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Breast Cancer Preventive Practices of Female Employees in Mansoura University

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Abstract: Breast cancer is an important health challenge that women face and affect their safety and productivity. The aim of the study was to identify the breast cancer preventive practices of female employees in Mansoura University. The study was carried out in seventeen Faculties representing all Faculties of Mansoura University. All female employees who worked in the previously mentioned setting during the time of the study were included in the study sample. Their total number was 681 female employees. Based on the current study results, it can be concluded that, most of the female employees have poor knowledge about breast cancer regarding definition, risk factors, signs and symptoms, preventive measures, breast self examination and early detection methods of breast cancer. As for preventive practices, the majority of the studied employees were consuming saturated fat, eating large amount of carbohydrates, did not practice physical exercise and the minority of the female employees was c onsuming soy products as soybeans, tofu, soymilk or soy cheese.As regards screening methods, the majority of the studied employees did not practice breast self examination and also did not perform breast diagnostic investigations as mammogram, CT and MRI. Although the majority of the studied employees had good knowledge about breast cancer yet did not perform breast self examination, clinical breast examination and mammogram.

Key words: Prevention · Breast Cancer · Women

INTRODUCTION

Cancer is a major significant world health problem with wide geographical variation in incidence and is also becoming an important item in every country's health agenda [1]. It is the second leading cause of death in developed countries after cardiovascular diseases and is among the three leading causes of death for adult in developing countries [2, 3].

Cancer is also becoming an increasingly important factor in the global burden of disease. Worldwide, the estimated number of new cases each year is expected to rise from 10 million in 2000 to 15 million by the year 2020. Of all these new cases; 60% will occur in the less developed parts of the world [4,5]. Approximately 20 million people are alive with cancer at 2003; by 2020 there will probably be more than 30 million [6].

Breast cancer is the most common malignant tumor diagnosed in women all over the world; yet its incidence differs from one region to another. Globally, more than one million cases occurring annually. It accounts approximately 30% of all female cancer [7]. In USA, the American Cancer Society estimated that in 2012 approximately 226,870 women would be diagnosed, with 39.510 deaths. If current rates of increase remain constant, a woman born today has a 1 in 8 chance of developing breast cancer [8].

In Egypt, breast cancer ranked first among cancer affecting females and it constitutes around 29% of all female cancers [9, 10], in Jordan, it is 35.8% of all cancers and 20.6% in Saudi Arabia [11, 12]. The median age tends to be younger in the Arab countries than that of the western countries with a lmost half of the patients diagnosed below the age of 50 years [13].

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In Dakahlia Governorate, it was reported that the number of cancer patients is 522 i.e. 2.8% from the total number of cancer patients in Egypt [9]. In 2004, a report of Mansoura University Hospital showed that cancer cases were 26%, the incidence of breast cancer was 16% from total cancer patients admitted to surgical departments [14].

Women's health status has an important impact on the health of their children, family and community. In addition to the traditional roles of women as wives, mothers and primary care givers for their families, they assume an important position within the social and economical lives of their communities [15].

Breast cancer is an important health challenge that women face and affect their safety and productivity. Although the cause of breast cancer is unknown yet there are many known breast cancer risk factors can be classified into " factors that cannot be modified " and life style related factors that can be modified. The first category includes age, genetic predisposition, personal or family history of breast cancer and previous abnormal breast biopsy. The latter includes breast feeding, hormonal replacement therapy, oral contraceptive use, postmenopausal obesity, high fatty diets, physical inactivity and overweight [16].

In Fact, cancer prevention is an essential component of all cancer control plan because about 40% of all cancer deaths can be prevented [17]. It is the key to decrease mortality from the disease. There are several options aimed at preventing breast cancer such as primary prevention which includes educating women about breast cancer risk factors and influencing behavioral changes and secondary prevention that includes screening strategies aimed at early detection with a view to early intervention [18].

Early detection services are the primary weapons that could be used to fight this mortal enemy to give the women the life that they deserve and to limit the social, emotional and economical burdens that result from high prevalence of breast cancer, not only on women and their families, but also on the entire life of the community [19].

