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The breast feeding practices of women with a history of breast cancer

Lynn Ann Marlett
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THE BREAST FEEDING PRACTICES
OF WOMEN WITH A HISTORY
OF BREAST CANCER

by

Lynn Ann Marlett

Bachelor of Science
University of Nevada, Las Vegas
1992

A thesis submitted in partial fulfillment
of the requirements for the degree of

Masters of Science

in

Nursing

**Department of Nursing
University of Nevada, Las Vegas
December 1998**

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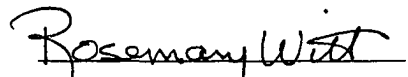
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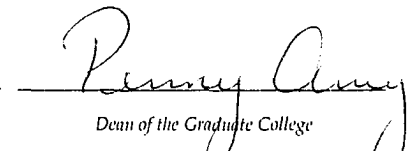
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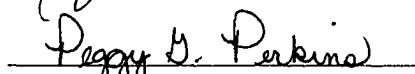
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ABSTRACT

The Breast feeding Practices of Women with a History of Breast Cancer

by

Lynn Ann Marlett

Dr. Rosemary Witt, Examination Committee Chair
Chair of Nursing
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This descriptive study examined the history of breast feeding experiences in women who have been diagnosed with breast cancer, and resided in a large southwestern city. A questionnaire modified by the researcher, based on previous research regarding lactation and breast cancer was used to collect demographic data, reproductive and breast cancer histories, and breast feeding practices for each of the subjects first five pregnancies. The Neuman Systems Model was the conceptual framework for this study. Women, diagnosed with at least stage I breast cancer sometime during the last year were given a questionnaire. Data were analyzed using univariate and bivariate descriptive analysis. The results of this study support past research regarding previously identified risk factors for breast cancer. The results of this study clarified and added additional information regarding the breast feeding practices of women with a history of breast cancer. No significant difference existed between adequacy of milk supply and initial and advanced

stages of breast cancer. Nor was there a difference between described problems during breast feeding and initial and advanced stages of breast cancer.

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To my parents, Allen and Jacqueline Carlson for their love, guidance, and support throughout my life. Their confidence in my abilities shall never be forgotten. I pray and hope that my mom will continue to be strong in her fight against breast cancer.

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Most of all, I want to thank my husband, James Marlett Jr. and our two daughters, Amber and Brandy. Without their love and support I would not have the strength to fulfill my dreams. Many times they had to wait while mommy finished studying, but not anymore. The stair house will be ours soon! I know I have been blessed by God, for he has given me so much.

IN MEMORY

I would like to take a few moments to remember those who have lost their life to breast cancer. My grandmother, Anna Jameson, who was born February 18, 1928 and died December 14, 1992. She was diagnosed with breast cancer in May 1992 and underwent a radical mastectomy. She never fully recovered, when post surgical complications set in and she silently slipped away. She left behind a husband, 6 children, 12 grandchildren, and 5 great-grandchildren.

A special friend of mine, Lori Grundy also died with breast cancer. She was only 36 years old, when this deadly disease ended her life. She fought a long and courageous battle. Just when we thought she had this disease beat it came back with a vengeance, and proved it was stronger than she was. She left behind a loving husband and 2 small children.

I know there are many more women who are plagued by breast cancer. Some women successfully overcome the disease while others suffer and die. Through research we hope to one day find a cure for this deadly disease. Past research has taught us how to treat breast cancer and save lives. Future research will teach us how to cure it.

CHAPTER I

INTRODUCTION

Over the past 30 years, the incidence of breast cancer in young women has continued to rise. In the United States, one woman of every nine will develop breast cancer at some time during her life (Norton, 1995). The incidence of breast cancer is higher in the United States than European or Asian countries. Women with a family history of pre-menopausal breast cancer are about two times more likely to develop breast cancer than other women (American Cancer Society, 1995). There is no absolute cure for breast cancer, only prevention and treatment. Health professionals believe that breast feeding, breast self-examinations and mammograms may prevent death from breast cancer.

Background of the Study

Breast feeding, once the sole method of infant feeding, declined radically in the United States in the middle of this century. It was estimated that, in 1946 the number of American mothers leaving the hospital breast feeding was 38% (Hill, 1995). By 1956 this percentage declined to 21 % and 18 % by 1966 (Guthrie & Guthrie, 1966). Currently, reports in literature indicate a resurgence of interest in breast feeding. In 1991, Ross Laboratories surveyed United States mothers about their breast feeding practices

and found that 58 % had breast fed their children, and 37 % were still breast feeding at three months, and 22 % at six months.

Over the past 30 years, the incidence of breast cancer in women has increased by seven percent (American Cancer Society, 1995). The American Cancer society has estimated that 228,600 women will be diagnosed or die with breast cancer each year. In 1992, breast cancer claimed the lives of 48,391 women (American Cancer Society, 1995). Breast cancer is the most common type of cancer in women age 15 to 54 and a leading cause of death (Kunz, 1992). The following risk factors have been established for breast cancer: age, incidence increases until age 80; family history, particularly in first degree relatives; history of benign breast disease; hormonal factors; onset of menstruation before age 12; late age of menopause; and never having born a child or having the first child past age 30 (American Cancer Society, 1995 & Kunz, 1992).

Breast Cancer Incidence in Nevada

Breast cancer is the leading cause of death due to cancer among women in Nevada (Nevada State Health Division, 1998). In 1996, 960 women in Nevada were newly diagnosed with breast cancer and 210 women died from this disease (NSHD, 1998). More than 85 % of all breast cancer in Nevada occur in women age 45 and older.

Estimates for breast cancer incidence rates in Nevada area as follows: Caucasians 110.1 cases per 100,000, African American 96.1, Hispanics 70.9, Asians 51.8, and Native Americans 28.8 (NSHD, 1998). Breast cancer incidence and mortality rates for Nevada Caucasian women are comparable to those nationwide. According to the Nevada State

Health Division, Nevada Hispanic women have lower breast cancer incidence rates than Caucasian or African American women, but higher than the Asian and Native American.

Some research (Layde et al., 1989; Siskind et al., 1989; Yoo et al., 1992; and Chilvers et al., 1993) supports the notion that women who have breast fed their children have a decreased incidence of breast cancer. These findings suggest that pregnancy or lactation provides some type of protection against the development of breast cancer. However, recent literature (Katsouyanni et al., 1996; Brinton et al., 1996; and Michels et al., 1996) does not support the notion that breast feeding substantially reduces a woman's risk of developing breast cancer. Despite numerous studies, the relationship between breast feeding and development of breast cancer remains unclear.

Statement of the Problem

Research regarding lactation and development of breast cancer has failed to adequately question women regarding their breast feeding practices. According to Katsouyanni et al. (1996); Chilvers et al. (1993); and Yoo et al. (1992) an "ever vs never" history of breast feeding is too crude of an indicator. Research regarding lactation tends to focus on duration and not on adequacy or problems encountered while breast feeding. Kvale et al., 1987; Siskind et al., 1989; and Thomas et al. 1993 suggested that future studies needed to question women on their reasons for terminating breast feeding, factors which enable them to successfully breast feed and specifically if their breasts were emptied during each feeding.

Between 1987 and 1997, only five research articles regarding lactation and development of breast cancer were published about women who live in the United States, while ten were published based on international results. The breast feeding practices of women who reside in the United States needs to be clearly documented. Especially since the incidence of breast cancer is higher in the United States than either Europe or Asia (Kelsey et al., 1993).

There are few recent research articles published linking breast feeding and breast cancer, and most are over five years old. Therefore current information regarding the breast feeding practices of women with a history of breast cancer needs to be documented.

Purpose of the Study

The purpose of this descriptive study was to examine the breast feeding experiences of women diagnosed with breast cancer within the previous year. In addition this study investigated the relationship between the diagnosis of breast cancer and variables linked with the diagnosis in previous research.

Significance of the Study

It is estimated that 64 % of women choose not to breast feed (Ross, 1991) or experience an inadequate milk supply during lactation. Research on breast cancer is conflicted as to the importance of these observations, and few studies have investigated the impact of the multiple variables surrounding the lactation experience on the subsequent diagnosis of breast cancer. Breast feeding is a potentially modifiable

behavior, and if information concerning the breast feeding practices could provide information which decreased the incidence of breast cancer, the information could be an opportunity for health care providers to provide primary prevention.

Operational Definitions

For this study breast cancer was defined as diagnosis of at least a stage I breast tumor within the last year, as indicated by the primary Tumor, regional lymph Node, and distant Metastases Staging tool, (TNM) approved by the International Union against Cancer and the American Joint Commission on Cancer staging and end reports (see Appendix B). Initial stage of breast cancer was defined as stage I breast tumor. Advanced stage of breast cancer was defined as stage II, stage III or stage IV breast tumor. Breast feeding was defined as women who have attempted to breast feed a birth child. The number of months breast fed was cumulative of all births. Menarche was defined as the beginning of menstrual periods. Menopause was defined as the cessation of menstrual periods. Pregnancy was defined as having a developing embryo in the uterus. Abortion was defined as induced termination of pregnancy. Miscarriage was defined as spontaneous termination of pregnancy. Premature was defined as birth of a child before the 38th week of gestation. Full term was defined as birth of a child after the 38th week of gestation. Feeding on demand was defined as feeding baby when hungry and not on a schedule. Adequate milk supply was defined as the ability to offer only breast milk without supplementing more than 2 ounces at a feeding. Regularly emptied breasts was defined as feeling relief in breasts after each feeding. Supplementation was

defined as initiation of foods or formula. Engorgement was defined as pain and distention of breasts with milk. Mastitis was defined as pain, warmth, redness and swelling of the breast. Skin infection was defined as pain, warmth, redness and swelling of the breast requiring the use of antibiotics. Abscess was defined as a collection of pus in the breast. Lack of milk was defined as an inability to offer only breast milk, supplementing with more than 2 ounces of formula. Nulliparous women were defined as women who have never given birth. Parous women were defined as women who have given birth to at least one child.

Research Questions

The following research questions were answered by a sample of women, who live in a large southwestern city, and in the past year were diagnosed with breast cancer by an oncologist.

1. How frequently did the women in this sample diagnosed with breast cancer within the past year demonstrate the five known risk factors associated with breast cancer identified in previous research?
2. Was there a difference between the described adequacy of milk supply during the breast feeding experience(s) and the subsequent diagnosis of initial stages or advanced stages of breast cancer?
3. Was there a difference between women who described problems during the breast feeding experience(s) and women who did not describe problems and the subsequent diagnosis of initial or advanced states of breast cancer?

The demographic variables for this study were current age, marital status, race, income and education. The research variables for this study were age at diagnosis of breast cancer; family history of breast cancer; age at menarche; age at menopause; age at first, second, third, fourth, and fifth pregnancy; outcome of each pregnancy; number of children delivered at each birth; number of children breast fed; frequency of breast feeding; length each child breast fed; regularly emptied breasts; age of infant when supplementation began; method used to stop milk production and problems encountered during breast feeding.

CHAPTER II

REVIEW OF LITERATURE

This chapter presents research which examines the relationship between breast feeding and breast cancer. The literature review utilizes information from a wide time span, in that the majority of studies that form the basis of current information were completed in the 1980's and early 1990's. Recent publication of articles dealing with the topic are limited. In addition, articles which use Nueman's System Model (1989) as a theoretical framework, which was the framework of this study are reviewed. The 1989 edition of Neuman's work is utilized as the later edition of the book focused on the use of the model in an academic setting.

Breast Cancer and Lactation

In 1987, Kvale and Heuch published results from a prospective study, carried out in Norway, regarding lactation, risk of breast cancer and other cancers in 50,274 women. Among women with complete information on lactation, 5,102 developed cancer and of those 1,136 were diagnosed with breast cancer. A questionnaire developed by the researchers was used to elicit information on demographic variables and the following reproductive variables: age at menarche and menopause; number of full-term deliveries;

age at first and last birth; number of abortions; and duration of lactation. Each woman was also given a breast exam by a physician and interviewed, using a standardized questionnaire, to obtain information on her lactation experience, total duration of breast feeding for first three births, and a history of breast disease or diseases of the genital organs. Analysis of association with mean duration of lactation per birth and duration for each of the three first births suggested a nonlinear relation to breast cancer. The research found that women who breast fed for less than four months and longer than ten months had a lower risk of developing breast cancer than those women who breast fed between those time intervals. An explanation for this potential protective effect regarding duration of breast feeding may involve hormonal changes or physical effects on the breast during lactation. They suggested cessation of lactation during high volume of milk supply may increase the risk for development of breast cancer.

A case-control study by Layde, Webster, Baughman, Wingo, Rubin, Ory and The Cancer and Steroid Study Group (1989) examined the association of parity, age at first full term pregnancy and duration of breast feeding with the risk of breast cancer. Lactation was measured by cumulative number of months of breast feeding from all pregnancies. Four-thousand, five-hundred and ninety-nine women from across the United States participated in this study. All subjects were diagnosed with breast cancer and between the ages of 20 to 55 years. Another 4,536 women of similar ages, but not diagnosed with cancer served as the control group. Trained interviewers administered a questionnaire of about 50 minutes in length to each participant in her home. The results

indicated that women who had breast fed for more than twenty-four months had a 43% lower risk of breast cancer than women who had never breast fed. Compared with nulliparous women, women who had at least one full-term pregnancy had a 27% lower risk of breast cancer [linear trend ($X = 25.8$, $p < 0.01$)]. This study also supports previous research in stating that age at first full-term pregnancy [linear trend ($X = 30.7$, $p < 0.01$)], parity [linear trend ($X = 57.5$, $p < 0.01$)] and duration of breast feeding [linear trend ($X = 40.2$, $p < 0.01$)] are each strongly associated with the risk of breast cancer in parous women.

In 1989, Siskind, Schofield, Rice, and Bain published results from a case control study, carried out in Australia, regarding breast cancer, diet and lactational history. Four-hundred and fifty-nine women diagnosed with breast cancer participated in this study. For each woman with breast cancer, two women of similar ages, without breast cancer were selected at random from the electoral roll (voting registry). The control group consisted of 1,091 women. Each subject was interviewed for approximately 60 minutes. The researcher found that women who breast fed their first live born child had the greatest protection against development of breast cancer ($X = 14.8$, $df = 6$; $p < 0.05$). No consistent relationship to total duration of lactation was apparent in pre-menopausal women ($OR = 0.71$, 95 % $CI = 0.37 - 1.58$) or post-menopausal women ($OR = 0.71$, 95 % $CI = 0.39 - 1.31$).

