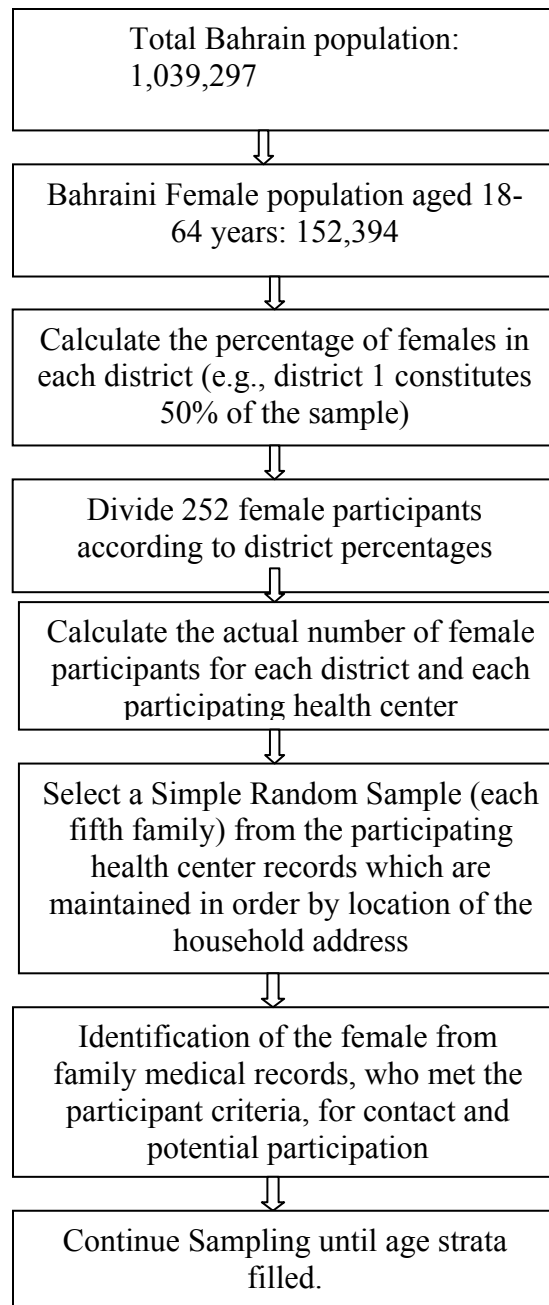


Figure 4: Population and Sample Selection Process

The random sample selection of family medical records was time consuming as most of the files were not updated with current addresses and phone numbers. Therefore, the medical records officer had to select more files than needed continuing with every fifth file, until we had the correct phone number for each participant. For example, among twenty family files which were selected, only 5 had the correct phone number or

responded to the call. The researcher called these five women and only four came for the interview. The time needed for selection ranged from 2-4 hours daily in each health center, which required the researcher to work 12 hours daily to be able to select, call and interview the next day (Table 3).

Table 3

Sampling Process in Each Health Center

Health Centre	Number of family files selected	Total sample obtained
Muharraq	183	45
Naeem	80	20
Shik Sabah	47	14
Jidhafes	104	60
Mohd Kanoo	51	27
Isa Town	84	37
Sitra	66	22
Hamad Kanoo	38	20
East Riffa	34	13
Total	687	258

*Eligibility Criteria*

In order to generalize the study results to the general population of Bahraini females, women were eligible if they fit the criteria developed to obtain a representative sample of Bahraini nationals who use primary health care centers. The inclusion criteria in this study were adult Bahraini women aged 18 to 64 years, able to communicate in Arabic, attending the Ministry of Health primary local health center and having a family file. Non-Bahraini women, Bahraini women aged less than 18 or older than 64 years, or severely ill women (e.g., unconscious, hospitalized, severely mentally handicapped, women with cancer, or unable to speak) were excluded.

Bahrain Central Statistics Office regulations for research sampling do not allow for the use of personal identification numbers, names, or addresses; therefore, the total number of women participants in each district was provided to the investigator without any identifying information. This sampling process was approved by Bahrain Ministry of Health Ethics Committee, Bahrain Central Statistics Office, and the researcher.

The final sample of 258 Bahraini women was divided into three groups (18-35 years: 88 participants; 36-52 years: 61 participants; and 53-64 years: 13 participants.) Thus, the selected sample was representative of the national and local district levels (Figure 4). Data for the study were obtained from 258 Bahraini women whose ages were 18 to 64 years.

### **Measurement**

This study required several measurements that provide the best estimated health status for Bahraini women. These measurement includes SF-36 perceived health status measurement, structured questioner, that consist of questions related to socio-economic status, health history, life style and health seeking behaviors.

Women health status is the main outcome variables (Appendix 4), were measured using standardized instruments and physiological indicators. The Medical Outcomes Study 36-Item Short Form (SF-36) (Appendix 2), medical chart review (Appendix 4), and physiological measurements including blood pressure, height and weight, were used to assess actual health status. It is well documented that the Arabic population overestimates positively their own individual perceived health status; thus, having empirical evidence (i.e., physiological and provider generated data) serves as evidence for the development or change of proposed health policies and services (Baron-Epel, Kaplan,

Haviv-Messika, Tarabeia, Green, & Kaluski, 2005). A supplemental structured interview with options forced-choice and open-ended questions was used to obtain the women's socio-demographic data, health history, utilization of health resources, health seeking and health care needs (Appendix 3). These questions were chosen to obtain the best possible estimate of the perceived health status for women residing in Bahrain.

#### *SF-36 Perceived Health Status Scale*

The SF-36 version 2 is a Likert-type scale use 0-100 score system, originally designed as a generic indicator of health status for population surveys and evaluative studies of health policy (Ware, Kosinski & Keller, 1994). The SF-36 scale has been widely used, translated into fifteen different languages and found to be appropriate with international populations (Bekker and Lhajoui, 2004; Ware, 1994). Moreover, it has been a useful instrument for measuring a population's health status, estimating disease burden, and comparing disease-specific benchmarks with general population norms (Ware, 1994). It consists of 36 questions which measure eight health concepts: physical functioning (PF); role-physical (RP); bodily pain (BP); role-emotional (RE); (GH) general health, vitality (VT), social functioning (SF), , and mental health (MH).

The physical domain includes the following subscales: PF measures limitation in physical activities because of health problems; SF measures limitation in social activities because of physical or emotional problems; RP measures limitation in usual role activities because of physical health problems; BP measures bodily pain. The mental domain includes the following subscales: MH measures general mental health (psychological distress and well-being); RE measures limitation in usual role activities because of emotional problems; VT measures vitality (energy and fatigue); and GH

measures general health perceptions (See Appendix 2). According to the SF-36 instruction manual, the SF-36 scale should be introduced to the participant first, prior to any other measurements, to avoid bias from other measurements on this test (Ware et al., 1994).

The SF-36 has been administered successfully in general population surveys in the U.S. and other countries and can be administered in 5-10 minutes with a high degree of acceptability and data quality (Ware et al., 1994). The SF-36 scale is self-administered or read by an interviewer. The SF-36 as translated into Arabic, it had been used in a few studies, (e.g. Bangladesh, Lebanon, Iran, Morocco, and US) and found to be reliable and valid (El Meidanry, El Gaafary, and Ahmed, 2003; Sabbah, Drouby, Sabbah, Retel-Rude, & Mercier, 2003; Ware et al., 1994). Use of the SF-36 health assessment scale in the Middle East is relatively new and used in Lebanon and Iran population studies.

Few studies have been conducted to examine the health status of Middle Eastern populations utilizing the SF-36. The reliability has been tested using the internal consistency measure Cronbach Alpha or test-re-test in these studies.

Sabbah, Drouby, Sabbah, Retel-Rude, & Mercier (2003) used SF-36 in a cross-sectional population study in Lebanon with a resulting Cronbach Alpha of more than 0.70.

El Meidanry et al. (2003) reported test and re-test reliability with a one-week interval, with Cronbach Alpha of .94 to .98 for the eight subscales, and .82 for the total for the Arabic SF-36 Health Assessment Questionnaire. The test-retest findings indicated that in each of the multiple assessments (for rheumatoid arthritis intervention and placebo

group), nearly all of the measures showed significant differences in improvement over time, which validate the use of the SF-36 scale in this population.

Bekker and Lhajoui (2004) found that the value of Cronbach Alpha for the SF-36 subscales was above .80 for most of the subscales, with an average of .80, which indicates a high level of internal consistency reliability for the SF-36 Scale when used with Moroccan women. The SF-36 scales' vitality and social functioning subscales demonstrated the lowest Cronbach Alpha, at .50 to .60, respectively.

The use of the SF-36 in a non-Western populations by Ahmed et al. (2002) indicated good acceptance and understanding using the Bangladeshi translation of the SF-36. The internal consistency for the SF-36 was examined and the resulting Cronbach alpha coefficients for all subscales were above .70, except for Vitality, which necessitated the removal of this scale from the entire analysis (Eshaghi, Ramezani, Shahsanaee, & Pooya, 2006). A study in Iran indicated good internal consistency with Cronbach Alpha of .70 for all subscales (Peleg, Albin, Peleg, Neumman, Abu Rabia, & Buskila, 2007).

The SF-36 Scale for minority ethnic groups in Western countries (Moroccan women in the Netherland) was found to be a reliable tool for measurement of the health status for these populations (Hollifield, Warner, Lian, Krakow, Jenkins , Kesler, Stevenson & Westermeyer, 2002; Schofield, 1998). Anderson et al., (1998) used the SF-36 in both Arabic and English versions with Arabic clients from Saudi Arabia (non-Saudi Arabs workers), and found it reliable (Anderson, Kaplan, Coons & Schneiderman, 1998).

A preliminary was study conducted with Arab-American women in Michigan during 2007, to assess the reliability and validity of the SF-36 Scale Arabic version when used with Arab women prior to understanding this Bahrain study. Result indicated that



the SF-36 could be administered easily to Arabic-American women (Mukhaimer, 2007). Acceptability of the instrument refers to the rate of missing data, number of refusal, and time needed with each participants. The acceptability was tested and there were no refusals; sixty SF-36 questionnaires were completed, and the time used ranged from 7-10 minutes. The SF-36 scale was completed without missing items and the structured questionnaire forms also were piloted. These too were completed with minimal missing items (Mukhaimer, 2007).

In this preliminary study, reliability analysis of the eight SF-36 subscales was examined using the Cronbach Alpha statistical procedure for all cases. The Cronbach's Alpha for PF, RP, RE, MH, and BP subscales exceeded the standard 0.80; The Cronbach Alpha for SF, VT, and GH subscales were .66, .51, .63, respectively (Table 4).

Coefficients above .80 indicate a high level of internal consistency, while coefficients .50 and below may be attributable to homogeneity or small sample size (Ahmed et al., 2002; El Meidanry, 2003; Ware et al., 1994). However, homogeneity of the sample has been well documented to affect self-rated health assessment tools, in that it reflects both individuals' and a community's living conditions, socio-economic and cultural norms (Shmueli, 2003).

The Arab-American female subjects of the preliminary study had been in a state of transition involving social, emotional, and economic changes, having resided within the USA for a period of only two years; this transitional state may have affected the women's well-being in a homogenous manner and thus may have impacted the reliability results for VT, GH, and SF subscales which measure well-being (Mukhaimer, 2007).

Table 4

Descriptive Statistics and Reliability of the SF-36 scale for Arab-American Women from the Preliminary Study

(N =60)

Subscale	Range	Mean	SD	Median	Cronbach's Alpha
Physical Functioning (PF)	40-100	83.75	7.98	90.00	0.81
Role Physical (RP)	0-100	59.38	1.05	59.37	0.93
Role emotional (RE)	0-100	46.94	3.85	25.00	0.93
Social Functioning (SF)	0-100	66.88	4.66	62.50	0.66
Bodily Pain (BP)	22-100	63.83	3.22	62.00	0.82
Mental Health (MH)	5-95	57.17	2.98	60.00	0.75
Vitality (VT)	-6.5-92	51.98	3.48	53.12	0.50
General Health GH	27-92	62.50	6.97	66.00	0.62

Source: (Mukhaimer, 2007)

Another consideration is that in the preliminary study the version of the SF-36 scale was a standard Arabic version, and was not modified to fit each participant's local language (i.e., Lebanese, Iraqi, Algerian, Palestinian, or Yemeni); which may have affected their responses. Others who had utilized a modified version reported having a higher Cronbach Alpha (Sabbah et al., 2003; Shmueli, 2003). The studies by these and other authors indicated that the reliability of the SF-36 scale, when used with Middle-Eastern populations, was acceptable (Table 5).

Validity of the SF-36 Scale was tested in number of studies, and it was found to be a valid instrument when used with Middle Eastern women. Sabbah et al. (2003) utilized a modified SF-36 Arabic version into local Lebanese dialect in a cross-sectional, population-based study in rural and urban Lebanon. The analysis showed good item and scale level validation with wide variability and acceptability similar to that found in the United States, supporting the validity of using the SF-36 in this population.

Table 5

## Reliability of SF-36 Scale for Different Population Groups

SubScale	USA Women	Arab- American women	Lebanese Women	Bangladeshi Women	Moroccan In Netherland	Elderly Iranian Population
PF	.93	.81	.90	.85	.86	.93
RP	.89	.93	.87	.96	.89	.98
BP	.90	.82	.89	.92	.85	.90
GH	.81	.62	.72	.78	.71	.89
VT	.86	.50	.73	.59	.71	.91
SF	.68	.65	.70	.73	.63	.46
RE	.82	.93	.84	.94	.90	.95
MH	.84	.74	.76	.81	.82	.77

Sources for columns, left to right: Ware, 2006; Mukhaimer, 2007; Sabbah et al., 2003; Ahmed et al, 2002; Bekker and Lhajoui, 2004; Eshaghi et al., 2006

The SF-36 scale floor effect ranging from 0.6 to 3.8% except the PR and RE scales, 32.3%, and 21.2 % respectively. While the ceiling effect reached 30% for five scales (PF, RP, BP, SF, and RE), and 3 to 5% for GH, VT, and MH. These findings indicates adequate distribution of the scores, and support the documented trends of the Arab populations' tendency to over-estimate the positive (Shmueli, 2003).

Item level validity was tested determining that items discriminate validity for all scales (with the exception of the General Health scales). Results were consistent with previous studies, e.g., an alpha of .08 and high correlation within the same scale items indicating 90% in item-discriminating validity.

The structure validity of the SF-36, using factor analysis with principal component analysis with Varimax rotation for the eight scales resulted in a two-factor solution supporting the hypothesized physical and mental domains of health underlying the SF-36 concepts and consistent with the original factor structure. However, there was some confusion with regard to the understanding of item number one in the role physical,

and item number one in role emotional subscales, which led to removing these items from the scales. Age influenced the PF scores as the older participants scored lower than the younger ones. More significantly, the presence of health problems (chronic illness) resulted in lower SF-36 scores. These data demonstrate the ability of the instrument to discriminate between healthy and less healthy individuals; further, women had poorer SF-36 scores than men (Sabbah et al., 2003).

Eshaghi, et al. (2006) reported that in the Iranian elderly sample of 100 individuals, the convergent validity was good for most of the subscales, except for the role emotional and role physical scales. Convergent validity was tested using each item correlation with its hypothesized scale showed satisfactory results (correlations ranging from 0.58 to 0.95). More importantly, discriminant/construct validity was demonstrated by examining the differences between gender and age groups, whereby women were found to have lower scores than men for all subscales; age was shown to affect the SF-36 score, particularly older participants had lower physical functioning scores than younger ones (Eshaghi, et al., 2006).

Factor analysis using principal component analysis with varimax rotation in the Iranian study resulted in one factor being loaded, explaining 72.2% of the variance (Eshaghi et al., 2006). Most studies conducted in western countries showed a two-factor loading, (Ahmed et al., 2002; Bekker & Lhajoui, 2004; Mukhaimer, 2007; Sabbah et al., 2003; Ware, 2006). Although the results of the preliminary study indicated the SF-36 is a reliable scale, the sample size was only sixty Arab-American women. A larger sample study in the future is needed and a different Middle East subculture remains to be studied.

The SF-36 was found to be valid when used with Middle Eastern populations, according to several studies by Iben-Hammad (2004), Shmueli, (2003), and Anderson et al. (1998). Arogundade et al., (2005) and Matthews and Nelson (2004) support the use of the SF-36 scale performing well in a non-Western population and specifically in an Arabic population (as depicted in Table 5).

The result of the preliminary study indicates that the SF-36 was found to have an acceptable level of validity at the scale structure level, item discriminant validity and inter-scale correlation results supporting the overall scale validity when used with Arab-American women in Michigan. Factor analysis resulted in two main domains, physical and mental, which supported the hypothesized structure for the SF-36 of having physical and mental domains. The physical functioning scale (PF) that measures the women's physical ability to perform daily life activities was found to be the most significant scale, affected by a woman's age and number of children as shown in Table 6.

These findings suggest that a woman's age and the SF-36 subscales (PF, BP, and VT), number of deliveries and the (RP, VT, and MH) correlated negatively, although not all at statistically significant level. Age was found to have the largest negative correlation within the eight SF-subcales.

Marital status was found to have a significant effect on PF subscale scores. Married women had higher perceived health status scores followed by single women, while divorced, separated and widowed women had lower scores. This may indicate that having a partner has a positive effect on the women physical and social functioning status.

Table 6

Correlations between SF-36 and Women's Age, Education, Marital Status, Income and Number of Deliveries

SF-36 scale	Age	Education	Marital status	Income	Number of Deliveries
PF	-.500**	.077	.957**	.112	-.045
RP	-.255	.155	-.202	.129	-.300*
BP	-.374**	.258*	-.141	.129	-.202
VT	-.312*	.158	-.185	.158	-.336*
RE	-.003	.147	.005	.216	-.094
MH	-.244	.158	-.024	.218	-.296*
GH	-.257	.278*	-.054	.007	-.119
SF	-.220	.078	.007	.244	-.225

\*\*Significant at the p= 0.01 level (2-tailed)

\* Significant at the p= 0.05 level (2-tailed)  
(Mukhaimer, 2007)

When Mukhaimer's (2007) results were compared with the US women's health status using SF-36 by Ware (2006), significant differences were found between the mean scores in all subscales except the PF subscale (Table 7). These differences may be due to sample size variation as well as sample homogeneity among the Arab-American women (Shmueli, 2003). The US female sample was larger and had greater ethnic diversity representing various groups including White American, non-White American, Hispanic, Native American, and African American. In contrast, the Arab-American women's group was a small homogeneous sample of purely Arab-American women.

Table 7

Arab-American Women SF-36 Mean Scores Compared To US Women's SF-36 Mean Score

Subscale	Arab-American Mean *	U.S. Women's Mean **	T-test value	Significance
Physical Functioning (PF)	83.75	84.2	.19	.844
Role Physical (RP)	59.38	80.9	-4.06	<.001
Role Emotional(RE)	46.94	81.3	-6.07	<.001
Social Functioning (SF)	66.88	83.3	-5.16	<.001
Bodily Pain (BP)	63.83	75.2	-3.79	<.001
Mental Health (MH)	57.17	74.7	-5.90	<.001
Vitality (VT)	51.98	60.9	-2.94	<.001
General Health (GH)	62.50	71.9	-4.29	<.001

Sources: \*Mukhaimer, (2007) ;\*\* Ware, Jr. (2006)

The SF-36 Arabic version was utilized in several Middle Eastern and Arabic studies and found to be appropriate, having shown good reliability for most of the subscales, although exhibiting less reliability with some subscales. The SF-36 scale validity testing met the standard, and had acceptable item and scale level validity. These studies supported the fact that the participants' socio-demographic condition has impacted the SF-36 scores directly and specifically with respect to age and gender. Studies of females had lower overall scores. Only the Saudi Arabian study with a clinical sample of patients with renal disease evidenced lower scores (Arogundade, Abd-Essamie, & Barsoum, 2005). This supports the validity of the SF-36 for the use with Arab-speaking population.

