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Quality of Life in Female Breast Cancer Survivor in Panama

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Quality of Life in Female Breast Cancer Survivors in Panama

by

Mayela Castro Barrios

A thesis submitted in partial fulfillment
of the requirements for the degree of
Master of Sciences in Public Health
Department of Environmental and Occupational Health
College of Public Health
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Table of Content

List of Table	iii
List of Figures	v
Abstract	vi
Chapter 1: Introduction	1
Breast Cancer Definition	1
Breast Cancer Etiology	1
Epidemiology of Breast Cancer	2
Breast cancer incidence	2
Breast cancer mortality	3
Breast Cancer Survivors and Quality of Life	4
Public health impact	4
Breast cancer survivors and other diseases	7
Objectives	7
Research Questions	7
Chapter 2: Research Methods	9
Study Design	9
Sample population	9
Sampling	9
Data Source	9
Inclusion and Exclusion Criteria	10
The Self Assessment study Survey	10
The WHOQOL-BREF instrument	11
Measuring WHOQOL-BREF instrument	13
Introducing the Research of the Medical Staff	13
Participants Recruitment Strategy	14
Survey Procedures	14
Compensations and Benefits	15
Pilot Test	15
Ethical Considerations	15
Data Management	16
Cleaning data	16
Statistical analysis	16

Chapter 3: Results	18
Sociodemographic Characteristics	18
Clinical Characteristics	19
Use of natural or alternatives treatment	21
Other diseases	21
Medical relationship	21
Social support of the survivors	21
Quality of Life Analysis	24
General quality of life	27
Health satisfaction	27
Physical domain	29
Psychological domain	29
Social domain	33
Environmental domain	34
Multivariate Analysis	35
General quality of life	37
Health satisfaction	37
Physical domain	37
Psychological domain	37
Social domain	38
Environmental domain	39
Chapter 4: Discussion	41
Conclusion	46
Recommendations	47
Limitations	48
References	40
Appendix 1: University of South Florida IRB Approval	54
Appendix 2: Panama Gorgas Research Bioethics Committee Approval	55

List of Tables

Table 1: Sociodemographic Characteristics of Female Breast Cancer Survivor in Panama	20
Table 2: Clinical Characteristics of Breast Cancer Survivor in Panama	22
Table 3: Report of Clinical Treatments of Breast Cancer Survivors in Panama	23
Table 4: Type of Diseases Reported among Breast Cancer Survivors in Panama	24
Table 5: Social Support and Spiritual Beliefs of Breast Cancer Survivors in Panama	26
Table 6: Summary of the Quality of Life in Breast Cancer Survivors in Panama	27
Table 7: Spearman Correlation of the Dependent Variables of Quality of Life	28
Table 8: Median Comparing Quality of Life Variables with Sociodemographic Characteristics	30
Table 9: Median Comparing Quality of Life Variables with Social Support and Spiritual Beliefs Characteristics	31
Table 10: Median Comparing Quality of Life Variables with Clinical Characteristics	32
Table 11: Summary of Logistic Regression Analysis for General Quality of Life Perception	37

Table 12: Summary of Logistic Regression Analysis in the Psychological Domain of Quality of Life	38
Table 13: Summary of Logistic Regression Analysis in the Social Domain of Quality of Life	39
Table 14: Summary of Logistic Regression Analysis in the Environmental Domain of Quality of Life	40

List of Figures

Figure 1: Breast cancer incidence and mortality of total female cancer, 2008	3
Figure 2: Domains of the WHOQOL-BREF instrument	12
Figure 3: Sample population of the female breast cancer survivor in Panama	18

Abstract

Introduction: Breast cancer is the most common female cancer worldwide and it is also the principal cause of death from cancer among women globally. Breast cancer has the highest prevalence among Panamanian women and its incidence is also growing every year. Women living with and beyond breast cancer have special needs that have to be considered by society and the health care systems. After diagnosis, the quality of life (QOL) of women is highly affected, due to the emergence of physical, psychological and social effects which lead to changes in attitudes and expectations towards life.

Purpose: To evaluate the QOL, among Panamanian women who suffer from breast cancer, factors that could influence QOL and the main life areas where these women are more affected when they receive this diagnosis.

Methodology: A cross-sectional study was developed to measure the QOL of Panamanian breast cancer survivors in four domains (physical, social, psychological and environmental). A total of 240 survivor women completed 80% of the self-assessment QOL-BREF survey at the National Cancer Institute of Panama during March, 2013. Non-parametric statistical tests were used to define QOL based on the survey results, including sociodemographic and medical characteristics. A logistic regression model was performed to evaluate variables that can influence the quality of life among this population.

Results: Higher socioeconomic indicators as well as having greater levels of spiritual belief, younger age and less than 5 years of cancer diagnosis appear to produce positive and statistically significant differences in QOL among breast cancer survivors.

Conclusions: Breast cancer survivors in Panama have a good quality of life perception and are satisfied with their health. Support principally from family and friends plays a very important role in all aspects of QOL. Elderly women have different physical needs that could explain the lowest score reported in this study.

Chapter 1: Introduction

Breast Cancer Definition

American Cancer Society states that “breast cancer is a malignant tumor that starts in the cells of the breast. A malignant tumor is a group of cancer cells that can grow into (invade) surrounding tissues or spread (metastasize) to distant areas of the body” (American Cancer Society, 2012). This disease comes in many forms and is not equal in all women; it varies according to the speed of tumor growth and its ability to spread to other parts of the body. It is impossible to predict the consequences of the disease, since the degree of malignancy varies and also because people react differently to the disease.

Breast Cancer Etiology

Regarding etiology, there is no single cause that explains breast cancer. Currently there is speculation about the causes of increasing breast cancer in the world. Most of the authors point to lifestyle as primary causes. Breast cancer is associated with the combination of increasing age and genetic, hormonal and environmental factors (American Cancer Society, 2012). Being a woman and growing older are the most significant risk factors for breast cancer. Breast cancer is strongly related to age; only 5% of all breast cancers occur in women less than 40 years of age and over 80% of all female breast cancers occur among women aged 50 or more years (American Cancer Society, 2012). The older a woman gets, the higher is her risk of developing breast cancer. The majority of breast cancers are not hereditary. About 85% of breast cancers occur in

women who have no family history of breast cancer. These occur due to genetic mutations rather than inherited mutations that happen as a result of the aging process and life in general. Only about 5-10% of the women who get breast cancer have a family member diagnosed with it (Son et al., 2012).

Epidemiology of Breast Cancer

Breast cancer incidence. Breast cancer is the most common cancer in women worldwide. It is also the principal cause of death from cancer among female globally. Breast cancer is by far the most frequent cancer among women, with an estimated 1.38 million new cancer cases diagnosed in 2008 (23% of all cancers), and ranks second overall (10.9% of all cancers) (Ferlay et al., 2010). It is now the most common cancer in developed and developing countries with around 690,000 new cases estimated in each region in 2008. Incidence rates vary from 19.3 per 100,000 women in Eastern Africa to 89.7 per 100,000 women in Western Europe, and are high (greater than 80 per 100,000) in developed regions of the world (except Japan) and low (less than 40 per 100,000) in most of the developing regions (Ferlay et al, 2010). The United Kingdom (UK) and USA have some of the highest incidence rates worldwide (together with the rest of North America and Australia/New Zealand), making these countries a priority for breast cancer awareness (Parkin, Pisani, & Ferlay, 1999; Ferlay et al., 2010). As we can see in Figure 1, Latin America, the situation is not far different. Breast cancer incidence and mortality rates are the highest of all women's cancers and they are increasing in Panama (Urena, 2009).

In 2008, the incidence of breast cancer among Panamanian women was 29.2% per 100,000 women; this is translated into approximately 466 cases (Ferlay et al., 2010).

According to statistics from the National Cancer Institute, in 2009, the reported number decreased to 445. And in 2010, the country recorded 491 new cases of breast cancer (Velasco, 2011).