The results from a case control study, conducted in Britain, by Chilvers, McPherson, Peto, Pike, and Vessey (1993) suggest that breast feeding protects against the

development of breast cancer in pre-menopausal women. One control per case, matched for age, was selected from a list of the case's general practitioner. Control cases consisted of women diagnosed with breast cancer before the age of 36. Seven-hundred and fifty-five matched pairs of women were interviewed in their homes by trained interviewers, who obtained information regarding oral contraceptives, pregnancy, duration of breast feeding, and return of menstruation. Findings showed risk of breast cancer decreased with increased duration of breast feeding and number of babies breast fed. Total duration of breast feeding and risk of breast cancer were significantly related (RR = 0.94 per three months' breast feeding; X test for trend, $p = 0.026$). The relation between the number of babies breast fed and risk of breast cancer was slightly more significant (RR = 0.86 per baby breast fed; X test for trend, $p = 0.017$). Relative Risk is a measure of the strength of the relationship between risk factors and cancer (American Cancer Society, 1995).

An international case-control study by Thomas, Noonan, and World Health Organization (1993) examined the relationship between breast cancer and prolonged lactation. Prolonged lactation was defined as greater than two years. There were 2,336 women diagnosed with breast cancer who participated in this study. The control group consisted of 14,900 women who were admitted to the same hospital as the control, but not for obstetrical or gynaecological reasons. All participants were selected from hospitals in the following countries; Australia, Germany, Israel, Chile, China, Colombia, Kenya, Mexico, Philippines and Thailand, when admitted for treatment of breast cancer.

A standardized questionnaire was used to obtain information of suspected risk factors for the neoplasms under study plus a detailed obstetric and contraceptive history. The total duration of lactation was obtained by summing the number of months each child was breast fed. No statistically significant results were found in regards to the relative risk between women who breast fed for longer than 24 months ($RR = 0.75$, 95% $CI = 0.64 - 0.87$) and those women who breast fed for less than three or six months ($RR = 1.05$, 95 % $CI = 0.88 - 01.24$). Pre-menopausal women who breast fed for 37 months demonstrated the lowest risk ($RR = 0.81$, 95 % $CI = 0.54 - 1.09$).

The results from a case-control study by Yoo, Tajima, Kuroishi, Hirose, Yoshida, Miura, and Murai (1993) examined the risk of breast cancer associated with breast feeding in Japanese women. There were 521 subjects, women who were diagnosed with breast cancer, and another 521 controls, women not diagnosed with breast cancer, who participated in this study. Data were collected via a questionnaire administered by an interviewer to outpatients waiting to be examined by a physician. Information was obtained on life-styles, history of cancer, detailed history of full-term pregnancies, lactational history for each pregnancy, and a complete menstrual history. Their results suggested that lactation had an independent protective effect against development of breast cancer in Japanese women. This study also suggested that pre-menopausal women who breast fed for seven to nine months had the lowest risk for developing breast cancer ($OR = 0.39$, 95% $CI = 0.15-0.97$).

A case-control study by Brinton, Potischman, Swanson, Schoenberg, Coates, Gammon, Malone, Stanford, and Daling (1995) examined the relationship of various breast feeding practices to risk of breast cancer in women less than 45 years old. The study was conducted in the United States and involved 1,211 women newly diagnosed with in situ or invasive breast cancer and 1,120 controls matched by geographic area and age. Subjects were interviewed for an average of 70 minutes in their homes. Detailed information was collected regarding: demographic factors; reproductive, breast feeding, and menstrual histories; contraceptive behavior; use of exogenous hormones; medical and screening histories; anthropometry and physical activity; adolescent diet; alcohol consumption; smoking; occupations; family history of cancer; and certain lifestyle factors and opinions regarding cancer causation. Risk of breast cancer decreased by 10 % in women having ever breast fed. Subjects who breast fed for less than two weeks had a slightly higher risk ($RR=1.19$), than those who breast fed for 72 weeks ($RR=0.90$).

In 1996, Katsouyanni, Lipworth, Trichopoulou, Samoli, Stuver, and Trichopoulos published results from a hospital-based case-control study carried out in Greece regarding lactation and risk of breast cancer. There were 820 women with confirmed breast cancer, and 795 orthopaedic patient controls, and 753 hospital visitor controls who participated in this study. A questionnaire developed by the researchers was used to elicit information on the following variables: demographic, socioeconomic, biomedical, nutrition, and a detailed reproductive history. Subjects who reported having one or more full-term pregnancies resulting in a live birth were asked, for each birth separately, whether they

breast fed, the duration of breast feeding, the reason they stopped breast feeding, and whether they took medication to stop the milk supply. All subjects were also asked to provide a detailed history concerning benign breast disease as well as about breast cancer history in their mother or siblings. Specially trained interviewers administered the questionnaire. The research found that pre-menopausal women who had breast fed for greater than 24 months ($OR = .50$, $95\% CI = 0.23-1.41$) had a lower risk of breast cancer. There was no association between breast feeding and breast cancer risk in post-menopausal women ($OR = 0.79$, $95\% CI = 0.45-1.39$).

The results from a prospective cohort study done by Michels, Willett, Rosner, Manson, Hunter, Colditz, Hankinson, and Speizer (1996) suggested that there was no important overall association between breast feeding and the occurrence of breast cancer. The study was conducted in the United States and involved 89,887 women, ages 30 to 55. A self-administered questionnaire obtained information on parity, age at menarche, personal and family history of breast cancer, history of benign breast disease, weight, height, oral contraceptive use, menopausal status, and post-menopausal hormone use. Biennial questionnaires were sent out for 16 years, updating information about menopausal status, weight, and benign breast disease. The final questionnaire obtained information on total number of months of breast feeding for all births. Among pre-menopausal women, the relative risk associated with a history of ever breast feeding, adjusted for known determinants of breast cancer, was ($RR=1.14$, $95\% CI = 0.87-1.50$).

When cumulative duration of breast feeding for all births was considered, no important trend emerged (test for trend: $z=0.45$, $p=0.65$).

In 1996, Negri, Braga, Vecchia, Levi, Talamini, and Franceschi published results from a case-control study, conducted in Italy, regarding the relation between breast feeding and breast cancer. Subjects for this study included 2,167 parous women with histologically confirmed breast cancer and 2,208 parous control women who were admitted to hospitals in the same area for acute, non-neoplastic, non-gynecological and non-hormonal related diseases. The questionnaire included questions on socio-demographic characteristics, lifelong smoking habits, physical activity and anthropometric factors at various ages, dietary habits, alcohol consumption, and problem-oriented medical history, family history of cancer, menstrual and reproductive history, history of use of sexual hormones for contraception, hormone replacement therapy and other indications. Information on age at delivery and months of lactation was elicited for every full-term pregnancy. With respect to women who had never tried to lactate, and those who had ever lactated the odds ratio (OR) $p < 0.05$ varied between 1.06 and 1.17, depending on inclusion of age, gender, education, parity, menopausal status/age at menopause, age at first birth family history of breast cancer, benign breast disease, body mass index and marital status. Relative to women who had not breast fed any children, the OR for women who had breast fed one, two, and three or more children were 1.14, 1.18 and 1.32 respectively. Compared with women who had never lactated, the OR for those who had lactated for less than 6 months, for 6-11 months, for 12-17 months for 18-23 months and for 24 months or more were

1.17, 1.07, 1.12, 0.75 and 0.55 respectively. This study, largest to date from Europe, does not support the hypothesis that breast feeding, at least for less than 2 years, is protective against breast cancer, even in pre-menopausal women. Breast feeding is strongly related to parity and other reproductive factors, and is thus difficult to separate its effect from those of other reproductive variables.

A case-control study by Romieu, Hernandez-Avila, Lazcano, Lopez and Romero-Jaime (1996) examined whether a dose-response relationship could be observed between duration of lactation and risk of breast cancer. There were 349 women, aged 20-75 years, who were selected through six hospitals in Mexico City to participate. Using the Mexican national sampling center, another 1,005 controls, age-stratified, were selected from the general population. Interviewers administered a questionnaire that asked about socio-demographic variables, potential risk factors for breast cancer and reproductive and gynecologic history. Information on lactation history including duration of lactation for each live birth, identification of breast feeding as bilateral or unilateral and reason for having breast fed unilaterally was also included. The results indicate that family history of breast cancer was a strong risk factor among both pre (OR = 6.46, 95 % CI = 1.96 - 21.2) and post (OR = 1.19, 95 % CI = 0.41 - 3.44) menopausal women. Multiparous women (OR = .10 - .23, 95 % CI = 0.06 - .57) had a lower risk of breast cancer than nulliparous women. Parous women who had lactated had a breast cancer risk of 0.47 (95 % CI = 0.30 - 0.73) compared with parous women who had never lactated. Duration of lactation, even short-term, was also associated with a reduction in breast cancer risk.

Women who had breast-fed for up to 3 months (OR = 0.38, 95 % CI = 0.23 - 0.96) had a decreased risk of breast cancer when compared with parous women who had never breast-fed.

The results from a nested case-control study, conducted in Sweden, by Lambe, Hsieh, Tsaih, Ekblom, Adami, and Trichopoulos (1996) suggested that women who deliver multiple births have a 12 % lower risk of breast cancer than women who deliver a single birth. There were 19,368 parous women who were included in this study. All women were diagnosed with breast cancer and registered in the Swedish Cancer Registry and nationwide Fertility Registry. There were 329 case women and 2,031 control women, who delivered twins. These women were matched by year and month of twin birth. Compared with parous women with only single births, the estimated risk of breast cancer was 12 % lower (OR = .88, 95 % CI = 0.78 - 0.99) in women with at least one live multiple birth. The birth order of the twin pregnancy had no apparent modifying effect.

A hospital based case-control study by Lai, Chen, Ku, Lee, Chang, Chang, and Liou (1996) examined the relationship between parity, breast feeding and breast cancer in Taiwan women. Breast cancer patients were recruited from female patients admitted with breast cancer, confirmed by either pathological biopsy or cytological examination. There were 114 breast cancer cases. The control group was recruited from females admitted for health examination in the same hospital. There were 228 age-matched control cases. All participants were interviewed in the hospital with a formatted questionnaire. Information was collected on the following variables personal characteristics and habits, marital status

and reproductive history, history of breast feeding, history of gynecological diseases, familial history of breast cancer and other cancers, history of hormone replacement therapy, and radiation exposure. Age at first full-term pregnancy was related to significantly higher risk of breast cancer. Women whose first full-term pregnancy at the age of 30 years or older had a higher incidence of breast cancer than women who were younger than age 30 (OR = 2.47, 95 % CI = 1.05 - 5.82). Women with one to three full-term pregnancies (OR = 2.35, 95 % CI = 1.27 - 4.34) had a significantly higher risk of breast cancer than women having more than three full-term pregnancies. Women who had never breast fed (OR = 2.39, 95 % CI = 1.19 - 4.81) had a significantly higher risk of breast cancer than women who breast fed more than three years. Marital status, smoking status, total years of menstruation cycle, and the number of spontaneous or induced abortions were not found to be related to an increased risk of breast cancer.

In 1997, Robbins, Brescianini and Kelsey published results from a study comparing the incidence of breast cancer in the San Francisco Bay area to other regions in the United States. Data were taken from the Surveillance, Epidemiology, and End Results (SEER) program. The age-adjusted incidence of breast cancer in the San Francisco Bay area has consistently been higher than that in other regions of the United States. Age-adjusted breast cancer incidence rates from January 1978 through December 1982 were obtained for the San Francisco Bay area and other regions from the SEER program. Risk factor data from January 1980 through December 1982 were computed from the Cancer and Steroid Hormone Study, a population-based, case-control study of women 22-25 years of

age who resided in eight SEER regions. The number of subjects included in this study were not given. The following risk factors were examined: years of education completed, parity, number of spontaneous and induced abortions, months of breast feeding, age at first full term pregnancy, months of oral contraceptive use, months of estrogen replacement therapy use, age at menarche, age at menopause, menopausal status, history of hysterectomy, number of ovaries present, history of infertility, body mass index, weight, height, alcohol consumption, lifetime pack years of cigarettes smoked, family history of breast and ovarian cancer in a female first degree relative, history of benign breast disease, frequency of breast self-examination, and frequency of mammography. The data indicates that the higher incidence of breast cancer could be completely explained by known risk factors. The relative risk (1.00) associated with San Francisco Bay area residence relative to residence in other SEER areas was approximately ($RR = 0.96 - 0.99$) for white women and ($RR = 0.75 - 0.83$) for black women.

The results from a case-control study, conducted in the United States, by Enger, Ross, Henderson and Bernstein (1997) suggested a protective role of breast feeding and an adverse role of nausea or vomiting during pregnancy in the development of premenopausal breast cancer, especially in the years immediately following pregnancy. Cases were 452 parous, premenopausal women, 40 years or younger, diagnosed with breast cancer in Los Angeles County from July 1983 to December 1988. Control subjects were matched to cases on age, race, parity and neighborhood. In-person interviews, averaging 45 min in length, were conducted in the subjects' home. Complete

reproductive and breast feeding histories, as well as detailed information on other potential breast cancer risk factors including use of oral contraceptives, family history of cancer, physical activity habits and alcohol consumption were collected. For each pregnancy, the following information was obtained: month and year pregnancy ended, outcome, single or multiple live birth, stillbirth, spontaneous miscarriage, induced abortion, tubal pregnancy, gestation in months, treatment with drugs or hospitalization for nausea or vomiting during pregnancy, treatment with hormones to incude or promote labor, treatment with hormones to suppress lactation and months breast fed. The results indicate that ever breast feeding a child did not confer substantial protection against the development of premenopausal breast cancer (OR = .90, 95 % CI = 0.69 - 1.26). However, women who breast fed for 16 months or longer, and had one full term pregnancy (OR = .35, 95 % CI = 0.33 - 1.05), had two full term pregnancies (OR = 0.75, 95 % CI = 0.47 - 1.27) were at a substantially reduced risk of developing breast cancer compared with women who never breast fed. Risk appeared to decrease slightly with increasing age at first breast feeding age less than 20 years (OR = 0.94, 95 % CI = 0.58 - 1.97) and age greater than 30 years (OR = 0.79, 95 % CI = 0.78 - 1.24). Women who had been treated for nausea or vomiting of pregnancy with drugs or hospitalization were at increased breast cancer risk compared with those who had not been treated (OR = 1.06, 95 % CI = 0.44 - 2.51). The number of children breast fed was not associated with risk, suggesting that the total duration of breast feeding is most relevant to protection.