The SF-36 scale when modified to the local Arabic dialect was found to show better reliability, higher than 0.65 (Sabbah et al., 2003; Shmueli, 2003). This may

indicate that lower reliability of the SF-36 scale may be due to combination of homogeneity of the sample and differences in the actual interpretation of the items.

The use of the Arabic translated SF-36 perceived health status scale in the preliminary study provided valuable information for researchers through testing the scale reliability and validity when used with an Arabic female population and supports its use for this study of Bahraini women's health status. Permission from Quality Metric Incorporated, the original copyright holder (Ware et al., 2000) was received for use of the scale.

### *Structured Questionnaire*

Since the SF-36 scale is relatively new to use with Arabic populations, structured questionnaires served the purpose in the secondary aim to contribute additional validation information. These items included demographic and socio-economic information, medical chart review, and physiological health indicators which includes blood pressure and Body Mass Index by taking participant height and weight.

The interview questionnaire was based on selected parts of the well established standard and published by the WHO Demographic Health Survey (DHS, 2006). The first part included women's reported demographics such as educational level, age, occupation, income, and marital status. The second part included women's reported medical and obstetric history and lifestyle practices such as use of tobacco, caffeine intake, exercise, diet, and use of medication. The third part dealt with women's health seeking behavior, accessibility to health care services, and standard health care needs questions, (i.e., both met and unmet health needs).



The questionnaire consisted of 17 questions with forced-choice response options, (Appendix 3). As result of the preliminary study, the structured questionnaire was reviewed and a few questions were modified or removed to be acceptable within this culture. For example, the income was changed from U.S. Dollars to Bahraini Dinars. Also, some questions have been removed as these questions provide information that is not pertinent to this study. The question regarding the country of origin was not applicable to this study as the researcher verified with the medical records officer to ascertain that the selected female participant comes from Bahraini families only.

#### *Physiological Measurements*

Several physiological indices were identified for inclusion in this study including blood pressure, height and weight. Blood pressure is an important indicator of health status and predictor of life expectancy, as high blood pressure is considered a risk factor for coronary heart disease (Ahmed et al, 2002). The American Heart Association (AHA) recommends that all adults should have their blood pressure measured routinely at least every 2 years, and that those with high blood pressure should be re-measured more often at each doctor visit and annually, since monitoring and treating high blood pressure reduces strokes, heart attack and heart failure (AHA, 2009). Blood pressure is defined as the pressure of the blood within the arteries. It is produced by the contraction of the heart muscle and its measurement is recorded by two numbers: the first is systolic blood pressure after the heart contracts and is higher, while the second is the diastolic blood pressure, which is the measure before the heart contracts and is the lower value. The normal blood pressure for a healthy adult is 120 millimeters of mercury for systolic and 80 millimeters of mercury for diastolic pressure according to AHA (2009).

In order to obtain accurate and reliable blood pressure measurement, it was important to ensure that an adequately calibrated device (e.g. a mercury sphygmomanometer) is used by a trained person implementing a consistent procedure. For this study the researcher, an advanced practice nurse, conducted all blood pressure readings using the same manual mercury sphygmomanometer on all subjects. Adjustable Hewlett Packard sphygmomanometer cuff was used to accommodate different women sizes, with adult Littman classic II stethoscope. Left arm blood pressure was measured at the end of the interview in the same room.

Women's height and weight are the best indicators of their nutritional status, from which the body mass index (BMI) can be calculated. BMI is the most common screening method for obesity. BMI was calculated using the following formula: weight in kilogram divided by height in meters squared. A BMI of 25-29.9 indicates overweight and a BMI of 30 or higher indicates obesity (CDC, 2009 and Schteingart, 2004). In this study the researcher used a weighing scale that also has height measurement features to take the women's weight and height. Height was measured in centimeters, while the weight was measured in kilograms.

#### *Medical Chart Review*

The review of the medical chart is a major component of this study because it supplements the self reports with documented assessments by health care providers. A standard form was used for data extraction from the medical charts to consistently obtain the relevant data. The form is based on the standards for health promotion in hospitals developed by the WHO Office in Europe (2004), and the WHO (2007) health survey; it

also includes the most commonly reported health problems for women in Bahrain as reported by the Ministry of Health Statistics (Bahrain Ministry of Health Statistics, 2006).

The questionnaire includes assessment for chronic conditions such as diabetes, hypertension, asthma, anemia, heart disease, and HIV-AIDS.

Gender-specific assessment regarding breast and cervical cancer screening is also evident in the health status surveys for women by World Health Organization (WHO, 2006). Therefore a check list for chart review and extraction was created using these indicators (Appendix 5).

## **Procedures**

The following section describes the study procedures involving the data collection procedures, and protection of human subjects.

### *Data Collection*

The researcher had several meetings with the Ministry of Health director for primary care and the health centers' chief administrator to select the health centers that serve mostly Bahraini population. The selected health centers with morning and evening working hours ensured a more effective recruitment approach. The researcher prepared a timetable for the research activities in each health center and informed the administrators of the planned dates and time for recruitment and data collection. The plan included the participant number in each health center which facilitated accurate recruitment.

All health center administrators were called by the researcher 2-3 days before the planned date of data collection to inform and update regarding the research activities. Health center administrators were very cooperative; they facilitated the research activities

by assigning a private room for the study purpose and introduced the researcher to the medical records officer to assist in the recruitment process.

The medical record officer used simple random systematic sampling by selecting every fifth family file from the health center serving area address. For example, the health center serves 20 address blocks, each block has an average of 100-500 family files. The selection of every 5<sup>th</sup> family medical records starts from the first block and continue through the entire list. The researcher then identified the files that had females that matched the inclusion criteria and recorded the phone number. Once the sample was identified from the health center family medical records registry, the researcher contacted the participants by phone, asked verbal consent for study participation and scheduled an interview appointment for the participant during the day. During the telephone call risks and benefits were explained and directions to the study site and researcher contact information were given.

A study poster was posted near the medical record information desk to inform the public about the research activity with the study room number to guide the participants. Interviews were conducted in a comfortable, private room with tables and chairs that allowed the participant to relax. The weighting scale with height measurement, and blood pressure apparatus were kept in the same room to provide privacy for the participants. Transportation was provided for the participant when needed. An explanation of the research purpose, consent form, and procedure was given to each participant at the beginning of the interview.

SF-36 health status scale was introduced first followed by a supplemental structured interview to examine the women's health seeking behavior and their health

services utilization. The researcher read the SF-36 for each of the participants to avoid potential literacy-related discomfort. Next, physiological measurements, which included weight, height, and blood pressure were taken. Subsequently, each woman's medical chart was reviewed by the researcher only, after the interview was completed. When a new health problem was identified or a problem that required immediate referral (e.g., if the participant had a high blood pressure reading) participants were referred to the health center's family physician. Participants were given immediate accessibility to the health care providers and any necessary services were administered free of charge.

A light meal was provided during the interview as well as child care for women with children. The researcher explained that the final results of this study would be communicated to the health officials in Bahrain, using data for the participants as a group, and no individuals would be identified; it was also explained that the results may be published in nursing or health journals.

#### *Protection of Human Subjects*

University of Michigan Institutional Review Board (IRB) approval was secured as well as permission from two government offices in the country. These were the Ministry of Health and Bahrain Central Statistics Office Administration in Bahrain to assure that research participants were protected and their rights of privacy were respected throughout the study, refer to permission letter (Appendix 11).

There were minimal risks in this health assessment study, which included disclosure of medical information and review of medical charts. Within the research consent form there was provision for permissions for release of medical information from

each participant. Blood pressure, height, and weight are physiological measurements that pose minimal risk and are non-invasive procedures.

The letter explaining the study and soliciting participation and the consent form were in Arabic and the researcher read it for the participant in her language (Appendix 6). Each participant signed the consent form by herself. Thus, there was no need for husband's or father's signatures. All participant information was kept strictly confidential; no participant was identified by name, except during the interview. Moreover, participants were informed that they were under no obligation to respond to any question and could feel free to withdraw from the study at any time. The participants' names were confidential and were kept separate from the interview ID.

Only the health center administrator had the participant list of names, medical records ID and study ID. The researcher has maintained the study ID list only to ensure confidentiality. When the researcher needed additional information from any participant chart, the health center administrators communicated with the researcher and provided the needed information using that list to ensure accuracy and confidentiality. All data were collected during the study period and were stored in a research office in locked files. Moreover, only the primary investigator had access to this information.

In the event of an emergent problem with study participants (for example, women with high blood pressure readings) the researcher ethical responsibility is to refer her immediately to the local health center physician for emergency evaluation and treatment free of charge.

## **Data Management and Analysis**

The data were analyzed using SPSS computer program version 17. The researcher used the SF-36 scale manual guidelines to create the database for the SF-36 scale analysis for this study. A code book was developed, using the preliminary study; Bahraini women's responses for the structured questionnaire were analyzed using the content analysis process by the researcher. Data cleaning and recoding was carried out by the researcher and verified by the staff of the University of Michigan Center for Statistical Consultation and Research (CSCAR).

The SF-36 scale was re-coded according to the manual instructions; other variables were coded according to the type of statistical analysis carried out. For example, age was entered as a continuous variable and recoded into three groups: young (18-35years), middle (36-52years), and older (53-64years). Age reverse recoding was needed when regression model analysis was performed as it requires the weight of each group to be identified (as young was the higher percentage group), group 1 became older, 2 the middle and 3 was the young. Height in cm and weight in kg were entered separately; however BMI was calculated using both variables. In addition, BMI was recoded into a categorical variable in order to have 4 different levels of BMI (underweight, normal, overweight, and obese).

As data were obtained during face to face interviews and most women answered the structured questions verbally, this resulted in a small number of missing data. The missing data were handled by assigning 99 codes.

The height was converted to meters, and then squared. The BMI was calculated and recoded into these categories: BMI  $1 < \text{or} = 18.5$  are considered underweight, BMI 2

=18.5-24.9 is appropriate, BMI 3= 25-29.9 is overweight, BMI 4= >30 is obese (CDC, 2007). While blood pressure was taken and coded as systolic and diastolic, it was collapsed into groups which include: 1= normal BP 120/80, 2 = elevated 130/90 and 3 = high 140/>90 and above.

The structured questionnaire was analyzed using content analysis which included listing all possible answers for each question, grouping the answers into categories, and then coding them to ensure systematic analysis. Data were coded using the participants' responses and grouping them into themes; coding was performed manually, followed by data cleaning, recoding, and entry into the database using the Statistical Package for Social Sciences (SPSS) computer program. The sample was stratified by age and region according to Bahraini population proportions; therefore, the sample represents the population and there was no need to weight the analysis.

In order to answer the research questions descriptive statistical analyses were used, including means, medians, and ranges. Inferential statistical procedures were also used, including correlations, one way ANOVA, regressions, t-tests, and chi square analyses.



## **CHAPTER V**

### **Results**

This chapter describes the sample, results of the SF-36 reliability and validity assessment, and the results related to each research question. In addition, it contributes to the secondary validation of the SF-36 Arabic version by presenting the analyses of associations between health data (BMI, BP, number of health problems, and number of physician visits made in the last six months) in relation to perceived health status scores.

#### **The Sample**

The total sample was 258 Bahraini women, ranging in age from 18 to 64 years old. The mean ( $\mu$ ) age was 35 years with standard deviation (SD) of 11.1 and the median age was 34 years. The majority of the participants were married (73.6 percent), full-time homemakers (63.6 percent), and educated at high school or higher levels (71.3 percent). Table 8 presents sample characteristics.

#### **SF-36 Scale Reliability and Validity Assessment in This Sample.**

This section presents results of the essential assessments of the Sf-36 performance in this sample. This step is fundamental to interpreting this study's findings in relation to the primary aim of describing the health status of Bahraini women. Some additional findings about validity also are presented to fulfill the secondary aim of contributing to the body of female metric data available for the Arabic version. The process used are those published in the updated SF-36 manual (Ware, 2000) for the data in this sample. The processes included: (1) acceptability of the SF-36 scale; (2) reliability testing using

Cronbach's Alpha; (3) item level validity; (4) scale level validity; (5) structure validity of the SF-36; and (6) scale factor analysis.

Table 8

Demographic Characteristics of Study Participants

(N=258)

Characteristics	N	%
Marital status		
Single	44	17.1
Married	190	73.6
Divorced	10	3.9
Widowed	14	5.4
Age		
18-35years	141	54.7
36-52 years	92	36
53-64 years	24	9.3
Education		
None	12	4
Less than high school	48	18.6
High school	97	37.6
College+	101	39.2
Women's Monthly Income*		
None	164	63
BD 300 (Poor)	31	12
BD 400-600 (Middle)	44	17.1
BD 600-1000(Upper Middle)	17	6.6
BD 1000 + (Affluent)	2	0.8
Family Monthly Income		
BD 300	70	27.1
BD 400-600	90	34.9
BD 600-1000	47	18.2
BD 1000 +	51	19.8
Employment status		
Full-time homemaker	145	63.6
Part-time homemaker	2	.8
Full-time employment	76	29.5
Part-time employment	5	1.9
Student	22	8.6
Retired	8	3.1

\*1 BD = 2.2 USD

The acceptability of the SF-36 scale was determined by the percentage of refusals, the percentage of completed questionnaires, and the length of time taken to complete the questionnaire. Additionally, acceptability was examined by using descriptive statistics (mean and standard deviation) and the participant response rate. The SF-36 scales were completed with no missing values. This may be due to the fact that it was an interview and the researcher restated responses to validate the participants' values. All 258 women completed the scale. There were no refusals for any items, and the interview for the SF-36 scale took less than 10 minutes. Descriptive statistics which reflect the percentage of scale answers can be found in (Table 9). These include range, mean, SD, and median. The structured questionnaire had ten missing answers out of the 258 protocols.

The internal consistency reliability of the eight SF-36 subscales was examined using the Cronbach alpha statistical procedure. The Cronbach alpha internal consistency coefficients for physical functioning (PF), role physical (RP), role emotional (RE), mental health (MH), and bodily pain (BP) subscales were found to be between 0.70 to 0.90; lower alpha coefficients were found for social functioning (SF), vitality (VT), and general health (GH) subscales (Table 9).

Item level validity of the SF-36 scale, according to Ware (2000) is supported if the following Likert scale scoring assumptions are fulfilled: 1) the items belonging to the same scale and measuring the same concept have approximately similar means and standard deviations; 2) each item in the scale has approximately a similar correlation with the scale; 3) the correlation between items and the hypothesized scale exceed 0.40 for the internal consistency; and 4) the correlation between each item and the

hypothesized scale is higher than the correlation between that item and the other scales for the item discriminant validity (Ware, 2000).

Table 9

Descriptive Statistics and Reliability of the SF-36 scale for Bahraini Women

(n=258)

Subscale	Range	Mean	SD	Median	Cronbach's Alpha
Physical Functioning (PF)	0-100	81.18	16.90	83.33	0.75
Role Physical (RP)	0-100	53.77	42.51	50.00	0.87
Role Emotional (RE)	0-100	41.53	45.48	16.66	0.90
Social Functioning (SF)	0-100	75.85	27.74	85.71	0.59
Bodily Pain (BP)	0-100	61.86	26.26	61.84	0.70
Mental Health (MH)	0-100	62.59	20.55	66.66	0.71
Vitality (VT)	0-100	60.43	20.05	64.28	0.49
General Health (GH)	0-100	69.21	22.49	76.92	0.65

Items belonging to the same scale were examined to verify if the mean and standard deviation for the items for each of the subscales were within a similar range. For example, the role physical (RP) subscale, which consists of four items, had an  $\mu$  between 2.90 and 3.35 and a SD between 1.97 and 2.0. The role emotional (RE) subscale  $\mu$  was between 2.56 and 2.75 while the SD ranged from 1.95 to 2.04. The SF-36 results showed comparable SD and  $\mu$  for most items, indicating that items of the same scale are measuring the same concept; other subscales performed similarly (Table 10).

Each of the subscales in the SF-36 addresses a different dimension of health status, and moderately related to each other. For example, the correlations within each of the eight subscales and their own items were significant ranging from .15 to .71 with  $p=$  0.01 and .05. This indicated a success rate of over 90% for internal consistency; the PF scale correlations ranged between .16 to .60. The correlation between each item and the hypothesized scale was higher than the correlation between that item and the other scales, supporting valid scale results (Appendix 8).

Table 10

SF-36 Item Means, Standard Deviations and Correlations with SF-36 subscale (Version 2 Standard)  
(N=258)

ITEM		MEAN	SD	PF	RP	BP	GH	VT	SF	RE	MH
SCALE	PF – PHYSICAL FUNCTIONING										
PF01	3a	1.73	.779	.56							
PF02	3b	2.85	.481	.60							
PF03	3c	2.90	.387	.50							
PF04	3d	2.35	.708	.68							
PF05	3e	2.84	.465	.62							
PF06	3f	2.61	.668	.59							
PF07	3g	2.54	.694	.69							
PF08	3h	2.81	.489	.70							
PF09	3i	2.95	.245	.43							
PF10	3j	2.99	.087	.14							
SCALE	RP – ROLE PHYSICAL										
RP1	4a	3.10	2.00		.87						
RP2	4b	2.90	2.00		.89						
RP3	4c	3.23	1.99		.79						
RP4	4d	3.35	1.97		.84						
SCALE	BP – BODILY PAIN										
BP1	7	3.91	1.23			.90					
BP2	8	5.18	1.02			.85					
SCALE	GH – GENERAL HEALTH										
GH1	1	3.66	.80				.71				
GH2	11a	3.89	1.04				.61				
GH3	11b	2.32	.86				.56				
GH4	11c	3.34	.93				.65				
GH5	11d	3.48	.85				.68				
SCALE	VT – VITALITY										
VT1	9a	3.18	1.08					.62			
VT2	9e	3.41	1.12					.58			
VT3	9g	3.32	1.13					.63			
VT4	9i	3.53	1.10					.68			
SCALE	SF – SOCIAL FUNCTIONING										
SF1	6	4.01	1.31						.79		
SF2	10	4.29	.95						.89		
SCALE	RE – ROLE EMOTIONAL										
RE1	5a	2.75	2.04							.90	
RE2	5b	2.56	1.95							.92	
RE3	5c	2.65	1.97							.90	
SCALE	MH – MENTAL HEALTH										
MH1	9b	3.52	1.16								.72
MH2	9c	4.17	1.08								.66
MH3	9d	3.22	1.24								.67
MH4	9f	3.54	1.09								.76
MH5	9j	3.79	.78								.58

Item to scale correlations were examined between each item in the SF-36 subscales and its own scale and with the other subscales. These correlations are expected to be higher than the correlation with other subscales. For example, the ten items in the PF scale should correlate more highly with the PF scale than with RP, MH, GH, RE, VT, MH, and BP scales (Appendix 8)

Scale level validity would be supported if the scale scores indicated substantial variability when examining the ceiling and floor effect, if the reliability coefficients equaled or exceeded 0.70, and if the mean score for the subscales measuring health related disability (PF, RP, BP, and RE) were higher than the mean scores for scales measuring well being (GH, VT, MH, and SF) (Sabbah et al., 2003; Ware et al., 2002).