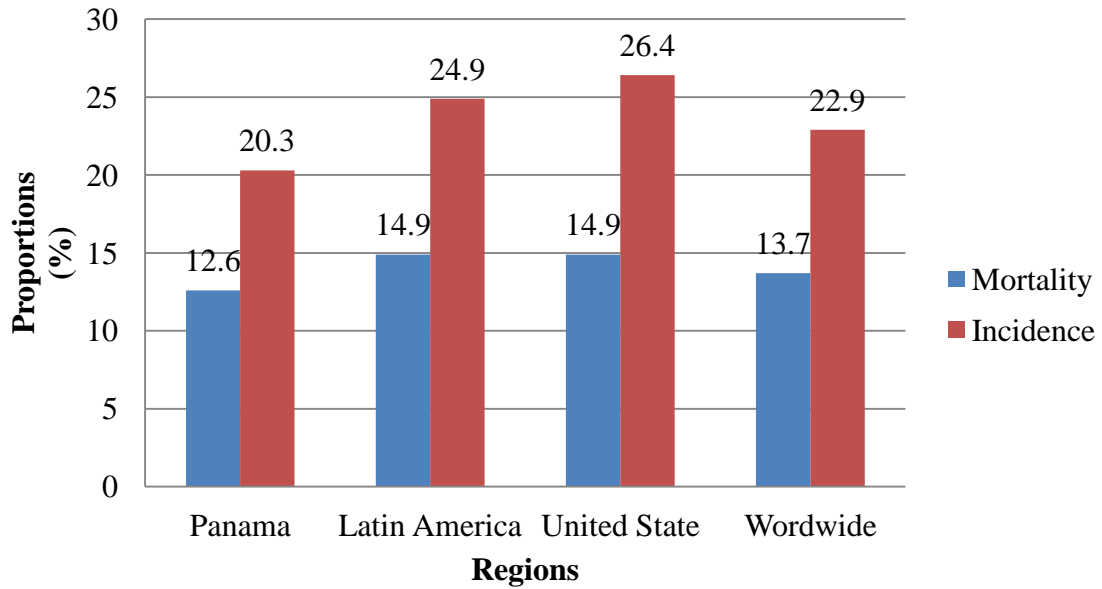


Figure 1. Breast cancer incidence and mortality proportions of total female cancer, 2008

Breast cancer mortality. The range of mortality rates is small (approximately 6-19 per 100,000) because of the more favorable odd of survival of breast cancer in developed regions. As a result, breast cancer female rank as the fifth cause of death from cancer overall (458,000 deaths), but it is still the most frequent cause of cancer death in women in both developing (269,000 deaths, 12.7% of the total) and developed regions, where the estimated 189,000 deaths figure is almost equal to the estimated 188,000 deaths from lung cancer (Ferlay et al., 2010). Available mortality statistics indicate that among Panamanian women, breast cancer is the second leading cause of cancer death

after cervical cancer. In 2008, the mortality rate was 11.6% per 100,000 women which represented 189 deaths by breast cancer. In relation to other cancers in the Panamanian female population, these statistics indicate that the prevalence of breast cancer ranks highest. The 5-year prevalence in Panama in 2008 was 1,661 cases which represented a 29.1% per 100,000 women (Velasco, 2011; Ferlay et al, 2010).

Breast Cancer Survivors and Quality of Life

The National Coalition for Cancer Survivorship (2010) defines individuals as survivors from the time of their diagnosis through the balance of their lives. Balance of life is the experience of living with, through, and beyond a diagnosis of cancer (Rowland, Hewitt & Ganz, 2006). Breast cancer survivors are an increasing group of women; despite the high incidence rates, in United States, 89% of women diagnosed with breast cancer are still alive five years after their diagnosis (Jemal, Center, DeSantis & Walt, 2010).

The survival rate for breast cancer has shown an increased significantly lately. Currently, more than half of the patients with breast cancer survive owing to new effective treatments and earlier detection (K. Ashing-Giwa, Ganz, & Petersen, 1999; Deimling, Bowman, Sterns, Wagner, & Kahana, 2006). Cancer survivorship has become a new issue for delivering quality cancer care (Rowland, Hewitt, & Ganz, 2006).

Public health impact. For cancer survivors, QOL is considered an essential outcome variable and is conceptualized according to a system of values, standards or perspectives that vary from person to person, from group to group and from place to place. So, the quality of life is the sense of well-being that can be experienced by people and represents the sum of objective and subjective personal feelings. According to the

CDC, in public health and medicine, the concept of quality of life related to health refers to the way a person or group of people perceive their physical and mental health over time. Because there is no single definition of QOL, the operational definition in this study is based on the four domains of the WHO-BREF instrument.

The World Health Organization (WHO) defined quality of life as “an individual perception of their own position in life within the context of the cultural and value system in which they live and in relation to their goals, expectations, standards and concerns” (WHO, 1996); this concept is consistent with the definition of health in the same organization, incorporating physical, psychological, level of independence, social relationships, environmental, and spiritual areas. This was the concept of quality of life that guided the development of this research work. This definition means that the quality of life is a subjective assessment and stresses that it can only be improved if incorporated into the cultural, social and environment life of that person.

During active cancer treatment, much of the focus of care has been the support of psychological and physical well-being. Concerns about life stress, and social, family and spiritual well-being, most often arise months to years after the diagnosis (Ferrell, Dow, & Grant, 1995). The transition of the experience to being a breast cancer survivor has been described as a group of extraneous circumstances that create a huge impact on the woman’s life. Often, trying to balance the persistent physical symptoms, altered life meaning, uncertainty and fears of cancer’s recurrence, along with the rejoicing at surviving (Ashing-Giwa & Lim, 2009; Ferrell et al., 1996; Knobf, 2002) Also, survivors may have to deal with the challenge of the recovery process which may be accompanied by considerable health problems that become apparent after treatment (Ashing-Giwa et

al., 2004; Ganz et al., 2002). Major findings among young breast cancer survivors also indicate reproductive concerns (Sonmezer & Oktay, 2006). Discussing these issues and exploring all the possible options are crucial before beginning cancer treatment. According to the literature, the majority of cancer patients experience interpersonal, psychological, health cover and co morbidities difficulties instead of mental problems. Feeling like a social burden also has been a conclusion of several studies among this population (Kroenke et al., 2012).

Socioeconomic factors and sexual behaviors have a big impact on the quality of life of breast cancer survivors. As for the latter, losing employment and a change in marital status while experiencing cancer, together with spiritual issues and physical worries, have negative effects on QOL (Kobayashi et al., 2008). Furthermore, breast cancer survivors often report a number of unmet needs that cover various areas in the woman's life (Cappiello, Cunningham, Knobf, & Erdos, 2007; Knobf, 2007; Park & Hwang, 2012). Therefore, it is important to concentrate on cancer patients' quality of life after cancer diagnosis and its treatment (Matsuno et al., 2007). Awareness about patterns of recovery following treatment is just beginning to appear. Survivors' information and support needs in following treatment are little known. How survivors manage the issues discussed earlier, or the resources needed to promote recovery, self-care management or experience of women completing treatment are also less investigated (Davis, 2004; Kroenke, Kubzansky, Schernhammer, Holmes, & Kawachi, 2006; Low, Stanton, & Danoff-Burg, 2006).

Early detection and advances in new therapies increase the number of survivors and their quality of life. Among breast cancer patients and medical organizations, this is a

growing area of research that can provide a better recovery, evaluation and considerable clinical experience (Park, Bae, Jung, & Kim, 2012).

Breast cancer survivors and other diseases. In Canada, Lipscombe and collaborators concluded in their study that “postmenopausal women who survived breast cancer are more likely to develop diabetes, compared to other women of their age who did not have breast cancer” (Lipscombe et al., 2012). The authors also added that breast cancer survivors who had undergone therapies against breast cancer, especially chemotherapy, were at risk of developing diabetes. Over the last few years, researches have become increasingly aware of a link between cancer and diabetes.

Objectives

The objectives of this study are:

- To determine and report the quality of life of women who are breast cancer survivors in Panama in order to know and identify associated factors and areas of life in which these patients have been most affected during and after breast cancer treatment.
- To identify potential areas for education, counseling, support as well as the weaknesses of the medical care system in dealing with breast cancer survivors.

This allows doctors and health institutions, especially in the public sector, to implement strategies and design appropriate interventions to prepare patients for recovery after treatment.

Research Questions

This study will answer the following three questions:

1. What is the quality of life (QOL) among Panamanian breast cancer survivors?

2. What factors influence the QOL among women who survive breast cancer?
3. Which are the areas in which breast cancer survivor women feel more affected their life?

Chapter 2: Research Methods

Study Design

A cross-sectional study was conducted to examine the quality of life (QOL) among breast cancer survivors. The QOL was evaluated by association analysis of four domains (physical, social, psychological and environmental) in women diagnosed with breast cancer.

Sample population. The study population consisted of Panamanian women who have been diagnosed with breast cancer and attended their follow up appointment at the Medical Oncology Health care Service at the National Cancer Institute.

Sampling. A non probabilistic sampling method was utilized to draw a purposive sample of a minimum of 150 participants. This rough estimate was provided by a medical oncologist at the National Cancer Institute as an achievable sampling goal. All women who were at the time the study attending breast cancer follow-up appointments or receiving any type of treatment, who agreed to participate in research were surveyed. A total of 263 breast cancer patients participated in the study and a total of 240 completed the survey QOL instrument in 80%.