Currently, cancer screening plays a pivotal role in early detection and reducing mortality of breast cancer. American Cancer Society declared in its guidelines that the early detection of breast cancer vary depending on a woman's age.It includes monthly breast self- examinations from the age of twenty, clinical breast examinations every three years between the ages of twenty and forty years and annually thereafter and screening mammography for asymptomatic women over the age of forty, Annually [20, 21]. Moreover, the role of a low fat diet in prevention of breast cancer needs to be verified; however, there are indications that breast cancer risk is increased with consumption of food rich in fat and low in fiber. A low-fat diet might decrease the risk of breast cancers through hormonal mechanism. It has been reported that dietary fat and postmenopausal estrogen levels are directly related [22]. Fruits and vegetables are also important sources of antioxidants which may help to protect against the tissue damage linked to increased cancer risk. Antioxidants include vitamin C, vitamin E and carotenoids such as beta-carotene. Richly colored fruits and vegetables are the best sources for these nutrients. These fiber-rich foods are an essential part of a healthy diet [23]. In addition, dietary vitamin D, fish oil "omega -3 fatty acid " and calcium intake has all been shown to prevent breast cancer [24].

Recently, data on the protective effect of vitamin D against breast neoplasia have been reported, with a risk reduction of 50% in patients with plasma vitamin D levels> 50 mg/dL compared to levels < 13 mg/dL. Although further research is ongoing, proposed anti-cancer mechanisms of vitamin D include inhibition of cell proliferation, induction of apoptosis and differentiation and decreased formation of tumoral blood vessels (angiogenesis) [25]. Soy foods may be the most protective when consumed during childhood and adolescence. Eating soy in moderation during adulthood may be beneficial but avoid using soy extracts, such as genistein, in supplement form [26].

Physical exercise is one of the most important components of healthy lifestyle. The American Cancer Society recommends engaging in 45-60 minutes of physical activity at least 5 days a week. A study from Women's Initiative reported that as 1 to 2 hour per week of brisk walking reduces a woman's risk by 18 % and walking more hours a week reduces the risk a little more [27, 28].

Sleep is a natural body function. It plays a central role in everyone's life. A woman should take adequate sleep from 7-8 hours per night. It is very important for managing hormone levels and promoting long term health. During sleep the body circulates melatonin and hormones essential to overall health. A recent study reported that woman had less than 6 hours of sleep per night may be at increased risk of postmenopausal breast cancer while postmenopausal women who slept 9 hours per night or more had a 33% lower risk of breast cancer, possibly via the effect of melatonin levels [29].

Managing stress is very important to maintain healthy body and mind. There are different strategies to manage stress including needed meditation, exercise and doing relaxation technique. More research is needed to find if there is a relationship between psychological stress and the transformation of normal cells into cancerous cells. Other studies are looking at whether stress reduction can improve the immune response and possibly slow cancer progression [30].

The community health nurses have a crucial role in the prevention of breast cancer. They can play an important part in helping women protect their health. Their close contacts with women and their status as health professionals give them the opportunity to use their advanced knowledge and practice skills to educate women about cancer risk factors, the need for breast cancer screening and to encourage them to participate in screening activities for early detection and intervention. Nurses have important role in primary and secondary prevention of breast cancer. They monitor screening and treatment services. Moreover, they promote high quality care by educating and supervising both professionals and non professional care givers [31].

The aim of the study was to identify the breast cancer preventive practices of female employees in Mansoura University.

MATERIALS AND METHODS

Research Design: Cross sectional descriptive study was used to carry out this research.

Setting: The study was conducted at the seventeen Faculties representing all Faculties of El-Mansoura University such as Faculty of Medicine, Pharmacy, Nursing, Science, Education, Art, Agriculture and Commerce.

Subjects: All female employees who worked in the previously mentioned settings during the time of the study were included in the study sample. Their total number was 681 female employees.

Tool of Data Collection: In order to collect the necessary information for the study, the following tool was developed "Breast cancer preventive practices structured questionnaire"

The tool was developed by the researcher based on reviewing of recent literature. It included three parts: Part I: Socio- demographic characteristics of the female employees as age, level of education, marital status and years of work experience. Medical and surgical history, Family health history, Reproductive health history, Oncology health history for female employees, Family health history of tumors included benign or malignant tumors, Radiation exposure, previous exposure to radiation as CT, MRI or X – ray, Body mass index.

Part II included Knowledge about breast cancer preventive practices,

Part III included Preventive practices of female employees: nutritional and eating habits, sleep pattern, physical activities, stress management, breast self examination including questions about practice of breast self examination, timing of breast self examination (BSE) and performance of diagnostic breast investigation.

Methods: For execution of the study, a written official letter was obtained from the faculty of Nursing, Alexandria University and directed to Mansoura University Administration to collect the necessary data after explaining the purpose of the study. Approval was obtained to collect the data from all Faculties of

Mansoura University. The tool was developed by the researcher after thorough reviewing of recent literature, judged by 5 experts in the related fields as Community Medicine, Obstetric & Gynecological Nursing and Community Health Nursing.The required corrections & modifications were carried out.