Results from this study showed the percentage of floor effect within a range from 0.40 to 2.3 for all subscales except for RP and RE (which were 29.5 and 50 percent respectively). Moreover, the ceiling effect was greater than 30% for 3 scales (RP, RE, SF), and between 0.80 to 13.6 % for PF, BP, GH, VT, and MH subscales (refer to Table 11).

The SF-36 is a likert scale with minimum is 0 and the maximum is 100. The score distribution for normality was tested using Kolmogotov-Smirnov test in SPSS; only VT and MH had normal distributions, while GH and BP had nearly normal distributions. PF and SF were completely skewed to the left, while RP had an irregular pattern and RE was skewed to the right (Figure 5.1-5.8). These findings indicate that SF-36 scores for these women presented differently than the scores for the US distribution.

Table 11

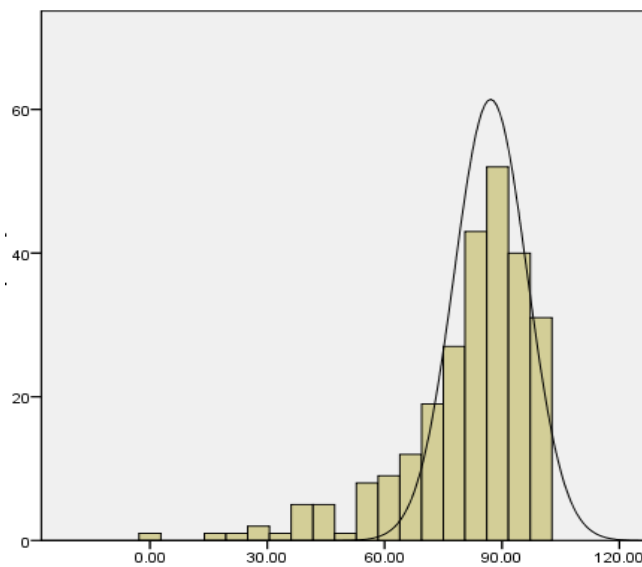
## SF-36 Score Variability Test

(N= 258)

Scale	Floor Effect		Ceiling effect		Mean	SD
	%	Score	%	Score		
PF	0.4	0	12	100	81.18	16.90
RP	29.5	0	36.6	100	53.78	42.51
BP	1.6	0	13.6	100	61.87	26.26
GH	0.8	0	0.8	100	69.21	22.49
VT	0.4	0	0.8	100	60.43	20.05
SF	2.3	0	41.1	100	75.86	27.74
RE	50	0	33.3	100	41.53	45.49
MH	0.8	0	01.2	100	62.60	20.55

The mean score for scales measuring wellbeing did not meet the expected values based upon the US samples (Ware et al., 2002). The coefficient reliability for PF, RP, RE, BP, and MH subscales was above .70, while for subscales VT, GH, and SF the values were between .49-.65, and this may be attributable to homogeneity of this study sample or different interpretation of item meaning for Arabic Bahraini women. For example, the respondents answered the questions related to physical role easily and quickly, while they took longer and asked more questions when it came to choosing level for emotional or mental questions. The mean scores for the subscales measuring health related disability (RP, BP, RE, except PF) were 53, 61, 41 and 81 respectively which were generally somewhat lower than scores for scales measuring well being (GH, VT, MH, except SF): 69, 60, 62 and 75.

5.1 :Physical Functioning Scale Scores Distribution



5.2 :Role Physical Scale Scores Distribution

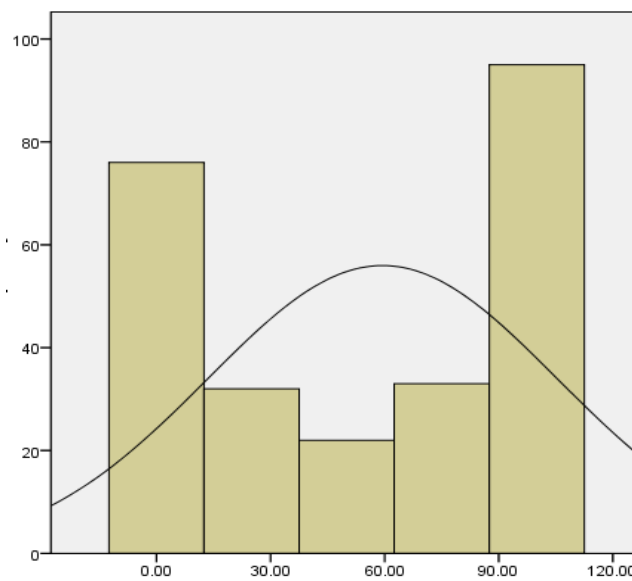
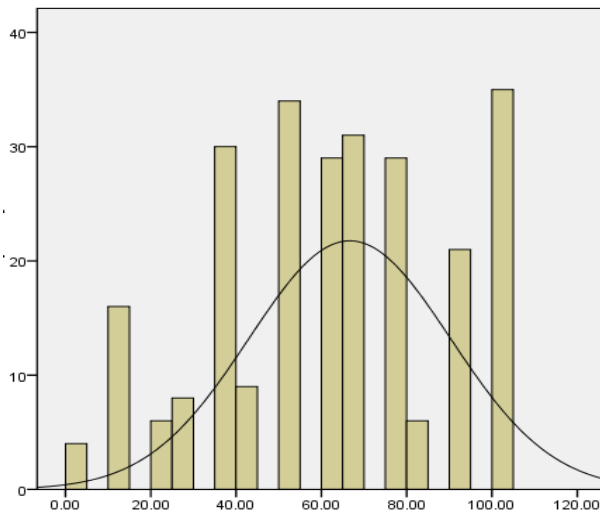


Figure 5.1-5.2: Bahraini women's SF-36 Scores Distribution for PF & RP Subscales



5.3 : Bodily Pain Scale Scores Distribution



5.4 : General Health Scale Scores Distribution

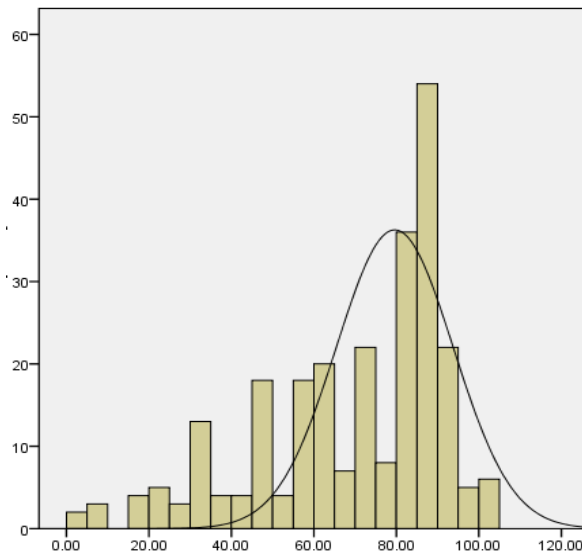
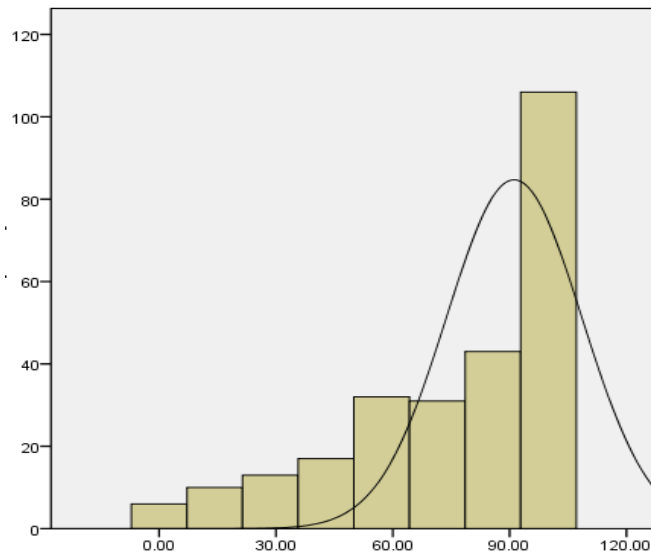


Figure 6.3-5.4: Bahraini women's SF-36 Scores Distribution for BP & GH Subscales

5.5 : Social Functioning Scale Scores Distribution



5.6 : Vitality Scale Scores Distribution

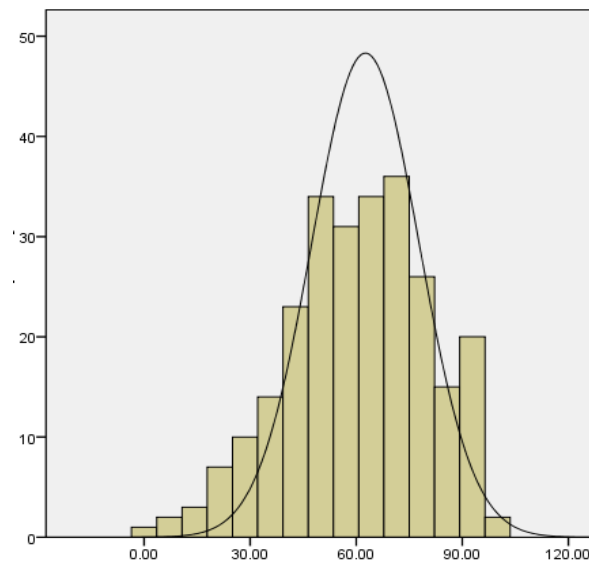
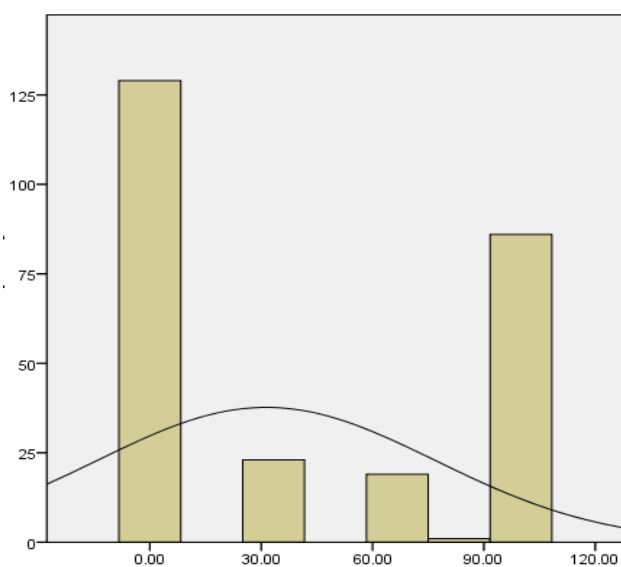


Figure 7.5-5.6: Bahraini women's SF-36 Scores Distribution for SF & VT Subscales

5.7 : Role Emotional Scale Scores Distribution



5.8 : Mental Health Scale Scores Distribution

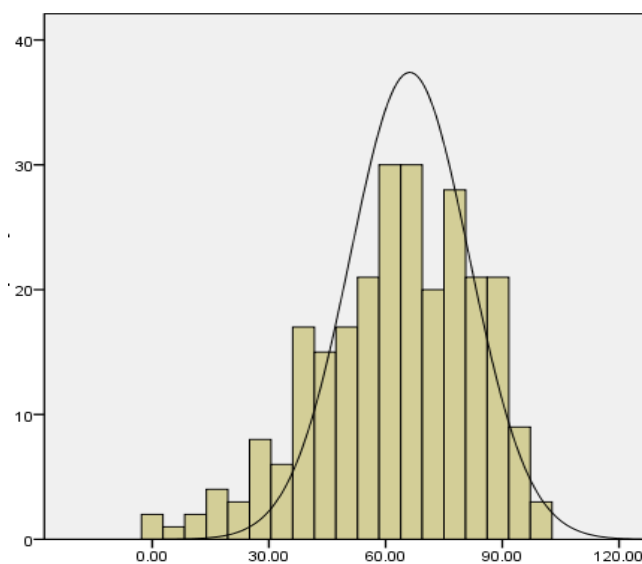


Figure 8.7-5.8: Bahraini women's SF-36 Scores Distribution for RE & MH Subscales

SF-36 Scale structure validity was examined by conducting correlations between all eight scales and comparing them to the internal consistency of each scale. Pearson Product-Moment correlations were used to examine the relationships between the eight SF-36 scales. The correlations between the subscales were mostly positive. The internal consistency for all sub scales was higher than the correlations between the eight subscales (Table 12). This suggests the scale structure validity is supported, indicating factor analysis is the next appropriate step in the analysis process.

Table 12

Structure Validity of the SF-36 scale

(N= 258)

Scale	Internal consistency	PF	RP	BP	GH	VT	SF	RE	MH
PF	.75								
RP	.87	.263**							
BP	.70	.352**	.357**						
GH	.65	.360**	.275**	.360**					
VT	.49	.095	.311**	.265**	.284**				
SF	.59	.157*	.276**	.257**	.211**	.443**			
RE	.90	-.017	.313**	.186**	.077	.349**	.327**		
MH	.71	.066	.305**	.274**	.288**	.612**	.496**	.418**	

\*\* Significant at the p= 0.01 level (2-tailed)

\* Significant at the p= 0.05 level (2-tailed)

Factor analysis of the eight SF-36 subscales was performed using principal component analysis with Varimax rotation resulting in a two-factor solution corresponding to the theoretical mental and physical domains of health underlying the SF-36 scales. Factors with Eigen values greater than 1 were extracted. In this analysis 2 factors were extracted and accounted for 55.5% of the total shared variation. These results of factor analysis were consistent with previous studies (Ware et al., 2000; Ahmed et al., 2002; Sabbah et al., 2003; Bekker & Lhajoui, 2004; Eshaghi et al., 2006).

The factor analysis using Varimax with Kaiser Normalization showed that 38 percent of the variance is explained by the first component (Mental) and 17.3 percent of the variance is explained by the second component (Physical). The PF, RP, BP, and GH subscales loaded mostly on the physical components, while the VT, SF, RE, and MH subscales loaded mostly on the mental components. This outcome of factors analysis procedure supports the conclusion that the SF-36 measured these constructs in this sample in a manner consistent with prior factor analysis and is therefore a valid measure in this sample. Results are presented in Tables 13 and 14. Bold numbers in the SF-36 factor loading table 14 showed the level of loading degree for eight subscales. The first four scales (PF, RP, BP, and GH) loaded mostly on physical component, while the following four scales (VT, SF, RE, and MH) loaded mostly on mental component.

Table 13

Principal Component Factor Analysis for SF-36 Scales

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative	Total	% of Variance	Cumulative %
1	3.055	38.186	38.186	3.055	38.186	38.186
2	1.386	17.321	55.507	1.386	17.321	55.507
3	.822	10.269	65.776			
4	.663	8.289	74.065			
5	.610	7.630	81.695			
6	.576	7.205	88.900			
7	.515	6.439	95.338			
8	.373	4.662	100.000			

Extraction Method: Principal Component Analysis.

Table 14

## SF-36 Scale Factor Loading with Rotated Component Matrix

SubScales	Component	
	Mental	Physical
PF scale	-.109	<b>.802</b>
RP scale	.409	<b>.497</b>
BP scale	.240	<b>.688</b>
GH scale	.169	<b>.704</b>
VT scale	<b>.763</b>	.191
SF scale	<b>.678</b>	.211
RE scale	<b>.708</b>	.035
MH scale	<b>.817</b>	.60

Extraction Method: Principal Component analysis. Rotation Method: Varimax with Kaiser Normalization.

<sup>a</sup> Rotation converged in 3 iterations

### Research Questions and Specific Aims

Aim1: To assess the perceived health status of Bahraini women.

Research question 1: What is the perceived health status of Bahraini women?

To assess the perceived health status of Bahraini women, the SF-36 eight subscales scores (PF, RP, BP, SF, RE, MH, GH, VT) were calculated using the updated SF-36 manual coding system. Basic descriptive statistics analysis including frequencies, percentages, SD, means, and distribution of the participants' perceived health score were carried out.

The perceived health status scores for Bahraini women were calculated, and examined in relation to the United States women's normative scores published by Ware et al. (2002). Employing normative population data for SF-36 scale scores is the ideal method to determine whether a group's or an individual's perceived health status score is below or above average for their country, age, or sex. Scores for Bahraini women have not been published to date. Therefore, using both the US population average SF-36 scale

scores and the preliminary study of Arab-American women scores as the population normative data seemed most appropriate for this study's purpose.

In order to understand the difference between the Bahraini women in this study and the two US women's SF-36 scores, independent-sample t-tests for each subscale were carried out using the respective mean for these two samples. There were statistically significant differences between the Bahraini women's health status scores and the US women's scores across six subscales, except for the VT and GH subscales, which were not significant (Table 15). When Bahraini women's health status scores were compared to the Arab-American women's health status scores from the preliminary study, there were significant groups differences for the PF, RP, SF, MH, VT, and GH subscales (Table 16).

Table 15

Comparison of the SF-36 Mean Scores Between Bahraini and U.S. Women

Subscale	Bahrain Women	U.S. Women	t-statistic	p-value
	$\mu$	$\mu$		
PF	81.18	84.2	-2.87	.004
RP	53.77	80.9	-10.24	.001
RE	41.53	81.3	-14.04	.001
SF	75.85	83.3	-4.30	.001
BP	61.86	75.2	-8.15	.001
MH	62.59	74.7	-9.46	.001
VT	60.43	60.9	-.37	.711
GH	69.21	71.9	-1.91	.056

Source: Ware, Jr., (2006)

Table 16

Comparison of the SF-36 Mean Scores between Bahraini and Arab-American Women

Subscale	Bahraini Women	*Arab-American Preliminary Study	T-test value	Probability
	$\mu$	$\mu$		
PF	81.18	83.75	-2.44	.05
RP	53.77	59.37	-2.11	.05
RE	41.53	46.94	-1.90	.058
SF	75.85	66.87	5.20	.001
BP	61.86	63.83	-1.20	.231
MH	62.59	57.16	4.25	.001
VT	60.43	51.97	6.78	.001
GH	69.21	62.50	4.79	.001

\*Source: Arab-American women's study by Mukhaimer Preliminary study, 2007

Aim 2: To examine the actual health status of Bahraini women.

Research Question 2: What is the actual health status of Bahraini women?

Research Question 3: What are the most common health problems of Bahraini women?

To identify the actual health status and the most common health problems for women in Bahrain, basic data on the participants' health were gathered using chart review, along with data from the interview and physical measurements. These included maternal health indicators and diagnoses, and clinical indicators such as blood pressure and weight. Basic descriptive statistics were used to examine these data.

Physiological measurements that are predictors for future morbid conditions among Bahraini women are body mass index (BMI) and blood pressure (BP). Results from this study showed only 23.3 percent were within normal BMI, and over 70 percent were in the overweight or obese categories.



In this sample, 80% of the Bahraini women had normal blood pressure, while 20 percent had elevated blood pressure levels. During the study, two women were found to have high blood pressure (180/100) and were referred to the health center physician immediately for medical treatment and care. According to a chart review, they were previously identified as hypertensive and had ignored their follow up at the health center (Table 17).

Content analysis was completed for the structured questionnaire data regarding maternal health indicators. These questions included the number of pregnancies, deliveries, and abortions among Bahraini women. Mean reproductive events reported by Bahraini women included 3.1 pregnancies, 2.5 deliveries, and .42 abortions (Table 18).

