Early Detection of Breast Cancer among Females at Fakous District, Sharqia Governorate, Egypt

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Abstract: Background: Breast cancer is the most important cancer, with women in an increasing numbers in incidence developing countries. It is by far the commonest cancer among Egyptian women and represents 37% of all female cancers. Objectives: Early detection of breast cancer, and determining the most frequent barriers of delay in breast cancer diagnosis among females at Fakous district, Sharqia Governorate, in addition to identification of the risk factors and prevalence of breast cancer in the year 2010. Subjects & Methods: Community based survey study at Fakous district, Sharqia Governorate for 6 months period (from 1 January 2010 –to 30 June 2010). A multistage cluster random sampling was adopted for this work on a sample of 390 females. The study tools included :a- a questionnaire which was designed and pretested in pilot testing before the study. It was prepared to ask women about some socio-demographic characteristics, and risk factors of breast cancer. In addition to any suspected symptoms of breast cancer as lump, pain or tenderness, or nipple discharge barriers of delay in breast cancer diagnosis. b-Weight and height were measured to calculate Body mass index (BMI). c-Clinical Breast examination. d-Referral of the suspected cases to Fakous Cancer Center for doing mammogram, ultrasound, and fine needle biopsy to ensure the diagnosis. Results: The most frequent interviewed age groups were 30-39 ys, 20-29 ys, and 40-49 years (27.9%, 24.4%, and 22.1% respectively) with mean age (38.7) years and median age 36.5 years. About 52% of the studied females had early menarche (<12 years), and Null parity constituted 4.1% of the studied sample. The age of women at 1st full term pregnancy (at ≥35years) represented more than one quarter (26.6%) of the studied females and no breast feeding which constituted 59% among the multipara women. More than 54% of the studied sample was overweight and obese with positive family history of breast cancer constituted 3.5%. About 86.7% of the menopausal women had delayed menopause (≥50 years). Illiteracy took the upper hand among the studied females (34.6%). 23.1% of the studied sample was oral contraceptive users. After doing clinical breast examination (CBE) of women and mammography; 23 cases were presented by breast lesions (5.9%). 18 cases were diagnosed as benign breast lesions (4.6%), and 5 cases were confirmed as breast cancer 'BC' (1.3%) by ultrasonography & fine needle aspiration biopsy. Histopathological reports for the discovered BC cases, revealed that 2 females presented with infiltrating duct carcinoma (IDC) and 2 cases presented with ILC, 3 cases (60%) had lymph node metastasis. Mean tumor size was 3.9 cm. By reviewing the BC stages among the females with breast cancer, it was found that 2 cases were in stage II (40%), 2 cases were in stage III (40%) . It was found that lack of doing mammography, annual CBE, & monthly BSE were the main limitations for early diagnosis of breast cancer. In addition to illiteracy, reluctance in seeking medical care, far distance from health services, negligence of the complaint, and fear from BC diagnosis constituted the most frequent barriers for early detection of breast cancer among the studied females. Recommendations: taking any women's breast complaints seriously, Proper training programs for women about monthly breast self examination for early detection of any breast lesion. Health education programs on a wide scale on the studied places to improve not only awareness, or knowledge but also changing the faulty attitudes & practices about breast cancer especially among illiterate women. In addition to training programs for health care providers at primary health care units about the importance of annual CBE in early detection of BC cases especially in low resources settings.

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Key words: Breast cancer, early detection, clinical breast examination, prevalence, risk factors, barriers for early diagnosis.

1. Introduction:

Breast cancer represents 10% of all cancers diagnosed worldwide annually and constituted 22% of all new cancers in women in 2008, making it by far the most common cancer in women. The rate of increasing incidence is higher in developing countries [(1)].

In the Eastern Mediterranean region, breast cancer is by far the most common cancer even when considering men and women together, with 2 time

more cases (N=57 000 new cases per year) than lung cancer (N=25 000) or bladder cancer (N=25 500)[2].

More than 60-80% of breast cancers present at advanced stage. Treatment of advanced cancer is more difficult and costly. In Egypt, Breast cancer can cost up to LE 250,000 to cure, and a mastectomy (removal of the breast) is sometimes the only solution. This can be very difficult for the patient to deal with. If the disease is detected at an early stage, however, the surgery won't cost more than LE 15,000 and offers a greater chance of removing the tumor without the trauma of a mastectomy[3].