A pilot study was carried out on a sample of [25] female employees, who were selected randomly from health centers and who were excluded from the study sample. The data obtained from the pilot study was analyzed. According to the results some questions were restated and some items were added and other was omitted. A verbal consent was obtained from every employee included in the study after explanation of the study purpose. Ethical consideration to ensure client's right was considered. During data collection the anonymity and confidentiality of response, voluntary participation and right to refuse to participate in the study was emphasized to subjects. The questionnaire was distributed to the female employees in their place of work and collected after its completion. Weight and height were taken after interview and used to estimate body mass index to assess obesity.

Statistical Analysis: Collected data were coded and transferred into special design format. The data were analyzed and tabulated using the Statistical Package for Social Science (SPSS version 11.5). The arithmetic mean and standard deviation were used as measures of central tendency and dispersion respectively for quantitative data. The chi square (χ^2) was used to test the association between two qualitative variables or to detect difference between two or more proportions. The 0.05 level was used as the cut off value for statistical significance. The calculated body mass index (BMI) was then compared with the reference value to identify overweight or obesity among female employees as following:

- Less than 18.5 kg/cm^2 (underweight), 18.5 – 24.9 kg/cm^2 (normal weight),
- 25.0 – 29.9 kg/cm^2 (overweight), 30.0 – 34.9 kg/cm^2 (obesity)

Knowledge about Scoring System: The female employees knowledge about breast cancer was calculated for each item of breast cancer as follows:

	score
• Complete correct answer provided	2
• Incomplete correct answer provided	1
• Didn't know and wrong answer provided	0

The total score of knowledge about breast cancer was 34, it was divided into the following levels: Good = more than 75% of the total score, Fair = 50 - 75 % of the total score and Poor = less than 50 % of the total score.

RESULTS

Table (1) shows the socio- demographic characteristics of the female employees. The age of the female employees ranged from 20 up to more than 50 years, with a mean age of 41.33 ±11.69 years. More than one third of the sample (37.4%) aged from 50 years and more, 23.2% aged from 20 years to less than 30 years, 21.6% aged from 30 years to less than 39 years and 17.8% aged from 40 years to less than 49 years.

Regarding the marital status, three quarters of the female employees (75.6%) were married. Concerning the years of work experience, 42.9% had 20 or more years of work experience.

Table 1: Distribution of the female employees according to their socio-demographic characteristics.

Characteristics	No. n=681	%
Age (in years)		
20-	158	23.2
30-	147	21.6
40-	121	17.8
50 +	255	37.4
X± SD	41.33 ±11.69	
Marital Status		
Married	515	75.6
Single	103	15.1
Widowed	49	7.2
Divorced	14	2.1
Years of work experience		
<10	174	25.6
10-	215	31.5
≥20	292	42.9

Table 2: Distribution of the female employees according to their health history

Health history	No. n=681	%
Medical history #		
Hypertension	168	24.7
Diabetes mellitus	183	26.9
Heart diseases	102	15.0
Thyroid disorders	100	14.7
Types of cancer	n=55	
Uterine cancer	25	45.5
Breast cancer	16	29.1
Ovarian cancer	14	25.4
Previous surgical operations	n=76	
Hysterectomy	25	32.9
Mastectomy	16	21.1
Oophorectomy	14	18.4
Thyroidectomy	12	15.8
Gastrointestinal surgery	9	11.8

More than one answer was given

Table (2) shows female employees' health history. It was observed that about one quarter of the sample (24.7%, 26.9%) had history of hypertension and diabetes mellitus respectively. Regarding the type of cancer, about half of female employees with positive history (45.5%) had history of uterine cancer, while more than one quarter of them (29.1%) had history of breast cancer and 25.4% of them had history of ovarian tumor. Concerning the previous surgical operations, the same table revealed that, one third of female employees (32.9%) had history of hysterectomy and 21.1% of them had history of mastectomy.

Table 3: Distribution of the female employees according to their knowledge about breast cancer

Knowledge of breast cancer	n= 681	%
Definition of breast cancer	256	37.6
High risk group	217	31.9
Types of breast cancer	261	38.3
Risk factors of breast cancer	135	19.8
Sign & symptoms of breast cancer	69	10.1
The availability of breast cancer treatment	499	73.3
Types of treatment of breast cancer	147	21.6
Preventive measures of breast cancer	172	25.3
Early detection methods of breast cancer	122	17.9
Frequency of breast self examination (BSE)	486	71.4
Suitable time of BSE	184	27.0
Importance of BSE	192	28.2
Initial time to perform BSE	114	16.7
Frequency of breast self examination during menopause time	90	13.2
Suitable time to perform mammogram	131	19.2
Initial time to perform Pap smear	154	36.9??
Sources of information		
Television	234	34.3
Magazine and newspaper	46	6.8
Relatives& friends	85	12.4
No source	316	46.5

Table (3) shows the distribution of the female employees according to their correct knowledge about breast cancer. More than one third of the sample (37.6%) defined breast cancer correctly, as for high risk group of breast cancer, less than one third of sample (31.9%) gave correct answer. Concerning types of breast cancer, 38.3 % of them gave correct answer. Concerning risk factors of breast cancer, 19.8% of them gave complete correct answer. Regarding signs and symptoms of breast cancer, 10.1% of the sample gave complete correct answer about the signs and symptoms.