Reproductive and Hormonal Risk Factors

In 1993, Kelsey, Gammon, and John published an article which reviewed thirty-three research articles, published between 1962 and 1992, regarding reproductive risk factors and emerging risk factors. In the paragraphs to follow their results and conclusions are summarized.

Kelsey et al. (1993) found that the younger a woman's age at menarche, the higher her risk of breast cancer. One large study found that for each two year delay in onset of menstruation, breast cancer risk was reduced by about 10 percent. Another study found that women with onset of menstruation at or after age fifteen years had a 23 percent lower risk than those with an age at menarche of twelve years or younger.

The later a woman's age at menopause, the higher her risk of breast cancer. For every five year difference in age at menopause, the risk for breast cancer changes by about 17 percent. Bilateral oophorectomy before age forty, is associated with a lifetime decrease in risk of about 50 percent in comparison with having a natural menopause. The increased risks associated with early age at menarche and late age at menopause suggest that the longer the exposure to estrogen during the reproductive years, the higher the risk of breast cancer.

In 1993, Kelsey et al. also noted that women who give birth to their first child after age thirty have a higher risk for breast cancer than nulliparous women. The majority of studies have found that, the younger a woman is when she has her first full-term pregnancy, the lower her risk of breast cancer. One large international study found that,

compared with nulliparous women, the relative risk ranges from about 0.5 in women aged twenty years or younger at the birth of their first child to about 1.4 in women who are over age thirty-five at the birth of their first child. Relative Risk is a measure of the strength of the relationship between risk factors and cancer (American Cancer Society, 1995). The reasons for the association between age at first birth and breast cancer risk are uncertain, but they probably relate either to changes in breast tissue that render the tissue less susceptible to carcinogenic agents or to long-lasting changes in hormone levels.

Nulliparous women are at increased risk for breast cancer in comparison with parous women, with estimates of relative risk ranging from about 1.2 to 1.7. Several studies have found that the relative risk associated with five or more full-term pregnancies has been about 0.5 in comparison with women with no full-term pregnancies. Most studies that considered age at diagnosis, found an increased risk for breast cancer diagnosed after forty to forty-five years of age but not for breast cancer diagnosed at younger ages. Several studies have found that risk of breast cancer is increased for ten years following the last full-term pregnancy. If the immediate effect of a full-term pregnancy is an increase in risk, then it's possible that estradiol and progesterone have a short-term adverse effect which, after a period of about ten years, is replaced by a long-term benefit.

Other reproductive factors reviewed by Kelsey et al. (1993) were spontaneous and induced abortions, characteristics of the menstrual cycle, infertility, multiple births, and hypertension during pregnancy. Results were inconsistent regarding characteristics of the menstrual cycle and spontaneous and induced abortions due to inaccurate reporting.

The authors found that only a few studies had addressed the issues regarding spacing of births. Infertility resulting from a hormonal abnormality and its effect on breast cancer risk yielded inconsistent results. One group of investigators reported a decreased risk of breast cancer among women whose last birth was a multiple birth and among women who had hypertension during pregnancy, but these results were not confirmed by additional studies.

The relationship between breast feeding and breast cancer risk has been examined in many studies; some have reported no association, while others report a reduced risk, particularly among pre-menopausal women and in women who have lactated for extended periods. Research regarding lactation and development of breast cancer has failed to adequately question women regarding their breast feeding practices. Past research tends to focus on duration, not on adequacy or problems encountered while breast feeding. Several research articles suggest that future studies should question women on reasons for terminating breast feeding, adequacy of milk supply and if breasts were emptied during each feeding. These suggestions and concerns regarding lactation were included in the data collection instrument in the current study.

Relevant Theoretical Literature

The Neuman's System Model (1989) was used as a conceptual framework to further investigate the breast feeding practices of women with a history of breast cancer. Therrien (1993) used Neuman's System Model to guide her graduate thesis regarding "Weight gain in women with stage I and stage II breast cancer." This study concentrated

on the physiological variable of weight gain after diagnosis of breast cancer. The diagnosis of breast cancer was viewed as penetrating the lines of defense. The stressors included: diagnosis of cancer, surgery, type of treatment, and staging work up. All three levels of prevention were addressed as follows: secondary prevention was type of treatment received, tertiary prevention was assisting the patient in regaining their previous level of wellness, and primary prevention was referral to a program to help prevent weight gain. The results indicated that women with stage I and stage II breast cancer, regardless of treatment, gained weight over 12 and 24 months. Weight gain was not statistically different between the groups.

O'Neal (1993) utilized Neuman's System Model to guide her graduate thesis regarding the "Effects of BSE on depression/anxiety in women diagnosed with breast cancer." This study examined the psychological responses of women who discovered a cancerous lesion via breast self-examination, spouse, or health care provider. Depression and anxiety were categorized as part of the lines of resistance. Monthly breast self-examinations were categorized as part of the normal lines of defense as well as a primary prevention. The diagnosis of breast cancer was viewed as a stressor. The results indicated the lines of resistance, were not significantly strengthened, when women found a lump via breast self-examination. However, the knowledge associated with the practice of breast self-examination did appear to strengthen the lines of resistance resulting in less depression, anxiety and disturbance of mood.

Evely (1994) devised a plan of care based on Neuman's System Model to assist a mother with establishing and continuing successful breast feeding. Emphasis was placed on prevention, health education, and management of ill-health. Intra-personal stressors included painful nipples and lack of confidence and knowledge about breast feeding. Interpersonal stressors were mischievous toddler and lack of support from husband. Extra-personal stressors arose from the conflicting advice given about breast feeding. Evely recommended that primary prevention regarding breast feeding should take place in the antenatal period and consist of education regarding anatomy and physiology of the breast and lactation, proper positioning, effective sucking, and care of nipples and breast. Secondary prevention was aimed at reducing sore nipples and developing a satisfying breast feeding experience. Tertiary prevention was maintenance of successful lactation through monitoring and support. The following goals were established: correct positioning of the baby at the breast and the ability to achieve this independently to alleviate problems; complete demand breast feeding, excluding nipple shields, supplements and water; and relaxed, confident and happy mother, allowing normal hormonal reflex resulting in a contented baby. As a result of this plan of care the patient no longer had sore nipples and was able to successfully breast feed for five months.

The Neuman's System Model is viewed as flexible and has been used in many different settings. The model has been used to develop tools, assist with teaching curriculums, and study the ability of patients to adapt to stressors.

Conceptual Framework

In subsequent paragraphs, the Neuman Systems Model (1995) is described, including a conceptual map, hypotheses, definitions of concepts, and other relevant terms. These descriptions demonstrate how the Neuman Systems Model can be used to speculate on the relationship between breast feeding and development of breast cancer.

The Neuman Systems Model is based on two major components: stress and reaction to stress. The client is an open system in interaction and total interface with the environment. Stressors are defined by Neuman as "tension-producing stimuli with the potential for causing disequilibrium." Environmental stressors are classified as intra-, inter-, and extra-personal in nature. The flexible line of defense protects the normal line of defense, which is the usual state of wellness. The lines of resistance protect the basic structure. The client/client system consists of five variables. The variables are as follows: physiological, which refers to bodily structure and function; psychological, which refers to mental processes and relationships; sociocultural, which refers to social and cultural functions; developmental, which refers to life developmental processes; and spiritual, which refers to spiritual beliefs. Another important aspect of Neuman's System Model is prevention. Primary prevention is used to protect the client system's normal line of defense. Secondary prevention is used to protect the basic structure by strengthening the internal lines of resistance. Tertiary prevention is used to protect the basic structure and facilitate wellness.

Assumptions of Neuman Systems Model

Betty Neuman has identified ten basic assumptions within her Systems Model. The assumptions are listed below. Assumptions one through six describes how the client adapts to stressors. The stressor in this study is defined as cancer of the breast. Prevention is the key to maintaining a stable system, and these concepts are presented in assumptions seven through nine. Prevention in this study is defined as breast feeding.

1. Though each individual client or group as a client system is unique, each system is a composite of common known factors or innate characteristics within a normal, given range of response contained within a basic structure.

2. Many known, unknown, and universal environmental stressors exist. Each differs in its potential for disturbing a clients usual stability level, or normal lines of defense. The particular interrelationships of client variables-physiological, psychological, sociocultural, developmental, and spiritual- at any point in time can affect the degree to which a client is protected by the flexible line of defense against possible reaction to a single stressor.

3. Each individual client/client system, over time, has evolved a normal range of response to the environment that is referred to as a normal line of defense, or usual wellness/stability state.

4. When the cushioning, accordion like effect of the flexible lines of defense is no longer capable of protecting the client/client system against an environmental stressor, the stressor breaks through the normal line of defense. The interrelationships of

variables-physiological, psychological, sociocultural, developmental and spiritual- determine the nature and degree of the system reaction or possible reaction to the stressor.

5. The client, whether in a state of wellness or illness, is a dynamic composite of the interrelationships of variables - physiological, psychological, sociocultural, developmental, and spiritual. Wellness is on a continuum of available energy to support the system in its optimal state.

6. Implicit within each client system is a set of internal resistance factors known as lines of resistance, which function to stabilize and return the client to the usual wellness state (normal line of defense) or possibly to a higher level of stability following an environmental stressor reaction.

7. Primary prevention relates to general knowledge that is applied in client assessment and intervention in identification and reduction or mitigation of risk factors associated with environmental stressors to prevent possible reaction.

8. Secondary prevention relates to symptomatology following a reaction to stressors, appropriate ranking of intervention priorities, and treatment to reduce their noxious effects.

9. Tertiary prevention relates to the adjustive processes taking place as reconstitution begins and maintenance factors move the client back in a circular manner toward primary prevention.

10. The client is in dynamic constant energy exchange with the environment.

Women diagnosed with breast cancer may undergo different types of treatment. In Neuman Systems Model such treatments would be referred to as secondary prevention. These treatments include radiation, chemotherapy, hormone manipulation, lumpectomy, and mastectomy. Nursing's goal is to facilitate optimal wellness through retention, attainment, or maintenance of client systems stability. Women may accomplish these goals by joining cancer support groups, discussing problems with their pastor or counselor, and having a supportive family. These later activities are referred to tertiary prevention.

The diagnosis of breast cancer is a stressor, which will penetrate the flexible line of defense. A woman's reaction to this and other stressors is influenced by previous system behaviors. Influencing factors include system variables, coping patterns, life-style factors, developmental and spiritual influences, and cultural considerations. The stressor can penetrate the normal line of defense and lines of resistance if stability is not achieved, causing emotional and physical instability.

The concepts of interest for this study include primary, secondary, and tertiary prevention, flexible line of defense, flexible line of resistance, internal lines of resistance, and stressors. The results of this study will clarify and add additional information about the breast feeding practices of women diagnosed with breast cancer. Through their experiences with lactation and breast cancer, factors that contribute to development of breast cancer may be clarified. These results may encourage women to participate in primary prevention methods such as successful and extended periods of breast feeding,

self breast exams, and mammograms. These preventive practices may help women to lead a healthy lifestyle and reduce the risk of developing breast cancer or at least lead to early detection of breast cancer, thereby increasing their chance of survival.

CHAPTER III

METHODOLOGY

The following information will be discussed in this chapter: research design; sample; setting; measurement methods; procedures; ethical considerations and data analysis.

Research Design

A descriptive design was used to collect data on the previous breast feeding practices of women diagnosed with breast cancer between April, 1997 and April, 1998.

Sample

The target population was women who had been diagnosed by an oncologist as having Stage I or higher stages of breast cancer. The sample, one of convenience, was drawn from the medical records of two large medical practices specializing in the treatment of cancer. Three-hundred questionnaires were distributed. It was expected that 30 % of the subjects asked to complete the questionnaire would do so. This figure is based upon the low number of questionnaires generally returned in the mail. Due to the diversity of demographic variables within this study, the results should be reflective of the target population, although a large randomized population would yield more reliable results.

Setting

Research was conducted in a large southwestern city, with a population of 1.1 million people. Women who met the inclusion criteria were given a packet, by the liaison nurse, containing a letter from the oncology practice informing them of the study, a letter from the researcher identifying herself, the questionnaire and a self-addressed, postage paid return envelop. The questionnaire was filled out, at the participants own convenience. Data were collected for a two month period.

Measurement Methods

The measurement tool was a four part questionnaire (see Appendix A). The first section collected demographic data. The second sought information on personal and family history of breast cancer diagnosis. Part three asked questions concerning respondents reproductive history. The final section asked for information regarding reproductive and breast feeding histories of the respondents. The following demographic data were collected on each participant: current age, marriage status, race, income and education. The following information was collected on breast cancer: age when breast cancer was first diagnosed, stage of breast cancer at diagnosis and family history of breast cancer. A reproductive history including the following information was obtained: age at menarche, age at menopause, outcome and age of first through fifth pregnancies and number of infants born during each pregnancy. The following information was collected on breast feeding: number of children breast fed, length each child was breast fed, return of menses, adequacy of milk supply, were breasts regularly emptied during each feeding,

age of infant when supplementation began, method used to stop milk production, and types of problems encountered while breast feeding.

Content validity for the data collection instrument was established by using questions similar to those used in similar research studies (Kvale and Heuch, 1987; Siskind et al., 1989; Layde et al., 1989; Yoo et al., 1992; Chilvers et al., 1993; Thomas et al., 1993; Brinton et al., 1995; Katsouyanni et al., 1996; Michels et al., 1996) regarding lactation and breast cancer. Power level was set at .80, alpha level at .05, and effect size at .20.

The questionnaire contained both fill-in the blank and response set questions. Most of the data were coded at the time of collection and entered into the computer. The remaining areas were entered into the computer as raw data.

Procedure

The researcher met with a liaison nurse from both medical practices informing them of the nature of this descriptive study and asked for consideration to access patients. The liaison nurse then, presented the research proposal to each oncologist. Once approval was obtained the researcher and liaison nurse from each office were responsible for generating a list of eligible subjects. Eligible subjects included all women diagnosed with at least Stage I breast cancer, between April, 1997 and April, 1998. One-hundred and fifty research packets were distributed to each liaison nurse. It was estimated that these questionnaires could be completed in approximately 15 minutes. The completed questionnaires were mailed back to the University of Nevada, Las Vegas, Department of

Nursing. Each liaison nurse was available Monday thru Friday 9:00 a.m. to 5:00 p.m. to answer any questions or concerns that women had about the questionnaire.