The survival rate from breast cancer in developing countries is generally poorer than in developed countries, primarily as a result of delayed diagnosis of cases. Breast cancer is a dangerous disease but it could be very simple [to treat] if discovered in an early stage. The only way to decrease mortality and morbidity from breast cancer is to detect the disease before the patient presents with symptoms[4].

Early detection is the identification of breast cancer at a stage in its natural history where the impact of therapy has the greatest chance of producing a cure. It may include programmes by which breast cancer that is causing symptoms can be diagnosed at an earlier stage [5].

From the available cancer control measures for breast cancer, primary prevention, screening and improved therapy, only screening has the potential for a rapid and major effect though this will be restricted to a reduction in mortality rather than a reduction in incidence. From the available screening tests, mammography, physical examination of the breasts and breast self-examination, only mammography is established as effective in reducing mortality from breast cancer[6].

However, mammography requires expensive technology, highly trained radiologists and radiographers, and is out of reach for most developing countries [7,8]. Further, in women under age 50 there is little evidence for a benefit, and if a benefit exists, it is less than in older women [6].

Preliminary results about down staging programs based on clinical breast examination (CBE), breast self examination (BSE), public awareness campaigns and training of primary heath staff have shown very encouraging results in different low-income countries settings, for example urban Egypt [5] and Borneo Island [9].

Most doctors feel that tests for finding breast cancer early save many thousands of lives each year. Diagnosis of breast cancer during the early stages of disease has been positively linked to a decrease in the mortality and morbidity of the illness. A positive correlation also exists between breast cancer awareness & screening practice [10].

Data from the regional population-based cancer registry at Gharbia governorate 2000-2002 (Egypt) as well as data from the National Cancer Institute hospital based registry (Cairo) show that breast cancer is the first cancer in Egypt (19% of all cases, male and female considered together). It is by far the commonest cancer among Egyptian women and represents 37% of all female cancers. Incidence in term of crude Incidence and age standardized rate are relatively high for a low income country (37.6 / 100,000 and 49.6 / 100 000 respectively).

Objectives of the study: were to promote early detection of breast cancer among females at Fakous District, Sharqia Governorate, 2010 and to identify some risk factors and the prevalence of breast cancer among the studied females. In addition to determining the most frequent barriers of delay in breast cancer diagnosis.

Research question: How is cancer breast can be detected early at Fakous district, Sharqia Governorate, 2010?

2. Material and Methods:

Research design:

A large community based survey study at Fakous district, Sharqia Governorate. The data were collected twice weekly for 6 months (from 1 January 2010 –to 30 June 2010). Fakous district was selected because it has Fakous Cancer Center to be easily available and accessible to females who will be referred for further investigation when needed.

Sampling technique:

A multistage cluster random sampling was adopted for this work. Fakous District was divided into urban part (2 cities; Fakous and Elsalhia cities) and rural part (48 villages & 728 Ezbas); one city (Fakous city), 3 villages and 5 Ezbas were selected randomly as the 1st sampling stage. The selected city was divided into four sectors then one sector was selected randomly (2nd stage sampling of urban part). On the other hand, the selected villages & Ezbas were divided into main streets; so three of these streets were randomly selected as the 2nd sampling stage of rural place. The study sample included all the houses within the selected streets. Subjects were selected from these households according to the certain inclusion criteria: all females who had menarche and permanently residing at the studied place. Exclusion criteria: females who had previous history of breast cancer, surgical or chemotherapeutic interventions and those who refused to participate in this work.

The sample size was calculated by EPI Info Version 6.04 with expected frequency of breast

cancer among females of 35%, population size of 570340 (Central Agency for Public Mobilization & Statistics CAPMAS 2006), at 95% level of confidence (α error = 5%), using the equation for a single proportion. Accordingly, the estimated sample size is 349 females. After adjustment for a dropout rate of 10%, the sample size was increased to 390 females.

The research study tools:

A- a questionnaire was designed and pretested in a pilot study before use. It was prepared to ask women about some socio-demographic characteristics, and risk factors of breast cancer (BC) as; age, residence (urban, village or Ezba), education level, marital status, age of menarche, age of 1st full term pregnancy, number of children, history of breast feeding, age of menopause if present, family history of breast cancer, and any history of breast complaint. In addition to any suspected symptoms of breast cancer as lump, pain, tenderness, or nipple discharge barriers of delay in breast cancer diagnosis.