As regards the availability of breast cancer treatment, the same table revealed that, approximately three quarters of the female employees (73.3%) gave correct answer about the availability of breast cancer treatment. For types of treatment, 21.6 % of the sample gave complete correct answer.

Concerning knowledge of employees regarding the preventive measures of breast cancer, 25.3% of them gave complete correct answer, as for the early detection methods of breast cancer, 17.9% of them gave complete correct answer.

Table (4) shows preventive practices of female employees. As regards number of meals per day, two thirds of the sample (62.7%) reported that they take 3 meals/ day and more and 37.3% of them take less than 3 meals / day.

Table 4: Distribution of the female employees according to their preventive practices (dietary habits).

Dietary habits	No. n =681	%
No. of meals /day		
< 3	254	37.3
≥3	427	62.7
Carbohydrate group (6-11 serving / day)		
Below normal	80	11.7
Within normal	251	36.9
Above normal	350	51.4
Vegetable group (3-5 serving / day)		
Below normal	312	45.8
Within normal	367	53.9
Above normal	2	0.3
Fruits group (2-4 serving / day)		
Below normal	320	46.9
Within normal	340	50.0
Above normal	21	3.1
Diary group (2-3 serving / day)		
Below normal	52	7.6
Within normal	320	47.0
Above normal	309	45.4
Protein group (2-3 serving / day)		
Below normal	68	10.0
Within normal	434	63.7
Above normal	179	26.3
Types of fat		
Saturated fat	310	45.5
Unsaturated fat	292	42.9
Both	79	11.6
Not consuming	0	0
Consumption of fatty foods		
Always	202	29.7
Sometimes	300	44.1
Don't intake	179	26.2
Soy foods consumption		
Yes	68	10.0
No	613	90.0
Fluid intake		
< 8 cups /day	558	81.9
8 cups /day	110	16.2
> 8 cups / day	13	1.9
Number of tea drinks / day		
Once	150	22.0
Twice	261	38.3
Triple & more	208	30.5
No drink	62	9.2
Number of cola drinks / week		
Once/week	161	23.7
Twice/week	133	19.5
Triple/week	14	2.0
No drink	373	54.8
Salt in diet		
High salt	43	6.3
Moderate salt	638	93.7
Without salt	0	0

Concerning pattern of food consumption, more than half of the female employees (51.4%) consumed above normal amount of carbohydrates per day (6-11serving), while 36.9% of them were taking normal amount of carbohydrates. Only 11.7% were considered as taking below normal. Moreover, vegetables were consumed within normal (3-5 serving)/ day by only 53.9% of the studied employees, whereas 45.8% of the sample consumed below normal amount, only 0.3 % considered as taking above normal. On the other hand, half of the sample (50%) were consuming within normal amount of fruits (2-4 serving/day), followed by 46.9% who were consuming below normal amount. Only 3.1% of them were consuming above normal.

Regarding the dairy group it could be observed that, 47.0 % of the sample were taking within normal amount of dairy products (2-3 serving per day), while 45.4% of them were taking above normal amount and 7.6% were consuming below normal amount of this group. Concerning protein group, about two thirds of the sample (63.7%) were taking within normal amount of protein group (2-3 serving per day), compared to one quarter 26.3% of them were consuming above normal amount and 10.0% who were taking below normal amount of this group.

The Table also portrays that, approximately half of employees (45.5%) were consuming saturated fat, 42.9% of them were consuming unsaturated fat, whereas 11.6% were consuming both of them. In relation to the consumption of fatty foods, approximately one third of the sample (29.7%) always were consuming fatty foods, 44.1% sometimes consume it, while 26.2% of them did not consume fatty foods. The majority of sample (90.0%) did not consume soy foods, while the minority of them (10.0%) was consuming soy foods.