Table 17

Bahraini Women's BMI and Blood Pressure

(N= 258)

BMI categories	N	Percentage	Blood Pressure	N	Percentage
1 Underweight	9	3.5	=<120/80	201	77.9
2 Normal BMI	60	23.3	130/90	63	2.3
3 Over weight	73	28.3	>=140/90	12	4.7
4 Obese	116	45	Other (overlap)	39	15.1

The medical conditions Bahraini women reported were verified by their medical chart review. Six charts were not found (2.3%), 71 were incomplete (27.5%), and 181 were complete (70.2%). Self reported health problems were double-checked with medical chart review in 70% of the participants. Some of the missing data may be related to women who changed to another health care provider for chronic illness management.

Anemia, hyperlipidemia, diabetes and hypertension were the most commonly reported chronic conditions among this sample (Table 19).

Table 18

Bahraini Women's Maternal Health Indicators

(N= 258)

Number Of events	Pregnancy		Delivery		Abortion	
	N	%	N	%	N	%
0	59	22.9	71	27.5	192	74.4
1-2	56	21.7	63	24.5	45	21.3
3-5	100	38.8	102	39.6	11	4.3
6-10	37	14.4	20	7.8	0	0
>10	7	2.4	2	.8		

Violence was reported by 80 women, which was 31% of the study participants, and all types of violence existed as seen in Table 20.

Table 19

Most Common Health Problems Among Bahraini Women

N=258

Medical Condition	Reported		Confirmed		Unconfirmed or Discrepant Cases
	Cases	%	Cases	%	
Anemia	53	20.5	25	9	28
Hyperlipidemia	30	11.6	15	5.8	15
Diabetes Mellitus	28	10.9	27	10.6	1
Hypertension	26	10.1	27	10.5	1
Asthma	17	6.6	3	1.2	14
Gastritis	17	6.6	9	3.5	8
Hypothyroidism	12	4.7	17	6.6	5
Irregular periods	7	2.7	5	1.6	2
Vaginitis	2	0.8	11	4.3	0

Table 20

Reported Types of Family Violence Among Bahraini Women

Violence Type	N	%
None	179	69
Verbal	40	15.5
Physical	4	1.6
Economic	2	.8
Psychological	4	1.6
Mixed	29	11.2
Total	258	100

Aim 3: To explore the health-seeking behavior of Bahraini women.

Research Question 4: What are the types of health-seeking behaviors of Bahraini women?

To identify the types of health seeking behaviors for women in Bahrain, content analysis of the structured questionnaire was carried out. Variables examined included service utilization, health seeking behaviors, use of preventive health services such as pap smears and mammograms, birth control use, medication use, smoking, dietary habits, exercise, and stress relief practices.

The main health facility used by Bahraini women when they are sick is the local health center (92% of the women), while 3.5% used the emergency room, and 4.7% used a private health facility. When asked about the accessibility of services, 98% of the women reported that these health facilities were available when they needed them. Health service utilization was similarly examined by identifying two types of doctor visits. Data included the number of health center physician visits (which are free health care services) and the number of private physician visits (which are either paid on a fee-for service basis or using health insurance). Approximately 50% of the women had visited the health

center 1 to 3 times in the last six months while 43% had 1 to 2 private physician visits (Table 21). Mean health center visits for each woman was 2.6 visits (SD=1.26) with the minimum being one visit and maximum of 12 visits. Mean private physician visits were 1.9 (SD=1.1) with minimum being 0 visits and the maximum 6 visits, women may have visits in both settings.

Table 21

Bahraini Women's Health Service Utilization in Previous Six Months

Number of visits	Health center clinic		Private Clinic	
	No	%	No	%
0	21	8.1	94	36.5
1-3	127	49.2	111	43.0
4-6	68	26.4	26	10.1
7-9	19	7.4	19	7.4
10-12	13	5.0	2	.8
>12	10	3.9	6	2.3

The health seeking behaviors were explored by asking each woman to rank order specific health seeking behaviors used when sick. The behaviors were ranked from 1 to 6, with 1 being the most frequently used strategy and 6 the least frequently used. The possible item choices were family advice, self medication, nothing, use of health center, use of traditional medicine (local traditional herbal medicine) and private clinic use. Traditional medicine was the most highly ranked by 168 women participants (65%), self medication was ranked second by 165 women (64%), health center use ranked third by 153 women (59%) and private clinic use was ranked fourth by 111 women (43%), nothing was ranked fifth (10%).

The use of preventive services was examined using descriptive statistics of the women who had mammograms and Pap smears. Forty three women (16%) had had

mammograms and 80 (31%) had Pap smears thus, the number of women who used these services was low overall; the frequency of use can be seen in Table 22.

Table 22

Bahraini Women's Use of Preventive Health Services

Time When Last Exam Done	Mammogram		Pap Smear	
	N	%	N	%
1-2 years	42	16.3	83	32.2
3-5years	4	1.6	20	7.8
>5years	1	.4	4	1.6
Not done	63	24.4	108	41.9
Not applicable*	148	57.4	43	16.7

\* Women were less than 40 years for mammogram, and virgin/unmarried for pap smear

When Bahraini women were asked about contraceptive use, results showed that the two major forms of birth control were none (56.6%) and coitus interruptus (22.9%) while only 19% used some form of standard contraception (Table 23).

In this sample, 44.6% of the women used one or more medications. The most commonly used medications were iron and vitamins, followed by medications for hypertension and diabetes (Table 24).

Table 23

Contraception Use Among Bahraini Women

Method	N	%
None	146	56.6
Oral Contraceptive pills	5	1.9
Male condom	20	7.8
IUD	1	.4
Safe Period (calendar method)	4	1.6
Coitus interruptus	59	22.9
Female Sterilization	14	5.4
Male Sterilization	9	3.5
Total	258	100

Table 24

Medication Use Among Bahraini Women

Medications	N	%
Iron & vitamin	67	25.6
Diabetes & Hypertension meds	30	11.6
Thyroxin	12	4.7
Other	8	2.7

Other health practices that were examined were smoking, exercise, diet, and coffee consumption behaviors. Smoking among Bahraini women was low in frequency with only 15 women (5.8%) using tobacco. However, among those who smoked, traditional Hookah smoking (which is done for 3-6 hours at a time) for more than 20 years was the most common practice. Fourteen percent of the women exercised 1-2 times per week. A total of 31 women (12%) were on a specific diet, mostly low calorie diets. Caffeine consumption was reported by 207 of the women with approximately 80% drinking 1-2 cups of coffee daily. When the women were asked about the stress relief method they used most frequently, they reported that they withdrew and cried in an isolated place (40%). Other women reported reading Quran and praying (18%), exercising (10.5%), and eating (7.8%) when stressed.

Research Question 5: What are the barriers Bahraini women face in obtaining health care services?

To identify the Bahraini women's barriers to obtaining health care services, content analysis of the responses was carried out by listing all of the barriers and regrouping them into themes (e.g., financial, social, cultural and health system). The main barrier for Bahraini women (49.7%) was health system related issues with a lack of trust

in health services mostly related to efficacy of treatment as a major concern reported by 33% of women. Financial, social and cultural barriers exist to a lesser extent (Table 25).

Table 25

Bahraini Women's Barriers to Obtaining Health Care Services

Barriers	N	%
Financial		
No health insurance	7	2.7
Transport	40	15.5
Social (busy with family)	46	17.8
Health system		
Appointment system problem	39	15.2
Lack of trust in health services	87	33.7
No health system information	2	.8
Cultural	37	14.4
(Ignorance, busy with work, does not want)		

Aim 4: To identify the types of health service needs of Bahraini women.

Research Question 6: What types of health services do Bahraini women need?

To identify related service needs of the women, content analysis of participants' answers to the supplemental questionnaire regarding health service needs was performed. The women were asked an open-ended question about their health needs. Women responded by identifying more than one health need. They identified the following needs: (a) well-woman exams, (b) obstetrics and gynaecology clinics, (c) women's health specialists, (d) nutritional programs, (e) annual screening, (f) health education, (g) others (exercise programs, improved quality of medications, transportation, social services, and child care). They indicated that women's health services were the most important health need (74.3%) followed by nutritional programs (36%) and annual screening exams (31.7%) (Table 26).

Women's responses to the open ended question (what would you identify as your most important health care need?) opened the door for them to express their concerns regarding the practiced services. They reported that being seen by different providers for episodic visits does not provide continuous and trustworthy relationship to address their health needs. Instead, they wanted to have regular providers who can deal with their women's health issues, e.g., premenopausal symptoms, problems with periods, vaginal discharge, problems with pregnancy, annual breast and cervical screening, blood testing for blood sugar, cholesterol, and haemoglobin, physical exam, health education, nutritional problems, and other.

Table 26

Health Services Needs of Bahraini Women

Type of services needed	N	%
1-Women's health		
a. Well women exam (Breast & Cx screening)	140	74.3
b. Obstetrics and gynaecology clinic		
c. Access to women health specialist		
2-Nutrition Program	97	36
3-Annual Screening for chronic disease	82	31.7
4-Health Education/Health information	75	29.1
5-Exercise Program	75	29.1
6-Medication	29	11.2
7-Psychology services	28	10.9
8-Social Services	19	7.4
9-Other (Child care/transport/equipment)	10	5

Each woman's frequency of health care needs was calculated. Since participants reported more than 14 types of health needs, and the number of needs varied by age group, participants were grouped into one of three groups (young, middle age, or older). Chi-Square ( $X^2$ ) analysis was conducted and the number of health need across the three age group was not found to be significant (Table 27).



Table 27

## Health Needs Across Different Age Groups

Number of health needs	Young	Middle age	Older	X <sup>2</sup>	P-value
No need	4.3%	4.3%	0%	3.27	.777
One need	15.6%	12.9%	12.5%		
Two needs	38.3%	38.7%	54.2%		
Three needs	41.8%	44.1%	33.3%		

To identify whether different age groups had different types of health services needs, an indicator variable was created for each health need type (women's health, screening, nutrition, health education, and exercise) and the specific need was compared across age groups using Chi-Square (X<sup>2</sup>) tests. Older women reported higher needs for screening than young and middle age women. Health education programs and access to women's health services was identified more by middle aged women, however the differences were not statistically significant. Although each group identified various needs, only older women's needs for screening were significant (Table 28).

Table 28

## Types of Women's Health Needs According to Age Groups

Health need	Young	Middle Age	Older	X <sup>2</sup>	P-Value
Screening	26.2%	30.1%	66.7%	15.673	<.001
Health education	19.9%	33.3%	29.2%	5.524	.063
Nutritional program	39.0%	36.6%	29.2%	.876	.645
Exercise	32.6%	26.9%	16.7%	2.87	.238
Access Women's Health	14.9%	16.1%	12.5%	.208	.901

The following section describes the study's secondary aim, that is, to continue developing the reliability and validity basis for the SF-36 perceived health status scales in the Arab sampling world. The last three research questions were addressed using the SF-36, actual health status, data from medical record and physiological data. It answers the question: does the SF-36 Arabic, version 2, demonstrate reliability and validity by showing the explained relationship in accordance with the literature-supported findings?

Aim 5: To identify the relationship between the perceived women's health status in different age groups (i.e., young, middle and older).

Research Question 7: Is there a relationship between the perceived women's health status and age?

To identify if there is a relationship between the perceived women's health status scores and age (i.e., when age is treated as a continuous variable), a Pearson Product-Moment correlation was used. The relationships between the SF-36 subscales and women's age were significant and negative for subscales PF, BP, and GH. The physical functioning scale was the most significant ( $r = -.497$ ), followed by GH ( $r = -.241$ ), and BP ( $r = -.142$ ) (Table 29).

Table 29  
Correlations Between SF-36 scales and Women's Age  
(N=258)

SF-36 scale	PF	RP	BP	VT	RE	MH	GH	SF
Age	-.497**	-.005	-.142*	.103	.053	.071	-.241**	.013
p-Value	.000	.942	.022	.099	.395	.259	.000	.835

\*\* Significant at the  $p = 0.01$  level (2-tailed); \*Significant at the  $p = .05$  (2-tailed)

To identify the relationship between the women's perceived health status scores with respect to age groups, (i.e., when age is treated as a categorical variable such as young, middle, and older) a one-way between groups analysis of variance (ANOVA) was conducted.

Age is of theoretical importance for the current study; hence it was analyzed for each of the scales in bivariate analysis step. Age was categorized into three groups: young (18-35 years); middle (36-52 years); older age (53-64 years). A test of homogeneity using the Levene test was performed indicating unequal variances for subscales PF and RE. Therefore a Welch test was conducted to adjust for unequal variances for the PF and RE subscales, the results showed the PF scale continued to be significant. One way ANOVA tests were used to compare the means of the eight subscales across age categories, which showed significant differences in the mean scores between the three groups of women for the subscales PF, BP, and GH. Tukey tests were used for multiple comparisons for these three subscales indicating significant group differences existed. The result for the PF subscale showed that group 1 was different from groups 2 and 3 ( $p = .001$ ), and group 2 was different from group 3 ( $p = .001$ ). The result for the BP subscale indicated that group 1 was different from groups 2 and 3 ( $p = .003$ ). The result for the GH subscale showed group 1 was different from groups 2 ( $p = .027$ ) and 3 ( $p = .001$ ). These results indicated differences across the three age groups suggesting that as Bahraini women get older their PF, BP and GH perceived health status decline (Tables 30).

Table 30

One-way Analysis of Variance for Effect of Age Group on the SF-36 Score

Scale	Young 18-35yrs (n=141)	Middle Age 36-52yrs (n=93)	Older 53-64yrs (n=24)	df	F	P
PF	M 57.63 <sup>3,2</sup> SD 24.34	78.55 <sup>3,1</sup> 15.89	91 <sup>1,2</sup> 11.32	2, 56	23.9	<.001*
RP	M 48.95 SD 47.47	55.91 41.92	53.19 42.24	2	.283	.753
BP	M 44.40 <sup>2,3</sup> SD 30.41	64.06 <sup>1</sup> 24.41	63.39 <sup>1</sup> 25.78	2	6.098	.003
GH	M 54.16 <sup>2,3</sup> SD 23.77	67.14 <sup>1</sup> 22.23	73.13 <sup>1</sup> 21.30	2	8.360	.001
VT	M 63.69 SD 19.97	62.51 18.97	58.51 20.68	2	1.473	.231
SF	M 69.64 SD 33.78	79.72 26.66	74.36 27.18	2	1.718	.181
RE	M 36.80 SD 48.64	48.38 46.75	37.82 43.86	2, 62	1.596	.211*
MH	M 63.19 SD 23.67	64.93 19.19	60.95 20.84	2	1.063	.347

Superscript denotes the significant contrasts between the groups from post-hoc multiple comparisons using

Tukey's test

Aim 6: To examine the relationship between women's perceived health status and marital status, level of education, income, chronic conditions, body mass index, and number of children.

Research Question 8: Is there a relationship between women's health status and age, marital status, level of education, income, chronic condition, body mass index, blood pressure and number of children?

Pearson Product Moment correlations were carried out to examine the relationships between the women's health status scores (SF-36) and other demographic factors. As previously discussed, the PF scale ( $p = <.001$ ) negatively correlated with age.

In addition, the PF scale correlated negatively and significantly with the number of deliveries ( $p = <.001$ ) and marital status ( $p = <.001$ ). Thus, women who were married, had more children, and were of higher age had lower PF health status scores.

In addition, the level of education positively correlated with PF scale scores, suggesting that as a woman's level of education increases, her PF score also increases. Correlation indicates a relationship between the SF-36 scores and education, income and marital status, and number of deliveries/children; however, other types of relationships may exist even when the correlation is not significant (Table 34). Thus covariates may exist which affect other existing linear relationships between the two variables. This indicates that regression analysis is the next step to identify the covariates most strongly associated with SF-36 scores (Table 31).

Table 31

Correlations Between SF-36 Scales and Women's Age; Education, Marital Status, Income and Number of Deliveries

SF-36 scale	Age	Education	Marital status	Income	Number of Deliveries
PF	-.463**	.331**	-.325**	.060	-.375**
RP	-.035	.133*	.106	.249**	-.055
BP	-.192**	.096	-.136*	.170**	-.130*
VT	.084	.051	-.074	.127*	.010
RE	.063	.034	.025	.194*	.091
MH	.074	.008	.031	.172**	.070
GH	-.231**	.146*	-.099	.055	-.145*
SF	.017	.074	.041	.098	.006

\*\*Significant at the  $p= 0.01$  level (2-tailed)

\* Significant at the  $p= 0.05$  level (2-tailed)

Research Question 9: Which variable is the best predictor of women's health status (age, marital status, level of education, family income, chronic conditions, body mass index, blood pressure, number of children, or barriers to health care)?

A variety of univariate regression models were tested in order to understand how much of the variance in perceived health status scores could be explained by the independent variables. The SF-36 subscale scores were utilized as the dependent variables. Several regression models were carried out to select the best fitting model.

A systematic process of regression modeling was followed. First, all eight subscales were modeled as dependent variables in the theoretical model (page 51). The regression model for each SF-36 subscale resulted in eight models. The model which predicted the largest amount of variance among all of the models includes women's age, level of education, family income, number of deliveries, BMI, BP, and number of health problems and barriers to health care services. These exhaustive models provide useful detailed information and relative effect sizes and are included in Appendix (7.1-7.8). These models show significant findings in some of the subscales. For example, the role physical scale showed associations with family income ( $p = .014$ ) and number of health problems ( $p = .04$ ). Results suggest that as family income increases the woman's role physical scores increases. Moreover, the bodily pain scale showed an association with number of health problem ( $p = .001$ ). Results indicates as the women age and the number of health problem increases, they reported higher bodily pain scores.

Similarly, the general health scale showed significant associations with the number of health problems ( $p = .001$ ) and social health barriers ( $p = .001$ ). This suggests that the number of health problems and social barriers affect women's general health

scores. Additionally, the role emotional scale was associated with family income ( $p = .001$ ). Thus, higher income women had more favorable role emotional scores. The social functioning, and mental health subscales showed no significant associations with the predictor variables.

Second, the physical well being scales were compared to the mental well being scales, and found that physical wellbeing scales (PF, BP, RP, and GH) were significantly predicted by number of health problems, and age. The mental well being scales (SF, RE, MH except VT) were not significantly predicted by these factors (Appendix 7.1-7.8).

Finally, since several theorized independent variables were not significant, these regressions were repeated with reduced number of predictors. Among all potential predictors in the model the following showed significant associations with the physical functioning scale: number of health problems (NOHP) ( $p = .001$ ), age ( $p = .001$ ), and financial barriers ( $p = .017$ ) (Table 32). Number of health problem and age were found to have an association with bodily pain scale (Table 33). Similarly, the number of health problems were found to have significant association with general health and vitality subscales (Table 34 and 35).

Notably, the number of health problems the women reported (NOHP) was significant across all SF-36 subscales except for the social functioning scale. This may suggest that women with higher levels of education reported higher physical functioning scores which may indicate good perceived health status. Women with more than one health problem (such as diabetes, hypertension, or hyperlipidemia) reported lower overall health status. Obese women and those with financial barriers had lower PF scores (Table 32).