Data source. Treatment of breast cancer is centralized in Panama City. The National Cancer Institute is the only oncologist public hospital in charge of providing treatment of cancer in the Republic of Panama. The original and primary data for this study was collected during March 2013 from women diagnosed with breast cancer who

attended their follow up appointment at the Medical Oncology Healthcare Service at the National Cancer Institute of Panama during March 2013.

Inclusion and Exclusion Criteria

The eligibility criteria for inclusion in the study included the following:

- Panamanian women 18 years or older, diagnosed with breast cancer, Spanish speakers who can read and have been attending their follow-up appointment and have been undergoing treatment at the National Cancer Institute at the time of the study survey and have in good conditions to answer the survey.

The exclusion criteria in the study were:

- Being a breast cancer patients under age 18, foreigners, not Spanish speaking, having a mental disability already diagnosed, who is under the influence of psychotropic medication, being incarcerated, having a serious health condition already diagnosed, having difficulty responding to the survey, or refusing to participate, or who does not know how to read Spanish.

The Self Assessment Study Survey

To protect participant's confidentiality, the survey was completely anonymous. The questionnaire collected information regarding general socio-demographic and medical characteristics. This survey included a validated quality of life (QOL) measurement instrument: The WHOQOL-BREF (World Health Organization Quality of Life Assessment Instrument BREF) Spanish version (WHO, 1996). This QOL measurement instrument is a short version of a generic World Health Organization Quality of Life assessment instrument (WHOQOL-100) (WHO, 1996). The WHOQOL-BREF is a self-administered survey that has been developed with a trans-cultural focus

on quality of life as perceived by the person (Skevington, Lotfy, & O'Connell, 2004). The questionnaires were designed to be completed by the participants in about 30 to 45 minutes.

Guided by the literature, additional characteristics and exposure that may influence QOL were included and evaluated in the survey. Those additional concepts were:

- Other diseases beside a breast cancer diagnosis
- General support by institutions or other persons
- Medical relationship and,
- Other natural medications taken to treat breast cancer

The WHOQOL-BREF instrument. The WHOQOL-BREF in Spanish has been validated as an evaluation tool of the relevant areas of the quality of life of a large number of cultures around the world, including Panama (Skevington, Lotfy, & O'Connell, 2004). It also provides an excellent alternative to the more complete WHOQOL-100, from which this brief version is derived. The WHOQOL-100 allows assessment of each individual facet within domains relating to quality of life with great detail; however, this may be too lengthy for practical use. If the survey is too long it is likely that we will obtain a low response/completion rate (WHO, 1996).

The survey in this study contained a total of 46 questions, of which 26 were from WHOQOL-BREF which provides a fast profile of 4 areas (domains). From those 26 questions, 2 questions were related to general health and overall quality of life; and the following 24 questions provided a broad and comprehensive assessment of the quality of life of a patient (WHO, 1996). The remaining 20 questions were related to socio-

demographics and medical characteristics. Each question of the WHOQOL-BREF instrument had five of the answer choices on an ordinal Likert scale. All of them produced a profile of four domains: physical, psychological, social relationships and the environment (see Figure 2). The last question was an open-ended question, where the patients were asked to give their opinion about the survey. Also, this question allowed them to express why patients chose the answers and why they did not answer any of the questions.

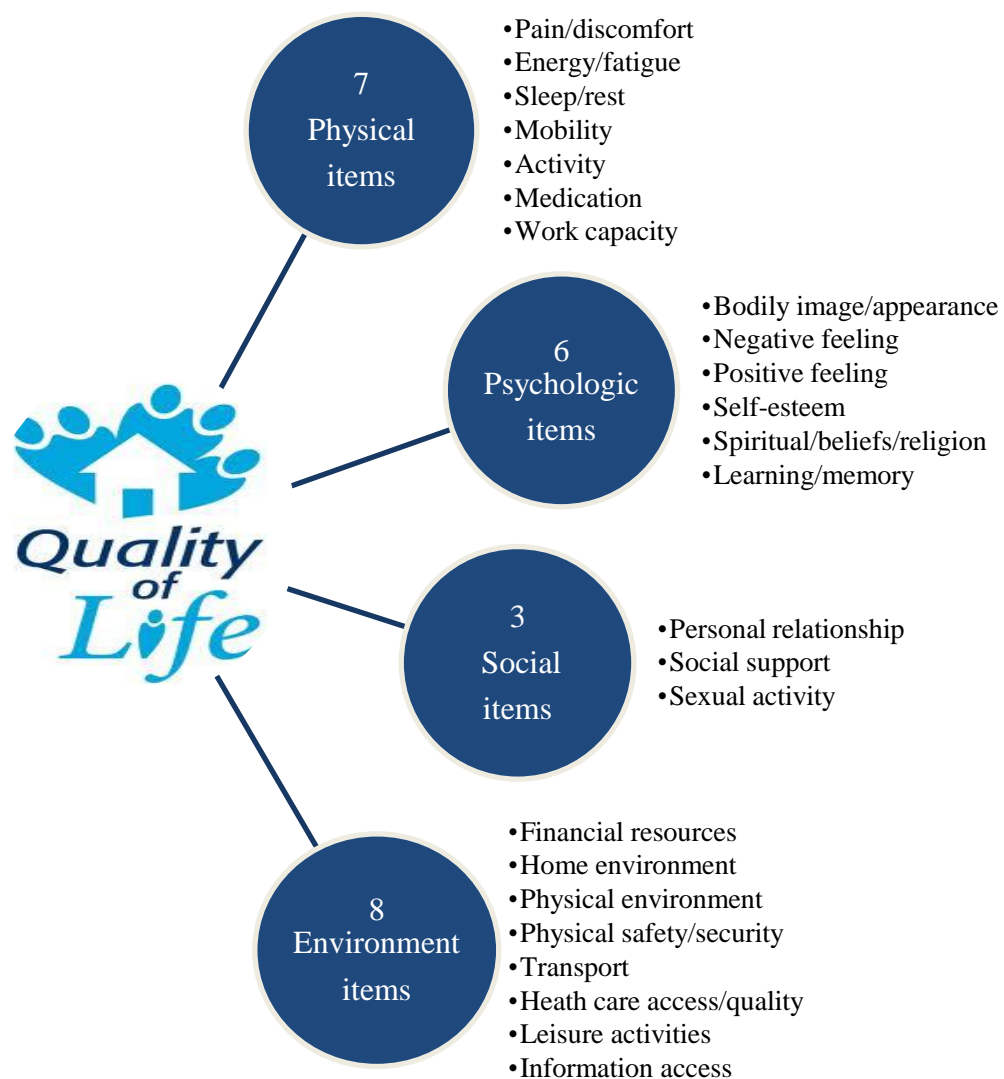


Figure 2. Four domains of the WHOQOL-BREF instrument

Measuring WHOQOL-BREF instrument. The domains are measured in a positive direction; the higher the score, the better the quality of life. The questions numbered 22, 23 and 45 had a negative meaning. So, it was necessary to reverse their scores. The answer to each question was used to calculate the measurement for the total domain. The steps for assigning scores were based on the WHOQOL-BREF scoring guide (WHO, 1996). The steps for assigning scores were:

- All 26 questions were assigned a score of 1-5.
- The scores for each domain were computed and multiplied by 4, for equivalence with the WHOQOL-100.
- If the domain had more than 20% missing data, the domain score would not be calculated.
- The scale scores for each domain ranged from 4 to 20.
- The 4-20 scores were converted to 0-100 scale.

Introducing the Research to the Medical Staff

The principal investigator met a group of oncology physicians and medical residents in the National Cancer Institute. The objective was to meet the medical staff and introduce in a short presentation the project and the study procedure. This presentation presented the study aims, the research questions, and a short explanation of the instrument, the methodology and the time and location of the investigator consulting room. Also, a short document where the inclusion criteria were specified was printed out and given to them. This document helped the medical personnel not to forget about the study and the characteristics that the patients had to meet, thus avoiding selection bias.

Participants Recruitment Strategy

Keeping the confidentiality of the patient in relation to their diagnosis is very important. In order to preserve the confidentiality of information and respect for the privacy of the women surveyed, the medical specialist or nursing assistant asked the women who met the inclusion criteria of the study if they wished to participate in a study related to breast cancer survivors' quality of life. Once the patient provided verbal approval to the medical staff, they indicated to the patients where the investigator's consulting room was located. The nursing assistant dining room was enabled to be the consulting room for the investigator during the study period. This room was located in the Medical Oncology Health care Service area.

Survey Procedures

Once the participant was with the principal investigator (PI) in the consulting room, she explained the survey and the Informed Consent (IC) of the study. After the patient agreed to participate and signed the Informed Consent, the investigator gave her the survey questionnaire to fill out. Once completed, the respondent returned it to the investigator. Also, all of the participants received a copy of the Informed Consent signed by the principal investigator. All questions, at any time during the survey, about the study and the Informed Consent form were answered until their complete satisfaction.