Regarding the fluid intake, the majority of studied employees (81.9%) were drinking less than eight cups of fluids /day, 16.2% were drinking eight cups of fluids / day and only 1.9% of them were drinking more than eight cups of fluids /day. As for drinking tea/day, more than one third of the sample (38.3%) were drinking it twice, while less than one third of them (30.5%) were drinking it triple & more / day, 22.0% were drinking once and 9.2% of them didn't drink it at all. Regarding drinking cola /week, more than half of the sample (54.8%) didn't drink, 23.7% were drinking it once & 19.5% of them were drinking it twice. Only 2.0% were drinking it triple & more. Concerning salt in diet, the majority of the sample (93.7%) was eating food with moderate amount of salt, whereas the minority of them (6.3%) was eating food with high salt in diet.

Table 5: Distribution of the female employees according to their preventive practices (stress-sleep)

Stress	n=681	%
Causes of stress exposure		
Families problems	312	45.8
Work overload	163	23.9
Health problems	32	4.7
Financial problems	10	1.5
No stress	164	24.1
Coping with stress	n=517	
Nervousness & anger	194	37.5
Pray and read Quran	168	32.5
Isolation	155	30.0
Period of exposure to sunshine		
At afternoon	297	43.6
At morning	258	37.9
Both	50	7.3
C No exposure to sunshine	76	11.2
Sleeping pattern		
Sleeping hours /day		
< 6hrs / day	159	23.3
6-	412	60.5
≥ 8hrs / day	110	16.2
X±SD	6.07±1.86	
Types of sleeping problems		
Interrupted sleep	95	14.0
Insomnia	78	11.5
Hyper sleep	99	14.5
No sleeping problems	409	60.0
Coping with sleeping problem	n=272	
Pray and read Quran	88	32.4
Take warm bath	82	30.1
Listen to music	67	24.6
Do nothing	35	12.9

Table (5) shows preventive practices of female employees. As for causes of stress, approximately half (45.8%) of the sample reported that they had families' problems, 23.9% had work overload, 4.7% had health problems, financial problems had 1.5%, while 24.1% had no exposure to any stress. Concerning the coping with stress, 37.5 % were coping with nervousness and anger, 32.5% of them were coping by pray andread Quran and 30.0% were coping with isolation.

As regards the period of exposure to sunshine, approximately half of employees (43.6%) reported that they had exposed to sunshine at afternoon, 37.9 % had exposed to sunshine at morning, 7.3%of them had exposed to sunshine at both morning and afternoon.While 11.2 % of them had not exposed to sunshine.

Table 6: Distribution of the female employees according to their practice of physical exercises

Physical exercise	n= 681	%
Types of physical exercise		
Walking	399	58.6
Running	11	1.6
Swimming	1	0.1
Not practicing exercises	270	39.7
Frequency of practicing physical exercise/week	n=411	
< 3 times / wk	271	65.9
> 3 times / wk	140	34.1
X± SD	2.01± 2.26	
Duration of practicing physical exercises / min	n=411	
15 -	218	53.1
30-	128	31.1
60	65	15.8
X± SD	16.26± 17.90	
Weight control		
Yes	254	37.3
No	427	62.7

Table 7: Distribution of the female employees according to their performance of breast self examination.

Performance of breast self examination	No. n=681	%
Frequency of practicing BSE		
Monthly	68	10.0
Yearly	56	8.2
Occasionally	85	12.5
Not practicing BSE	472	69.3
Reasons for not practicing BSE	n= 472	
Do not Know the technique	391	82.8
Fear to discover any abnormalities	81	17.2
Steps for performing BSE	n= 209	
Proper position	57	27.3
Proper inspection	28	13.3
Proper palpation	40	19.1

Concerning sleeping pattern, 23.3% of the sample reported that they were sleeping less than 6hrs/day, while 60.5% of them were sleeping from 6 to 8hrs /day and 16.2% were sleeping from 8hrs or more. As regards sleeping problems;14.0% of the sample were suffering from interrupted sleep, 11.5% of them were suffering from insomnia, while hyper sleep was represented by the 14.5% and 60.0% were not suffering any sleeping problems. As for coping pattern with sleeping problems, about one third of the sample (32.4%) reported that they were coping with pray and reading Quran, whereas 30.1%& 24.6% were coping either by take warm bath or listen to music respectively and the rest 12.9% of the sample did not intervene to cope with these problems.

Table (6) shows physical exercise participation of female employees. As regards frequency of practicing physical exercise, about two thirds (65.9%) of the sample reported that the frequency of doing exercises less than three times /week, while more than one third (34.1%) of them were doing exercises about three times and more /week. Concerning duration of practicing exercises, half of the sample (53.1%) were practicing exercises from 15 min to less than 30 min / day, 31.1% of them were practicing exercise from 30 to less than 60min /day. While 15.8% of them were practicing exercise about 60 min / day. As for weight control, the same table revealed that, 37.3% of employees reported that they had maintained weight control, while 62.7% had not maintained weight control.