B- Weight and height were measured by a validated weighing scale & a stadiometer. Body mass index (BMI) was calculated for every interviewed female using the formula [weight (kg)/height (meters)^2] [7].

C- Clinical Breast Examination (CBE) was done by the research team to all the studied females.

D- Referral of the suspected cases by CBE to Fakous Cancer Center for doing mammogram, ultrasound, and fine needle biopsy to ensure the diagnosis.

Ethical issues were taken into consideration as free and informed consent from each woman before the beginning of the study and assuring them for keeping the integrity and security of data. Approval from the related health authorities at the research place was also taken.

Data manipulation:

Data entry was carried out by using SPSS software version 13, that was proceeded by revision, coding, & checking of the data in order to minimize errors during its entry. Data analysis; tabulation, and graphic presentations as well as simple statistical analysis were carried out. The results of the pilot study were not included in the analysis. Interpretation and commenting were done, in addition to discussion of the findings.

3. Results:

As regards to some socio-demographic characteristics and risk factors of BC, the most frequent interviewed age groups were 30-39 ys, 20-29 ys, and 40-49 years (27.9%, 24.4%, and 22.1% respectively) with mean age (38.7) years and median age of 36.5 years. The most frequent risk factors of breast cancer in a descending manner were; delayed menopause, no breast feeding among multipara women, overweight& obesity, early menarche, 1st full term pregnancy at ≥35years, oral contraceptive users, and positive family history of breast cancer. Illiteracy took the upper hand among the studied females (34.6%) as shown in (table 1).

After doing clinical breast examination (CBE), mammography, and ultrasonography for the studied women; the prevalence rate of breast lesions cases =23⁄390 X 100= 5.9%. 18 cases were confirmed by fine needle aspiration biopsy as inflammatory and benign breast lesions (18⁄390X100=4.6%), however 5 cases were confirmed as breast cancer (5⁄390X100=1.3%) as illustrated in (figure 1).

After doing histopathological reports for the discovered BC cases, it was noticed that 2females presented with infiltrating duct carcinoma (IDC), 2 cases ILC (Infiltrating lobular carcinoma), and 1 case with DCIS (Intraductal carcinoma in situ). Mean tumor size was 3.9 cm, however, 2 cases were presented withT2, another 2 cases were presented with T3 tumor sizes and the last case was T1. 3 cases of BC had lymph node metastasis (table2).

By reviewing the BC stages among the females discovered with breast cancer, it was found that 2 cases were in stage II, 2 cases were in stage III, followed by 1 case was in stage I as in (table3).

By analyzing the social, psychological and economical barriers to early diagnosis and treatment of breast cancer, it was found that the most important determinants of late presentation were lack of doing mammography (99.5%), not practicing regular breast self examination (BSE) (97.4%), not doing regular clinical breast examination (95.6%), illiteracy (65.9%), reluctance in seeking medical care (56.9%), far distance from health services (56.2%), negligence of the complaints (47.4%)from the health care providers, and fear from BC diagnosis (44.1%) constituted the most frequent barriers for early detection of breast cancer among the studied females (table 4).

4. Discussions:

Breast cancer is an urgent public health problem in high-resource regions and is becoming an increasingly urgent problem in low resource regions, where incidence rates have been increasing by up to 5% per year [12,6].

Table (1) Percentage distribution of some breast cancer risk factors among the interviewed females during survey (No=390).

Risk Factors	Number	Percentage (%)
• Mean Age (years) ± SD (38.7 ± 12.0) • Median age: 36.5 years		
• Age groups: ▪ <20 years ▪ 20-29 ys ▪ 30-39 ys ▪ 40-49 ys ▪ 50-59ys ▪ ≥ 60 ys	 5 95 109 86 50 45	 1.3 24.4 27.9 22.1 12.8 11.5
• Early menarche (<12 years)	203	52.1
• Age at 1st full term pregnancy: At ≥35 years	104	26.6
• No breast feeding	230	59.0
• Oral contraceptives	90	23.1
• Null parity	16	4.1
• Positive family history of breast cancer	14	3.5
• Delayed menopause (≥50 years).	338	86.7
• Illiteracy	135	34.6
• Overweight and obesity	213	54.6