Table 32

## Regression Analysis of Age and Number of Health Problem Effects on PF Scale

Variables	B	SE	Significance	Partial $\eta^2$
No of Health Problem			.001	.114
	15.12	3.17	.001	
NOHP0	12.13	3.35	.001	
NOHP1	4.45	3.30	.177	
NOHP2	Reference			
NOHP3				
Age			.001	.075
18-35 years	-5.58	3.52	.001	
36-52 years	-2.55	2.00	.204	
53-64 years	Reference			
Health Barrier Financial	-5.72	2.39	.017	.023

Model  $R^2 = .426$  adjusted  $R^2 = .396$

Table 33

## Regression Analysis of Age, and Number of Health Problem Effects on BP Scale

Variables	B	SE	Significance	Partial $\eta^2$
No of Health Problem			.001	.077
	20.28	5.95	.001	
NOHP0	10.15	6.23	.105	
NOHP1	3.59	6.19	.563	
NOHP2	Reference			
NOHP3				
Age			.035	.027
18-35 years	-6.04	6.60	.358	
36-52 years	6.92	3.73	.065	
53-64 years	Reference			

Model  $R^2 = .174$  adjusted  $R^2 = .130$



Table 34

## Regression Analysis of Number of Health Problem Effects on GH Scale

Variables	B	SE	Significance	Partial $\eta^2$
No of Health Problem			.001	.161
NOHP0	30.53	4.90	.001	
NOHP1	24.40	5.12	.001	
NOHP2	12.90	5.09	.012	
NOHP3	Reference			
Model $R^2 = .238$ adjusted $R^2 = .198$				

Table 35

## Regression Analysis of Age and Number of Health Problem Effects on VT Scale

Variables	B	SE	Significance	Partial $\eta^2$
No of Health Problem			.010	.045
NOHP0	15.20	4.83	.002	
NOHP1	9.02	5.60	.076	
NOHP2	9.27	5.02	.066	
NOHP3	Reference			
Age			.077	.021
18-35 years	10.40	5.32	.053	
36-52 years	5.70	3.03	.063	
53-64 years	Reference			
Model $R^2 = .068$ adjusted $R^2 = .019$				

Based on the PF scale regression table, the effect size was calculated using the partial eta squared formula. To have accurate understanding of the actual difference between groups (no health problems, one health problem, two health problem and three health problems) in the PF scale, effect size was calculated by finding the Eta squared, using the following equation:  $\text{Eta Squared} = \text{Sum of Squares between groups} / \text{Total sum of squares}$ . The effect size for the PF subscale was 0.114 which is considered a large effect size (Pallant, 2001). This indicates a significant difference in the PF mean scores between women with different number of health problems. The number of health problems explained nearly 100% of the variance in the PF subscale after controlling for all other factors. Similarly, age accounted for 75% of the variance in explaining the variance in the PF subscale.

### **Health Education Findings**

The content analysis of the structured questionnaire included questions regarding health education. When the women were asked about health education during their visits at the health center, more than sixty percent indicated they had received some type of health education. The most common health education strategy used was verbal instructions. When women were asked if this health education was adequate, only 8% said yes, while 55% reported this was inadequate. The women also reported that the time spent for health education was inadequate, with 50% reporting that clinicians spent less than five minutes, while only 13% reported receiving between 10-15 minutes. When women were asked to describe how health education was offered by clinicians, only 6.2% said it was given with respect, 50% said it was given very quickly, with no details, and 7% said information was given in a perfunctory manners (Table36).

Table 36

Bahraini Women and Health Education

Health education Given	N	%	Health education in every visit	%	Health education Adequate	%
Yes	24	9.3	18	7	17	6.6
Sometime	139	53.9	95	36.8	5	1.9
No	95	36.3	145	56.2	141	54.7

Women were asked if they had received health education during schooling or college; 92.2 % of the women responded no, while only 7.8 % had some type of health education during school. The Bahraini health care system is a national, and free of charge, therefore 85.3% had no health insurance, while only 14.7% of the women had health insurance through their work or family members.

**SF-36 Scale Relationships to Women’s Health Factors**

In order to establish additional support for the use of the SF-36 scale for measuring the health status of Arabic speaking samples, supplementary analyses were performed to examine the relationship between the SF-36 scales and the sample’s health variables: BMI, BP, number of health problems, and health services utilization (such as the number of physician visits made in the last six month to a health center or private clinic). The SF-36 subscales were significantly correlated with physiological indicators BMI, BP, and number of health problems, as well as service utilization.

Women’s BMI correlated negatively with the BP scale ( $r = -.180, p=.004$ ), and the PF scale ( $r = -.272, p= <.001$ ). This suggests that as the woman’s BMI increases her physical functioning decreases and her bodily pain increases (thus her BP score is negative). Women’s blood pressure scores were negatively correlated with subscales PF

( $r = -.357$ ,  $p < .001$ ), and GH ( $r = -.130$ ,  $p = .037$ ). This suggests that higher blood pressure is negatively related to women's general health and physical functioning scores.

The number of visits the women made in the last six months to the local health center correlated negatively with BP ( $r = -.159$ ,  $p = .011$ ), GH ( $r = -.251$ ,  $p < .001$ ), and RP ( $r = -.178$ ,  $p = .004$ ) subscales. In addition, private physician visits the women made in the last six months correlated negatively with subscales GH ( $r = -.138$ ,  $p = .02$ ), and VT ( $r = -.145$ ,  $p = .02$ ). These results may indicate that when women have physical complaints (BP and RP are physical domain scales) they are more likely to visit the health center. If they had mental or well-being problems (GH and VT are mental domain scales) they may choose a private physician. The women's health problems showed significant negative correlations with PF ( $r = -.489$ ,  $p < .001$ ), RP ( $r = -.162$ ,  $p = .009$ ), BP ( $r = -.325$ ,  $p < .001$ ), GH ( $r = -.450$ ,  $p < .001$ ), and VT ( $r = -.131$ ,  $p = .035$ ); this indicates that when women have more health problems they have lower health status scores (Table 36).

### **Comments Reported From the Structured Questionnaire**

Bahraini women were asked an open-ended question at the end of the interview in order to allow them to make comments. The comments were listed and content analyzed for main themes. They reported the following: a few of the health center physicians gave good care, while the majority did not give good quality care for their patients; waiting times were too long even if they had appointments; clinics were overcrowded; cleanliness was an issue in every health center; the health center staff members were ill-mannered; medications of low quality; there was a lack of health programs and communication between the health center and the local community was poor.

During the interviews, participants asked a number of questions regarding their health and how they can access health services for preventive care. Moreover, once the interview progressed, they expressed a variety of thoughts and feelings about the health system. Many of these concerns are described in the major themes previously discussed.

Table 37

Correlations between SF-36 Scales and Women's BMI, BP, Number of Health Center Visits, Private Visits, and Number of Health Problems

SF-36 scale	BMI	BP	No of HC Visit	No of Private Visit	Number of Health Problems
PF	-.272**	-.357**	-.089	-.078	-.487**
RP	-.043	-.088	-.178**	-.061	-.162**
BP	-.180**	-.116	-.159**	-.057	-.325**
VT	.016	-.002	-.103	-.145**	-.131**
RE	.112	-.020	.077	-.046	-.085
MH	.083	.001	.031	-.055	-.109
GH	.106	-.130*	-.251**	-.138*	-.450**
SF	.041	-.071	.077	-.066	-.117

\*\* Significant at the  $p = < 0.01$  level (2-tailed)

\* Significant at the  $p = < 0.05$  level (2-tailed)

## **CHAPTER VI**

### **Discussion**

This chapter interprets study findings. It consists of two parts; it examines the performance of the SF-36 when used with this sample, actual health status (including common health problems), health seeking behaviors, utilization of health services, and barriers identified by Bahraini women. This discussion is followed by a re-consideration of the proposed conceptual framework in relation to the study results. In addition, study limitations, conclusions, implications for future research and implications for health policy and practice will be discussed.

#### **Use of SF-36 with Bahraini Women**

The SF-36 scale has not been used before in a population of Bahraini women; the reliability findings were similar as shown in other reports with Arabic speaking and Middle Eastern samples. The SF-36 subscales PF, RP, RE, MH, and BP were found to be reliable with a Cronbach's Alpha, ranging from 0.70 to 0.90, and the SF, VT, and GH subscales exhibited scores ranging from 0.49 to 0.65. Having a Cronbach's Alpha of < .80 may be attributed mainly to the homogeneity of the sample of the Arabic-Bahraini female population. Other considerations such as misinterpretation of these SF-36 scales items by Bahraini women, may have impacted the results for VT, GH, and SF subscales, which measure wellbeing.

Sample homogeneity has been documented as an important factor that affects the SF-36 scale by lowering the overall reliability (Shmueli, 2003). These findings support

previous studies among Middle-Eastern populations (Ahmed et al., 2002; Bekker & Lhajoui, 2004; Eshaghi et al., 2006; Sabbah and et al., 2003). Bahraini women's perceived health status scores were similar to other Middle Eastern populations and different than US population scores.

The version of the SF-36 scale used in this research was a standard Arabic version. It was not modified to fit each participant's local language. Language variations may have affected some responses. Sabbah et al.(2003) modified some of the SF-36 scale items for a Lebanese population. Although there was no evidence of lack of comprehension, modifying the scale to the local language so that each subscale item is more consistently interpreted might be considered for future studies in Bahrain.

The SF-36 scale was found to have an acceptable level of validity in this research, and the scale structure level, item discriminate validity, and inter-scale correlation results support the overall scale validity when used with Bahraini women. Factor analysis resulted in two main domains, physical and mental, which supported the theorized structure for the SF-36 scale when used with other populations (Ware et al., 2000).

When Arab-American women's SF-36 scale scores were compared to Bahraini women, significant differences were found among all but the RE and BP subscales. This may be related to the study sample of pure Bahraini women, while the Arab-American sample consisted of mixed Arab populations from several countries, suggesting that language group is more disparate than geographic group. Well-being scales which measure mental health, general health and vitality for Arab-American women may be affected by the context of the transitional status as an immigrant to the US.

When the mean score for the SF-36 scale of the U S sample of women was compared with Bahraini women there were significant differences in all but the VT and GH subscales.

This analysis of the use of the SF-36 in this population may indicate that Arab women have specific cultural views about their own health. Although the SF-36 Arabic version 2 used in this study can be used to evaluate the perceived health status of Bahraini women, it may have more specific outcomes if the scale was modified according to the local Bahraini dialect rather than using the standard Arabic version.

### **Perceived Health Status**

The perceived health status for Bahraini women in this study showed lower mean scores than the American population mean, except for the physical functioning scale. The study results showed that, as expected, there is a relationship between the perceived women's health status scores and age. For example, the physical functioning scale (PF) that measures the women's physical ability to perform daily life activities was found to be the most significant scale which was affected by the woman's age. The older the woman, the more likely she was to report lower SF-36 health status scores. Although this is an expected logical finding, i.e., as we age the health status may be lower, this study's results were lower than studies of western countries using the SF-36. This finding supports previous study findings by Ahmed et al, (2002) with Bangladeshi women. As women age in Bahrain, there is a cultural expectation to reduce activity and allow others to attend to their needs. As a result, women stay home much of the time and become inactive. Several researchers (Almadani et al., 2003; Hamadeh, 2000; Musaiger & Mannai, 2002) reported that social norms dictate that out of respect for older people,



younger people are encouraged to serve them. This may deprive women of the necessary exercise that would benefit their health.

Furthermore, there are significant differences among the three age groups in regard to their health status scores. Younger women had higher SF-36 mean scores than middle aged women, and middle aged women had higher scores than older women. Younger women were expected to be more active, and during their childbearing age had family responsibilities which kept them active until middle age. Bahraini women after the age of fifty are faced with lower family expectations for activity-related responsibilities. Moreover, they continue to have poor health-seeking behaviors which have developed during the time of child rearing in which they generally ignored their own health in favor of family responsibilities. Being inactive increases women's likelihood of developing chronic illnesses such as hypertension and diabetes, thus further increasing their health risks as they age (Hills & Mullett, 2005; Meleis & Im, 2002).

Findings of this study showed relationships between women's perceived health status and age, marital status, level of education, income, chronic condition, Body Mass Index, blood pressure and number of children. However, these relationships were significant with age, chronic condition, Body Mass Index, and blood pressure.

In addition to age, regression models showed that the number of health problems women had predicted the perceived health status scores for most of the scales. This is similar to previous research which suggests that the number of health problems are main predictors of perceived health status scores (Ahmed et al., 2002; El Meidanry, 2003; Poole et al., 2007; Ware et al., 1994). Having more than one chronic illness may further restrict a woman's daily activity. Moreover, women who may not have sufficient

knowledge of their own health care needs are at even greater risk for non-compliance related to preventing illness complications. Another predictor was lower level of education, which predicted lower health status scores. Lower levels of education may likely reduce secondary prevention efforts for women who develop chronic conditions.

Other predictors, which included family income, the number of deliveries, BMI, BP, and barriers to health services, had affected the physical well being scales (PF, BP, RP, and GH) more than they did the emotional well being scales. As the number of deliveries, BMI, BP, and barriers to health services increases the physical subscales score decreases. When the family income increases the physical subscales scores increases to higher scores. This relates to the actual health status that was observed in the study.

In summary, Bahraini women's perceived health status scores were different and lower than expected compared to the US women's scores. These findings verify previous studies which indicate that health functioning changes in the hypothesized direction with increased age, socioeconomic and disease status in population-based studies. That is, women's physical functioning activities are affected by their age, socioeconomic and diseases status (Ahmed et al., 2002; El Meidanry, 2003; Poole et al., 2007; Ware et al., 1994).

### **Actual Health Status**

When examining the actual health status of Bahraini women, findings indicated increased obesity and chronic diseases such as anemia, diabetes, and hypertension as the most common medical conditions. In this study, 70 percent of the women were overweight and obese, while five percent had high blood pressure. These findings suggest that Bahraini women are at risk for developing chronic illnesses as obesity has

been associated with higher risk for cardiovascular diseases in United States samples (Dawn, 2001). Obesity is the result of a sedentary life style; also, lack of nutritional knowledge can further exacerbate the problem as the traditional Bahraini diet contains high fat and carbohydrates.

Moreover, only 14% of the women exercised and of those who did, the frequency was at most 1-2 times per week. Therefore, nutritional and exercise programs are an essential need for this population (Almadani et al., 2003; Hamadeh, 2000; Musaiger & Mannai, 2002).

Recurrent pregnancy, delivery, and abortion are thought to be the main reasons for anemia among child bearing women worldwide (WHO, 2009). In the current study 56 percent of Bahraini women had three to ten pregnancies, 47 percent had 3 or more deliveries, and 25 percent had more than 2 abortions.

Another major concern for the Bahraini women that affects their actual health status is violence against women. Violence is reported by a large number of women with more than 30% having experienced domestic violence during their lifetime. The most common type of abuse is verbal or/and mixed type which consists of verbal with physical, economic and/or psychological violence.

These findings are similar to previous studies which report that violence against women is a major health problem among Middle Eastern women (Ahmed et al., 2002; Bekker & Lhajoui, 2004; Dawn, 2001; Eshaghi et al., 2006; Sabbah and et al., 2003; WHO, 2009). As a result, social and psychological counseling is another service needed by Bahraini women. Currently, there is growing concern regarding women's abuse in Bahrain. Therefore, the Ministry of Social Services has opened three centers for abused

women, which provide housing and 24 hours social, psychological, and medical treatment if needed. Some aspects of family law in Bahrain currently exists and provides a degree of protections for women and their children. Additional developments of legal protections for women are necessary, along with appropriate enforcement of these laws.

Lifestyle is an important factor that determines the health of a given population (Almadani et al., 2003; Hamadeh, 2000; and Musaiger & Mannai, 2002). One of the lifestyle practices by Bahraini women is smoking. Although the percentage of smoking among these women is only 5 percent, their smoking patterns are risky, as they smoke Hookah (charcoal kept on tobacco) for prolonged periods of time. This heavy smoking habit increases their risk for chronic diseases such as hypertension, coronary heart disease, cancer, and chronic obstructive pulmonary diseases (CDC, 2009).

### **Utilization of Health Services**

Bahraini women had limited use of preventive health services despite the availability of free health care. Mammograms and Pap smears screening, while available for all women, were used infrequently and women reported that they did not consider screening to be a priority. Bahraini women above age 40 years do not use the mammograms as part of annual screening preventive measures. Women only use mammography screening if their physician suggests it or if they have a family history of breast cancer. In this study, while mammography was recommended for 48 percent of the participants, only 18 percent of the women have had mammography. Pap smear testing was recommended for 85 percent of the participants according to guidelines, however only 42 percent received Pap smears regularly. This may be due to cultural misconceptions about vaginal examination.

Contraception use in this population (reported by more than 70%) is limited to coitus interruptus and safe periods only; other standard methods of contraception are rarely used. This may be due to a lack of knowledge regarding contraception methods, misconceptions regarding the side effects of pills or other methods, and lack of cooperation by husbands.

A majority of Bahraini women sought health services at their local health center for physical illness. When women reported the need for psychological services or dissatisfaction with health center services, they sought care at private clinics. Their health seeking patterns start with traditional medicine, followed by self medication using over-the-counter medications. If this does not work then women will go to the local health center and finally to a private clinic if there is no improvement. If women do not have health insurance or money for private care they are forced to wait longer and often present with complications in the emergency room (refer to Table 21).

Health center services are provided free of charge; however, the utilization of these services was lower than expected. Despite this, specific women's health services were the most frequently requested by participants. The services that women requested included well women annual exams, access to obstetrics and gynecology (Ob/Gyn) physicians and women's health specialists.

The Bahrain Ministry of Health provides high quality antenatal and postnatal services at the health center level; however, these services are provided by family physicians. If the woman requires further evaluation by a gynecologist, she would be referred to the main hospital. Delay for these appointments may be more than 2-3 months. Overcrowded clinics, prolonged waiting times, and being attended by a different

provider each time decreased women's compliance and willingness to be referred. These are some of the reasons women are in need of Ob/Gyn services by specialists at the health center level to provide timely services. Women's health specialists are not available at all, as it would require special education which currently is not offered in Bahrain.

The second major health service need identified by participants was nutritional programs. Data suggest that nutritional knowledge may be lacking, given that more than 50% of the participants were overweight or obese. Nutritional problems are well documented in this population by several researchers (Almadani et al., 2003; Hamadeh, 2000; Musaiger & Mannai, 2002). Bahraini women are responsible for cooking and preparing family meals. Therefore, their nutritional habits affect all family members. Nutritional programs that help women select and prepare healthy meals would be an essential first step for improving the health of this population.

The third health service need reported by Bahraini women is annual screenings. While screening services are available at no cost it is decided by the attending physician when women ask for it. Therefore having regular screening will make women more aware of their general health and identify risk factors for developing chronic diseases. Screenings also can inform health care providers about the needs of women and could lead to planning of future health programs depending on screening findings. Annual exams may include blood pressure screening, BMI, and blood tests for cholesterol, hemoglobin, and fasting blood sugar. Gynecologic exams may be performed every 3-5 years or as recommended by the WHO (2006). The women identified other health care needs including health education, exercise, the availability of good quality medications, social and psychological services, and availability of child care at the health center level.

## **Identified Barriers**

Although the Ministry of Health in Bahrain provides some important health services, Bahraini women identified unmet needs due to several barriers. Identified barriers included health system, social, financial, and cultural barriers. The women reported lack of trust in health care providers as the main health system barrier. This was followed by prolonged waiting time and crowded clinics, in spite of the appointment system. Social barriers included family obligations and being busy with children. Therefore, women gave more priority to family obligations than to their own health. Previous research suggests that one of the main barriers to attending to personal health needs is family obligations (Hills & Mullett, 2005; Meleis & Im, 2002).