Regarding breast self examination, nearly three quarters of employees (71.4%) gave correct answer for frequency of breast self examination. While 28.6% did not know it. Approximately three quarters of the sample (73.0%) did not know suitable time of breast self examination and 27.0% of them gave correct answer. For importance of breast self examination, 28.2% of the studied employees gave complete correct answer, while 25.5% of them gave incomplete correct answer of it and 46.3% did not know it. The majority of the sample (83.3%&86.8%) did not know initial time of breast self examination and frequency of breast self examination respectively, while 16.7% & 13.2% of them gave correct answer for initial time of breast self examination and frequency of breast self examination respectively.

Concerning performance of mammogram, the majority of employees (80.8%) did not know the suitable time to perform mammogram, while 19.2 % gave correct answer for it. As regards Pap smear, about two thirds of the studied subjects (63.1%) did not know importance of Pap smear compared to 36.9% of them who gave correct answer. As for initial time to perform Pap smear, 22.6% of the studied subjects gave correct answer compared to 77.4% who did not know. Television & radio were the source of information about breast cancer among more than one third of the sample (34.3%), followed by relatives & friends (12.4%), then magazines & newspaper (6.8%).

Table (7) shows breast self examination performance of female employees. As regards to the frequency of practicing breast self examination, more than two thirds of the studied employees (69.3 %) reported that they were not practicing breast self examination, 12.5% of them were practicing occasionally, 10.0% were practicing monthly, while 8.2% were practicing yearly.

Table 8: Distribution of the female employees according to screening methods performance

Screening methods	No. n= 681	%
Types of diagnostic breast investigation		
CT	18	2.7
Mammogram	2	0.3
MRI	9	1.3
Not performing diagnostic investigation	652	95.7
Frequency of performance mammogram		
Yearly	11	1.6
Occasionally	10	1.5
Not performing mammogram	660	96.9
Reasons for not performing mammogram	n=660	
Un oriented	302	45.8
Fear to discover any abnormalities	208	31.5
Expensive	150	22.7
Frequency of performance Pap smear		
Every year	3	0.4
Every two years	2	0.3
Every three years	1	0.1
Not performing Pap smear	675	99.2

Concerning reasons for not practicing breast self examination, the majority of employees (82.8%) did not know technique of breast self examination, while 17.2% of them feared to discover any abnormalities. Regarding the steps for performing BSE, about three quarters of the sample (72.7%) did not follow proper position, while 27.3% followed proper position. The majority of the sample (86.7%) did not follow proper inspection, whereas13.3% of them followed proper inspection.80.9% of them did not follow proper palpation, while 19.1% followed proper palpation.

Table (8) reveals that the majority of studied employees (95.7%) reported that they did not perform any diagnostic breast investigation. Figure (1) shows body mass index of the female employees. More than half of the sample (54.3%) were obese, more than one third of them (33.5%) were over weight. While the female employees who were normal body weight and under weight constituted 11.5% and 0.7% of them respectively. Figure (2) presents the total score of knowledge about breast cancer of female employees. Two thirds of the sample (62.7%) had poor knowledge scores, while 26.3% of them had fair knowledge scores and only 11.0 % had good knowledge scores. The mean total score of employees' knowledge about breast cancer was 13.92 ± 8.36.

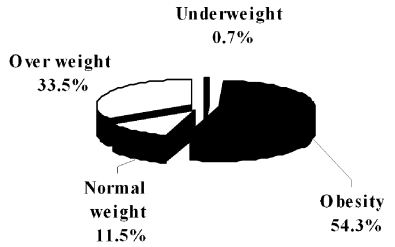

Fig. 1: Distribution of the female employees according to their body mass index (BMI)

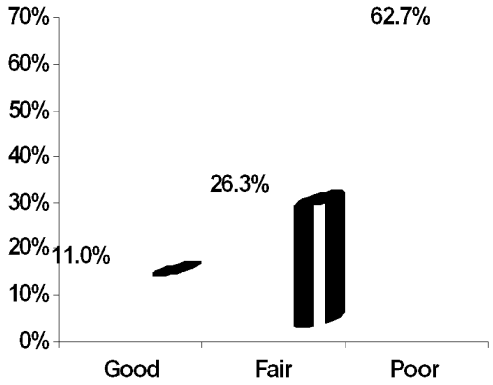

Fig. 2: Distribution of the female employees regarding their total score of knowledge about breast cancer.