Ethical Considerations

A cover letter was attached to each questionnaire explaining the identity and qualifications of the researcher, and the focus of the study (see Appendix C). Women who returned their questionnaire gave consent to participate in this study. A potential risk for the subjects was that personal information could be revealed to the researcher. To reduce this risk, no name or code numbers were placed on the questionnaires. In addition the subject may have been inconvenienced or have experienced emotional anguish from answering certain questions about their breast feeding practices and personal history of breast cancer. However each client who received the questionnaire had the opportunity to refuse to answer the questionnaire. A potential risk for the oncologist might have been a breach of confidentiality. However, the researcher did not look at individual files, or have access to names of the sample list. A benefit of the study, which was identified in the explanatory letter, was to clarify the breast feeding practices of women who have been diagnosed with breast cancer. The proposal for this study was reviewed in the following order: the thesis advisement committee, the Department of Nursing UNLV Human Rights Review Committee, University of Nevada, Las Vegas Human Rights Review Committee, and finally each participating Oncologist.

Data Analysis

Descriptive and exploratory analysis were performed on all data using the Statistical Package for the Social Sciences (SPSS). These analyses included frequency distributions, measures of central tendency and measures of dispersion. These analyses demonstrate what the data looks like and were used to describe the sample. Univariate descriptive analysis such as frequency distribution, mean, median, and mode were performed on the variables as appropriate. These analyses assessed what the sample looked like. The results are presented using graphs and tables. A bivariate descriptive analysis was also used to compare differences between initial and advanced stages of cancer.

CHAPTER IV

DATA ANALYSIS AND RESULTS

This chapter presents the results of data collection. First, demographic data concerning the sample are presented. Next, each research question is discussed and statistical analysis described.

Demographic Data

Three-hundred questionnaires were distributed to eligible participants over a two month period. Of the 300 distributed, 44 were returned, yielding a response rate of 15 percent. The participants ranged in age from 33 to 77 years, ($M = 58.44$, $SD = 12.52$) (see Table 1). The majority of women who responded to the survey were Caucasian ($n = 33$, 75%) (see Table 2). The remaining respondents were African-American ($n = 5$, 11.40%), Asian ($n = 3$, 6.80%), Hispanic ($n = 1$, 2.30%), and other ($n = 2$, 4.50%) (see Table 2). The participants were more likely to be married ($n = 29$, 65.92%), than widowed ($n = 6$, 13.64 %), divorced ($n = 5$, 11.34%), or single ($n = 2$, 4.55%) (see Table 3). Annual household income was as follows: below \$20,000 ($n = 9$, 20.5%), \$20,000 to \$40,000 ($n = 10$, 22.7 %), \$40,001 to \$60,000 ($n = 9$, 20.5%), \$60,001 to \$80,000 ($n = 7$, 15.9%), and above 100,000 ($n = 4$, 9.1%) (see Table 4). Half of all women had taken

some college courses ($n = 22$, 50%), four completed a college degree (9.09%), one completed a master's degree (2.27%), and four did not complete high school (9.09%) (see Table 5).

Breast Cancer Demographics

The participant's age at diagnosis of breast cancer ranged from 33 to 77 years ($M = 57.10$, $SD = 12.10$) (see Table 6). Participants stage of breast cancer was distributed as follows: stage I ($n = 18$, 40.9 %), stage II ($n = 9$, 20.5 %), stage III ($n = 3$, 6.8 %), and stage IV ($n = 8$, 18.2 %) (see Table 7). Slightly less than half of the women in this study had a family history of breast cancer ($n = 20$, 45.45 %). First degree relatives with a history of breast cancer included mother ($n = 6$, 13.64 %), sister ($n = 4$, 9.09%), and grandmother ($n = 3$, 6.82 %) (see Table 8).

Reproductive Demographics

The participants age at menarche ranged from 9 to 16 years ($M = 12.53$, $SD = 1.56$) (see Table 9), and age of menopause ranged from 38 to 60 years ($M = 46.87$, $SD = 5.96$) (see Table 10). It should be noted that nine women were still menstruating at the time data were collected (see Table 10).

The participants age at first pregnancy ranged from 16 to 38 years ($M = 23.57$, $SD = 5.20$) (see Table 11), second pregnancy; 18 to 39 years ($M = 26.65$, $SD = 4.71$) (see Table 12), third pregnancy; 20 to 34 years ($M = 27.06$, $SD = 4.19$) (see Table 13), fourth pregnancy; 24 to 58 years ($M = 32.5$, $SD = 8.02$) (see Table 14), and fifth pregnancy; 28 to 35 years ($M = 31.5$, $SD = 3.11$) (see Table 15).

Information regarding the outcome of each participants first through fifth pregnancy was obtained. Four of the 44 (9.09 %) women reported they had never been pregnant (see Table 16). Most of the participants ($n = 27$, 61.36 %) had delivered full term infants, six (13.6 %) had had miscarriages, five (11.4 %) had delivered premature infants, and two (4.5 %) had had abortions during their first pregnancies (see Table 16). Nine of the 44 (20.45 %) women reported not having a second pregnancy. Most of the participants ($n = 30$, 68.18 %) delivered full term infants, two (4.55 %) had had abortions, two (4.55 %) had had miscarriages, and one (2.27 %) delivered a premature infant during her second pregnancy (see Table 17). Eighteen of the 44 (40.91 %) participants reported having a third pregnancy; of those, thirteen (29.54 %) delivered full term infants, three (6.82 %) had had miscarriages, and two (4.55 %) delivered premature infants (see Table 18). Fifteen (34.09 %) of the 44 participants reported having a fourth pregnancy; of those, ten (22.73 %) delivered full term infants, three (6.82 %) had had abortions, and one (2.27 %) had had a miscarriage and one (2.27 %) delivered a premature infant (see Table 19). Four (9.09 %) of the 44 participants reported having a fifth pregnancy, three (6.82 %) delivered full term infants and one (2.27 %) had had a miscarriage (see Table 20).

Participants were asked about the number of children delivered during each birth. All but two participants reported delivering one child during each pregnancy. One women delivered twins during her second pregnancy and the second women delivered twins during her third pregnancy. Participants responded as follows to delivering one infant during first pregnancy ($n = 32$, 72.73 %), second pregnancy ($n = 29$, 65.91 %), third

pregnancy (n = 14, 31.82 %), fourth pregnancy (n = 11, 25.00 %), and fifth pregnancy (n = 3, 6.82 %) (see Table 21).

Breast Feeding Demographics

For each live birth the participants were asked if she breast fed and if so how many times a day. The majority of participants did not breast feed. Participants who responded that they had not breast fed are as follows: first pregnancy, twenty-four (54.55 %); second pregnancy, twenty-three (52.27 %), third pregnancy, fourteen (31.82 %); fourth pregnancy, eleven (25.00 %), and fifth pregnancy, three (6.82 %) (see Table 22).

Those participants who reported as having breast fed; were asked if they fed their infants on demand or had scheduled feedings. Frequency of breast feeding during first pregnancy ranged from three to 10 times a day (see Table 24); second pregnancy ranged from four to eight times a day (see Table 25); third pregnancy ranged from four to five times a day (see Table 26); fourth pregnancy ranged from four to eight times a day (see Table 27); while fifth pregnancy was six times a day (see Table 28). Four (25 %) of the 16 participants who breast fed after their first pregnancy used scheduled feedings (see Table 23). Nine participants reported breast feeding after their second pregnancy, four (45.44 %) had scheduled feedings (see Table 23). Four participants breast fed after their third and fourth pregnancies (see Table 23). Two participants used scheduled feedings and two fed on demand (see Table 23). Only one participant breast fed after her fifth pregnancy and she fed her infant on demand (see Table 23).

Information regarding how many weeks each participant breast fed each child was also collected. Length of breast feeding after first pregnancy ranged from 4 to 76 weeks (\bar{M} = 25.13, \underline{SD} = 21.23) (see Table 29), second pregnancy ranged from 2 to 76 weeks (\bar{M} = 20.83, \underline{SD} = 22.44) (see Table 30), third pregnancy ranged from 8 to 40 weeks (\bar{M} = 24, \underline{SD} = 16) (see Table 31), and fourth pregnancy ranged from 8 to 24 weeks (\bar{M} = 18, \underline{SD} = 7.66) (see Table 32). Only one participant reported breast feeding after her fifth pregnancy, and she reported breast feeding for 96 weeks (see Table 33).

Participants who breast fed were also asked about adequacy of milk supply. The question asked if the respondents supplemented more than 2 oz of formula after breast feeding. Seven (44 %) of the 16 participants who breast fed after their first pregnancy stated they had to supplement (see Table 34). Half of the participants (n = 12, 50 %) reported supplementing following breast feeding after their second pregnancy, while the remaining pregnancies did not require any supplementation (see Table 34).

Participants were asked to identify the age of their infant when supplementation with either food or formula was first given. Supplementation after first pregnancy ranged from 1 to 52 weeks (\bar{M} = 12.6, \underline{SD} = 12.99) (see Table 35), second pregnancy ranged from 2 to 52 weeks (\bar{M} = 13.45, \underline{SD} = 14.89) (see Table 36), third pregnancy ranged from 6 to 40 weeks (\bar{M} = 18, \underline{SD} = 19.08) (see Table 37) and fourth pregnancy ranged from 6 to 16 weeks (\bar{M} = 9, \underline{SD} = 4.76) (see Table 38). Only one participant breast fed after her fifth pregnancy and she started supplementing at 24 weeks (see Table 39).

Additional information regarding ability to empty milk from each breast while breast feeding was collected. Four (28.57 %) of the first pregnancy participants reported not feeling any relief after breast feeding (see Table 40). One of the second pregnancy participants reported not feeling any relief after breast feeding (see Table 40). The participants who breast fed after pregnancies three ($n = 4$), four ($n = 4$), and five ($n = 1$) all reported feeling relief after breast feeding (see Table 40).

Participants who breast fed were asked what method was used to stop milk production when breast feeding was completed. The results are as follows: following the first pregnancy fourteen (87.50 %) used nothing, one participant (6.25 %) used medication and one (6.25 %) used another method (see Table 41). Following a second pregnancy nine (81.82 %) used nothing and two (18.18 %) used medication (see Table 41). Following a third pregnancy three (75 %) used nothing and one (25 %) used medication; and following the fourth pregnancy all 4 (100 %) participants used nothing (see Table 41). Only one participant reported breast feeding after her fifth pregnancy and she reported using nothing to stop milk production (see Table 41).

The final question obtained information regarding types of problems participants encountered while breast feeding. Types of breast feeding problems encountered following the first pregnancy were nipple soreness ($n = 7$, 50%), lack of milk ($n = 3$, 21.43 %), breast pain ($n = 2$, 14.29 %), lack of time ($n = 1$, 7.14 %), or had to return to work ($n = 1$, 7.14 %) (see Table 42). Types of breast feeding problems encountered following the second pregnancy were nipple soreness ($n = 4$, 30.77 %), lack of milk ($n =$

2, 15.38 %), breast pain (n = 2, 15.38 %), lack of time (n = 2, 15.38 %), had to return to work (n = 1, 7.69 %), engorgement (n = 1, 7.69 %) and abscess (n = 1, 7.69 %) (see Table 42). Types of breast feeding problems encountered following the third pregnancy were breast pain (n = 1, 25 %), nipple soreness (n = 1, 25 %), mastitis (n = 1, 25 %), and lack of milk (n = 1, 25 %) (see Table 42). Types of breast feeding problems encountered following the fourth pregnancy were breast pain (n = 1, 50 %) and nipple soreness (n = 1, 50 %) (see Table 42). Types of breast feeding problems encountered following the fifth pregnancy were breast pain (n = 1, 33.33 %), nipple soreness (n = 1, 33.33 %) and engorgement (n = 33.33 %) (see Table 42). Nipple soreness was the most frequently reported problem.

Instrumentation

The breast cancer and breast feeding questionnaire had four sections. The demographic section was used to collect information on each participant. This information was used to describe the participants as a group. The second section collected information regarding breast cancer and reproductive histories. This information assisted the researcher in answering the first research question. The final section collected information regarding reproductive and breast feeding histories, which were separated into first, second, third, fourth, and fifth pregnancies. This information assisted the researcher in answering the second and third research questions.

To answer the second research question the Fisher's Exact Test, a non parametric test, was performed. This test is an adaptation of Chi-Square. This test is used when the

assumptions of Chi-Square cannot be met. Data from this study revealed that more than 20 % of the cells were less than 5, therefore the Chi-Square Test was not appropriate.

The Fisher's Exact Test was utilized to compare the differences between initial and advanced stages of breast cancer and adequacy of milk supply. No statistically significant relationship existed ($X^2 = 0.563$, $p = <0.05$) (see Table 43 & 45).

To answer the third research question a Chi-Square Test of Independence, a non parametric test, was performed. This test is used to compare frequencies in each group with the "expected" numbers. All assumptions were met.

The Chi-Square Test of Independence was utilized to compare the differences between initial and advanced stages of breast cancer and women who identified having problems while breast feeding with those who did not. No statistically significant relationship existed ($X^2 = 0.386$, $p = <0.05$) (see Table 44).

Results and Data Analysis Related to Research Questions

1. How frequently did the women in this sample diagnosed with breast cancer within the past year demonstrate the five known risk factors associated with breast cancer in previous research?

Descriptive statistics were used to analyze the frequencies of menarche, menopause, family history of breast cancer, having born no children and having born first child after the age of 30, which are associated with the diagnosis of breast cancer. Slightly less than half ($n = 20$, 45.45 %) of the participants reported having a family history of breast cancer (see Table 8). Eighteen (40.91 %) participants reported menarche prior to age 13 (see

Table 9). Seven (15.91 %) participants reported menopause after age 50 (see Table 10).

The two remaining risk factors: having born no children and having first pregnancy after the age of 30 each had 4 (9.09 %) participants (see Tables 11 & 16).

2. Was there a difference between the described adequacy of milk supply during the breast feeding experience(s) and the subsequent diagnosis of initial or advanced stages of breast cancer?

Statistics were computed using Fisher's Exact Test, which yielded no significant difference between adequacy of milk supply and stages of cancer ($X^2 = 0.563$, $p = <0.05$) (see Table 43).

3. Was there a difference between women who described problems during the breast feeding experience(s) and women who did not describe problems and the subsequent diagnosis of initial or advanced stages of breast cancer?

Result from Chi-Square Test of Independence indicated no significant difference between stages of breast cancer and women who described problems and those who did not ($X^2 = 0.386$, $p = <0.05$) (see Table 44).