Financial barriers included lack of transportation and health insurance. Transportation is considered the main financial barrier for women who do not work or drive, since they depend totally on their husbands or other family members to take them to the health center. Another financial barrier reported was the lack of private health insurance. Although health services are free in Bahrain, women reported the need for private health insurance, which they believe will help in obtaining quality health services. The women may feel reassured by private services.

Cultural barriers include women's lack of knowledge about overall health needs, beliefs that preventive services are not essential and the attitude that health center services are not adequate. These factors hindered the women from obtaining health services that were available at the health center and affected Bahraini women's overall health status. Early health education may be one strategy for improving some of these

cultural barriers as a way of improving their perceptions of quality of care (Flynn et al., 2006; Reed, 2001).

### **Conceptual Framework in Relation to the Study Result**

The conceptual framework proposed for this study was the modified combination of Steinwach's framework and the Longino view of science (Figure 3). This model proposed that women's health needs will be determined by their age, socio-economic status, education, health perception, health seeking behavior, and their health status. In addition, the conceptual framework explains that women's medical histories will identify their care priorities. Moreover, religion and culture will aid in understanding and hindering or promoting beliefs that affect women's health practices. Examining characteristics of women's health status will help health care practitioners to identify their health problem(s) and act accordingly.

Three main themes emerged from the study results linking to the conceptual framework. These included women's physical health (health problems, age, BMI, and blood pressure), socio-economic and cultural factors, and health system factors.

Current study results support the conceptual framework proposition that number of health problems (chronic conditions) and age were the main determinants of Bahraini women's perceived health status. Women's chronic conditions (from the medical chart review) were found to be important and affected their health status. In addition, important physiologic factors such as age, BMI and blood pressure were found to have important relationships to the women's health status, which supports the current model.

Socio-economic status, number of children and level of education were important factors which contributed to perceived health status, supporting the proposed model.



Social, financial and cultural barriers were identified which may have influenced beliefs that affected women's health care practices. Social and cultural beliefs influenced women's health practices and hindered them from fulfilling health care to meet their needs. Thus, preventive services were used less frequently than expected. This suggests that health seeking behavior is affected by the culture and belief system, which influenced Bahraini women's willingness to seek health assistance only when they were sick.

Health system factors that influenced women's health practices were lack of trust in the health system and lack of health information. These factors adversely impacted the use of preventive services, whereby women developed negative attitudes toward the health system.

In the current study, particularly the significant findings suggesting that age and number of health problems affect women's perceived needs for health care services supports the study's conceptual framework. The framework suggests that women's perception of health influences their health seeking behaviors and perceived need for health care services.

### **Study Summary**

This was a cross-sectional study that examined the perceived and actual health status, health practices, and needs for Bahraini women aged 18 to 64 years, while validating the use of SF-36 scale with Arabic women. The SF-36 Arabic Version Health Status Survey, structured questionnaire, and medical chart review for chronic conditions were used in addition to measuring the women blood pressure, weight and height. A systematic random sample of 258 women who used Bahrain Ministry of Health primary

health care services was selected for interviews in local health centers. The data were analyzed using the SPSS computer program version 17.

This study suggests that the SF-36 perceived health status scale can be used with Bahraini women although it may yield somewhat different results if modified according to the local Arabic dialect. Bahraini women's perceived health status is similar to that of other Middle Eastern populations, and different from US studies. This may be due to cultural differences in regard to health perception as well as the different interpretation or understanding of scale items in this culture. The finding implies that Bahraini women's perceived health status is affected negatively by the number of chronic health problems the women had and their age.

While significant problems were identified in the women's actual health status, (including obesity, anemia, diabetes and hypertension) their health was further complicated by a lower use of preventive services. Moreover, the lack of health information and lack of trust in health services affected their health status negatively. Previous studies report that obesity, anemia, diabetes, and hypertension are major health problems in Bahrain (Almadani et al., 2003; Hamadeh, 2000; Musaiger & Mannai, 2002). However, the decreased use of preventive services, the lack of health information, and the lack of trust in health services are unique findings to this study. Unless addressed, these factors could continue to negatively impact the health status of Bahraini women.

The results suggest that older women had significantly lower health status than younger women and, as the number of chronic health problems increases, their health status decreases and their health care needs increases. Also the current study suggests that

Bahraini women's perception of health and their health seeking behavior patterns are key elements for health care providers to consider when providing care.

Significant findings in this study related to barriers to seeking health care services were mainly related to health system factors, in particular lack of trust in the health center services. Social, cultural, and financial barriers were also present. Women were found to have pressing needs for primary and secondary health services.

### **Limitations**

There are three noteworthy limitations to this study. These limitations relate potentially to medical record problems as indicators of utilization of health facilities, exclusion of minority women, and use of SF-36 with Bahraini Arabic population.

This sample of Bahraini women was selected from local health centers' medical records since almost the entire Bahrain population uses these centers, as they are the official health care providers for health care services. Those Bahraini women who do not have records at the health center and do not have regular visits were not included. Bahraini women may use non-Ministry of Health facilities. For example, women may have health insurance through family members and may use private health centers such as military hospital clinics, private hospital clinics and company health centers. Some may use these alternatives entirely, or in addition to the health centers. In any further studies sampling may be revised to include all non-Ministry of Health centers. This may provide the evidence needed for generalizing findings beyond this sampling frame.

Incomplete medical charts due to lack of updates or other medical record system problems were another limitation identified in this study. Six charts were not found (2.3%), 71 were incomplete (27.5%), and 181 were complete (70.2%). Some of the

missing data may be related to women who changed to another health care provider for chronic illness management. This health system problem could not be controlled for this study. However updated and computerized medical records would provide more accurate information for the research purposes in the future.

Women from different ethnic and national groups living in Bahrain as temporary workers or married to Bahraini men were excluded. For example, Caucasian, Indian, Pilipino, Thai, Indonesian, Ethiopian, Syrian, Egyptian, and Jordanian women were excluded. Although these minority women use the same health care services, studying these different ethnic groups would require the use of SF-36 scale in several languages, and use of different interpreters which was not feasible due to increased costs and time limitations. Future studies which examine the health status of non-Bahraini women will be important to determine the needs for future women's health services.

The use of the SF-36 perceived health status scale was relatively new for this population, although it has been used with Arabic women in Lebanon and Israel. However, those women spoke different dialects of Arabic and the SF-36 scale was modified to fit that population. The SF-36 used in this study was the Saudi Arabian version as it was culturally closer to Bahraini in terms of language and culture. In addition, there was no Bahraini language version of SF-36 available. A future study using SF-36 scale that is modified to local Bahraini dialect can further validate the scale in this population.

### **Conclusion**

A number of conclusions can be drawn from the study results. First, the SF-36 Perceived Health Assessment Scale can be successfully used in Bahraini women. The

scale had acceptable validity and reliability when used in this population; however, language modification to local Bahraini dialect may result in better reliability. Bahraini health status scores were closer to a sample of Arab-American women's perceived health status and different from a sample of the general population of US women. A similarity in health status scores among Arabic populations of women is an expected outcome due to similarities in socio-cultural factors that influence health. This study sample had a lower perceived health status score than American women, and was reflective of their actual health status. Actual health status for Bahraini women in this study indicated that anemia and obesity were the most common health problems. Bahraini women are at higher risk for hypertension and diabetes due to life style practices such as inactivity, lack of health education and cultural beliefs which may act as barriers to health seeking behaviors.

Therefore, health strategies at different levels are required in order to address these evolving health problems for women in Bahrain. Ministry of Health, local non-governmental organizations, health professionals, and the people of Bahrain share this responsibility. Community awareness, health education programs through schools, and religious meetings are approaches that could be utilized to affect unhealthy life style practices. In addition, nutritional and health education programs, annual screening, and the provision of women's health services at the health center level are important priorities to improve the health status of Bahraini women. Similarly, addressing the lack of trust between women and their health care providers would be essential to improving current services. Future research in the area of women's health and focusing on reshaping of

current health services are essential steps toward meeting the health care needs of Bahraini women.

### **Recommendations for the Health System**

The results of this study have important implications for policy makers. First, women's health services in Bahrain need to be re-evaluated to provide services which more effectively meet their needs. Re-evaluating women's health services in Bahrain is a crucial step towards providing women's health services that more specifically meet the needs of the population. The re-evaluation may involve further studies in the area of women's health, internal and external consumer satisfaction with current services, and examining the women's health care provider practices. These studies are essential in order to reshape the current referral system and the infrastructure for women's health care providers at the Ministry of Health.

Development of unified standards of care for women's health in Bahrain is another area where health care providers can work to improve their health care services. Although Bahrain Ministry of Health has a standard recommendation for pre-natal and postnatal care, standards for women's health across the life span are not yet established. Women before and after the child bearing age lack standard care, such as screening for chronic illness, cancer, and domestic violence. Therefore, development of these standards may aid health care providers in meeting the women's health care needs.

The social and cultural context affect important health practices. Bahraini women consider their health as secondary to their family obligations, which result in delay in addressing their health care needs. Therefore, the Ministry of Health, the Ministry of Education and community resources should provide more organized and targeted

programs to meet women's needs. For example, screening, health education, nutrition, and exercise programs accessible to women in their communities are important for reshaping women's health attitudes and behaviors. Annual screening is essential at this time as the first three causes of death among Bahraini are circulatory diseases, endocrine, and neoplasm's (Bahrain Ministry of Health, 2007).

In order to make favorable changes towards improving the government health services, health education at early ages for all school-age children may introduce important health care concepts and reinforce positive health care practices. Previous studies have supported this strategy (Reed, 2001). Health education programs could be planned by forming national committees that include students, teachers, health care professionals and religious leaders in the community. Health education should be integrated into the school curriculum for both males and females. Each school stage would aim for specific health education topics. For example, grades 1-4 might focus on hygiene and healthy nutrition. Grades 5-8 could add information about exercise and infectious diseases. Finally, grades 8-12 could add reproductive and sexual health education.

Nutrition programs that help women to select healthy food types and healthy food preparation methods are also needed for adult populations. These programs could be conducted in cooperation with Ministry of Social Affairs Programs, through organized sessions at the local social centers for each area. A nutritionist and cooking expert could conduct these sessions to give the women and girls the basics of healthy cooking and eating. These sessions could be done during the evening and morning hours to provide

flexible schedule for women with children. Providing babysitting services during these sessions will encourage women to attend.

Exercise programs could be planned through the Ministry of Youth and Sport for the Bahraini population. Organized fitness programs which include pre-enrollment physical exams by professional trainers, providing tailored programs for each individual, with follow-up and monitoring are vital aspect for fitness program implementation. Also, exercise programs for women using district sports facilities should be provided by professional trainers in order to establish pre-post exercise program evaluations and follow up.

Bahraini women's health perception is a key element in improving their health status. Therefore, women to women forums and discussions sponsored by non-governmental organizations and local community religious leaders could play an important role by educating women during their meetings and through multimedia. Non-governmental organizations have been working for more than 50 years and have developed relationships of trust with local communities. Developing partnerships with these organizations in conducting health related programs could be important strategies. Healthy community programs such as organizing exercise programs for the community at their nearest school or club and involving local women in conducting health information sessions and similar activities are examples.

There is high demand for women's health services at the health center level. These include daily Ob/Gyn clinics, access to women's health specialists, and annual screenings to identify high risk groups, and planning future health services are important needs for this population. Therefore, providing women health specialists is an important



element as women need to develop a relationship of trust with their provider. In addition, providing hotline telephone services for women to call when in need is a high priority for this population.

Women need transportation to health centers, coordinated between the Ministry of Health and Ministry of Transportation to provide daily services to the local health center, to provide access. Using existing low fee public bus transportation within each district would provide easy access for local women to health center services.

Finally, using the local media to increase the awareness about healthy lifestyle would be another useful strategy. Bahraini media, such as television and radio, as well as local newspapers may play vital roles in educating women by assigning regular programming to women's health, and tips for healthy lifestyle on a regular basis.

### **Recommendations for Health Care Providers**

Health care provider training is an essential step towards providing women's health services. Future medical and nursing education programs should include training for women's health specialists in the Bahrain health system; and providing specialized level of trained health care professionals (e.g. Nurse Practitioner, Health Visitor, and Community Nurses) can address general health concerns. The study findings suggest the health perception of Bahraini women impacted their health seeking behavior and resulted in lack of trust in the health system. In order to address these women's health problems and needs, primary health care providers may play a vital role in educating the women and allow them to be health-informed. Women's health problems and concerns could be taken care of at the primary health care level by trained women's health providers or experts that provide care within the scope of women's needs like nutritionists, fitness

trainers, women's health nurse practitioners, health visitors, or community health nurses. Maintaining an open access to health services may also improve the women's health services and increase their compliance and trust in their providers.

The establishment of hot line for health inquiries would allow women more access to health providers. Monthly women's health newsletters which are specifically for Bahraini women in their own language will increase health awareness and may strengthen the trust between women the health care system.

Medical and nursing community practitioners, administrators and researchers may contribute to the aforementioned programs by organizing and sharing their expertise and knowledge. These steps will bring physicians and nurses closer to the community and help develop long term relationships in the area of health research and population health.

Additionally, a new women's health program could be established to educate physicians and nurses about how to care more successfully for women and to strengthen existing women's health services, while providing opportunity for women's health research. Currently Bahrain Ministry of Health follows the World Health Organization guidelines for practice of medicine in Bahrain. However, local population needs require additional review and development of practices in relation to women's health care services. For example, identification of high risk women for chronic illness by regular chart review, and calling women for screening and working with them and their families can reduce the risk of disease development. This could be conducted by health center physicians and/or women's health specialists.

Another area involves the education of the medical community which includes physicians, nurses, nurse-midwives, health educators, and nutritionists, in regard to

women's health. Establishment of routine mechanisms such as journal clubs, forums, research groups or seminars for the dissemination of up-to-date research and knowledge in the area of women's health are crucial in order to increase the medical community's awareness. Furthermore, inclusion of research-based practice as part of medical and nursing performance expectation and appraisal by health care organizations are important steps toward development of evidence-based practice for women's health in Bahrain.

### **Recommendations for Future Research**

This cross-sectional descriptive study was the second women's health study conducted 25 years after the first national study in Bahrain. This indicates a gap in systematic women's health research in Bahrain. Currently, the number of medical and nursing schools in Bahrain are increasing, which may enhance research development. Findings from this study suggest a number of strategies which may strengthen future research in the area of women's health. In particular, women's health research committees should be established which have independent administration and resources. Important resources include qualified researchers and statisticians to conduct and publish studies, as well as the development of human subject review committees. Such national committees may represent a different organization and may not be limited to Ministry of Health, medical and nursing schools. For example, private hospitals, non-governmental women's organizations, and private universities in the country may be appropriate locales within which research and research review committees may be established.

Community involvement may aid in conducting longitudinal and intervention studies that are needed in the future to increase the body of knowledge for health care providers and to increase awareness in the population regarding women's health.

Additional studies may be needed which involve comprehensive health assessments, and the development of interventions to successfully treat health problems specifically for Bahraini women. For example, programs need to be developed in the areas of: health education; obesity; anemia; hypertension; mental health; urinary incontinence; premenopausal and postmenopausal health. Studies of older women's health status are suggested as this study showed they had different actual and perceived health status and needs. In addition, immediate future studies may involve: re-testing the use of the SF-36 scale with Bahraini samples when modified to the local dialect; intervention studies for chronic illness; health promotion and risk reduction studies.

The re-evaluation of women's health services in Bahrain is the responsibility of both the medical, nursing, public health and general public communities. Therefore, these recommendations are first steps toward providing health services that meet the health needs for this population.

## Appendices

### Appendix 1: Women's Health Models

Health Models	Characteristics	Strengths	Weaknesses
Bio-medical	Bio-medical processes  Cures any women's health problems  Physician-controlled	Reduces mortality & morbidity of diseases	Ignores gender. Limits improvement in the quality of women's lives. High cost: one and/or multiple providers
Reproductive	Focuses on maintaining women's reproductive functions (i.e., pregnancy; fertility/infertility related care)	Reduces maternal morbidity & mortality  Reduces child morbidity & mortality	Ignores women in non-reproductive stages. Limits women's roles to caregivers only. Excludes women from clinical trials. High cost: one and/or multiple providers
Moral	Community moral values (i.e., health beliefs, attitudes, behaviors, and health practices) provide a framework for care	Community moral values (i.e., health beliefs, attitudes, behaviors, and health practices) are reinforced.	Limits access to health care services. Reinforces risky practices and unhealthy beliefs. High cost: various providers
Grandmother	Based on grandmothers' insights, experiences, and caring practices	Strengthens family relationships	Limited to grandmothers' personal life experiences, at specific times & places No cost
Comprehensive	Centered around women. Treats women with respect, accepts & acknowledges women's diversity. Actively considers the social, economic, societal, & environmental factors on women's lives. Recognizes women's difficulty in accessing the health care services. Recognizes the gender imbalance in our society. Gives women information and allows self-determination. Facilitates cooperation with health professionals	Comprehensive approach. One provider, cost efficient. Facilitates the ability to make informed choices. Seeks cooperation with mutually supportive health professionals Promotes synergistic collaborations, continuity, & quality of care. Manages whether or not a family member/significant others are involved in the care process	Special training costs for providers of comprehensive women's health care

Source: Hills & Mullett (2004); Meleis & Im (2002).

## حالتك الصحية العامة

يستفسر هذا الاستبيان عن وجهة نظرك في صحتك، هذه المعلومات سوف تساعد على تتبع ما تشعر به ومدى قدرتك على أداء نشاطاتك المعتادة. نشكرك على الإجابة عن هذه الأسئلة!

لكل سؤال من الأسئلة التالية يرجى وضع علامة  في المربع الخاص بالإجابة التي تصف بشكل أفضل ما تشعرون به.