Table 9: Relation between knowledge of the female employees about breast cancer and breast self examination practice of the female employees and their socio-demographic characteristics.

Socio -demographic Characteristics	Knowledge of breast cancer	Practice of breast self examination
Age (years)	χ^2=22.071 * P= 0.0001	χ^2=35.350* P= 0.0001
Level of education	χ^2=16.992* P=0.009	χ^2=5.487 P= 0.139
Family history of tumor	χ^2= 43.648* P= 0.0001	χ^2=30.823* P= 0.0001

The difference is statistically significant at P ≤ 0.05

Table 10: Relation between knowledge of the female employees about breast cancer and their performance of screening methods.

Performance of screening methods	Knowledge of breast cancer
Practice of BSE	χ^2=101.546* P= 0.0001
Performance of diagnostic breast investigation	χ^2=11.210* P= 0.004

* The difference is statistically significant at P ≤ 0.05

It appears from the study results that a statistically significant difference was found between knowledge scores of breast cancer and employees age, level of education and family health history of tumor (χ^2 =22.071, P=0.001, χ^2 = 16.992, p= 0.009, χ^2 = 43.648, p=0.000 respectively). A statistically significant difference was

observed between practice of breast self examination and age, family health history of tumor (χ^2=35.35, P=0.000, χ^2 =30.823, P=0.000 respectively).while level of education was not statistically correlated to practice of breast self examination. (χ^2 =5.487, P=0.139) (Table 9).

A negative significant difference was found between knowledge scores of breast cancer and practice of breast self examination (χ^2 = 101.546, P=0.0001). Negative significant relation also existed between knowledge scores of breast cancer and performance of diagnostic of breast investigations (χ^2 =11.210, P=0.004) (Table 10).

DISCUSSION

Primary prevention should be given highest priority in the fight against cancer; however the reduction in breast cancer incidence which can be achieved by primary prevention, based on early identification of modified risk factors such as increasing physical activity, avoid obesity and intake low fat diets [23]. Furthermore, one potentially important strategy in reducing breast cancer mortality is the use of screening to achieve earlier detection of cancer [24].

Therefore; this study was done with the aim to identify the breast cancer preventive practices of female employees in Mansoura University.

Breast cancer affects so many lives today that it is vital for women and men to understand the key facts about the disease, specially risk factors and methods of early detection.Females are more prone to develop breast cancer than males. Other associated factors are presence of family history of breast cancer, older women (rarely before 20 years of age), previous history of cancer in one of the breasts, obesity, nulliparity, early onset of menarche, late onset of menopause, women with longstanding mental stress and presence of other cancers like that of uterus, colon, rectum, salivary gland, ovary etc. [16].

Age is one of the risk factors for breast cancer, woman risk for developing breast cancer increases as she gets older [25]. The findings of the present study revealed that, more than one third of employees were aged 50 years and more. Several studies has proposed the chance of getting breast cancer goes up as a woman gets older [26, 27].

Family history of breast cancer is considered as a convenient and inexpensive tool for identifying risk of breast cancer and for promoting the adoption of preventive practices [28]. The results of this study revealed that approximately half of the employees had family history of breast cancer which increased their risk for developing the disease. These findings were supported by the study done in Alexandria by Bedwani [29]. He revealed that there was a strong association between family history of breast cancer and increased risk of breast cancer.

The risk of breast cancer also increases with obesity. The present study showed that the female employees had body mass index (BMI) ranged between (<18.5 to ≥ 30) with a mean of (31.35 ± 5.87). The finding showed that the obese female employees constituted more than half of the sample and more than one third of them were overweight. These results could be explained by the employees were having many unhealthy habits such as consuming large amount of carbohydrates and saturated fat. In addition, to lack of physical activity and sedentary nature of their work.Other studies were are in accordance with this result [30]. The association between obesity and increased breast cancer was investigated by the study carried out in USA by Stanford and Daling [32]. This result is also in congruent with a study done in Egypt by Abdelaal and Gomaa [33] that showed that overweight/obese was associated with increased risk of breast cancer compared with normal BMI.

In an attempt to assess knowledge of employees about breast cancer, the results of the current study revealed that the majority of the sample had poor knowledge score (< 50%) with a mean of 13.92 ± 8.36. These findings denotes lack of health awareness regarding epidemiology of the disease, signs and symptoms, risk factors, preventive methods and early detection measures of breast cancer. This could be explained by the fact that most of female employees included in the study did not like to discuss this topic or to gain information about it because they have many cancers. Breast cancer is considered the most feared malignancy by women concerns and worries. This result was supported by the study carried out in Saudi Arabia by Dandash and Al Mohaimeed [34] about studying knowledge, attitudes and practices surrounding breast cancer and screening in female teachers. He found that his studied females had poor knowledge (< 50%) about breast cancer.