In summary, the women in this sample supported previous research concerning the relationship between family history and age of menarche, and subsequent diagnosis of breast cancer. The majority ($n = 27$, 61.4 %) of participants reported having stage I or II breast cancer (see Table 7).

No significant difference was found between the adequacy of milk supply and the initial and advanced stages of breast cancer (see Table 43). Nor was there a difference

between women who described problems and those who did not describe problems during breast feeding and initial and advanced stages of breast cancer (see Table 44).

Methodological Limitations

The primary limitation of this study was the sample size. The characteristics of this sample seemed to be reflective of the general population of the community in which the data were collected, but inadequate to make any generalizations. There was a wide variance in age, education, and income levels. As well as the variance in breast cancer and breast feeding histories. In contrast to other studies, this study only sampled women who had a history of breast cancer.

The poor return rate (15 %) may be attributed to anxiety related to the recent diagnosis of breast cancer. All participants were diagnosed with breast cancer within the last year. Some participants were still receiving chemotherapy and or radiation to combat this deadly disease, and may not have felt physically well enough to participate.

Another possible explanation may be the feelings of guilt regarding inability or non use of breast feeding. To be successful at breast feeding, women need a lot of support from family and friends. Many women were encouraged not to breast feed in the 1970's due to the availability of commercial formulas.

The distribution of questionnaires took longer than expected. Some questionnaires may have been lost during the two month distribution period. Finally, it is possible that women in this sample failed to recall their pregnancy and breast feeding histories, and therefore did not return the questionnaire.

There were ($n = 266$, 85 %) women who refused to participate in this study. The researcher can only speculate on why this occurred. Some of these women may have been in denial about their recent diagnosis of breast cancer and felt the questionnaire regarding breast cancer did not pertain to them. Another possible explanation is exhaustion from declining health related to surgery, radiation and chemotherapy.

These limitations must be considered during the interpretation of these results. Broad generalizations about women who develop breast cancer cannot be made due to these limitations.

CHAPTER V

SUMMARY, CONCLUSIONS & RECOMMENDATIONS

The purpose of this descriptive study was to increase knowledge about women's past breast feeding experiences and the subsequent development of breast cancer. Few studies are available which focus on the characteristics of breast feeding. The majority of studies focus on the relationship of breast cancer to length of time the mother breast fed. This study attempted to provide additional information.

This study added information regarding breast feeding practices of women who subsequently developed breast cancer. Past research focused on if the woman had "ever" or "never" breast fed. This study questioned women about their breast feeding experiences of each of their first five pregnancies.

Conclusions

Demographic Variables

The participants average age in this study was 55.44 years old, which is older than the average age 52.64 years of participants in Lai et al. and Katsouyanni et al. Although participants from Layde et al., Yoo et al., Negri et al., and Sonia and Kelsey ranged in age from 20 to 70 years, the participants in this study ranged in age from 33 to 77 years. The

participants average age at diagnosis of breast cancer was 57.10 years. Only one article by Kvale and Huech identified age at diagnosis of breast cancer, which was 61.17 years. It should be noted that past research had larger sample sizes.

Most women in this study were Caucasian (n= 33, 75 %). Enger et al., Michels et al., and Sonia and Kelsey completed research on American women, but failed to identify percentages of participants according to race. Women in Enger et al. were either Caucasian or Hispanic, while women in Sonia and Kelsey were Caucasian or African American.

Results from this study, as well as Yoo et al., Lai et al., and Kvale and Heuch found that the majority of participants were married (89.80 %). A larger percentage of participants from this study were widowed (13.6 %) than participants from Lai et al. and Kvale and Heuch (4.08 %).

Demographic information not included in other studies, but included in this study were annual income and education. Most studies either did not report this or reported their type of profession. Women in this study reported an annual household income as follows: below \$20,000 (n = 9, 20.5 %), \$20,001 to \$40,000 (n = 10, 22.7 %), \$40,001 to \$60,000 (n = 9, 20.5 %), \$60,001 to 80,000 (n = 7, 15.9 %), and above \$100,000 (n = 4, 9.1%) (see Table 4). Half of all women had taken some college courses (n = 22, 50%), four completed a college degree (9.09%), one completed a master's degree (2.27%), and four did not complete high school (9.09%) (see Table 5). No information regarding stages of breast cancer were found in other studies, either. Participants stage of breast

cancer was distributed as follows: stage I (n = 18, 40.9 %), stage II (n = 9, 20.5 %), stage III (n = 3, 6.8 %), and stage IV (n = 8, 18.2 %) (see Table 7).

Cancer Risk Factors

The most frequently reported known risk factor in this study was family history. With slightly more than half (n = 44, 52 %) of the participants responding yes to this question. Seven of the articles report frequencies of family history for breast cancer. Participants in Layde et al. responded as follows: first degree relatives (8.9 %), second degree relatives (14.65 %), none (43 %), and unknown (33.4 %). Australian women in Siskind et al. reported mother and/or sister (8.95 %), more distant relatives (10.1 %), the remaining (80.95 %) were not discussed. Japanese women in Yoo et al. reported (2.11 %), Mexican women in Romieu et al. reported (2.9 %), American women in Enger et al. reported (10.65 %), and Greek women in Katsouyanii et al. reported (5.5 %), while Taiwanese women in Lai et al., reported less than one percent of their participants as having a family history of breast cancer. The participants in this study reported a significantly higher risk factor for family history of breast cancer than any other study and supports other research regarding the risk factor between family history and development of breast cancer. However, it must be noted that not all women who have a close relative with breast cancer are at increased risk of breast cancer. Women whose relatives are diagnosed at younger ages are at increased risks of developing breast cancer than those whose relatives are diagnosed at older ages (Claus et al., 1990). When assessing risk due to familial factors, age, pattern of inheritance in the family, laterality,

and presence of other cancers in the family must all be taken into account (Anderson et al., 1985). It is now possible to test individuals for the presence of hereditary factors that significantly increase their risk for cancer. The process is called Restriction Fragment Length Polymorphism (Kelly, 1993).

The second most frequently reported known risk factor in this study was menarche prior to age 13 years (40.9 %, $\bar{M} = 12.53$). Only six articles reported frequencies regarding menarche. Sonia and Kelsey reported that San Francisco Bay area women had a mean age of 12.7 years while the other seven SEER regions had a mean age of 13. Katsouyanii et al. also reported a mean age of 13 years. The other three articles reported percentages of menarche as follows: Enger et al. (53 %), Romieu et al. (36.23 %), Siskind et al. (15.1 %), and Yoo et al. (14.86 %). The majority of women from Australia and Asia reported having menarche beyond the age of 13 years. The participants in this study reported having similar ages of menarche and menopause as women who participated in studies conducted in the United States, Greece, and Mexico. This finding supports past research that a younger age of menarche and an older age at menopause, yields to a higher risk of breast cancer. This finding may be an important etiologic factor regarding lifetime exposure of estrogen.

The third most frequently reported known risk factor in this study was menopause after age 50 years (15.9 %, $\bar{M} = 46.87$). Only four articles reported frequencies regarding menopause. Sonia and Kelsey reported a mean age of 44.9 years for San Francisco Bay area, and a mean age of 44.4 years for the other SEER regions, while Katsouyanii et al.

participants reported a mean age 47.35 years. Yoo et al. reported (65.7 %) and Lai et al. (18.42 %) of their participants as having entered menopause after the age of 50 years. Participants in this study reported similar mean ages of menopause as American and Greek women. Taiwanese women reported having similar percentages of women enter menopause as those women who participated in this study. However, Japanese women reported entering menopause at a later age than women in this study.

The fourth most frequently reported known risk factor in this study was having born no children (n = 4, 9.1 %). Five research articles reported frequencies regarding nulliparity. The results are as follows: Katsouyanii et al. (n = 546, 22.6 %), Yoo et al. (n = 157, 15.06 %), Layde et al. (n = 1,371, 15 %), Siskind et al. (n = 218, 14.05 %), Romieu et al. (n = 133, 9.49 %). Mexican women were found to have similar results regarding nulliparity. Participants from Greece, Japan, the United States, and Australia reported higher frequencies regarding nulliparity than women in this study. Nulliparous women and those who give birth to a first live born child at age 30 or older are at somewhat increased risk of breast cancer compared with those with an earlier age at first birth (Kelly, 1993). Nulliparous women are at increased risk for breast cancer in comparison with parous women, with estimates of relative risk ranging from about 1.2 to 1.7 (Kelsey et al., 1993).

The fifth most frequently reported known risk factor in this study was having born first child over the age of 30 years (n = 4, 9.1 %). Ten of the articles discussed age at first full term pregnancy. Two studies only reported mean ages of first full term pregnancies.

Those studies were Sonia and Kelsey, ($M = 22.55$) which included American women and Katsouyanii et al., ($M = 26.15$) which included Greek women. The first question of this study focused primarily on known risk factors, however, the results of past research regarding ages of first pregnancy will be included here. Australian women in Siskind et al. exhibited the largest number of participants reporting their first child born over the age of 30 years (Age < 20, $n = 173$, 11.15 %, age 20-29, $n = 582$, 37.53 %, age > 30, $n = 795$, 48.68 %). A significant decrease is reported in the remaining studies, by almost half of the Norwegian participants in Kvale and Heuch reporting this risk factor (age < 20, $n = 2406$, 4.79 %, 20-29, $n = 34,593$, 68.81 %, >30 21.71 %, unknown, $n = 2362$, 4.69 %). Italian women in Negri et al. (age < 20, $n = 338$, 7.7 %, age 20-29, $n = 3329$, 76.1 %, age >30, $n = 708$, 16.2 %), as well as American women in Enger et al. (age < 20, $n = 214$, 23.67 %, age 20-29, $n = 560$, 61.94 %, age > 30, $n = 130$, 14.9 %), reported increased percentage of participants as having born their first child after the age of 30, than women reported in this study. Japanese women in Yoo et al. had similar results (age < 20, $n = 7$, 0.79 %, age 20-29, $n = 787$ 89.13 %, age >30, $n = 89$, 10.08 %) to this study. The remaining three studies which include: Taiwanese women in Lai et al., (age < 30, $n = 288$, 92.9 %, age > 30, $n = 22$, 7.1 %), Mexican women in Romieu et al., (age < 20, $n = 550$, 43.41 %, age 20-29, $n = 640$, 50.51 %, age > 30, $n = 77$, 6.08 %), and American women in Layde et al. (age > 20, $n = 923$, 11.93 %, age 20-29, $n = 6081$, 85.64 %, age > 30, $n = 757$, 2.43 %) all report decreased percentages of women reporting having their first born child after the age of 30 years. The reasons for the association between age at

first birth and breast cancer risk are uncertain, but are probably related to changes in the breast that render the tissue less susceptible to carcinogenic agents or to long lasting changes from hormones (Kelsey et al., 1993).

Breast Feeding Relationships

The results from this study indicate that 34 % of participants reported breast feeding. Which is substantially less than Romieu et al. (92.56 %), Negri et al. (77.38 %), Lai et al. (74.27 %), Katsouyanni et al. (69.3 %), and Layde et al. (51.25 %) reported.

Length of breast feeding in this study ranged from 2 to 96 weeks. The average length of breast feeding in this study was 59 weeks if all breast feeding participants were considered. If one outlier was removed, the average would be 22 weeks. The reason for such a large discrimination is that only one participant reported breast feeding after her fifth pregnancy which was for 96 weeks. The only study that reported an average for breast feeding was Sonia and Kelsey. They reported an average of 5.7 months of breast feeding for participants in the San Francisco Bay area and 5.1 months for participants in the other SEER regions. The remaining studies reported lifetime history of breast feeding and the results are as follows: Enger et al. (1-6 months, 44.19 %, 7-15 months, 32.4 %, >16 months, 23.34 %), Michels et al. (<3 months, 36.59 %, 4 - 6 months, 20.20 %, 7 - 11 months, 15.04 %, 12 - 23 months, 16.61 %, > 24 months, 11.56 %), Siskind et al. (1 - 13 weeks, 14.79 %, 14 - 52 weeks, 33.53 %, 53 - 104 weeks, 27.86 %, >104 weeks, 23.83 %), Negri et al. (1 - 5 months, 30.33 %, 6 - 11 months, 34.66 %, 12 - 17 months, Romieu et al. (1-3 months, 7.09 %, 4 - 12 months, 19.57 %, 13 - 24 months, 14.87 %, 25 - 36

months, 10.85 %, >36 months, 47.61 %), Layde et al. (<6 months, 26.55 %, 6 - 12 months, 12.85 %, 13 - 24 months, 7.5 %, >25 months, 4.35 %), and Katsouyanni et al. (<3 months 23.85 %, 3 - 11 months, 34.05 %, 12 - 23 months, 20.15 %, >24 months, 21.95 %), Lai et al. (> 3 years, 30.41 %, < 3 years, 43.86 %).

In this study no relationship existed between adequacy of milk supply and initial and advanced stages of breast cancer. Nor was there a relationship between women who described problems and women who did not describe problems during breast feeding and initial and advanced stages of breast cancer. The current evidence for a protective effect of breast feeding is inconclusive. Kelsey et al. (1993) reported that several studies have found a decreasing breast cancer risk with increasing duration of breast feeding, while others have reported little or no association. If a protective effect does exist, certain mechanisms have been postulated. For instance the cumulative number of ovulatory cycles has been hypothesized to be related to breast cancer risk, breast feeding could have a protective effect through delaying the reestablishment of ovulation (Henderson et al., 1985). A protective effect of breast feeding could also be related to hormonal changes, such as increased prolactin and decreased estrogen production during lactation, or to physical effects such as changes in the epithelial cells of the mammary ducts (Byers et al., 1985).

Reproductive and breast feeding histories not included in other studies were outcome of pregnancy, adequacy of milk supply, number of scheduled or demand feedings given in one day, and if breasts were emptied after each feeding. The question regarding

supplementation was based on suggestions by Chilvers et al. Suggestions from Romieu et al. regarding the use of hormones to suppress lactation were incorporated into this questionnaire as well. Siskind et al. suggested that future research focus on reasons mothers decide whether or not to breast feed and on the factors which enable them to do so successfully. Their suggestion helped to formulate the final question of this study.

What types of problems were encountered during the breast feeding experience?

Breast Cancer Incidence in Nevada Women

In 1995, The Nevada Cancer Registry reported 911 cases of breast cancer. Ten of the reported cases were men. The age range for actual cases of breast cancer in Nevada was 25 to 99 years ($M = 54.70$) (see Table 46). Which is similar to the mean of participants from this study who ranged in age from 33 to 77 years, ($M = 58.44$, $SD = 12.52$) (see Table 1).