The survey was conducted in the waiting area of the Medical Oncology Health care after the patient's follow-up appointment. If the participants needed help in filling the survey out, the principal investigator assisted them. In order to maintain the participant's privacy when answering questions, this was done in the investigator consulting room.

Compensation and Benefits

The participation of the women was completely voluntary. Participants did not receive any kind of monetary compensation that could influence their choice to participate in the study. Light refreshments during the self-assessment survey were provided to all the participants when they received the survey. Also, notebooks and pens with a pink ribbon logo were given to all the women who completed and returned the survey to the PI.

Pilot Test

Before using the study survey and the Informed Consent, these had to be pretested and, if necessary, revised and edited (Jacobsen, 2012). A total of 15 patients from the target population (10% of the minimum population for the study sample) who met the inclusion criteria for the study were pilot surveyed. They completed the preliminary survey and gave individual feedback about the content, wording, clarity and the estimated timing to complete it. After this pilot test, the survey and the IC were revised and edited based on the patients' observations. Just one round of pilot testing was run.

Later on in the study, two new questions were introduced about co morbidities. Those were introduced because many people expressed that their quality of life could be more affected by other diseases than the breast cancer diagnosis itself.

Ethical Considerations

This study was categorized as minimal risk to the participants. Prior to the administration of the study survey the study protocol was approved by:

- The Educational Committee and the Medical Director of the National Cancer Institute of Panama (ION), in Panama City, Republic of Panama.

- The Research Bioethics Committee for Health Research of the Gorgas Memorial Institute for Health Studies (ICGES), in Panama City, Republic of Panama.
- The Institutional Review Board of the University of South Florida in Tampa, Florida (USF IRB), in the United States.

Data Management

Data was entered into the Excel 2010 program. A codebook for the digitization of the categorical data (nominal and ordinal) was created. Double entering data technique of 10% of random data was conducted and compared using the Excel Compare program. A lot of unmatched data was found; therefore, 100% of the data was double entered into the Excel program and exported to SPSS to be analyzed.

Cleaning data. To analyze the QOL, if more than 20% of the domain information/data in the WHOQOL-BREF instrument was missing from an assessment, the assessment was discarded. Only those domains with a minimum of 80% of the items answered were analyzed. Each domain had different items. If more than two items were missing from the domain, the domain score was not calculated (with exception of domain 3, where the domain should only be calculated if ≤ 1 item is missing)

Statistical analysis. The database and statistical analysis was performed using SPSS v.17 software. Descriptive statistics computation techniques were applied to the discrete and continuous data. Measures of central tendency as mean, median, mode and measures of variability or dispersion as standard deviation, minimum and maximum were developed from the continuous data. Frequency and relative frequency were calculated for discrete data. Transformations of each domain score from the WHOQOL-BREF instrument to the 0-100 scale was completed before the data analysis was carried out.

Most statistical tests assume that the data be normally distributed and therefore have to be checked if this assumption is violated. A test of normality among the continuous variable was run to examine the distribution of the sample population. A Shapiro-Wilk test of normality was conducted to find out what kind of distribution the continuous variables of the sample had. Non-parametric statistical tests were used to define quality of life (QOL) based on the survey Spearman's rank correlation coefficient denoted by r_s was calculated to determine the correlation among variables. It is suitable for the comparison analysis; the Mann-Whitney U test was used to examine the heterogeneity of independent variables with two groups of categories. If the independent variable had more than two groups of categories, the Kruskal-Wallis one-way analysis of variance test was indicated to determine statistical significance.

A binary logistic regression analysis was run to assess how much variance in the different sociodemographic characteristics accounted for change in the likelihood of the general quality of life score, health satisfaction perception and four QOL domains. In the logistic analysis, a chi-square test provided an estimate of the overall statistical significance of each model. A Hosmer and Lemeshow goodness of fit test was performed to determine how poor the model was at predicting the categorical outcomes. In order to understand how much variation in the dependent variables could be explained by the model independent variables, a Nagelkerke R square was calculated. Wald test was used to determine statistical significance for each of the independent variables. Odds ratios (ORs) were estimated to see the strength of association among the variables with 95% confidence intervals (CIs).

Chapter 3: Results

Sociodemographic Characteristics

Of the 263 breast cancer survivor patients who received the survey, a total of 240 (91.3%) completed and returned the survey to the investigator. A total of 23 (8.7%) breast cancer survivor women did not complete or return the survey (see Figure 3). Although we cannot be sure of all the reasons why the patients could not complete the survey, it appeared that those reasons were related to the time availability (did not have enough time to complete it) or negative feelings about the survey.

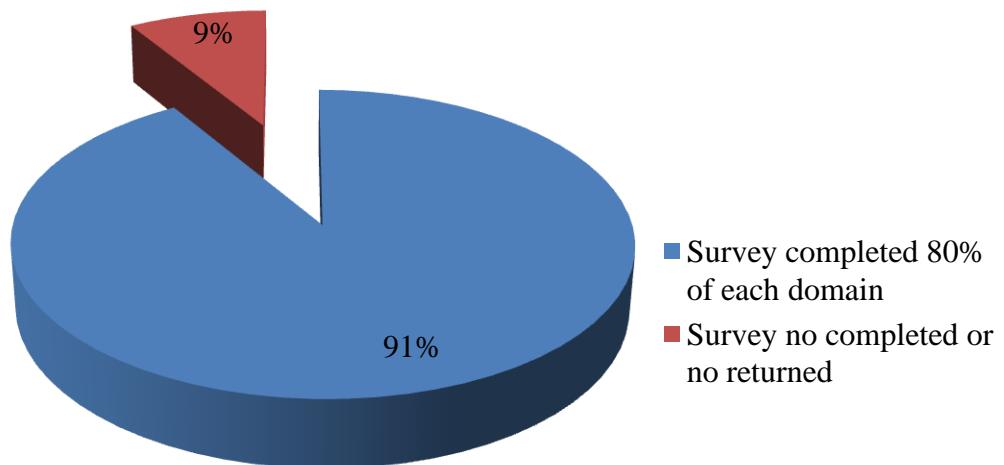


Figure 3. Sample population of the female breast cancer survivor in Panama, 2013

Regarding the place where the survivors came from, most women surveyed (62.5%) were living in Panama Province, 9.2% came from Colon, 5.8% from Chiriqui, 5.4% from Cocle, 4.6% from Herrera and Veraguas, 4.2% from Los Santos. 0.8% from Bocas del Toro, and 0.4% from Darien.

The mean age of the survivors was 61.0 years old with a standard deviation (SD) of 11.8 years. With a confidence of 95%, the survivor age mean was between 59.5 and 62.6 years old.

As shown in Table 1, higher proportions of participants (70%) reported having a high school or university education. Almost half of the women reported having a partner, of which 48% reported that they were united or married. Also, more than half reported not having a job; these women represented 62.1% of the participants and, 43% of the survivors earned less than \$500.00 monthly. Regarding healthcare insurance, almost all of the women (91.3%) were covered by the Social Security Fund within the governmental health care system.

Clinical Characteristics

The diagnosis mean time of women was 6.0 years. With a confidence of 95%, this mean was between 5.5-6.4 years with a SD of 3.7. The minimum diagnosis time was 1 year and the maximum was 27 years and almost all the women who underwent breast surgery (99.6%) had either conservative (33.9%) or mastectomy (65.3%) surgical procedures. The data in Table 2 shows that most often the surgeries were a one breast mastectomy and that 75.6% opted not to undergo breast reconstruction surgery.

Table 1

Sociodemographic Characteristics of Breast Cancer Survivors in Panama

Characteristics	Groups	n (240)	%
Age (years)	≤50	44	18.3
	51-69	126	52.5
	≥70	58	24.2
	Missing	12	5.0
Residence	Panama province	150	62.5
	Other provinces	84	35.0
	Missing	6	2.5
Marital status	Single	55	22.9
	Married	82	34.2
	United	33	13.8
	Widow	42	17.5
	Divorced	28	11.7
Education level	Elementary school	56	23.3
	High school	83	34.6
	University	85	35.4
	Technical studies	12	5.0
	None	3	1.3
	Missing	1	0.4
Income (\$)	Less than 500	127	52.9
	500-1000	65	27.1
	More than1000	33	13.8
	Missing	15	6.3

As shown in Table 3, 31.3% of the women surveyed reported that they had received chemotherapy, radiotherapy and hormonal therapy at least once. Regarding breast cancer treatment at the time of the survey, less than 5.2% of the women were receiving chemotherapy or radiotherapy. However, more than half (58.7%) of the women declared being under hormonal treatment at the time of the survey.

Use of natural or alternative treatments. Regarding how frequently the Panamanian breast cancer survivors have used any natural or alternative to deal in a better way with the disease, the study data shows that just 20% of the surveyed women reported using them in some way in their life. Several types of herbs and plants were described by these women. The most popular were aloe, “anamu”, transfer factor (FourLife), “desbaratadora” herbs, and soursop fruit inter alia.