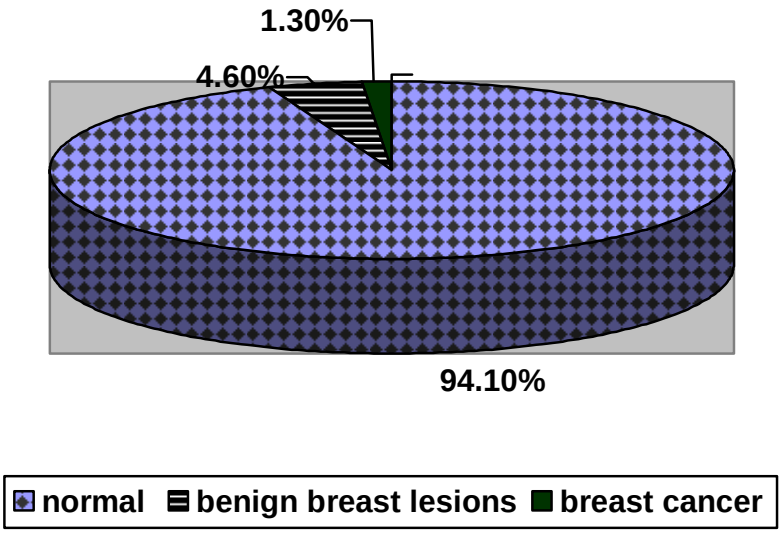

Figure (1) Pie diagram; The results of breast lesions among the examined females during house to house survey (No=390).

Table (2) Pathological type of the tumor, its size & the involved lymph node enlargement among the studied females with breast cancer (No=5).

Variable	Number	Percentage (%)
Pathological Type*:		
• IDC	2	40.0
• ILC	2	40.0
DCIS	1	20.0
Tumor size:**		
Mean tumor size ± SD	3.9 ± 1.1	
• T1	1	20.0
• T2	2	40.0
• T3	2	40.0
• T4	0	0.0
Lymph Node:		
• 1-3	**2**	40.0
• 4-9	**1**	20.0
• ≥ 10	**0**	0.0
N0 (no palpable axillary lymph nodes)	**2**	40.0

* **Pathological type:** IDC; Infiltrating duct carcinoma. ILC; Infiltrating lobular carcinoma. DCIS; Intraductal carcinoma in situ[(24)].

Tumor size according to international TNM staging: T1; 2cm diameter or less. T2; 2-5 cm diameter. T3; Tumor larger than 5 cm. T4; Any size with direct extension to chest wall or to skin [(24)].

Table (3) Percentage distribution of tumor stage among the studied females with breast cancer (no=5).

Tumor stage *	Number	Percentage (%)
Stage I	1	20.0
Stage II	2	40.0
Stage III	2	40.0
Stage IV	0	0.0
Total	**5**	**100.0**

***Stage 0** Ductal carcinoma in situ or lobular carcinoma in situ.

Stage I Invasive carcinoma 2 cm or less in size (including carcinoma in situ with micro invasion) without nodal involvement and no distance metastasis .

Stage II Invasive carcinoma < 5 cm without nodal involvement but with movable axillary nodes and no distance metastasis.

Stage III Invasive carcinoma < 5 cm in size with nodal involvement and fixed axillary nodes.

Stage IV Any form of breast cancer with distance metastasis[(24)].

Table (4) social, psychological, or economical barriers about delay in early detection of breast cancer among the studied females (No=390).

Barrier	Number	Percentage (%)
• Not doing regular mammogram	388	99.5
• Not practice monthly breast self examination	380	97.4
• Not doing annual clinical breast examination	373	95.6
• Illiteracy	257	65.9
• Reluctance in seeking medical advice	222	56.9
• Far distance from health services	219	56.2
• Negligence of the patient complaints	185	47.4
• Fear from BC diagnosis	172	44.1
• Patient poverty & High cost	109	27.9
• Lack of time	92	23.6

A key part of the fight against breast cancer is early detection, if treated in time the patient's life can be saved. Exploration of the most important risk factors of breast cancer, its prevalence, the tumor size and its stage at presentation are essential to all women.

This work described that there were high percentages of multiple risk factors for breast cancer among the interviewed women during survey as (early menarche, delayed menopause, late age at first birth, little or no breast feeding, overweight, oral contraceptive users & obesity, in addition to family history of breast cancer). These findings agreed with that reported by Albrektsen et al[13], & Lipworth et al[14] who explored the interaction between these risk factors and breast cancer.

Illiteracy constituted important precipitating factors of lack of awareness and knowledge of these women about breast cancer especially if complaining from breast conditions.