The majority of reported cases of breast cancer in Nevada, in 1995, were Caucasian ($n = 845$, 92.76 %) (see Table 47). The remaining reported cases were African-American ($n = 39$, 4.28 %), Asian ($n = 14$, 1.54 %), Other ($n = 7$, 0.77 %), Indian ($n = 3$, 0.33 %), and Unknown ($n = 3$, 0.33 %) (see Table 47). Which is similar to the results of this study as the majority of women who responded were Caucasian ($n = 33$, 75%) (see Table 2). The remaining respondents were African-American ($n = 5$, 11.40%), Asian ($n = 3$, 6.80%), Hispanic ($n = 1$, 2.30%), and other ($n = 2$, 4.50%) (see Table 2).

In Nevada, in 1995, reported stage of breast cancer at diagnosis was distributed as follows: stage I ($n = 264$, 28.97 %), stage II ($n = 476$, 52.23 %), stage III ($n = 92$, 10.10 %).

%), stage IV (n = 47, 5.16 %), and unknown (n = 32, 3.54 %) (see Table 48). Participants in this study differ in distribution and is as follows: stage I (n = 18, 40.9 %), stage II (n = 9, 20.5 %), stage III (n = 3, 6.8 %), and stage IV (n = 8, 18.2 %) (see Table 7). The participants in this study are similar to other Nevada women who have been diagnosed with breast cancer and are not considered to be an elite group.

Comments on Conceptual Framework

According to the results of this study, breast feeding, described as a primary prevention for this study, does not seem appropriate for this conceptual model. No difference was found between women who breast fed and women who did not breast feed regarding initial and advanced stage of breast cancer according to adequacy or described problems during their breast feeding experiences. Breast cancer, a stressor penetrated the flexible line of defense, normal lines of defense and lines of resistance, leading to instability of the client system.

Recommendations

A larger, randomized sample including women with and without a history of breast cancer would provide more reliable results and the ability to compare the two samples. Future studies need to focus more on American women, who have higher rates of breast cancer and are less likely to have extended periods of lactation. Additional questions regarding "favored" breast during lactation, reasons for not breast feeding or an inability to lactate should be included in future research.

To increase sample size the questionnaire should be distributed to women who have been diagnosed with breast cancer in the previous five years. The return rate may be increased, by mailing the questionnaire packets to potential subjects instead of hand delivering them during an office visit. Confidentiality would still be protected if the questionnaire packets were mailed by office staff and not the researcher.

The literature review and this study identified a need to investigate the influence of hormones on breast tissue. Future research should try to identify factors that affect estrogen and progesterin levels, particularly factors that increase the likelihood of prolonged exposure.

Implications for Nursing Practice

This study enhances the limited body of knowledge regarding past breast feeding experiences and subsequent development of breast cancer. The five known risk factors for breast cancer were clearly demonstrated by the participants in this study. Health care providers need to educate their clients regarding these risk factors, so they may be aware of potential health problems.

Health care providers need to support women during their child bearing years and encourage them to have successful and sustained breast feeding experiences. Research, regarding successful and sustained lactation need to continue. Results of future studies may help to clarify ways in which women have healthy breast feeding experiences. Through these studies health care providers may become aware of potential preventative measures against the development of breast cancer.

APPENDIX A
THE QUESTIONNAIRE

Reproductive and Breastfeeding History

1. **Fifth pregnancy** Age: _____
2. **Outcome of pregnancy:**
 - a. Abortion b. Miscariage c. Premature d. Full term
3. **Number delivered:**
 - a. Single b. Twins c. Triplets d. Quadruplets e. Quintruplets
4. **Did you breastfeed?** a. Yes b. No (procede to next page)
5. **How many times a day did you breastfeed?**
 - a. One b. Two c. Three d. Four e. Five f. Six
 - g. Seven h. Eight i. Nine j. Ten k. Eleven l. Twelve
6. **Did you feed on demand?** a. Yes b. No (scheduled feedings)
7. **How long did you breastfeed?** (please indicate number of weeks or months) _____
8. **Was milk supply adequate once established?** (did you have to supplement more than 2 ounces of formula after breastfeeding)
 - a. Yes b. No
9. **Were breasts emptied during each feeding?** (did you have a feeling of relief after breastfeeding) a. Yes b. No
10. **Age of infant when supplementation began?** (either with food or formula) Please indicate number of days, weeks, or months _____
11. **What method was used to stop milk production?**
 - a. Nothing b. Medication c. Other
12. **What types of problems did you encounter during your breastfeeding experience?** (please circle all that apply)
 - a. Breast pain b. Nipple soreness c. Engorgement
 - d. Mastitis e. Skin infection f. Abscess
 - g. Lack of milk h. Returned to work i. Lack of time

Breast Cancer and Breastfeeding

Questionnaire

By

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Master's Degree Candidate**



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Department of Nursing

This questionnaire has four sections that need to be completed.

The Demographic section will help describe the participants as a group. The Breast Cancer and Reproductive histories will be used to analyze and compare the results. The Reproductive and Breastfeeding histories are separated into first, second, third, fourth, and fifth pregnancies.

Please circle or fill in the blank for each question. It is extremely important to fill out the questions as best as you can, even if you did not breastfeed.

Demographic Information

1. Age: _____
2. Marital Status:
 - a. Single b. Married c. Divorced d. Widowed
3. Race:
 - a. White b. Black c. Asian d. Hispanic e. Other
4. Household Income:
 - a. Below 20,000 b. 20,000-40,000 c. 40,001-60,000
 - d. 60,001-80,000 e. 80,001-100,000 f. Above 100,000
5. Education:
 - a. Some High School b. High School Diploma
 - c. Some College d. College Diploma
 - e. Master's Completed f. Doctorate Completed

Reproductive and Breastfeeding History

1. Forth pregnancy Age: _____
2. Outcome of pregnancy:
 - a. Abortion b. Miscariage c. Premature d. Full term
3. Number delivered:
 - a. Single b. Twins c. Triplets d. Quadruplets e. Quintuplets
4. Did you breastfeed? a. Yes b. No (proceed to next page)
5. How many times a day did you breastfeed?
 - a. One b. Two c. Three d. Four e. Five f. Six
 - g. Seven h. Eight i. Nine j. Ten k. Eleven l. Twelve
6. Did you feed on demand? a. Yes b. No (scheduled feedings)
7. How long did you breastfeed? (please indicate number of weeks or months) _____
8. Was milk supply adequate once established? (did you have to supplement more than 2 ounces of formula after breastfeeding)
 - a. Yes b. No
9. Were breasts emptied during each feeding? (did you have a feeling of relief after breastfeeding) a. Yes b. No
10. Age of infant when supplementation began? (either with food or formula) Please indicate number of days, weeks, or months

11. What method was used to stop milk production?
 - a. Nothing b. Medication c. Other
12. What types of problems did you encounter during your breastfeeding experience? (please circle all that apply)
 - a. Breast pain b. Nipple soreness c. Engorgement
 - d. Mastitis e. Skin infection f. Abscess
 - g. Lack of milk h. Returned to work i. Lack of time

Reproductive and Breastfeeding History

1. **First pregnancy** Age: _____
2. **Outcome of pregnancy:**
 - a. Abortion b. Miscariage c. Premature d. Full term
3. **Number delivered:**
 - a. Single b. Twins c. Triplets d. Quadruplets e. Quintruplets
4. **Did you breastfeed?** a. Yes b. No (procede to next page)
5. **How many times a day did you breastfeed?**
 - a. One b. Two c. Three d. Four e. Five f. Six
 - g. Seven h. Eight i. Nine j. Ten k. Eleven l. Twelve
6. **Did you feed on demand?** a. Yes b. No (scheduled feedings)
7. **How long did you breastfeed?** (please indicate number of weeks or months) _____
8. **Was milk supply adequate once established?** (did you have to supplement more than 2 ounces of formula after breastfeeding)
 - a. Yes b. No
9. **Were breasts emptied during each feeding?** (did you have a feeling of relief after breastfcedding) a. Yes b. No
10. **Age of infant when supplementation began?** (either with food or formula) Please indicate number of days, weeks, or months _____
11. **What method was used to stop milk production?**
 - a. Nothing b. Medication c. Other
12. **What types of problems did you encounter during your breastfeeding experience?** (please circle all that apply)
 - a. Breast pain b. Nipple soreness c. Engorgement
 - d. Mastitis e. Skin infection f. Abscess
 - g. Lack of milk h. Returned to work i. Lack of time

Reproductive and Breastfeeding History

1. **Second pregnancy** Age: _____
2. **Outcome of pregnancy:**
 - a. Abortion b. Miscariage c. Premature d. Full term
3. **Number delivered:**
 - a. Single b. Twins c. Triplets d. Quadruplets e. Quintruplets
4. **Did you breastfeed?** a. Yes b. No (procede to next page)
5. **How many times a day did you breastfeed?**
 - a. One b. Two c. Three d. Four e. Five f. Six
 - g. Seven h. Eight i. Nine j. Ten k. Eleven l. Twelve
6. **Did you feed on demand?** a. Yes b. No (scheduled feedings)
7. **How long did you breastfeed?** (please indicate number of weeks or months) _____
8. **Was milk supply adequate once established?** (did you have to supplement more than 2 ounces of formula after breastfeeding)
 - a. Yes b. No
9. **Were breasts emptied during each feeding?** (did you have a feeling of relief after breastfcedding) a. Yes b. No
10. **Age of infant when supplementation began?** (either with food or formula) Please indicate number of days, weeks, or months _____
11. **What method was used to stop mlk production?**
 - a. Nothing b. Medication c. Other
12. **What types of problems did you encounter during your breastfeeding experience?** (please circle all that apply)
 - a. Breast pain b. Nipple soreness c. Engorgement
 - d. Mastitis e. Skin infection f. Abscess
 - g. Lack of milk h. Returned to work i. Lack of time

Reproductive and Breastfeeding History

1. **Third pregnancy** Age: _____
2. **Outcome of pregnancy:**
 - a. Abortion b. Miscariage c. Premature d. Full term
3. **Number delivered:**
 - a. Single b. Twins c. Triplets d. Quadruplets e. Quintuplets
4. **Did you breastfeed?** a. Yes b. No (proccde to next page)
5. **How many times a day did you breastfeed?**
 - a. One b. Two c. Three d. Four e. Five f. Six
 - g. Seven h. Eight i. Nine j. Ten k. Eleven l. Twelve
6. **Did you feed on demand?** a. Yes b. No (scheduled feedings)
7. **How long did you breastfeed?** (please indicate number of weeks or months) _____
8. **Was milk supply adequate once established?** (did you have to supplement more than 2 ounces of formula after breastfeeding)
 - a. Yes b. No
9. **Were breasts emptied during each feeding?** (did you have a feeling of relief after breastfeeding) a. Yes b. No
10. **Age of infant when supplementation began?** (either with food or formula) Please indicate number of days, weeks, or months _____
11. **What method was used to stop milk production?**
 - a. Nothing b. Medication c. Other
12. **What types of problems did you encounter during your breastfeeding experience?** (please circle all that apply)
 - a. Breast pain b. Nipple soreness c. Engorgement
 - d. Mastitis e. Skin infection f. Abscess
 - g. Lack of milk h. Returned to work i. Lack of time

Breast Cancer History

1. **Age at which breast cancer was diagnosed.** _____
2. **Stage of breast cancer at diagnosis.** _____
3. **Family history of breast cancer.** (please circle all that apply)
 - a. Mother b. Sister c. Grandmother d. Other
 - e. No family history

Reproductive History

1. **Age at menarche** (periods started) _____
2. **Age at menopause** (periods stopped) _____

APPENDIX B
T,N,M STAGING

T,N,M Staging

T Primary tumors

- T1 Tumor 2 cm or less in its greatest dimension
 - a. No fixation to underlying pectoral fascia or muscle
 - b. Fixation to underlying pectoral fascia or muscle
- T2 Tumor more than 2 cm but not more than 5 cm in its greatest dimension
- T3 Tumor more than 5 cm in its greatest dimension
 - a. No fixation to underlying pectoral fascia or muscle
 - b. Fixation to underlying pectoral fascia or muscle
- T4 Tumor of any size with direct extension to chest wall or skin
 - a. Fixation to chest wall
 - b. Edema, ulceration of the skin of the breast, or satellite skin nodules confined to the same breast
 - c. Both of the above
 - d. Inflammatory carcinoma

N Regional lymph nodes

- N0 No palpable homolateral axillary nodes
- N1 Movable homolateral axillary nodes
 - a. Nodes not considered to contain growth
 - b. Nodes considered to contain growth
- N2 Homolateral axillary nodes containing growth and fixed to one another or to other structures
- N3 Homolateral supraclavicular or infraclavicular nodes containing growth or edema of the arm

M Distant metastases

- M0 No evidence of distant metastases
- M1 Distant metastases present, including skin involvement beyond breast area

Stage I	T1a or T1b	N0 or N1a	M0
Stage II	T0	N1b	M0
	T1a or T1b	N1b	M0
	T2a or T2b	N0, N1a or N1b	M0
Stage III	T1a or T1b	N2	M0
	T2a or T2b	N2	M0
	T3a or T3b	N0, N1 or N2	M0
Stage IV	T4	any N	any M
	any T	N3	any M
	any T	any N	M1

Approved by both the International Union Against Cancer and the American Joint Commission on Cancer Staging and End Reports.

APPENDIX C
THE COVER LETTER

UNLV Department of Nursing
Lynn A. Marlett RN, BSN
4505 Maryland Parkway
Box 453018
Las Vegas, Nevada 89154-3018

March 23, 1998

Hello:

My name is Lynn Marlett. I am a registered nurse and graduate student in the Department of Nursing at the University of Nevada, Las Vegas. In pursuit of my Master's Degree, I am conducting a research study in the area of breast cancer. Your participation in this study is very important, and your time and effort are greatly appreciated. You are invited to participate in this study, which is attempting to examine the breastfeeding practices of women with a history of breast cancer.

Your oncologist has reviewed the purpose and goals of this study and has agreed that the information gained will be beneficial. Your oncologist has identified you as a prospective participant in this study. As someone who has been diagnosed with breast cancer in the last year, your participation may assist health professionals in providing improved counseling to women during their childbearing years. There are many known as well as unknown factors which contribute to the development of breast cancer. The relationship between breastfeeding and breast cancer is unclear.

