

**SOCIAL & ENVIRONMENTAL VARIABLES RELATED
TO BREAST SWELLINGS AMONG EGYPTIAN WOMEN
(DIAGNOSTIC STUDY USING MAMMOGRAPHY)**

Submitted By

Ghada Khamis Ramadan Selim

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Master of (Radio Diagnosis), Faculty of Medicine, Ain
Shams University, 1999

A thesis submitted in Partial Fulfillment
Of
The Requirement for the Doctor of Philosophy Degree
In
Environmental Science

Department of Environmental Medical Science
Institute of Environmental Studies and Research
Ain Shams University

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APPROVAL SHEET

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ABSTRACT

The Aim of the Study is to assess the role of mammography in detection of any neoplastic changes (as early as possible) that might affect the women breast that could be ascribed to environmental and social risk exposure.

Subjects and methods: it is a hospital based cross sectional study that include 150 women, 100 of them had neoplastic changes in the breast (by mammography) and the other 50 women had no neoplastic changes in the breast (by mammography). These women were more than 18 years, not previously treated with hormones or radiation therapy, have no family history for the disease, not lactating and the lesions not due to trauma. After proper constant all women were submitted to clinical examination, after that all women are submitted to mammography examination, then all completed a questionnaire to investigate about, age, height, weight, marital status, educational level, occupation, age of menarche, period regularity, age of menopause, age of marriage, sexual relationship, age at delivery of first and last child number of children, lactation, contraception, wearing habits, eating habits, special habits, work, physical activities, chemical exposure, home characteristics, home appliances, monthly income and husband characteristics.

This study revealed that, there was significant increase in women that had neoplastic changes in the breast as regard weight, BMI, first baby and last age, wearing tight and synthetic bra, long duration of exposure to problems in work and to hazardous substances, smoking exposure, use of contraception, kuhl usage, long term use of medication, increase of crowding index, Geer paint and tiles at home and presence of TV at bedroom, in comparison to women that had no neoplastic changes in breast.

Also the study revealed that, there was significant decrease in women that had neoplastic changes in the breast as regard age of menarche, exclusive breast feeding, decrease number of children, age of weaning in comparison to women that had no neoplastic changes.

Also revealed that, there was no significant difference between women that had neoplastic changes in the breast and the women that had no neoplastic changes in the breast as regard age, height marital status, occupation, educational level, age of menopause or age of marriage,

period regularity, sexual relationship, type and duration of contraception, wearing bra, type of work, working hours, shifts in work, problems in work or type of hazardous substances, smoking type, eating habits, physical activities, use of cosmetic or perfumes and hair dyes, type of medications, radiological exposure, breast self examination, home size, floor number, type of home, ventilation type, presence of home appliances expect TV, monthly income or husband characters. So subsequent controlled studies are needed to validate each factor separately.

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List of Abbreviations

AEC	: Automatic exposure control
AHH	: Aryl hydrocarbon hydroxylase
AJCC	: American Joint Commission on Cancer
ASCO	: American Society of Clinical Oncology
BC	: Before Christianity
BCSC	: Breast Cancer Surveillance Consortium
BI-RADS	: Breast Imaging Reporting and Data System
BMI	: Body mass index
BRCA	: Breast cancer susceptibility gene
BSE	: Breast self-examination
CA	: Cancer antigen
cAMP	: cyclic adenosine monophosphate
CAT	: Computed Axial Tomography
CCC	: Columbia Clinical Classification
CI	: Confidence interval
DCIS	: Ductal carcinoma in situ
DMIST	: The Digital Mammography Imaging Screening Trial
ER	: Estrogen receptor
FDA	: Food and Drug Administration
FDG	: Fluorodeoxyglucose
FNAB	: Fine-needle aspiration biopsy
FNAC	: Fine Needle Aspiration Cytology
HER2	: Human epidermal growth factor receptor 2
HR	: Hazard ratio
IARC	: The International Agency for Research on Cancer
IDC	: Invasive ductal carcinoma
ILC	: Invasive lobular carcinoma
kV(p)	: Low peak kilovolt
LAN	: Light at night

List of Abbreviations (*Cont...*)

LCIS	: Lobular carcinoma in situ
MRI	: Magnetic resonance imaging
MWS	: Million Women Study
NHSC	: Nurses Health Study Cohort
NST	: No special type
ORs	: Odds ratios
PAH	: Polycyclic aromatic hydrocarbon
Pb	: Lead
PET	: Positron emission tomography
PgR	: progesterone receptors
PNL	: Posterior nipple line
PSA	: Prostatic specific antigen
QALY	: Quality-adjusted life years
RCTs	: Randomized control trials
ROC	: Receiver operator characteristic
RR	: Relative risk
SEER	: Surveillance, Epidemiology, and End Results
SLN	: Sentinel lymph node
US	: Ultrasound
USPSTF	: U.S. Preventive Services Task Force
VEGF	: Vascular Endothelial Growth Factor
WHI	: Women health initiative

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Introduction

Breast cancer is one of the oldest known forms of cancer tumors. Our oldest description of cancer (although term cancer was not used) was discovered in Egypt and dates back to approximately 1600 BC. The Edwin Smith Papyrus, or writing describes 8 cases of tumors or ulcers of the breast that were treated by cauterization, with a tool called "the fire drill" the writing says about the disease. "There is no treatment" (*American Cancer Society, 2006*).

Breast cancer refers to cancer originating from breast tissue. With best treatment and dependent on staging, 10 years disease free survival varies from 98% to 10%. Worldwide, breast cancer comprise 10.4% of all cancer incidence among women, making it the second most common type (after lung cancer) and the fifth most common causes of cancer death (*World Cancer Report, 2003*).

In 2004 breast cancer caused 519.000 deaths worldwide (7% of cancer death; almost of 1% of all deaths. The cause of breast cancer is unknown, but research shows that certain risk factors associated with the disease. About 90% of women who develop breast cancer don't have a family history of the disease. So, it's generally believed that the environment plays some role in the development of breast cancer (*Newman and Moorman, 2005*).

Many risk factors play an important role in breast cancer development, dietary customs as incidence increase with high fat diet and much decrease by high consumption of vegetables and fruits. Also, child

bearing reduces risk with greater protection for early first births and a large number of births. Breast feeding is thought to have a protective effect. Electromagnetic fields and artificial light at night have been suggested to increase risk for breast cancer by decreasing nocturnal melatonin secretion. Occupational exposures such as exposure to DAT PCBs are structurally similar to endogenous estrogens. Also, exposures to radiation as the breast tissues are most sensitive to the effect of radiation. Physical activity is associated with reduced risk (*Freudenheim, 2004*).

Breast cancer screening refers to testing otherwise healthy women for breast cancer in an attempt to achieve an earlier diagnosis. The assumption is that early detection will improve outcomes. Mammographic screening for breast cancer to examine the breast for any uncharacteristic masses or lumps, it is found that mammograms reduce mortality from breast cancer by 15 percent (*Gotzsche and Nielsen, 2009*).

Aim of the work

To assess the role of mammography in detection of any neoplastic changes (as early as possible) that might affect the women breast that could be ascribed to environmental and social risk exposure.