One in eight women and one in four women develop breast cancer in the US and the UK respectively, and Egypt follows closely behind the UK's prevalence rate [15].

Prevalence of breast cancer at this work was 1.3%. Although this prevalence was high but still underestimated as lack of trained personnel discover to this fatal disease. Boulos et al[3] revealed that about eight breast cancers per 1,000 women were found after the screening program in the first year, and when half the women were contacted again in the second year, two cancers per 1000 women were detected.

The incidence of breast cancer is lower in developing countries than in developed countries, but the stage at presentation is much later. Unfortunately, it was noticed that 4 cases (80%) of the discovered cases with breast cancer had tumor sizes T2 & T3 with lymph node metastasis, which indicated late diagnosis and denial of the women to be discovered early that would be reflected on their survival rate later on. In addition to the lack of mass screening programs in these studied areas.

But our results may differ with that of Maalej *et al.* 2008 (Tunisia)[17], CH Yip 1996 (Malaysia)[18], and university hospital, kuala lumpur who reported that T2 & T4 were the frequent tumor sizes in their studies.

In many developed countries, organized mammography screening is available at the population level while developing countries lack such facilities. An ideal screening test for developing countries needs to be simple, inexpensive and effective. Mammography is far from reaching these criteria. Hence, breast self-examination and clinical breast examination (CBE) to detect any abnormalities have been envisaged as alternatives. There are indications that good clinical breast examinations by specially trained health care workers could have an important role especially in women under 50 years [16].

Stage II & stage III of the tumor were the most frequent among the studied cases with breast cancer (80%), which were consistent with that found by Ezzat et al[19] Saudi Arabia & Bedwani *et al*[20] in Alexandria. While these were different in from that reported by Cairo project (all Egypt), which revealed that stage II, IV, & III were the most frequent tumor stages.

The importance of tumor size in improving survival is increasingly evident, and recent evidence by Elkin et al[21] has shown that measuring the impact of an early detection program by stage alone would fail to observe tumor downsizing benefits within stage groups.

Considering some barriers for early detection of breast cancer among the studied females, it was found that lack of healthy practices as doing regular mammography, annual breast examination, and breast self examination were the main limitations of early diagnosis of BC. The previous limitations may be attributed to culture and traditions of the studied females and their families.

Illiteracy was another barrier which reflects their ignorance and deficient awareness or knowledge about the breast cancer.

In addition to reluctance in seeking early medical care, far distance from health services, negligence of the complaint, and fear from BC diagnosis constituted other precipitating factors for delay in diagnosis. So this would lead to high morbidities & mortalities from this terrible disease and consequently bad prognosis as described by female (it is considered a death sentence). Poor survival rates were another impact.

It is estimated that 99% of Egyptian women are unaware of the dangers of breast cancer. Because of this lack of awareness, incidents of death from breast cancer are higher in Egypt than in other parts of the world. This is exacerbated by the fact that many people will not talk about cancer, nor are women educated to perform self-breast examinations and take mammogram tests. Unfortunately only highly educated women or those who have been overseas are aware that breast cancer if caught in the early stages, can be cured. Consequently women are coming to doctors when the cancer has reached an advanced stage, necessitating aggressive treatment [22].

There is also a common misconception in Egypt that cancer is contagious, a notion that has caused the husbands of many diagnosed women to seek a divorce. If a young woman is diagnosed with

breast cancer, she is considered unmarriageable. Egyptian women do not usually come forward until the late stages of the disease, when it is often too late to assist [23].

Recommendations:

Our results recommended the need for urgent health education programs on a wide scale on the studied places to improve not only awareness, or knowledge but also changing the faulty attitudes & practices about early detection of breast cancer especially among illiterate women. Proper training of women about monthly breast self examination for early detection of any breast lesion. In addition to training programs for health care providers at primary health care units about the importance of clinical breast examination in early detection of breast cancer cases especially in low resources settings, beside taking the women's complaints seriously. "Don't worry" attitude by PHC doctors should be changed. Primary health care professionals should be encouraged to refer patients to cancer specialists whenever there is a suspicion that breast cancer may be present.