Your responses to this questionnaire are strictly voluntary and will remain confidential through anonymous reporting. All data will be reported as grouped data. No individual data will be used. To protect confidentiality, do not put your name on the questionnaire

or return address on the envelope. By returning this questionnaire, you have indicated your willingness to participate in this study.

To participate, please fill out the attached questionnaire. The questionnaire takes less than 15 minutes to complete. Once completed, please place in the postage paid envelope and mail it to me at the University of Nevada, Las Vegas.

If, while answering the questionnaire, you have any uncertainties or discomfort, with the questions, please call the nurses at your respective physician's office. If you are a patient at Nevada Cancer Center, contact Sandy Klimek RN, MSN at 735-7154 and if you are a patient at Southwest Cancer Clinic, contact Carol Bacca MA at 731-2620.

If you have questions concerning this study, or if you would like to know the results when the study is completed, please feel free to contact me at the above address. For questions concerning the rights of research subjects, please contact the UNLV Office of Sponsored Programs at 895-1357.

Thank you very much for your time and cooperation in pursuit of this research.

Sincerely,

A handwritten signature in cursive script that reads "Lynn A. Marlett RN, BSN".

Lynn A. Marlett RN, BSN
Master's Degree Candidate

APPENDIX D
THE PHYSICIAN LETTERS



SOUTHWEST CANCER CLINIC

Hematology & Medical Oncology

70

Edwin C. Kingsley, M.D.
Paul E. Michael, M.D.
Mary Ann K. Allison, M.D.
James D. Sanchez, M.D.
Heather J. Allen, M.D.

Date: March 20, 1998

You are invited to participate in a research study being conducted by a graduate student in the Department of Nursing, at University of Nevada, Las Vegas. The area of interest is breast cancer, specifically to build knowledge regarding causative factors. Known causative factors include family history, early age at menarche, late age at menopause, having first child born after age thirty and having delivered no children.

Your participation in this study is strictly voluntary. All responses will remain confidential through anonymous reporting. All data will be reported as grouped data. No individual data will be used.

The oncologists from this office are not responsible or involved in anyway with this research, other than to advise you about the study. They have reviewed the purpose and goals of this study and agree that the information obtained from this study will be beneficial. All questionnaires will be returned directly to the researcher at University of Nevada, Las Vegas, Department of Nursing.

Sincerely,

Joni Scheller, CRA

3920 South Eastern Avenue • Suite 203 • Las Vegas, Nevada 89119 • (702) 731-2620
7200 Cathedral Rock Dr. • Suite 202 • Las Vegas, Nevada 89128 • (702) 341-8026
98 East Lake Mead Drive • Suite 202 • Henderson, Nevada 89015 • (702) 731-2620
3920 South Eastern Avenue • Suite 200 • Las Vegas, Nevada 89119 • (702) 735-4002



M. NAFEEES NAGY, M.D.
CHRIS B. BRINGHURST, M.D.
NIKOLAOS TOUROUTOGLU, M.D.
ANN M. WIERMAN, M.D.
RUSSELL P. GOLLARD, M.D.
HANS L. BOEDEKER, M.D.
LUIS E. FAYAD, M.D.

71

1950 EAST DESERT INN ROAD, SUITE A • LAS VEGAS, NEVADA 89109 • (702) 735-7154 • FAX (702) 735-7153

February 28, 1998

Dear

You are invited to participate in a research study being conducted by a graduate student in the Department of Nursing, at University of Nevada, Las Vegas. The area of interest is breast cancer, specifically to build knowledge regarding causative factors. Known causative factors include family history, early age at menarche, late age at menopause, having first child born after the age of thirty years, and having delivered no children.

Your participation in this study is strictly voluntary. All responses will remain confidential through anonymous reporting. All data will be reported as grouped data. No individual data will be used.

The oncologists from this office are not responsible or involved in any way with this research, other than to advise you about the study. They have reviewed the purpose and goals of this study and agree that the information obtained from this study will be beneficial. All questionnaires will be returned directly to the researcher at University of Nevada, Las Vegas, Department of Nursing.

Sincerely,

Marlene Giron
Administrator

2851 N. TENAYA WAY, SUITE 101 LAS VEGAS, NEVADA 89128

APPENDIX E

THE COPYRIGHT LETTER

UNLV Department of Nursing
Lynn A. Marlett RN, BSN
4505 Maryland Parkway
Box 453018
Las Vegas, Nevada 89154-3018

Betty Neuman, R.N., Ph.D.
P.O. Box 488
Beverly, OH 45715

Dear Dr. Neuman:

I am a graduate student at the University of Nevada in Las Vegas. My goal is to obtain a Masters in Nursing and become a Family Nurse Practitioner. I am writing to ask for copyright privileges to include figures, maps, models, and text of your book entitled "Neuman Systems Model," (1989). It is my intent to use Neuman Systems Model as I develop my thesis regarding the breast feeding practices of women with a previous diagnosis of breast cancer. Enclosed you will find two letters of permission regarding use and ability to quote copyrighted materials, that need to be completed by you. I look forward to your response.

Sincerely,

A handwritten signature in cursive script that reads "Lynn Marlett, RN, BSN".

Lynn Marlett, R.N., B.S.N.

Permission to Use Copyrighted Material

I, Betty Neuman, RN., Ph.D., FAAN

holder of copyright on material entitled

The Neuman Systems Model

authored by Betty Neuman

and originally published in Nursing Research 1973

hereby give permission for the author to use the above described material in total or in part for inclusion in a master's thesis at the University of Nevada, Las Vegas.

I also agree that the author may execute the standard contract with University Microfilms, Inc. for microform reproduction of the completed thesis, including the materials to which I hold copyright.

Betty Neuman, RN., Ph.D., FAAN 7/3/98
Signature Date

Betty Neuman, RN., Ph.D., FAAN
Name (typed) Title

Self
Representing

Permission to Quote Copyrighted Material

I, Betty Neuman, RN., Ph.D., FAAN

holder of copyright material entitled _____

The Neuman Systems Model

hereby give permission to graduate student Lynn E. Markitt
to quote in her master's thesis that portion of the above described work which is indicated
in the attached xerographic copy.

I also permit the quoted material to be included in copies of the completed thesis
submitted to University Microfilms, Inc. for microform reproduction. I understand that
proper scholarly citation will be adhered to.

Betty Neuman, RN., Ph.D., FAAN 7/1/98
Signature Date

Betty Neuman, RN., Ph.D., FAAN
Name (typed)

Address

P.O. Box 77

Watertown, Ohio 45787

APPENDIX F
APPROVAL LETTERS



23 January 1998

Lynn A. Marlett, R.N., B.S.N.
Dept of Nursing
University University, Las Vegas
Las Vegas NV 89154

Dear Ms. Marlett:

The Department of Nursing Human Subjects Rights Committee met and approved your proposal "What are the breastfeeding practices of women with a history of breast cancer". You may now take your proposal to the University Office of Sponsored Programs for their consideration. We suggest you request an exempt status for your project.

You have a study that should result in useful information for nursing. The Committee wishes you well in completing it. If any of the above is not clear or you wish to discuss any of the points please do not hesitate to call myself or any of the other committee members.

We wish you well in completing your study and are looking forward to hearing about your findings.

If you make any major change in your project please notify the Committee.

Sincerely,

A handwritten signature in cursive script, appearing to read "Margaret Louis", is written over a horizontal line.

Margaret Louis, RN PhD
Chairperson
Human Subjects Rights Committee
Department of Nursing, UNLV

cc: Rosemary Witt, R.N., Ph.D.

Department of Nursing
4505 Maryland Parkway • Box 453018 • Las Vegas, Nevada 89154-3018
(702) 895-3360 • FAX (702) 895-4807



DATE: March 20, 1998

TO: Lynn Marlett (NUR)
M/S: 3018

FROM: *for* Dr. Lawrence Golding
Chairman, Biomedical Sciences Committee
of the UNLV Institutional Review Board

RE: Status of Human Subject Protocol entitled:
"What Were the Breastfeeding Practices of Women with a
History of Breast Cancer"

OSP #501s0198-152b

This memorandum is official notification that the protocol for the project referenced above has been approved by the Biomedical Sciences Committee of the Institutional Review Board. This approval is approved for a period of one year from the date of this notification, and work on the project may proceed.

Should the use of human subjects described in this protocol continue beyond a year from the date of this notification, it will be necessary to request an extension.

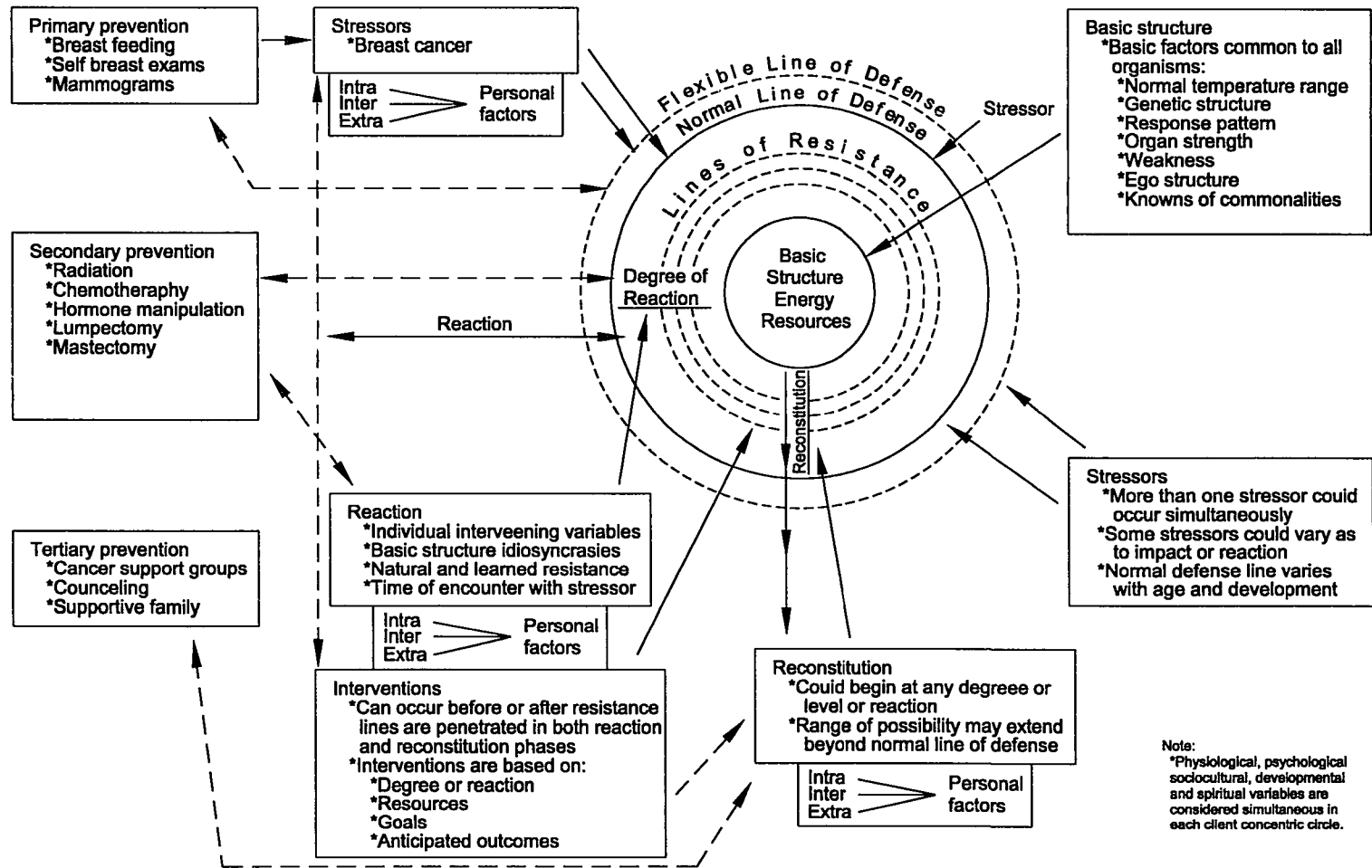
If you have any questions or require any assistance, please Marsha Green at 895-1357.

cc: R. Witt (NUR-3018)
OSP File

Office of Sponsored Programs
4505 Maryland Parkway • Box 451037 • Las Vegas, Nevada 89154-1037
(702) 895-1357 • FAX (702) 895-4242

FIGURE 1

NEUMAN'S SYSTEMS MODEL



The Neuman System Model. Original diagram copyright 1970 by Betty Neuman.