Other diseases. From the 160 women who answered the survey questions about co morbidities, 156 (96.3%) reported having other diseases, but just 51.5% of them reported the nature of their other disease. The diseases most frequently reported were hypertension, diabetes and thyroids problems (see Table 4).

Medical relationship. The data showed that 78.9% of the women reported that they always understood when the doctor explained their medical condition

Social support to the survivors. As shown in Table 5, high proportions of positive answers (more than 78%) pointed to the large support that the women received from their children, partners, friends and family. Women who have children reported the highest proportion (94%). Nonetheless, many patients (77.8%) reported not receiving support from any governmental, profit or nonprofit organization.

Table 2

Clinical Characteristics of Breast Cancer Survivor in Panama

Clinical characteristic	Groups	n	%
Time with diagnosis (years)	≤5 years	124	51.7
	>5 years	109	45.4
	Missing	7	2.9
	Total	240	100
Mastectomy surgery	Yes	156	65.3
	No	81	33.9
	Missing	2	0.8
	Total	239	100
Mastectomy type	One breast	153	98.1
	Both breast	3	1.9
	Total	156	100
Reconstruction surgery	Yes	31	19.9
	No	118	75.6
	Missing	7	4.5
	Total	156	100

A small number of women (60 participants) reported having received some kind of help from some particular organizations. Among those organizations that stood out were churches, some governmental institutions such as MIDES, town municipalities

Santo Thomas Hospital, the Social Security Fund, the National Cancer Institute, some credit unions such as COOPEVE and COOESAN, and Fundacancer.

Table 3

Report of Clinical Treatments of Breast Cancer Survivors in Panama

Clinical treatment	Groups	n	%
Chemotherapy	Yes	193	80.4
	No	41	17.1
	Missing	6	2.5
	Total	240	100
Chemotherapy at date of the survey	Yes	10	5.2
	No	181	93.8
	Missing	2	1.0
	Total	193	100
Radiotherapy	Yes	164	68.3
	No	60	25
	Missing	16	6.7
	Total	240	100
Radiotherapy at date of the survey	Yes	4	2.4
	No	157	95.7
	Missing	3	1.8
	Total	164	100
Hormonal therapy	Yes	143	69.6
	No	87	36.3
	Missing	10	4.2
	Total	240	100
Hormonal therapy at date of the survey	Yes	84	58.7
	No	56	39.2
	Missing	3	2.1
	Total	143	100

Table 4

Type of Diseases Reported among Breast Cancer Survivors in Panama, n=160

Type of disease	n	%
Hypertension	41	25.6
Diabetes	6	3.8
Diabetes and hypertension	11	6.9
Thyroid	7	4.4
Others	15	9.4
Missing	80	50
Total	160	100

Support from members of the churches, coworkers, classmates and heads of department on their jobs was outstanding among these women. Support by psychologists and neighbors were outstanding as well but at lower proportions.

Most of the women (91.7%) stressed that their personal and spiritual beliefs greatly helped to overcome those negative feeling that come with receiving a breast cancer diagnosis. The vast majority (78.7%) of the study participants were of Catholic faith.

Quality of Life Analysis

WHOQOL-BREF allows the evaluation of the general perception of quality of life and overall perception of health satisfaction. Scores are scaled in a positive direction with a measure of 1 to 5 scales, where a higher score denotes higher quality of life. In this manner, it was found that breast cancer survivors in Panama have an equal perception of the general quality of life and general health satisfaction with a median value of 4 for both and standard deviations of 0.83 and 0.80, respectively (see Table 6).

The social domain had the highest score among the other three domains with a median of 75 on a scale of 1-100. In the scales measured from 1 to 100, higher values, close to 100, indicated better quality of life.

Table 7 shows estimates of Spearman rank order correlation coefficients (r_s) of the relations among general quality of life, general health satisfaction, and the four domains of social support, sociodemographic and clinical characteristics. Weak positive and negative correlations with the overall quality of life perception were found. However, the four quality of life domains were positively correlated with each other. The stronger correlations among quality of life domains were between the social and environmental domains, with $r_s=0.59$ and $p=.01$. All domains were positively correlated with income, being the strongest factor within the environmental domain with $r_s=.04$ and $p=.0001$.

The psychological domain had more correlations with most of the characteristics evaluated, having the stronger correlation with spiritual beliefs with $r_s=0.34$ and $p=.0001$. A bivariate analysis was conducted in order to see if there were differences in scores in general quality of life, health satisfaction and each of the quality of life domains by social support, sociodemographic and clinical characteristics. A Shapiro-Wilk test of normality of continuous data found that age followed a normal distribution with $p=0.32$, therefore, a mean will be reported as measure of central tendency. Meanwhile, diagnosis time and domains followed a non-normal distribution, suggesting reporting a median as measure central tendency for comparison. Based on that, the Mann-Whitney U and Kruskal-Wallis tests were applied to the data. From the variables that were included in the bivariate analysis, age group, education level, income, marital status, job, family, friends, children support and other support, number of children, and spiritual beliefs, showed

significant differences regarding general quality of life perception, health satisfaction and the four domains ($p \leq .05$).

Table 5

Social Support and Spiritual Beliefs of Breast Cancer Survivors in Panama

Support from	Groups	n	%
Partner	Yes	105	89.7
	No	4	3.4
	Missing	8	6.8
	Total	177	100
Family	Yes	189	78.8
	No	13	5.4
	Missing	38	15.8
	Total	240	100
Children	Yes	200	94.3
	No	6	1.9
	Missing	8	2.8
	Total	212	100
Friends	Yes	190	79.2
	No	19	7.9
	Missing	31	12.9
	Total	240	100
Others	Yes	60	25
	No	25	10.4
	Missing	155	64.6
	Total	240	100

Table 6

Summary of the Median of Quality of Life in Breast Cancer Survivors in Panama

Statistics	General ¹		Domains ^{2†}			
	Quality of life	Health satisfaction	Physical	Psychological	Social	Environmental
Median	4	4	63	69	75	69
Mode	3	4	63	69	75	69
Standard deviations	0.83	0.80	1.94	1.76	2.78	2.27

¹Scale 1-5²Scale 1-100

General quality of life. Statistically significant differences were found with the sociodemographic and clinical characteristics. Differences by age group, education level, income, job, family support, spiritual beliefs, diagnosis time, and had chemotherapy, were important ($p \leq .05$). Those women who were between 50-69 years old, who had a university education, and received more than \$500.00 income monthly, reported to have better general quality of life perception (see Table 8). Those women who had family support and one or two children reported better general quality of life as well (see Table 9). Furthermore, women who had five years or less diagnostic time and had been treated with chemotherapy reported better quality of life perception (see Table 10).

Health satisfaction. With regards to health satisfaction, which had a median of 4, significant differences were found among women by level of income, marital status, family support, partner and children support, and prior receipt of chemotherapy ($p \leq .05$).

Table 7

Spearman Correlation of the Dependent Variables of Quality of Life

Dependent variables	Independent variables	r_s
General quality of life	Income	0.26**
	Education level	0.18**
	Spiritual beliefs	0.16*
	Number of children	-.22**
	Diagnosis time	-.13*
Health satisfaction	Marital status	0.17*
Physical	Income	0.28**
	Education level	0.16*
	Job	0.14*
	Age	-.15*
Psychological	Spiritual beliefs	0.34**
	Other support	0.29**
	Income	0.28**
	Job	0.20**
	Family support	0.17*
	Friends support	0.16*
	Age	-.25**
Social	Family support	0.29**
	Income	0.21**
	Friends	0.20**
	Education level	0.15*
	Diagnosis time	-.15*
Environmental	Income	0.40**
	Family support	0.24**
	Education Level	0.20**

* $p \leq .001$ ** $p \leq .05$

Women, who were united with their partner and received a monthly income more than \$500.00 reported a better health satisfaction (see Table 8). Those women who had support from family had significantly better scores on health satisfaction (see Table 9).

Physical domain. This domain integrated seven items relating to activities of daily living, dependence on medications, energy and fatigue, mobility, pain and discomfort, sleep and rest, and work capacity. Breast cancer survivors reported a median in 63 of this domain.

Significant differences in this domain are found by age group, education level, income, receipt of radiotherapy, and receipt of hormonal therapy at the time of the survey ($p \leq .05$).

A difference of seven points more in the median of this domain was obtained among those women who were less than 69 years old and had more than a basic education level (Mdn=63) compared with those who were older and had less education (Mdn=56). Also, those who received more than \$1000.00 in monthly income reported a difference of 6 points more (Mdn=69) compared with those who received less than \$1000.00 (Mdn=63) (see Table 8). Regarding clinical characteristics, those women who received radiotherapy reported seven points more on this domain (Mdn=63) than those who did not (Mdn=56) (see Table 10).