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5. References:

1. Porter P: 'Westernizing' women's risks? Breast cancer in lower-income countries. N Engl J Med 2008; 358:213–216.
2. Ferlay J, Bray F, Pisani P, Parkin DM. GLOBOCAN 2002: cancer incidence, mortality and prevalence worldwide. IARC Cancerbase no. 5, version 2.0. Lyon, France: IARC Press, 2004; avaliable at http:// www-dep.iarc.fr/.
3. Boulos S, Godallah M, Neguib S. Breast Screening in the emerging world. High prevalence of Breast Cancer in Cairo, Egypt. Breast 2005; 14(5):340-6.
4. Motawy, M.; Hattab, O.E.; Fayaz, S.; Oteifa, M.; Ali, J.; George, T.; Barghash, I.; Abuzallouf, S.; Jarallah, M.E. Multidisciplinary Approach To Breast Cancer Management in Kuwait, 1993–1998. J. Egyptian Nat. Cancer Inst. 2004, 16, 85–91.
5. WHO 2006, Guidelines for Early Detection and screening of breast cancer EMRO Technical Publications Series 30.
6. IARC Working Group on the Evaluation of Cancer-Preventive Strategies. IARC Handbooks of Cancer Prevention. Vol. 7, Breast Cancer Screening. Lyon, France: Oxford University Press, 2002.
7. Miller AB, Chamberlain J,Tsechkovski M. Self-examination in the early detection of breast cancer. A review of theevidence, with recommendations for further research. J Chronic Dis. 1985; 38(6):527-40.
8. Vahabi M. Breast cancer screening methods: a review of the evidence. Health Care Women Int. 2003 Nov;24(9):773-93.
9. Devi B, Tang TS, Corbex M. Reducing by half the percentage of late stage presentation for breast and cervix cancer over 4 years: A pilot study of clinical downstaging in Sarawak, Malaysia. 2006 in press.
10. ACS Breast Cancer Screening Guidelines Memorial Sloan-Kettering Cancer centre. 2006
11. Ogden C, Kuczmarski R, Flegal K, et al. Centers for Diseases Control and Prevention 2000 growth charts for the United States: improvements to the 1997 National Center for health Statistics version. Pediatrics.2002;109(1):45–60 [Abstract/Free Full Text].
12. -Stewart B, Kleihues PE. World cancer report. Lyon, France: IARC Press, 2003.
13. Albrektsen G, Heuch I, Hansen S, Kvale G. Breast cancer risk by age at birth, time since birth and time intervals between births: exploring interaction effects. Br J Cancer 2005;92:167-75.
14. Lipworth L, Bailey LR, Trichopoulos D. History of breast-feeding in relation to breast cancer risk: a review of the epidemiologic literature. J Natl Cancer Inst 2000;92:302-12.
15. May El Meleigy FIGHTING BREAST CANCER WITH FIBER AND DIET First Published: March 9, 2007"
16. Shapiro S. Periodic screening for breast cancer. The HIP randomized control trial. J Natl Cancer Inst Monogr ((1997)) 22:27–30.[Abstract/Free Full Text]
17. Maalej M, Hentati D, Messai T, et al: Breast cancer in Tunisia in2004: a comparative clinical and epidemiological study Bull Cancer. 2008 Feb;95(2):E5.
18. C H Yip. E H Ng: Breast Cancer – A Comparative study Between Malaysian And Singaporean Women, SINGAPOR MED J 1996;Vol 37:264-267

19. Ezzat AA, Ibrahim EM, Raja MA, Al-Sobhi S, Rostom A,Stuart RK. Locally advanced breast cancer in Saudi Arabia: high frequency of stage III in a young population. Med Oncol1999; 16:95e103.
20. Bedwani R, Abdel-Fattah M, El Shazly M, Bassili A, Zaki A, Seif HA, et al. Profile of familial breast cancer in Alexandria, Egypt. Anticancer Res 2001; 21:3011-4.
21. Elkin EB, Hudis C, Begg CB, Schrag D. The effect of changes in tumor size on breast carcinoma survival in the U.S.: 1975–1999. Cancer 2005; 104:1149–57.
22. Jemal, A, Siegel, R, Ward, E, et al. Cancer statistics, 2007. CA Cancer J Clin 2007; 57:43.
23. World Health Organization. Executive summary. In: National Cancer Control Programmes: Policies and Managerial Guidelines. Geneva. Switzerland: World Health Organization, 2002:i–xxiv.
24. Singletary, S. Eva, M.D.; FACS; James, L.; Connolly, M.D.; Breast Cancer Staging: Working With the Sixth Edition of the AJCC Cancer Staging Manual.CA Cancer J. Clin. 2006, 56, 37–47.

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