Table 1

Frequency Distribution by Age Range

Age Range	Frequency	Percent
30 - 39	4	9.1%
40 - 49	8	18.2%
50 - 59	9	20.5%
60 - 69	9	20.5%
70 - 79	11	25.0%
Missing	3	6.8%
Total	44	100%

Table 2

Frequency Distribution by Race

Race	Frequency	Percent
Caucasian	33	75.0%
African-American	5	11.4%
Asian	3	6.8%
Hispanic	1	2.3%
Other	2	4.5%
Total	44	100%

Table 3

Frequency Distribution by Marriage Status

Marriage Status	Frequency	Percent
Married	29	65.9%
Widowed	6	13.6%
Divorced	5	11.3%
Single	2	4.6%
Missing	2	4.6%
Total	44	100%

Table 4

Frequency Distribution by Income

Income	Frequency	Percent
<20,000	9	20.5%
20,000 - 40,000	10	22.7%
40,001 - 60,000	9	20.5%
60,001 - 80,001	7	15.9%
80,001 - 100,000	0	0.0%
>100,000	4	9.1%
Missing	5	11.3%
Total	44	100%

Table 5

Frequency Distribution by Education

Education	Frequency	Percent
High School	4	9.1%
Some College	22	50.0%
Bachelor's Degree	4	9.1%
Master's Degree	1	2.3%
Missing	13	29.6%
Total	44	100%

Table 6

Frequency Distribution by Age at Diagnosis of Breast Cancer

Age Range	Frequency	Percent
30 - 39	5	11.4%
40 - 49	7	15.9%
50 - 59	12	27.3%
60 - 69	9	20.5%
70 - 79	8	18.2%
Missing	3	6.8%
Total	44	100%

Table 7

Frequency Distribution by Stage of Breast Cancer

Stage	Frequency	Percent
I	18	40.9%
II	9	20.5%
III	3	6.8%
IV	8	18.2%
Missing	6	13.6%
Total	44	100%

Table 8

Frequency Distribution by Family History of Breast Cancer

Family History	Frequency	Percent
Mother	6	13.6%
Sister	4	9.1%
Grandmother	3	6.8%
Other	9	20.5%
No	20	45.5%
Missing	2	4.6%
Total	44	100%

Table 9

Frequency Distribution by Age at Menarche

Age	Frequency	Percent
9	2	4.6%
10	3	6.8%
11	5	11.4%
12	8	18.2%
13	14	31.8%
14	8	18.2%
15	2	4.6%
16	1	2.3%
Missing	1	2.3%
Total	44	100%

Table 10

Frequency Distribution by Age at Menopause

Age Range	Frequency	Percent
36 - 40	5	11.4%
41 - 45	10	22.7%
46 - 50	8	18.2%
51 - 55	4	9.1%
56 - 60	3	6.8%
Pre	9	20.5%
Missing	5	11.4%
Total	44	100%

Table 11

Frequency Distribution by Age at First Pregnancy

<u>Age Range</u>	<u>Frequency</u>	<u>Percent</u>
16 - 20	12	27.3%
21 - 25	17	38.6%
26 - 30	6	13.6%
31 - 35	3	6.8%
36 - 40	2	4.6%
Never	4	9.1%
Total	44	100%

Table 12

Frequency Distribution by Age at Second Pregnancy

Age Range	Frequency	Percent
16 - 20	5	11.4%
21 - 25	7	15.9%
26 - 30	13	29.6%
31 - 35	4	9.1%
36 - 40	2	4.6%
Never	4	9.1%
No Second	9	20.5%
Total	44	100%

Table 13

Frequency Distribution by Age at Third Pregnancy

<u>Age Range</u>	<u>Frequency</u>	<u>Percent</u>
20 - 24	4	9.1%
25 - 29	8	18.2%
30 - 34	5	11.4%
Never	4	9.1%
No Third	23	52.3%
Total	44	100%

Table 14

Frequency Distribution by Age at Fourth Pregnancy

<u>Age Range</u>	<u>Frequency</u>	<u>Percent</u>
24 - 29	6	13.6%
30 - 35	5	11.4%
36 - 41	1	2.3%
> 42	1	2.3%
Never	4	9.1%
No Fourth	27	61.4%
Total	44	100%

Table 15

Frequency Distribution by Age at Fifth Pregnancy

<u>Age Range</u>	<u>Frequency</u>	<u>Percent</u>
28 - 30	2	4.6%
31 - 33	1	4.3%
34 - 36	1	2.3%
Never	4	9.1%
No Fifth	36	81.8%
Total	44	100%

Table 16

Frequency Distribution by Outcome of First Pregnancy

Outcome	Frequency	Percent
Full term	27	61.4%
Miscarriage	6	13.6%
Premature	5	11.4%
Abortions	2	4.5%
Never	4	9.1%
Total	44	100%

Table 17

Frequency Distribution by Outcome of Second Pregnancy

Outcome	Frequency	Percent
Full term	30	68.2%
Miscarriage	2	4.6%
Premature	1	2.3%
Abortions	2	4.6%
Never	4	9.1%
No Second	5	11.4%
Total	44	100%

Table 18

Frequency Distribution by Outcome of Third Pregnancy

Outcome	Frequency	Percent
Full term	13	29.5%
Miscarriage	3	6.8%
Premature	2	4.6%
Abortions	0	0.0%
Never	4	9.1%
No Third	22	50.0%
Total	44	100%

Table 19

Frequency Distribution by Outcome of Fourth Pregnancy

Outcome	Frequency	Percent
Full term	10	22.7%
Miscarriage	1	2.3%
Premature	1	2.3%
Abortions	3	6.8%
Never	4	9.1%
No Third	25	56.8%
Total	44	100%

Table 20

Frequency Distribution by Outcome of Fifth Pregnancy

Outcome	Frequency	Percent
Full term	3	6.8%
Miscarriage	1	2.3%
Premature	0	0.0%
Abortions	0	0.0%
Never	4	9.1%
No Third	36	81.8%
Total	44	100%

Table 21

Frequency Distribution of Number Delivered during

Pregnancy

Pregnancy	Single	Twins
First	32	0
Second	29	1
Third	14	1
Fourth	11	0
Fifth	3	0

Table 22

Frequency Distribution of Breast Feeding

Pregnancy	Yes	No	Never
First	16 (36.4 %)	24 (54.6 %)	4 (9.1 %)
Second	12 (27.3 %)	23 (52.3 %)	9 (20.5 %)
Third	4 (9.1 %)	14 (31.8 %)	26 (59.1 %)
Fourth	4 (9.1 %)	11 (25.0 %)	29 (65.9 %)
Fifth	1 (2.3 %)	3 (6.8 %)	40 (90.9 %)

Table 23

Frequency Distribution of Breast Feeding Demand vs Scheduled

Pregnancy	Demand	Scheduled	Never
First	12 (27.3 %)	4 (9.1 %)	28 (63.6 %)
Second	5 (11.4 %)	4 (9.1 %)	35 (79.6 %)
Third	2 (4.6 %)	2 (4.6 %)	40 (90.9 %)
Fourth	2 (4.6 %)	2 (4.6 %)	40 (90.9 %)
Fifth	1 (2.3 %)	0 (0.0 %)	43 (97.7 %)

Table 24

Frequency Distribution by Number of Breast Feedings given each
day following the First Pregnancy

<u>Range</u>	<u>Frequency</u>
3	1
4	3
5	2
6	1
7	1
8	2
9	0
10	1

Table 25

Frequency Distribution by Number of Breast Feedings given each
day following the Second Pregnancy

<u>Range</u>	<u>Frequency</u>
4	3
5	1
6	0
7	2
8	1

Table 26

Frequency Distribution by Number of Breast Feedings given each
day following the Third Pregnancy

<u>Range</u>	<u>Frequency</u>
4	1
5	1

Table 27

Frequency Distribution by Number of Breast Feedings given each
day following the Fourth Pregnancy

<u>Range</u>	<u>Frequency</u>
4	2
5	0
6	0
7	0
8	1

Table 28

Frequency Distribution by Number of Breast Feedings given each
day following the Fifth Pregnancy

Range	Frequency
6	1

Table 29

Frequency Distribution by Number of Weeks Breast Fed

following the First Pregnancy N = 15

Weeks	Frequency
4	1
6	2
8	2
9	1
12	1
24	2
28	1
36	1
40	2
56	1
76	1

Table 30

Frequency Distribution by Number of Weeks Breast Fed following
the Second Pregnancy

<u>Weeks</u>	<u>Frequency</u>
2	3
8	2
12	1
16	2
24	1
36	1
48	1
76	1

Table 31

Frequency Distribution by Number of Weeks Breast Fed following
the Third Pregnancy

<u>Weeks</u>	<u>Frequency</u>
8	1
24	1
40	1

Table 32

Frequency Distribution by Number of Weeks Breast Fed following
the Fourth Pregnancy

<u>Weeks</u>	<u>Frequency</u>
8	1
16	1
24	2

Table 33

**Frequency Distribution by Number of Weeks Breast Fed following
the Fifth Pregnancy**

Weeks	Frequency
96	1

Table 34

Frequency Distribution of Adequate Milk Supply while Breast

Feeding

Pregnancy	N	Adequate	Not Adequate
First	16	9 (56.3 %)	7 (43.7 %)
Second	12	6 (50.0 %)	6 (50.0 %)
Third	4	4 (100 %)	0 (0.0 %)
Fourth	4	3 (75.0 %)	0 (0.0 %)
Fifth	1	1 (100 %)	0 (0.0 %)

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Table 35

Frequency Distribution of Supplementation following the First

Pregnancy

<u>Weeks</u>	<u>Frequency</u>
1 - 4	4
5 - 8	4
9 - 12	3
13 - 16	1
17 - 20	0
21 - 24	2
52	1

Table 36

Frequency Distribution of Supplementation following the Second
Pregnancy

<u>Weeks</u>	<u>Frequency</u>
1 - 4	3
5 - 8	3
9 - 12	2
13 - 16	1
17 - 20	0
21 - 24	0
25 - 28	1
52	1

Table 37

Frequency Distribution of Supplementation following the Third

Pregnancy

<u>Weeks</u>	<u>Frequency</u>
6	1
8	1
40	1

Table 38

Frequency Distribution of Supplementation following the Fourth
Pregnancy

Weeks	Frequency
6	2
8	1
16	1

Table 39

Frequency Distribution of Supplementaion following the Fifth

Pregnancy

Weeks	Frequency
24	1

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Table 40

Frequency Distribution of Ability to Empty Milk from each Breast

<u>Pregnancy</u>	<u>Relief</u>	<u>No Relief</u>	<u>Never or Missing</u>
First	10 (22.7 %)	4 (9.1 %)	30 (68.2 %)
Second	10 (22.7 %)	1 (2.3 %)	33 (75.0 %)
Third	4 (9.1 %)	0 (0.0 %)	40 (90.9 %)
Fourth	4 (6.8 %)	0 (0.0 %)	40 (90.9 %)
Fifth	1 (2.3 %)	0 (0.0 %)	43 (97.7 %)

Table 41

Frequency Distribution by Method used to Stop Milk Production

	<u>Pregnancy</u>	<u>Nothing</u>	<u>Medication</u>	<u>Other</u>	<u>Never</u>
First	14	(31.8 %)	1 (2.3 %)	1 (2.3 %)	28 (63.6 %)
Second	9	(20.5 %)	2 (4.6 %)	0 (0.0 %)	33 (75.0 %)
Third	3	(6.8 %)	1 (2.3 %)	0 (0.0 %)	40 (90.9 %)
Fourth	4	(9.1 %)	0 (0.0 %)	0 (0.0 %)	40 (90.9 %)
Fifth	1	(2.3 %)	0 (0.0 %)	0 (0.0 %)	43 (97. 7 %)

Table 42

Frequency Distribution of Problems by Pregnancy

Problems	First	Second	Third	Fourth	Fifth
Nipple Soreness	7	4	1	1	1
Lack of Milk	3	2	1	0	0
Breast Pain	2	2	1	1	1
Lack of Time	1	2	0	0	0
Returned to Work	1	1	0	0	0
Engorgement	0	1	0	0	1
Abscess	0	1	0	0	0
Mastitis	0	0	1	0	0

Table 43

Fisher's Exact Test of Differences in Women according to

Inadequate Milk Supply by Stage of Breast Cancer

	Initial Stage	Advanced Stage	X2	Significance
Inadequate				
Yes	3	4	0.79	0.56
No	15	16		

p = < .05

Table 44

Chi-Square Test of Differences in Women according to described problems during Lactation by Stage of Breast Cancer

	Initial Stage	Advanced Stage	X2	Significance
Problems				
Yes	4	7	0.75	0.39
No	14	13		

$p = < .05$

Table 45

Frequency Distribution by Stages of Breast Cancer and

Adequacy of Milk Supply

	Initial	Advanced	Total
Adequate	21 (76.7 %)	10 (37.0 %)	31 (100 %)
Inadequate	6 (85.7 %)	1 (9.1 %)	7 (100 %)
Total	27 (71.1 %)	11 (28.9 %)	38 (100 %)

Table 46

Frequency Distribution of Nevada Women, in 1995, by Age

Range

<u>Age Range</u>	<u>Frequency</u>	<u>Percent</u>
25 - 34	21	9.1%
35 - 44	103	18.2%
45 - 54	202	20.5%
55 - 64	213	20.5%
65 - 74	240	25.0%
75 - 84	110	
85 - 94	20	
95 - 104	2	6.8%
Total	911	100%

Table 47

Frequency Distribution of Nevada Women, in 1995, by Race

Race	Frequency	Percent
Caucasian	845	92.8%
African-American	39	4.3%
Asian	14	1.5%
Other	7	0.8%
Indian	3	0.3%
Unknown	3	0.3%
Total	911	100%

Table 48

Frequency Distribution of Nevada Women, in 1995, by Stage of

Breast Cancer

Stage	Frequency	Percent
I	264	29.0%
II	476	52.3%
III	92	10.1%
IV	47	5.2%
Unknown	32	3.4%
Total	911	100%

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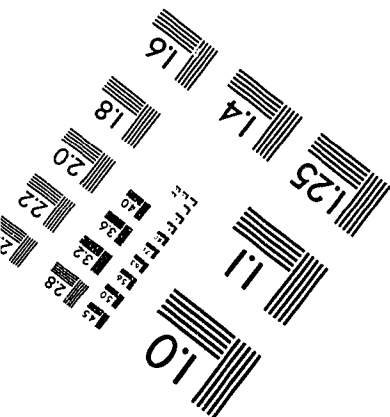
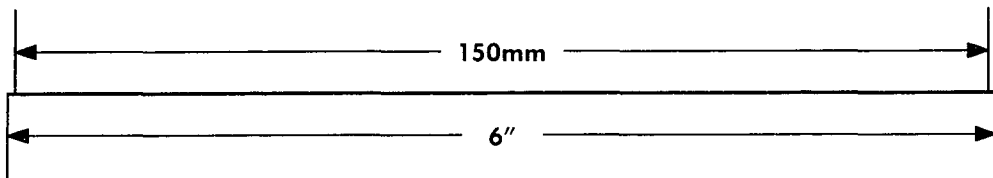
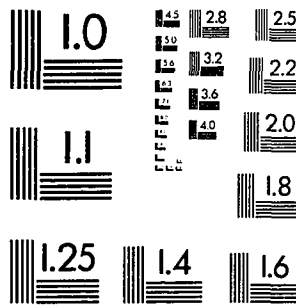
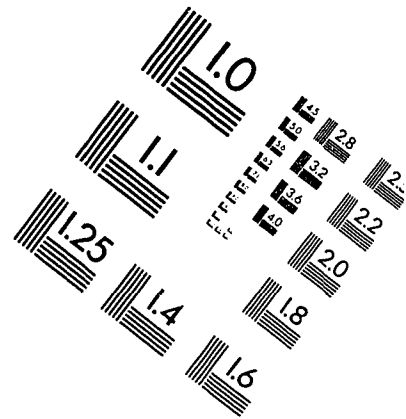
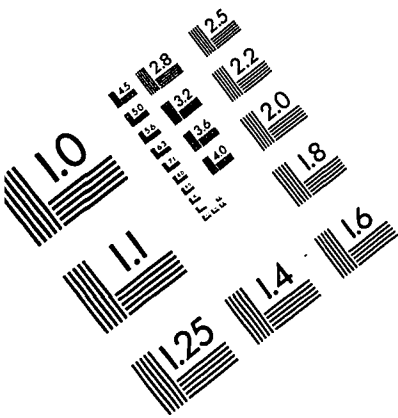
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