Psychological domain. This domain revealed more differences among sociodemographic characteristics, levels of social support and spiritual beliefs than the other three domains, with a median of 63 points. This domain was made up of six items: body image and appearance, negative feeling, positive feelings, self-esteem, spiritual beliefs/religion/personal beliefs and thinking, learning, memory and concentration.

Table 8

Median Comparing Quality of Life Variables with Sociodemographic Characteristics

Variables	General quality of life ³	General health satisfaction ³	Domains ⁴			
			Physical	Psychological	Social	Environ- mental
Age group¹						
≤50	4	4	63	69	81	69
51-69	4	4	63	69	75	69
≥70	3*	4	56*	63*	75	69
Province²						
Panama	3	4	63	69	75	63
Others	4	4	63	69	75	69
Education level¹						
None	3*	4	56*	56*	75	56
Elementary school	3*	4	56*	63	75	63
High school	4	4	63	69	75	69
University	4	4	63	69	81	75*
Technical	4	4	63	63	75	56
Income (\$) ¹						
<500	3*	4	63	69	75	63
500-1000	4	4	63	69	75	69
≥1000	4	5*	69*	75*	81*	81*
Marital status¹						
Single	3	4	63	69	75	63
Widowed	4	4	63	69	75	69
Married	4	4	63	69	75	69
United	4	4*	69	69	75	69
Divorced	4	4	63	69	75	69
Job²						
Yes	4*	4	63	69*	75	69
No	3	4	63	63	75	69

¹Kruskall Wallis test²Mann Whitney U test³Scale 1-5⁴Scale 1-100

*p≤.05

Table 9

Median Comparing Quality of Life (QOL) Variables with Social Support and Spiritual Beliefs Characteristics

Variables support	General quality of life ³	General health satisfaction ³	Domains ⁴			
			Physical	Psychological	Social	Environmental
Partner¹						
Yes	4	4	63	69	75	69
No	3	4	63	63	63	63
N/A	3	4	56	69	75	69
Family²						
Yes	4*	4*	63	69*	75*	63*
No	3	3	56	56	63	50
Children¹						
Yes	4	4	63	69	75	69
No	4	4	56	69	69	56
N/A ⁵	3*	4	56	69	75	63
Friends²						
Yes	4	4	63	69*	75*	69
No	3	4	63	63	69	63
Others people²						
Yes	3.5	4	63	69*	75	69
No	3	4	63	63	75	63
Spiritual beliefs²						
≤Some	3	4	63	69	75	63
≥Great	4*	4	63	75*	81*	69*

¹Kruskall Wallis test

²Mann Whitney U test

³Scale 1-5

⁴Scale 1-100

⁵Non applicable

*p≤05

Table 10

Median Comparing Quality of Life Variables with Clinical Characteristics

Variables	General quality of life ³	General health satisfaction ³	Physical	Domains ⁴ Psychological	Social	Environ-Mental
Time with diagnosis¹						
≤5 years	4*	4	63	69	81*	69
>5 years	3	4	63	69	75	69
Chemotherap¹						
Yes	4*	4	63	69	75	69
No	3	4*	63	69	75	69
Radiotherapy¹						
Yes	4	4	63*	69	75	69
No	3	4	56	69	75	63
Hormonal therapy¹						
Yes	4	4	63	69*	75*	69*
No	3	4	63	63	69	63
Chemotherapy now¹						
Yes						
No	4	4	56	63	75	69
	4	4	63	69	75	69
Radiotherapy now¹						
Yes	3	4.5	69	69	75	69
No	4	4	63	69	75	69
Hormonal now¹						
Yes	4	4	63	69	75	69
No	3	4	69	69*	81*	69*

¹Mann Whitney U test

*p≤.05

In this domain, estimates show that there were differences by age group, education level, income, family, friends and other support, number of children, and spiritual beliefs ($p \leq .05$). Regarding clinical characteristics in this domain, significant differences were found by hormonal treatment status. Women who were less than 69 years old, who had a high school or university education level, and received more than \$500.00 monthly reported better scores on this quality of life domain (Mdn=69), with a difference of seven points compared with the corresponding categories (Mdn=63) (see Table 8). Also, those women who had friends and other support and higher levels of spiritual beliefs reported the same score (Mdn=69). Nevertheless, a bigger gap of thirteen points was found among those women who had family support (Mdn=69), reporting a better score compared with those who did not (Mdn=56) (see Table 9). Women who were treated with hormonal therapy (Mdn=69) reported a difference of seven points in the median compared with those who never had received this treatment (Mdn=63) (see Table 10).

Social domain. This domain has just three items related to personal relationships, social support, and sexual activity. Breast cancer survivors reported a median in 75 of this domain.

Income, number of children, family, friends and spiritual beliefs influenced this domain significantly ($p \leq .05$). Regarding clinical characteristics in this domain, a significant difference was found by hormonal treatment status as well. Those women who received more than \$500.00 monthly had a median of 81, which was six points higher compared with those who earned less than \$500.00 (Mdn=75) (see Table 8). Women who

had support from friends reported a better score as well (Mdn=75), which is six points more than the score reported by women in the other categories (see Table 9). Those who underwent hormonal therapy reported a score which is six points more than the median of this domain (Mdn=75) than those who did not (Mdn=69) However, those who underwent hormonal therapy at the time of the survey reported a lower score in this domain with a difference of six points from the median (Mdn=75) than those who did not (Mdn=81).

Environmental domain. This domain contains more items than the other three. Domain items were related to financial resources, freedom, physical safety and security, health and social care, home environment, opportunities for acquiring new information and skills, participation in and opportunities for recreation (leisure activities), physical environment (pollution, noise, traffic, climate), and transportation. Breast cancer survivors reported a median of 69 in this domain.

Statistically significant differences were found by educational level, income, family support, number of children and type of religion ($p \leq .05$). Regarding clinical characteristics in this domain, significant difference was found by hormonal treatment status. Women who had university education (Mdn=75) reported 19 more points in the scale compared with women in other education categories (Mdn=56). Also, those receiving more than \$1000.00 in monthly income showed a better quality of life score (Mdn=81) (see Table 8). Women who had family support and who were Christian, reported the highest score on this domain (Mdn=88) (see Table 9). Those who underwent hormonal therapy reported six points more in the median of this domain (Mdn=75) than those who did not (Mdn=69) (see Table 10).

Multivariate Analysis

Regression analysis was used to determine how much variance the sociodemographic, social support and clinical characteristics accounted for in each of the dependent variables of quality of life recognized as outcomes of the WHOQOL-BREF scores. A complete regression model was run by entering the sociodemographic and social support variables that were significant in the bivariate analysis (at $p \leq .05$). The model also included time of diagnosis which was entered based on literature that strongly shows that time of diagnosis influences the quality of life of breast cancer patients.

In binary logistic regression, dependent variables are required to be dichotomous in order to be analyzed. Therefore, to facilitate comparisons and interpretations and to obtain measures of association and odds ratios (OR), each of the dependent variables that were included in the model were dichotomized.

A chi-square test was conducted to provide an estimate of the overall statistical significance of the model. A Hosmer and Lemeshow goodness to fit test was used to analyze how poor the model was at predicting categorical outcomes. In order to understand how much variation in the dependent variables could be explained by the model, a Nagelkerke R square was estimated. The Wald test was used to determine statistical significance for each of the independent variables. Also, 95% confidence intervals (CIs) were estimated for the odds ratios (ORs) of each of the independent variables in each model.

The quality of life perception and health satisfaction score was measured in a positive direction on a 1-5 scale, where a higher score denoted higher quality of life. To

dichotomize these variables, the percentile rank of patients with the lowest scores (less than or equal to 3), was calculated. The lowest scores were located in the third quintile, indicating that 47% and 14% of patients surveyed had scores of perception of quality of life and health satisfaction less than or equal to 3, respectively.

The four quality of life domains scores were measured in a positive direction on a 0-100 scale, where a higher score denoted higher quality of life in the particular domain. Therefore, deciles of patients with lowest scores (less than or equal to 69), were calculated. The lowest scores of the physical domain were located in the eighth decile indicating that 80% of patients surveyed reported scores less than 69. Similarly, the psychological domain had its lowest scores in the seventh decile the social domain in the third and the environmental domain in the sixth.