### 1. بشكل عام، هل تعتبر أن صحتك:

ضعيفة	لا بأس بها	جيدة	جيدة جداً	ممتازة
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### 2. مقارنة مع العام الماضي، كيف تقيّم صحتك الآن بشكل عام؟

أفضل	أفضل إلى	تقريباً مثل	أسوأ إلى	أسوأ بكثير
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بكثير الآن من العام الماضي	حد ما الآن من العام الماضي	العام الماضي؟	حد ما الآن من العام الماضي؟	الآن من العام الماضي

5 4 3 2 1 

3. الأسئلة التالية تدور حول النشاطات التي قد تقوم بها أثناء يوم عادي. هل صحتك الآن تحدّ من قدرتك على القيام بالنشاطات التالية؟ إن كانت كذلك، فألى أي حد؟

لا، لا	نعم	نعم
تحدّها أبداً	تحدّها قليلاً	تحدّها كثيراً
▼	▼	▼

- أ- النشاطات العنيفة مثل الركض ورفع الأشياء الثقيلة، المشاركة في رياضات شاقة
- ب- النشاطات المعتدلة مثل تحريك طاولة أو دفع مكنسة كهربائية، أو لعب البولينغ أو البلياردو
- ج- رفع أو حمل كيس مشتريات البقالة
- د- صعود الأدراج لعدة طوابق
- هـ- صعود الدرج لطابق واحد
- و- الانحناء أو الركوع أو جلوس القرفصاء
- ز- المشي لمسافة تزيد عن كيلومتر واحد
- ح- المشي لبضعة مئات من الأمتار
- ط- المشي لمسافة مئة متر
- ي- الاستحمام أو ارتداء الملابس بنفسك

4. خلال الأسابيع الأربعة الماضية، هل حصلت معك أي من المشاكل التالية خلال تأدية عملك أو نشاطاتك اليومية العادية الأخرى كنتيجة لصحتك الجسدية؟

لا	نعم
----	-----

أ- خَفَّفت من مقدار الوقت الذي تقضيه في العمل أو النشاطات الأخرى. 1  2

ب- أنجزت أقل مما كنت تريد. 1  2

ج- كنت محدوداً في نوع العمل أو النشاطات الأخرى. 1  2

د- وجدت صعوبة في القيام بعملك أو أداء نشاطات أخرى

(على سبيل المثال، أخذت منك مجهوداً إضافياً). 1  2

5. خلال الأسابيع الأربعة الماضية، هل حصلت معك أي من المشاكل التالية خلال تأدية عملك أو نشاطاتك اليومية المعتادة الأخرى كنتيجة لمشاكل عاطفية (مثل شعورك بالكآبة أو القلق)؟

لا	نعم
----	-----

أ- خَفَّفت من مقدار الوقت الذي تقضيه في العمل أو النشاطات الأخرى. 1  2

ب- أنجزت أقل مما كنت تريد. 1  2

ج- أديت العمل أو النشاطات الأخرى باهتمام أقل من المعتاد. 1  2



6. خلال الأسابيع الأربعة الماضية، إلى أي مدى تعارضت صحتك الجسدية أو مشاكلك العاطفية مع نشاطاتك الاجتماعية العادية مع الأسرة، أو الأصدقاء، أو الجيران أو مجموعات أخرى من الناس؟

لم تتعارض أبداً	بشكل قليل	بشكل متوسط	بشكل كبير	تعارضت بشكل كبير جداً
1	2	3	4	5
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

7. ما مدى شدة الأوجاع الجسدية التي شعرت بها خلال الأسابيع الأربعة الماضية؟

لا أوجاع	خفيفة جداً	خفيفة	متوسطة	حادة	حادة جداً
1	2	3	4	5	6
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

8. خلال الأسابيع الأربعة الماضية، إلى أي مدى تعارض الألم مع عملك العادي (بما في ذلك عملك خارج المنزل والعمل المنزلي)؟

لم يتعارض أبداً	بشكل قليل	بشكل متوسط	بشكل كبير	تعارض بشكل كبير جداً
1	2	3	4	5
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

9. هذه الأسئلة تدور حول ما تشعر به وكيف سارت الأمور معك خلال الأسابيع الأربعة الماضية. الرجاء إعطاء إجابة واحدة عن كل سؤال بحيث تكون الأقرب لما كنت تشعر به. كم من الوقت خلال الأسابيع الأربعة الماضية...

ك	م	و	ب	ق	أ
ل الوقت	عظم	قت لا بأس	عض	ليل من	بدأ
	الوقت	به	الوقت	الوقت	

- أ- هل شعرت بأنك مفعم بالحيوية؟ .....  1 .....  2 .....  3 .....  4 .....  5 .....  6
- ب- هل كنت متوتراً جداً؟ .....  1 .....  2 .....  3 .....  4 .....  5 .....  6
- ج- هل أحسست أنك محبطاً لدرجة أن لا شيء ممكن أن يبهجك؟ .....  1 .....  2 .....  3 .....  4 .....  5 .....  6
- د- هل أحسست بالهدوء والطمأنينة؟ .....  1 .....  2 .....  3 .....  4 .....  5 .....  6
- هـ- هل كانت لديك طاقة كبيرة؟ .....  1 .....  2 .....  3 .....  4 .....  5 .....  6
- و- هل أحسست بالحزن والاكتئاب؟ .....  1 .....  2 .....  3 .....  4 .....  5 .....  6
- ز- هل شعرت بأنك مُرهق جداً؟ .....  1 .....  2 .....  3 .....  4 .....  5 .....  6
- ح- هل كنت سعيداً؟ .....  1 .....  2 .....  3 .....  4 .....  5 .....  6
- ط- هل شعرت بأنك متعب؟ .....  1 .....  2 .....  3 .....  4 .....  5 .....  6

10. خلال الأسابيع الأربعة الماضية، كم من الوقت تعارضت صحتك الجسدية أو مشاكلك العاطفية مع نشاطاتك الاجتماعية (مثل زيارة الأصدقاء والأقارب، الخ...)?

أبداً	قليل من الوقت	بعض الوقت	معظم الوقت	كل الوقت
▼	▼	▼	▼	▼
5 <input type="checkbox"/>	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>

11. ما مدى صحة أو خطأ كل عبارة من العبارات التالية بالنسبة لك؟

خط	خط	لا	ص	ص
خط	خط	لا	ص	ص
أ بالتأكيد	أ غالباً	أعرف	حيث غالباً	حيث بالتأكيد
▼	▼	▼	▼	▼

- أ- يبدو أنني أمرض بسهولة أكثر بقليل من الآخرين.....  1 .....  2 .....  3 .....  4 .....  5
- ب- أنا على نفس القدر من الصحة كالأخرين الذين أعرفهم.....  1 .....  2 .....  3 .....  4 .....  5
- ج- أتوقع أن تسوء صحتي.....  1 .....  2 .....  3 .....  4 .....  5
- د- صحتي ممتازة.....  1 .....  2 .....  3 .....  4 .....  5

شكراً على الإجابة عن هذه الأسئلة !

Appendix 3: Structured Interview

**An Assessment of the Health Status and Needs for women**

**1-Demographics**

Age as indicated on Passport \_\_\_\_\_

Last year of education completed (Circle the highest level completed):

No schooling

Elementary School K 1 2 3 4 5 6

Intermediate School 7 8 9

High School 1 2 3 4

College/University 1 2 3 4

Graduate Studies MA PhD Post Doc \_\_\_\_\_

Marital status:

Single Married Separated Divorced Widowed

Occupation:

Full-time homemaker Part-time employment Full-time employment

Average Monthly Income:

1- < BD 500

2- BD 600-800

3- BD 800-1000

4- > BD 1000

Individual monthly income \_\_\_\_\_

Family monthly income \_\_\_\_\_

**2-Medical History:**

Gravid (Number of all pregnancies) \_\_\_\_\_ Para (Number of births) \_\_\_\_\_

Abortions \_\_\_\_\_ Menstrual Period \_\_\_\_\_ Menopause \_\_\_\_\_

Pap smear \_\_\_\_\_ Result \_\_\_\_\_ Mammogram \_\_\_\_\_

Result \_\_\_\_\_

Contraception method (s) \_\_\_\_\_

Smoking: No Yes Ex-smoker

Yes or Ex-smoker, how many packs per day do you/did you smoke? \_\_\_\_\_

Yes or Ex-smoker, number of years smoking \_\_\_\_\_

Caffeine intake: No Yes If yes how many cups per day? \_\_\_\_\_

What do you do to decrease your stress? \_\_\_\_\_

List your medications including oral contraceptives, herbal medicines, and vitamins including frequency and dosage.

---

---

---

---

Type of diet: Regular other (specify) \_\_\_\_\_

Medically diagnosed chronic illness(es) \_\_\_\_\_

Have you ever felt threatened by any member of your family? No Yes

If yes, was it physical, emotional, or economical, or a combination or all listed?

Are there any other health problem(s) that you would like to share?

---

**3- Health care needs, and health care practice**

What is women’s health in your opinion? [what are the three lines below for?]

1- What would you identify as your most important health care need?

2- What barriers, if any, do you feel prevent you from receiving your health care services?

3- Does your health care provider provide you with health information (Health education)?  
 No Sometimes Yes All the time

4- Is the given health education adequate? Was it helpful and if so please described the benefits.

5- What type of health education did you receive? Verbal Leaflet Film Referred to others

6- Do you feel comfortable in asking your health care provider for information?

Yes No If no please explain why. \_\_\_\_\_

7- Did you receive any health education in your school? No Yes

8- Do you feel like you have enough information to understand the health care system?

9-Do you have health insurance? Yes No Medicare/Medicaid

10-When you get sick which health care facility do you mostly use:

Health Center Emergency Room Private Clinic Work place onsite  
 clinic Others

11- How many minutes is the health care facility from your home?

12-Do the hours of operation in the nearest health facility work for you?

Yes No

13-In the last 6 months, how many doctor visits have you had?

None or 1-3 or 4-6 or 7-10

14- How many private doctor visits have you had in the last 6months?

15- Can you describe your health care seeking practices as 1 for first choice and 6 for your last choice?

Self medication	Traditional Healer advice/family	Government Health care services & follow up	Ignore Follow up appointment	Nothing	Private clinic

16- Comments: \_\_\_\_\_

Appendix 4: Components, Variables, Measures, and Relationship in the Proposed Study

Components	Variables	Measures	Role in the Model
Perceived Health Status	General Health	GH scale	Dependent variables
	Physical Functioning	PF scale	
	Role Physical	RP scale	
	Mental Functioning	MH scale	
	Social Functioning	SF scale	
	Role Emotional	RE scale	
	Bodily Pain	BP scale	
	Vitality	VT scale	
Actual Health Status	Physical Health	Health History/problems Violence history Medical Chart extraction Physiological Measurement : Height & Weight, Blood Pressure	Predictor
Socio-demographic	Age Marital status Education Number of children Income	Supplemental Questionnaire	Independent variable
Health Seeking Behavior	Number of Dr visit in 6 months	Supplemental Questionnaire, health services utilization	Predictor
Services utilization practices	Sources of Primary health Services Health issuance	questions from the U.S, National health Assessment Survey	Predictor
Health needs	Health Services Needs	Supplemental Questioner	Main Predictor

Appendix 5: Medical Chart Review Form

Chronic Condition	Yes	No	NA	Remarks/On meds
DM				
HTN				
Asthma				
Heart Disease				
Anemia				
Depression				
Chronic back ache				
Thyroid problems 1-Hypo 2-Hyper				
Gastritis/gastric ulcer				
Arthritis/chronic joint pain				
Pelvic inflammatory disease				
Chronic Cervical disease/inflammation/vaginitis				
Psychotics illness				
Smoking Status				
Drug & Alcohol Status				
Annual Physical				
Updated Vaccination				
Anemia/blood disorder				
Last Pap Smear /within 2years				
Breast clinical Exam/within 2years				
Mammogram /after 40yrs or when applicable				
Blood for cholesterol				
Others				

## Appendix 6 : Consent to Participate in a Research Study

Assessment of the Perceived Health Status and Health Care Needs of Bahraini Women

### **Principal Investigator :**

Jameela Jassim Mukhaimer, Fulbright Scholar; PhD Student, MSN, R.N., CNM, Primary Care NP

### **Faculty Advisor : Professor Richard Redman**

**Ms. Jameela invite you to participate in this study for Assessment of the perceived health status and needs for Bahraini women.**

#### **Purpose of Study:**

The purpose of this study is to assess the Bahraini women's health status; health practices; and identify related health service needs.

#### **Participation Eligibility:**

- Those eligible to participate must be adult Bahraini women aged between 18 and 65 years, possessing the ability to speak Arabic.
- Those ineligible from participating are adult Bahraini women under the age of 18 or over the age of 65, unable to communicate in Arabic, or are terminally ill.
- Non-Bahraini females are not eligible to participate in this study.

The number of participants for this study will be 252 Bahraini females.

If you agree to be part of the research study, you will be asked few questions, where two structured health survey questionnaires will be administered during a thirty minute interview process by the researcher, in which participants will remain anonymous. The SF-36 questioners includes question with answers to choose from, for example "In general how do you describe your health" answer options are; Excellent, Very good, Good, Medium, or Poor. The structured questioner involves some questions related to the socio-economic status, for example "What is the last level of education you have completed?" This will be followed by taking your height, weight and blood pressure. The women participant medical records will be reviewed by the researcher for data abstraction regarding chronic illness for this study purpose without identifiers on it. The benefits to participants include increasing the Bahraini women's awareness regarding their health, through involvement in identifying their own health care needs. Screening services for height, weight and blood pressure will be free. Furthermore, informing policy makers may facilitate provision of future health care services.

No participant will be identified by name and risk is minimal, There will not be any invasive procedures; it is possible for participants to be involved in other studies simultaneously. The interview will be carried out in private room in the health centre to maintain participant confidentiality



Free childcare services will be provided for participants' children during the study and a gift card of ten Bahraini Dinars will be offered to participants who complete the study. In case of medical help required during the study the women will be referred to a health center physician specialist free of charge immediately.

The data will be stored in a data bank for future study with the researcher in secure computer and will be accessed by the researcher or the Health authority only when needed with your permission only.

Please indicate if you wish to allow your data to be stored YES NO

Participation in this study is voluntary and free of charge. No fees or assessments will be submitted to insurance companies. Participants are free to withdraw from the study at any point for any reason or refuse to answer any question. This will not affect the health care services they receive in the health center.

Study results will be communicated to medical and nursing journals, without revealing participants'

For information regarding this study, feel free to contact the researcher, Jameela Mukhaimer at 39424068, [mukhaim@umich.edu](mailto:mukhaim@umich.edu). Or call Ministry of Health Research Support Team on 17286040

Feedback and comments are welcome.

I understand the information printed on this form. I have discussed this study, its risks and potential benefits, with relevant individuals. My questions have been answered. I understand that if I have more questions or concerns about the study or my participation as a research subject, I may contact one of the individuals listed below.

I understand that I will receive a copy of this form at the time I agree to participate in the study and later upon request. I understand that if my ability to consent for myself changes, either I or my legal representative may be asked to re-consent prior to my continued participation in this study.

Researcher's Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Bahrain Ministry of Health research information department \_No: \_\_\_\_\_

موافقه اشتراك في دراسته تقييم صحه المرأه في

البحرين

سيدتي: أنت مدعوة للمشاركة في دراسة لتقييم صحة المرأة واحتياجاتها الصحية في البحرين

الهدف من الدراسة تقييم ا احتياجات المرأة الصحية التي سوف تشارك فيها 252 أمراه

الاختبارات و الإجراءات التي تتكون منها : مقابلة مدة 30 دقيقة في المركز الصحي وتشمل بعض الاسئله

عن الصحة العامه مثل

: هل تعتبرى صحتك ممتازه ,جيده جدا, جيده ,متوسطه , ضعيفه . و اسئله عن الوضع الاجتماعي مثل : هل

انتي عازبه , متزوجه ,مطلقه , منفصله , ارملة

ومراجعة الملف الصحي, وفحص الطول والوزن والضغط.

. علماً بأنه لا توجد أخطار من هذه الدراسة, وإن وجدت فنسبة ضئيلة جداً؛ لأن الدراسة لا تشتمل على أية

عملية تشخيصي أو علاجية . و ان احتاجت المشاركة للرعايه الصحيه اثناء الدراسه , سوف تحول لطبيب المركز الصحي

في الحال دون الحاجه الى دفع اي تكاليف علاجيه

و لحماية المعلومات والخصوصية للمشاركات في الدراسة سوف تتم المقابلة في غرفة خاصة في المركز الصحي,لمرة

واحدة فقط دون ذكر أو تدوين الاسم ,ولن يتم استخدام أية بيانات شخصية

. جميع المعلومات سوف تحفظ في ملفات إلكترونية؛ لاستخدامها في البحث العلمي من قبل الباحثة ووزارة الصحة

وحسب قوانين مجلس البحث العلمي اذا كان ليس لديك مانع نعم لا

إن مشاركتك في الدراسة تطوعية ,ومن ثم يمكنك عدم الإجابة على أي سؤال أو التوقف عن الدراسة في أي

وقت ولن يؤثر ذلك على رعايتك الصحية مستقبلاً.

قد لا توجد فائدة مباشرة للدراسة حالياً ولكنها تزيد من الوعي الصحي لدى المرأه و سوف تساعد على تقييم

صحة المرأة وتخطيط افضل للخدمات الصحية مستقبلاً.

لا توجد رسوم للمشاركة في الدراسة ولا يتم تقديم فاتورة للتأمين الصحي .

إذا كان لديك إي استفسارات حول مشاركتك في البحث أو أسأله تتعلق بحقوقك بصفتك إحدى المشاركات في

البحث يمكنك الاتصال بالباحثة

39424068 :على الرقم [mukhaim@umich.edu](mailto:mukhaim@umich.edu) ,

او على الرقم المخصص لوزاره الصحة (قسم البحوث) \_\_\_\_\_ 17286040 الواردة أعلاه

التاريخ \_\_\_\_\_ التوقيع \_\_\_\_\_

IRB: Health Sciences  
and Behavioral Sciences

IRB Number: HUM00028244

**Document Approved On: 7/14/2009**

Appendix 7: (7.1-7.8) Regression Models Tables

7.1-Regression Analysis of Age, Education, BMI, Blood Pressure, Number of Health Problem, Number of Deliveries, and Barriers to Health Care Effects on PF scale

Variables	B	SE	Sig.	Partial $\eta^2$
NO of Health			.000	.098
NOHP0	14.54	3.48		
NOHP1	11.38	3.60		
NOHP2	4.31	3.52		
NOHP3	Reference			
Education				
No Ed.	-12.75	10.71	.009	.056
<High school	3.60	9.88		
High School	3.86	9.68		
College	4.26	9.67		
Graduate	Reference			
Age			.001	.061
18-35	Reference			
36-54	-15.03	3.95		
55-64	-2.48	2.27		
BMI			.029	.038
Underweight	8.55	4.87		
Normal	6.58	2.31		
Overweight	2.65	2.08		
Obese	Reference			
Health Barrier				
Financial	7.33	2.88	.012	.027
Social	-.22	2.45	.926	.000
Health system	3.46	2.18	.114	.011
Cultural	-2.77	2.71	.309	.004
None	Reference			
Blood Pressure			.373	.005
Normal	Reference			
Elevated	-.043	2.81		
High	.086	6.03		
Other	-4.37	4.47		
Family income			.878	.003
BD300	2.11	2.85		
BD400-600	1.90	2.52		
BD600-1000	1.29	2.81		
BD1000+	Reference			
No of children	-.055	.48	.910	.000

Model  $R^2 = .445$  adjusted  $R^2 = .390$

7.2-Regression Analysis of Age, Education, BMI, Blood Pressure, Number of Health problem, Number of Deliveries, and Barriers to Health Care Effects on RP scale

Variables	B	SE	Sig.	Partial $\eta^2$
No of Health			.041	.035
NOHP0	24.77	10.96	.025	
NOHP1	9.90	11.33	.383	
NOHP2	13.08	11.08	.239	
NOHP3	Reference			
Education			.359	.019
No Ed.	48.90	33.67	.148	
<High school	36.38	31.08	.243	
High School	46.87	30.45	.125	
College	46.06	30.40	.131	
Graduate	Reference			
Age			.505	.006
18-35	Reference			
36-54	6.033	7.13	.263	
55-64	13.94	12.42	.399	
BMI			.844	.003
Underweight	8.17	15.32	.594	
Normal	-4.05	7.28	.578	
Overweight	-1.76	6.55	.788	
Obese	Reference			
Health Barrier				
Financial	5.32	9.06	.558	.001
Social	2.12	7.70	.076	.000
Health system	-1.05	6.85	.878	.000
Cultural	.43	8.54	.959	.000
None	Reference			
Blood Pressure			.303	.004
Normal	Reference			
Elevated	5.75	8.84	.651	
High	1.31	18.96	.069	
Other	12.07	14.05	.859	
Family income			.014	.044
BD300	-26.84	8.97		
BD400-600	-10.65	7.95		
BD600-1000	-4.83	8.83		
BD1000+	Reference			
No of children	-.134	1.518	.930	.000