General quality of life model. In this model (see Table 11), was included time of diagnosis, age, education level, income, and family support as explanatory variables. A Chi-square of 29.93 ($p < .0005$) indicated that the model was statistically significant. The Hosmer and Lemeshow goodness to fit test was not statistically significant ($p = 0.968$), indicating that the model was not poor. The Nagelkerke R^2 test for variation of the dependent variables in the model was 21%. The statistically significant variables in this model were “having less than 5 years since diagnosis” and “income less than \$1000.00”. Women who had less than 5 years since breast cancer diagnosis and income more than \$1000.00 were associated with an increased likelihood of better general quality of life perception, OR=2.17, 95% CI (1.12, 4.22). Also, those women who received more than \$1000.00 monthly had six times higher probability to have better quality of life, OR=5.60, 95% CI (1.45, 21.62).

Table 11

Summary of Logistic Regression Analysis for General Quality of Life Perception, (n=176)

Variables	B	S.E	Wald	P	OR	95% CIs
≤5 Years diagnosis	0.78	0.34	5.27	.022	2.17	1.12, 4.22
Income (\$) >1000	1.72	0.69	6.24	.012	5.60	1.45, 21.62
Constant	0.20	0.15	1.83	0.18	1.23	

Health satisfaction model. In this model we included time of diagnosis, age, education level, income, marital status, family, children, and partner support as explanatory variables. No variables were statistically significant in this model, and too many interactions were found among those variables.

Physical domain. In this model we included time of diagnosis, age, education level and income as explanatory variables. A Chi-square of 13.26 ($p=0.10$) indicated that the model was not statistically significant.

Psychological domain. In this model (see Table 12), we included time of diagnosis, age, education level, income, family, friends, other support, and spiritual beliefs as explanatory variables. A Chi-square of 35.63 ($p=0.000$) indicated that the model was statistically significant. The Hosmer and Lemeshow goodness to fit test was not statistically significant ($p=0.96$), indicating that the model provided a good fit to the data. A Nagelkerke R^2 test of variation of the dependent variables in the model was 54%. The variables that were statistically significant in this model included age and spiritual beliefs. Women who were younger were associated with a decreasing likelihood of better

psychological quality of life, OR=0.87, 95% CI (0.43, 8.45). Also, those women who had lower levels of spiritual belief had the lowest probability of having a better psychological quality of life, OR=50.14, 95% CI (.03, 0.67). The ORs produced in this model were not significant.

Social domain. In this model (see Table 13), time of diagnosis, age, income, family, and friends support were included as explanatory variables. A Chi-square of 20.66 ($p=0.002$) indicated that the model was statistically significant. Hosmer and Lemeshow goodness to fit test was not statistically significant ($p=0.78$), indicating that the model is provided a good fit to the data. The estimate of the Nagelkerke R^2 test of variation of the dependent variables in the model was 17%.

Table 12

Summary of Logistic Regression Analysis in the Psychological Domain of Quality of Life, (n=72)

Variables	B	S.E	Wald	P	OR	95% CI
Age	-.14	.05	8.32	.004	0.87	0.43, 8.45
Spiritual beliefs	-1.99	0.81	6.04	.014	0.14	.03, 0.67
Constant	-.69	0.25	7.69	.006	0.50	

The variable that was statistically significant in this model was family support. Women who had family support were associated with twenty times higher probability of better social quality of life, OR=20.50, 95% CI (2.13, 196.75). This OR was not significant.

Environmental domain. In this model (see Table 14), we included time of diagnosis, age, income, family, and friends support as explanatory variables. A Chi-square of 29.72 ($p=.008$) indicated that the model was statistically significant.

Table 13

Summary of Logistic Regression Analysis in the Psychological Domain of Quality of Life, (n=163)

Variable	B	S.E	Wald	P	OR	95% CI
Family support	3.02	1.15	6.85	.009	20.50	2.13, 196.75
Constant	0.84	0.17	24.43	.000	2.33	

The Hosmer and Lemeshow goodness to fit test was not statistically significant ($p=0.64$), indicating that the model is a good fit to the data. The estimate of the Nagelkerke R^2 variation of the dependent variables in the model was 21%. The variables that were statistically significant in this model were age and income more than \$1000.00. Increases in age and having an income more than \$1000.00 increase the likelihood of a better environmental QOL, OR=1.03, 95% CI (1.01, 1.08). Those women who received more than \$1000.00 were associated with having five times more likelihood of getting better scores in the environmental quality of life domain. However, the ORs associated with these variables were not significant.

Table 14

Summary of Logistic Regression Analysis in the Environmental Domain of Quality of Life, (n=181)

Variables	B	S.E	Wald	P	OR	95% CIs
Age	.04	.02	5.04	.025	1.04	1.01, 1.08
Income (\$) >1000	1.77	.59	8.83	.003	5.84	1.82, 18.69
Constant	-.39	.152	6.68	.010	0.68	

Chapter 4: Discussion

In general, in this study, female breast cancer survivors in Panama had a good perception of quality of life and were satisfied with their health. This finding is similar to findings in prior research. For instance, Mols and contributors (2005) reported in a high quality systematic review that long-term breast cancer survivors (>5 years) experienced good overall quality of life. This systematic review of ten articles reaches the same conclusion as this study (Bloom, Stewart, Chang, & Banks, 2004; Mols, Vingerhoets, Coebergh, & van de Poll-Franse, 2005). Despite the fact that the quality of life among survivors is relatively good, there is no doubt that many survivors still experience substantial complications as a result of the cancer, its treatment or co morbidities. Quality of life has a multidimensional definition that can be influenced by different characteristics that make it hard to define with a validated quality of life instrument (Wyatt, Kurtz, & Liken, 1993). Even so, the WHOQOL-BREF instrument produced very good insights into characteristics which affected several aspects of the lives of breast cancer survivors.

Regarding the four quality of life domains analyzed on this study, the social domain showed the highest score, demonstrating that social support greatly influences the quality of life of Panamanian women. This study found that social support principally from family and friends plays a very important role, creating significant relationships with all aspects of women's quality of life and positively impacting the long term cancer

survivor's mental health. Interestingly, support from children and having a partner did not produce significance difference among these breast cancer survivors. Children support was not significant even though women reported that they had received more support from children than from family and friends. So, having children and their support did not contribute to having a better quality of life among this study population. Curiously, having a partner did not influence the quality of life of the Panamanian breast cancer survivors. It is possible that female breast cancer survivors are more comfortable discussing health issues with friends and other family members rather than partners and children whom they may not want to burden with their worries.

Except for the social domain, survivors who developed recurrence or who received a new primary breast cancer diagnosis experienced the worst quality of life in all other domains (Dorval, Maunsell, Deschenes, Brisson, & Masse, 1998). The high score in the social support domain could be influenced by spiritual beliefs which also have shown high scores. Women who receive support from friends or churches appeared to experience better quality of life. Spiritual beliefs had a big influence in these women; the vast majority (97%) reported they have high or very high levels of social support to overcome of their anxieties, giving this variable some influence on the general quality of life, psychological and environmental domain, but decidedly more impact on the social domain. Actually the high score of spiritual beliefs which often corresponds with attending religious services and being part of a religious community is indicative of the importance of friends and other community members in the welfare of Panamanian female breast cancer survivors.

In contrast, reported scores showed that participants have the worst quality of life in the physical domain. Studies of problems experienced by long-term survivors reported a lesser physical, psychological and general quality of life among patients than the control group (Amir & Ramati, 2002; Tomich & Helgeson, 2002; Weitzner, Meyers, Stuebing, & Saleeba, 1997). Elderly women have different physical needs. That could explain the lowest score reported in this study. However, this finding was expected and is supported by a number of previous studies (Casso, Buist, & Taplin, 2004).

The mean age of the women in this study was 61 years old. Age was negatively correlated with quality of life, whereby younger breast cancer survivors showed better quality of life perception through all the WHOQOL-BREF domains and health satisfaction. In contrast, women older than 70 years reported significantly lower general quality of life perception, physical and psychological domain scores (Park & Hwang, 2012; Park, Lee, Lee, Lee, & Hwang, 2011).

In this study, diagnosis time was negatively correlated with quality of life, as well as age, whereas those women with 5 or less years with breast cancer diagnosis reported better quality of life perception and the highest and statistically significant score on the social domain. This finding is supported by other studies which reported that survivors who had more than 5 years of diagnosis had the lowest QOL domain scores (Amir & Ramati, 2002; Weitzner et al., 1997). Earlier studies also revealed that long-term survivors reported a lesser physical, psychological and general quality of life than individuals in control groups (Tomich & Helgeson, 2002). However, it is important to mention that findings of a small number of studies contradict some of the findings of this study. For instance, Sammarco (2009) reported that women who had survived longer

after diagnosis of breast cancer reported better overall quality of life and better psychological and social well-being than women with fewer years of survival.

Regarding the sociodemographic characteristics, Panama province was where the highest incidences of breast cancer and survivors women were reported. This could be explained by the fact of that 51.8% of the total female population of the Republic of Panama is concentrated on Panama Province (Censos Nacionales, 2010). Treatment of breast cancer is centralized in Panama City, at the National Cancer Institute This is the only oncology public hospital in charge of providing treatment of cancer in the Republic of Panama. In this regard, we would expect quality of life differences among female breast cancer survivors living in Panama City and those living in other provinces as an outcome of the physical and economic implications of traveling from other provinces for follow-up appointments at the National Cancer Institute. However, travel implications showed no significant difference in total QOL and on any of the domains.

According to the CDC (2011), in the United States, higher education and income levels are keys to better health. Income was significantly correlated with all of the measures of quality of life, from general perception to all of the four domains analyzed in this study. However, the Panamanian retirees only receive 60 % of the average salary of the best 7 years of salaries quoted at the Social Security Fund. That could be a reason why more than half of the female Panamanian breast cancer survivors (52.9 % of the study sample) receive less than \$500.00 monthly. As this study revealed, lower income levels directly affected their quality of life.

Women who received more than \$1000.00 monthly had the highest health satisfaction and quality of life and showed a biggest gap in environmental quality of life

domain in comparison with women who received less than \$500.00 in monthly income (see Kobayashi et al., 2008). Educational level and income were highly correlated to each other. Survivors with the lowest education level reported less income, and therefore less quality of life. Female breast cancer survivors who had at least high school education reported better quality of life in all domains; and having university education gave them the highest QOL perception in environmental domain (see Sammarco, 2009; Kobayashi et al., 2008).

Among women who reported better scores on the psychological domain, having a job contributed to having significantly better general quality of life perception. . Return to work after breast cancer diagnosis is important, not only from a societal point of view, but also for the rehabilitation of the cancer survivor, including physical and mental health (Clark & Landis, 1989; Mellette, 1985). In this study, the majority of the participants (62.1%) did not have a job. This could be explained by the survivors mean age. In Panama, the retirement age for women is 56 years, and 60% of the women surveyed were already at or above that age. Though we cannot definitively confirm why certain surveyed patients did not have a job, we can assume that retirement played a large part in the fact that they reported that they were not employed. Therefore, the lower quality of life scores which are seen among older women are not unusual. They follow patterns typically seen among patients who report lower income levels.

Treatments modalities produced mixed results, with only hormonal therapy showing significant importance. Those women who had been treated in the past with hormonal therapy reported statistically significant and higher scores, especially in psychological, social and environmental domains. This may be the result of the fact that

hormonal therapy has less physical impact than chemotherapy and radiation. The majority of women with breast cancer who received hormonal therapy recovered to a near normal level of QOL after a 4-year adjustment period, and lead fulfilling lives (Durna, Crowe, Leader, & Eden, 2002).

This does not mean that the other breast cancer therapies did not influence the lives of Panamanian female breast cancer survivors. Less than 5% of the study sample was receiving chemotherapy or radiotherapy at the time of the survey. This study did not find a significant difference among those who were receiving chemotherapy and radiotherapy.

Conclusion

Breast cancer survivors in Panama have a good quality of life perception and are satisfied with health. Support principally from family and friends plays a very important role in all aspects of QOL, impacting positively the long term cancer survivor's mental health. This is more so among younger patients. Elderly women have different physical needs that may explain the lowest score which they reported in this study.

Finally, all higher socioeconomic indicators (higher income and educational level, and having a job) as well as having greater levels of spiritual belief, younger age and less than 5 years of cancer diagnosis appear to produce positive influences on QOL among breast cancer survivors.

The numbers of breast cancer survivors will continue increasing over the next years. This makes it necessary to monitor this population. New problematic side effects can arise with the implementation of new or adjusted treatments. This study provides an important approach to the medical profession and generally shows what the women who

have had a diagnosis of breast cancer think and feels and how their needs could be covered.

Recommendations

- More research on the specific medical and psychosocial needs of survivors is needed in order to be able to design appropriate interventions. Our study results showed that significant QOL differences exist by sociodemographic characteristics, but that the differences did not result from the unique effect of sociodemographic variables but rather from other related factors. Therefore, this study suggests that those factors (including breast cancer type, breast cancer stage, type of treatment, time with treatment, body mass, weigh, co morbidities, breast cancer recurrence, daily diet, excise activity as well as time of diagnosis) should be considered in targeting patients and when evaluating the full extent of cancer treatment.
- So, in order to identify possible negative long-term effects, is important to perform more high quality research in this area; including control groups of equal age, cancer stage, time with diagnosis and cancer treatment drawn from the general population, thus avoiding selection bias. Also, the selection of an appropriate quality of life instrument is essential to get a more accurate quality of life perception of the population studied.
- Panamanian breast cancer survivors will benefit from the creation of support groups which are presently lacking in the country.
- Age appropriate interventions might need to be designed for effective management of limited resources, such as organizing educational support groups

which provide peer support, education and specific information about change
alimentation habits and exercises activities

- Preparing older women for the social, physical, functional and treatment related effects of breast cancer, or involving partners and families in patient consultation may be helpful.

Limitations

- Since this is a cross-sectional study, the estimated associations cannot establish causality.
- A purposive sample in an oncology hospital was used in this study; therefore, results should not be generalized beyond the sample of this study and should be interpreted cautiously.
- The regression logistics presented limitations due to the fact that quality of life may be affected by other variables that were not included in the study.
- Due to the subjective nature of quality of life, it is not possible to know completely the impact on breast cancer patients using generic scales and closed-ended questions where may force respondents to select answers that did not truly express their status or opinion.

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Appendix 1: University of South Florida USF IRB Approval



DIVISION OF RESEARCH INTEGRITY AND COMPLIANCE
Institutional Review Boards, FWA No. 00001669
12901 Bruce B. Downs Blvd., MDC035 • Tampa, FL 33612-4799
(813) 974-5638 • FAX (813) 974-5618

January 4, 2013

Mayela Castro
Environmental and Occupational Health
Tampa, FL 33612

RE: **Exempt Certification** for IRB#: Pro00010588
Title: Quality of Life in Women Breast Cancer Survivors in Panama: A Cross-sectional Study

Dear Ms Castro:

On 1/4/2013, the Institutional Review Board (IRB) determined that your research meets USF requirements and Federal Exemption criteria as outlined in the federal regulations at 45CFR46.101(b):

(2) Research involving the use of educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures or observation of public behavior, unless:
(i) information obtained is recorded in such a manner that human subjects can be identified, directly or through identifiers linked to the subjects; and (ii) any disclosure of the human subjects' responses outside the research could reasonably place the subjects at risk of criminal or civil liability or be damaging to the subjects' financial standing, employability, or reputation.

As the principal investigator for this study, it is your responsibility to ensure that this research is conducted as outlined in your application and consistent with the ethical principles outlined in the Belmont Report and with USF IRB policies and procedures. Please note that changes to this protocol may disqualify it from exempt status. Please note that you are responsible for notifying the IRB prior to implementing any changes to the currently approved protocol.

The Institutional Review Board will maintain your exemption application for a period of five years from the date of this letter or for three years after a Final Progress Report is received, whichever is longer. If you wish to continue this protocol beyond five years, you will need to submit a: 1) continuing review application with Final Report selected and 2) a new application. Should you complete this study prior to the end of the five-year period, you must submit a request to close the study.

We appreciate your dedication to the ethical conduct of human subject research at the University of South Florida and your continued commitment to human research protections. If you have any questions regarding this matter, please call 813-974-5638.

Sincerely,

A handwritten signature in black ink that reads "John A. Schinka, Ph.D." in a cursive script.

John Schinka, PhD, Chairperson
USF Institutional Review Board

Appendix 2: Panama Gorgas Research Bioethics Committee Approval

República de Panamá



**INSTITUTO CONMEMORATIVO GORGAS DE ESTUDIOS DE LA SALUD
COMITÉ DE BIOÉTICA DE LA INVESTIGACIÓN**

N° 541/CBI/ICGES/13
25 de abril de 2013

Licenciada
MAYELA CASTRO
Investigadora Principal

P/C:


DR. NÉSTOR SOSA
Director General del ICGES

Estimada LIC. Castro:

Reciba un cordial saludo. El Comité de Bioética de la Investigación del Instituto Conmemorativo Gorgas de Estudios de la Salud en su sesión del 3 de abril de 2013, evaluó el Protocolo #1Pro00010588 Calidad de Vida de las Mujeres sobrevivientes de Cáncer de Mama en Panamá.

En nuestra sesión se acordó la aprobación de los siguientes documentos:

- Consentimiento informado, versión de estudio #1Pro00010588, abril 13, 2013.
- Encuesta

Agradeciendo la atención prestada a la presente me despido con la seguridad de mi mayor consideración y respeto.

Atentamente,


DRA. ROSALBA GONZÁLEZ
Presidenta del Comité de Bioética de la
Investigación del Instituto Conmemorativo
Gorgas de Estudios de la Salud

jdca