Model  $R^2 = .132$  adjusted  $R^2 = .047$

7.3-Regression Analysis of Age, Education, BMI, Blood Pressure, Number of Health problem, Number of Deliveries, and Barriers to Health Care Effects on BP scale

Variables	B	SE	Sig.	Partial $\eta^2$
No of Health P			.000	.076
NOHP0	20.89	6.51	.002	
NOHP1	9.92	6.73	.142	
NOHP2	4.51	6.58	.493	
NOHP3	Reference			
Education			.233	.023
No Ed.	46.48	20.00	.652	
<High school	39.80	18.46	.032	
High School	40.23	18.92	.027	
College	40.22	18.05	.027	
Graduate	Reference			
Age			.068	.023
18-35	Reference			
36-54	4.01	4.24	.345	
55-64	-10.14	7.37	.171	
BMI			.139	.023
Underweight	17.70	9.10	.053	
Normal	6.19	4.32	.154	
Overweight	-.09	3.89	.980	
Obese	Reference			
Health Barrier				
Financial	2.62	5.38	.626	.001
Social	-.090	4.57	.984	.000
Health system	3.60	4.07	.377	.003
Cultural	1.64	5.07	.747	.000
None	Reference			
Blood Pressure			.944	.002
Normal	Reference			
Elevated	-2.68	5.25	.611	
High	1.14	11.26	.919	
Other	.38	8.34	.964	
Family income			.116	.025
BD300	-12.48	5.33	.020	
BD400-600	-9.00	4.72	.058	
BD600-1000	-5.33	5.25	.311	
BD1000+	Reference			
No of children	.056	.901	.950	.000

Model  $R^2 = .198$  adjusted  $R^2 = .119$

7.4-Regression Analysis of Age, Education, BMI, Blood Pressure, Number of Health Problem, Number of Deliveries, and Barriers to Health Care Effects on GH scale

Variables	B	SE	Sig.	Partial $\eta^2$
No of Health P			.000	.167
NOHP0	32.83	5.28	.000	
NOHP1	25.72	5.45	.000	
NOHP2	14.49	5.33	.007	
NOHP3	Reference			
Education			.171	.027
No Ed.	11.70	16.21	.471	
<High school	24.58	14.96	.102	
High School	24.34	14.66	.098	
College	24.90	14.63	.090	
Graduate	Reference			
Age			.405	.008
18-35	Reference			
36-54	-2.29	3.43	.506	
55-64	-8.05	5.98	.179	
BMI			.258	.017
Underweight	13.19	7.38		
Normal	.22	3.50		
Overweight	3.14	3.15		
Obese	Reference			
Health Barrier				
Financial	8.18	4.36	.062	.015
Social	1.28	3.70	.729	.001
Health system	7.95	3.30	.017	.024
Cultural	3.43	4.11	.405	.003
None	Reference			
Blood Pressure			.237	.018
Normal	Reference			
Elevated	-8.31	4.26		
High	-10.02	9.13		
Other	-2.68	6.76		
Family income			.813	.004
BD300	-1.13	4.32	.794	
BD400-600	.21	3.82	.955	
BD600-1000	2.75	4.25	.519	
BD1000+	Reference			
No of children	0.991	-.731	.176	.008

Model  $R^2 = .282$  adjusted  $R^2 = .211$

7.5-Regression Analysis of Age, Education, BMI, Blood Pressure, Number of Health problem, Number of Deliveries, and Barriers to Health Care Effects on VT scale

Variables	B	SE	Sig.	Partial $\eta^2$
No of Health P			.055	.032
NOHP0	11.48	5.21		
NOHP1	4.74	5.39		
NOHP2	6.64	5.27		
NOHP3	Reference			
Education			.735	.009
No Ed.	16.80	16.01		
<High school	11.31	14.78		
High School	9.49	14.48		
College	7.58	14.46		
Graduate	Reference			
Age			.208	.013
18-35	Reference			
36-54	4.57	3.39	.179	
55-64	9.91	5.90	.095	
BMI			.475	.011
Underweight	4.08	7.28		
Normal	-2.99	3.46		
Overweight	-3.77	3.11		
Obese	Reference			
Health Barrier				
Financial	-1.29	4.31	.764	.000
Social	1.09	3.66	.766	.000
Health system	5.72	3.26	.080	.013
Cultural	3.05	4.06	.453	.002
None	Reference			
Blood Pressure			.576	.008
Normal	Reference			
Elevated	1.13	4.20		
High	-8.88	9.02		
Other	-5.16	6.68		
Family income			.062	.031
BD300	-11.25	4.26	.009	
BD400-600	-6.42	3.78	.091	
BD600-1000	-3.66	4.20	.384	
BD1000+	Reference			
No of children	-.640	.722	.376	.003

Model  $R^2 = .118$  adjusted  $R^2 = .032$



7.6-Regression Analysis of Age, Education, BMI, Blood Pressure, Number of Health problem, Number of Deliveries, and Barriers to Health Care Effects on SF scale

Variables	B	SE	Sig.	Partial $\eta^2$
No of Health P			.239	.018
NOHP0	9.20	7.37	.213	
NOHP1	7.37	7.62	.334	
NOHP2	-1.13	7.45	.879	
NOHP3	Reference			
Education			.697	.009
No Ed.	-18.06	22.65	.426	
<High school	-6.83	20.90	.744	
High School	-4.08	20.48	.842	
College	-6.38	20.45	.755	
Graduate	Reference			
Age			.248	.012
18-35	Reference			
36-54	7.98	4.80	.100	
55-64	4.87	8.35	.560	
BMI			.387	.013
Underweight	-14.54	10.31	.160	
Normal	1.50	4.90	.760	
Overweight	2.73	4.40	.535	
Obese	Reference			
Health Barrier				
Financial	.619	6.09	.919	.000
Social	-2.12	5.18	.682	.001
Health system	5.32	4.61	.250	.006
Cultural	3.82	5.74	.506	.002
None	Reference			
Blood Pressure			.993	.000
Normal	Reference			
Elevated	1.65	5.96	.781	
High	1.63	12.75	.898	
Other	.18	9.45	.981	
Family income			.631	.007
BD300	-7.01	6.03	.246	
BD400-600	-1.80	5.34	.737	
BD600-1000	-1.63	5.94	.784	
BD1000+	Reference			
No of children	.018	1.02	.986	.000

Model  $R^2 = .078$  adjusted  $R^2 = .012$

7.7-Regression Analysis of Age, Education, BMI, Blood Pressure, Number of Health problem, Number of Deliveries, and Barriers to Health Care Effects on RE scale

Variables	B	SE	Sig.	Partial $\eta^2$
No of Health P			.254	.017
NOHP0	13.39	11.56	.248	
NOHP1	8.76	11.95	.464	
NOHP2	- 2.90	11.69	.804	
NOHP3	Reference			
Education			.089	.034
No Ed.	46.70	35.52	.190	
<High school	27.04	32.78	.410	
High School	46.86	32.13	.146	
College	38.09	32.07	.236	
Graduate	Reference			
Age			.694	.003
18-35	Reference			
36-54	4.85	7.53	.520	
55-64	-2.18	13.10	.868	
BMI			.399	.013
Underweight	-4.53	16.16	.779	
Normal	-13.07	7.68	.090	
Overweight	-6.08	6.91	.380	
Obese	Reference			
Health Barrier				
Financial	-15.30	9.56	.111	.011
Social	2.07	8.12	.799	.000
Health system	3.66	7.23	.613	.001
Cultural	9.46	9.01	.295	.005
None	Reference			
Blood Pressure			.964	.001
Normal	Reference			
Elevated	-4.70	9.33	.615	
High	-5.86	20.0	.770	
Other	-3.31	14.82	.823	
Family income			.001	.067
BD300	-35.91	9.46	.000	
BD400-600	-29.46	8.38	.001	
BD600-1000	-27.94	9.32	.003	
BD1000+	Reference			
No of children	1.71	1.60	.286	.005

Model  $R^2 = .157$  adjusted  $R^2 = .074$

7.8-Regression Analysis of Age, Education, BMI, Blood Pressure, Number of Health problem, Number of Deliveries, and Barriers to Health Care Effects on MH scale

Variables	B	SE	Sig.	Partial $\eta^2$
No of Health P			.050	.033
NOHP0	10.11	5.33	.059	
NOHP1	11.08	5.51	.046	
NOHP2	1.55	5.39	.773	
NOHP3	Reference			
Education			.658	.010
No Ed.	16.97	16.38	.301	
<High school	9.55	15.12	.528	
High School	12.65	14.81	.394	
College	9.89	14.79	.504	
Graduate	Reference			
Age			.519	.006
18-35	Reference			
36-54	3.86	3.47	.266	
55-64	4.77	6.04	.430	
BMI			.530	.009
Underweight	-8.83	7.45	.237	
Normal	-4.14	3.54	.243	
Overweight	-1.59	3.18	.618	
Obese	Reference			
Health Barrier				
Financial	1.05	4.41	.812	.000
Social	4.58	3.74	.222	.006
Health system	3.43	3.33	.304	.005
Cultural	6.93	1.66	.096	.012
None	Reference			
Blood Pressure			.489	.010
Normal	Reference			
Elevated	-2.71	4.30	.529	
High	-5.64	9.22	.541	
Other	-10.47	6.83	.127	
Family income			.046	.033
BD300	-11.64	4.36	.008	
BD400-600	-5.75	3.86	.138	
BD600-1000	-2.62	4.30	.542	
BD1000+	Reference			
No of children	.360	.73	.626	.001

Model  $R^2 = .121$  adjusted  $R^2 = .035$

Appendix 8: SF36 Item Means, Standard Deviations and Correlations <sup>a</sup> with SF-36 Scales

(Version 2 Standard): (N=258)

ITEM		MEAN	SD	PF	RP	BP	GH	VT	SF	RE	MH
SCALE	PF – PHYSICAL FUNCTIONING										
PF01	3a	1.736	.779	.562	.195	.234	.208	.143	.095	.078	.027
PF02	3b	2.856	.481	.604	.207	.130	.204	.049	.160	-.035	-.007
PF03	3c	2.901	.387	.503	.200	.185	.150	.005	.097	.060	-.001
PF04	3d	2.352	.708	.685	.127	.214	.304	.055	.073	-.064	.087
PF05	3e	2.845	.465	.622	.098	.161	.205	.001	.088	-.001	.065
PF06	3f	2.616	.668	.598	.102	.243	.179	-.034	.017	-.079	-.017
PF07	3g	2.546	.694	.692	.233	.241	.254	.104	.061	-.013	.076
PF08	3h	2.810	.489	.705	.156	.263	.301	.109	.222	-.017	.112
PF09	3i	2.953	.245	.430	.101	.191	.113	.014	.178	.011	-.012
PF10	3j	2.992	.087	.149	.034	.149	-.052	-.001	-.031	.081	.006
SCALE	RP – ROLE PHYSICAL										
RP1	4a	3.108	2.00	.196	.876	.316	.266	.317	.339	.312	.338
RP2	4b	2.907	2.00	.211	.898	.304	.268	.253	.266	.268	.282
RP3	4c	3.232	1.990	.272	.797	.288	.197	.244	.192	.167	.196
RP4	4d	3.356	1.971	.218	.845	.321	.206	.247	.269	.195	.225
SCALE	BP – BODILY PAIN										
BP1	7	3.915	1.238	.299	.231	.903	.328	.201	.165	.116	.200
BP2	8	5.186	1.025	.322	.416	.855	.305	.273	.300	.222	.292
SCALE	GH – GENERAL HEALTH										
GH1	1	3.662	.802	.363	.191	.364	.711	.219	.165	.153	.232
GH2	11a	3.893	1.043	.227	.171	.157	.619	.126	.175	.005	.103
GH3	11b	2.325	.862	.102	.060	.072	.568	-.060	.029	-.049	.004
GH4	11c	3.341	.937	.256	.223	.239	.653	.336	.189	.104	.292
GH5	11d	3.480	.852	.201	.252	.319	.682	.309	.133	.017	.305
SCALE	VT - VITALITY										
VT1	9a	3.182	1.081	.199	.235	.209	.216	.627	.253	.195	.343
VT2	9e	3.418	1.127	-.004	.139	.106	.162	.580	.070	.119	.278
VT3	9g	3.321	1.130	.025	.203	.231	.149	.631	.309	.254	.379
VT4	9i	3.538	1.109	.019	.208	.124	.192	.687	.489	.314	.547
SCALE	SF – SOCIAL FUNCTIONING										
SF1	6	4.015	1.317	.209	.202	.235	.138	.344	.794	.227	.391
SF2	10	4.294	.957	.083	.260	.208	.211	.403	.897	.317	.448
SCALE	RE – ROLE EMOTIONAL										
RE1	5a	2.759	2.047	-.054	.294	.164	.106	.319	.256	.907	.395
RE2	5b	2.565	1.956	.041	.275	.164	.047	.330	.326	.928	.385
RE3	5c	2.658	1.974	.061	.287	.182	.005	.308	.316	.905	.365
SCALE	MH – MENTAL HEALTH										
MH1	9b	3.527	1.164	.032	.252	.199	.183	.369	.356	.316	.726
MH2	9c	4.178	1.087	.104	.219	.102	.098	.402	.379	.318	.663
MH3	9d	3.220	1.248	.041	.155	.203	.262	.427	.172	.183	.670
MH4	9f	3.542	1.094	-.003	.234	.217	.171	.480	.455	.418	.766
MH5	9j	3.798	.789	.063	.185	.228	.296	.429	.337	.187	.581

جدول - 5.1 - Table

عدد سكان مملكة البحرين حسب الفئة العمرية، الجنسية والنوع - يوليو ٢٠٠٧  
Population of the Kingdom of Bahrain by Age Group, Nationality & Sex - July 2007

Age Group	الجملة Total			غير بحريني Non-Bahraini			بحريني Bahraini			الفئة العمرية
	كلا النوعين Both Sexes	أنثى Female	ذكر Male	كلا النوعين Both Sexes	أنثى Female	ذكر Male	كلا النوعين Both Sexes	أنثى Female	ذكر Male	
0 - 4	74,530	36,731	37,799	17,776	8,834	8,942	56,754	27,897	28,857	4 - 0
5 - 9	73,454	35,864	37,590	18,027	8,845	9,182	55,427	27,019	28,408	9 - 5
10 - 14	71,629	34,997	36,632	14,634	7,121	7,512	56,995	27,876	29,120	14 - 10
15 - 19	69,131	33,871	35,260	12,878	6,547	6,331	56,253	27,324	28,929	19 - 15
20 - 24	97,360	39,745	57,615	46,903	15,191	31,713	50,457	24,555	25,902	24 - 20
25 - 29	136,162	44,607	91,555	91,697	22,938	68,759	44,465	21,669	22,796	29 - 25
30 - 34	128,248	42,865	85,383	91,016	24,088	66,928	37,232	18,777	18,455	34 - 30
35 - 39	111,214	36,815	74,399	77,921	19,691	58,230	33,293	17,125	16,169	39 - 35
40 - 44	90,421	32,140	58,281	55,818	14,297	41,522	34,603	17,843	16,759	44 - 40
45 - 49	72,128	25,269	46,859	41,455	9,406	32,049	30,673	15,863	14,810	49 - 45
50 - 54	48,835	15,948	32,887	26,077	4,904	21,173	22,758	11,044	11,714	54 - 50
55 - 59	27,201	9,324	17,878	11,775	2,439	9,336	15,426	6,884	8,542	59 - 55
60 - 64	12,734	5,546	7,188	3,375	892	2,483	9,359	4,654	4,705	64 - 60
65 - 69	9,666	4,764	4,901	1,150	415	735	8,516	4,349	4,167	69 - 65
70 - 74	6,236	3,240	2,997	648	269	379	5,588	2,970	2,618	74 - 70
75 - 79	4,607	2,389	2,218	393	172	221	4,214	2,217	1,997	79 - 75
80 - 84	2,545	1,281	1,263	185	98	87	2,360	1,183	1,177	84 - 80
85 +	3,196	1,827	1,369	136	63	74	3,060	1,764	1,296	+ 85
<b>Total</b>	<b>1,039,297</b>	<b>407,223</b>	<b>632,074</b>	<b>511,864</b>	<b>146,209</b>	<b>365,654</b>	<b>527,433</b>	<b>261,013</b>	<b>266,420</b>	<b>الجملة</b>

\* Based on CPR August, 2007 Adjusted as for 2007 Mid Year Population  
(1<sup>st</sup> July 2007).

- أرقام مبنية على بيانات السجل السكاني المركزي أغسطس ٢٠٠٧  
ومعدسوبة لمنتصف عام ٢٠٠٧ (الأول من يوليو ٢٠٠٧)

Source: Central Information Organization

## Appendix 9: Population of the Kingdom of Bahrain by Age Group

جدول - 11 - Table

عدد سكان مملكة البحرين حسب المحافظة، الجنسية والنوع - يوليو ٢٠٠٧  
Population of the Kingdom of Bahrain by Governorate, Nationality & Sex - July 2007

Governorate	الجملة Total			غير بحريني Non-Bahraini			بحريني Bahraini			المحافظة
	كلا النوعين Both Sexes	انثى Female	ذكر Male	كلا النوعين Both Sexes	انثى Female	ذكر Male	كلا النوعين Both Sexes	انثى Female	ذكر Male	
Capital	281,085	93,772	187,313	210,816	59,106	151,711	70,268	34,666	35,602	العاصمة
Muharraq	159,937	68,590	91,346	65,378	21,651	43,727	94,558	46,939	47,619	المحرق
Central	274,128	104,880	169,248	117,441	27,098	90,344	156,687	77,783	78,904	الوسطى
Northern	239,781	111,344	128,437	65,186	24,634	40,552	174,595	86,709	87,885	الشمالية
Southern	84,366	28,637	55,729	53,042	13,721	39,321	31,325	14,916	16,409	الجنوبية
<b>Total</b>	<b>1,039,297</b>	<b>407,223</b>	<b>632,074</b>	<b>511,864</b>	<b>146,209</b>	<b>365,654</b>	<b>527,433</b>	<b>261,013</b>	<b>266,420</b>	<b>الجملة</b>

\* Based on CPR August, 2007 Adjusted as for 2007 Mid Year Population (1<sup>st</sup> July 2007).

\* أرقام مبنية على بيانات السجل السكاني المركزي أغسطس ٢٠٠٧ ومحسوبة لمنتصف عام ٢٠٠٧ (الأول من يوليو ٢٠٠٧).

Source: Central Informatics Organisation

## Appendix 10: Population of the Kingdom of Bahrain by Governorate



No: FA/LA/ ٧٤٧2009  
Date: 14/7/2009

**Dr. Mariam Al Jalahma**  
Assistant Undersecretary for Primary Care & Public Health

Dear Dr. Mariam,

**Subject: Research Study by Mrs. Jameela Mukhaimer in Health Centers**

We would like to inform you that Mrs. Jameela Mukhaimer, a nursing student from University of Michigan is planning to conduct a study titled "Assessment of the Health Status and Needs of Women in Bahrain" as part of her PhD dissertation.

Please ask the concerned people at health centers to provide her the necessary support.

Yours sincerely,

**Dr. Fawzi Abdulla Amin**  
Assistant Undersecretary for Training and Planning  
Chairman, Research Technical Support Team

cc:- COMS/PC  
- Mrs. Jameela Mukhaimer  
- RTS Team file

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