In this respect, findings from the current study showed that, more than half of the employees did not know risk factors of breast cancer and the majority of them didn't know the signs and symptoms of breast cancer. These findings are in the same line with the study done in England by Ramirez *et al.* [35] and Jaradeen [36] in Jordan. They revealed that, the majority of women in

their studies were not aware with risk factors of breast cancer as well as the sign and symptoms. However, these findings are in contrast with the study carried out in Turkey by Soyer *et al.* [37]. They found that a high level of awareness among nurses about breast cancer prevention would most likely resulted from their health education & nursing experience.

Nutrition plays an essential role in health and in the prevention of disease, including cancer. Epidemiological studies have estimated that approximately 35% of cancers are potentially avoidable by nutritional modification especially a high consumption level of fruits and vegetables [7]. Findings of the present study showed that approximately half of the female employees were consuming normal amount of vegetables and fruits. Literature and researches proved that intake of high or normal amount of vegetable & fruits reduce the risk of breast cancer [37].

Phytoestrogens are estrogen – like chemicals found in plant foods such as beans, seeds and grains. Foods made from soybeans have some of the highest levels of phytoestrogen. Some studies indicated that phytoestrogens have health benefits including potential reduction of breast cancer [38]. The findings of the present study revealed that, only a minority of the studied employees were consuming soy products. These findings could be attributed to the unawareness regarding the availability and importance of taking soy products as soybean, tofu, soy cheese, soy yogurt and soy milk. This finding is in accordance with the study done in USA by Enderlin *et al.* [26].They showed that low intake of soy products has been associated with increased breast cancer risk.

Fat consumption is a source of estrogens which can promote breast cancer. Several studies have investigated the relationship between a high-fat diet and a woman's risk of breast cancer. While some studies have shown that a high-fat diet does increase a woman's breast cancer risk, other studies have not found a significant relationship. Researchers are also examining whether the types of fat eaten affect the risk of breast cancer (i.e. saturated versus unsaturated) [38] Findings of the present study revealed that about half of the female employees' were consuming saturated fat. These findings could be due to lack of knowledge regarding danger of fat consumption leading to obesity which increases risk of developing breast cancer. Numerous studies revealed that a diet high in animal fats may play a significant role in the development of breast cancer. Furthermore, McEwen and Nies [31] reported that diets high in saturated fat possibly increase the risk of breast cancer, so women should be advised to limit dietary fat intake and maintain optimum body weight

Exercise plays a role in reducing body fat which in turn lowers levels of cancer-promoting hormones such as estrogen. Not only can physical activity help a woman to reduce her risk of breast cancer by maintaining a healthy bodyweight, but it may also have its own benefits to risk reduction. Some studies have shown that physical exercise throughout a woman's life reduces her risk, independent of her weight [6] The present study revealed that more than one third of employees were not practicing any type of exercises and more than two thirds of them practice exercise less than 3 times per week. This might be due to the lack of knowledge about importance of physical exercises and related to nature of their work. These study findings are in agreement with the study done in Egypt by Abdelaal and Gomaa [33] supported the association between lack of physical activity and increased risk of breast cancer. These finding are in contrast to the results of a study carried out in Sweden by Moradi *et al.* [28]. They revealed that no association was found between practice of physical activity and breast cancer risk.

Studies have indicated that long-term exposure to stress can affect tumor growth and spread, but the precise biological mechanisms underlying these effects are not well understood [40, 41]. Findings of the present study showed that the majority of the studied employees were suffering from psychological stressors. This might be due to overload of their work.Moreover, literature and researches proved that the chronic stress associated with a depressed immune response may promote cancer [42].

Furthermore, the present study portrayed that approximately half of the employees didn't know the preventive measures and early detection methods of breast cancer. This alarming finding reflects the ineffective role played by either health care providers or mass media in this respect yet; there is a massive need for national campaign to increase public awareness about breast cancer and screening methods. These findings are in agreement with a study carried out in Iran by Kalantari *et al.*[38] They revealed that women has lacked knowledge about prevention of breast cancer and early detection methods including breast self examination, clinical breast examination and mammogram.The same was reported by Hausman and Seals [39] in China and Yan [40] in Hong Kong.

The majority of the sample did not know the suitable time to perform breast self examination and also the importance of it. These findings are in the same line with

the study carried out in Egypt by Seif and Aziz [41], on studying effect of breast self examination training program on knowledge, attitude and practice of a group of working women. They found that the majority of working women had low knowledge about breast self-examination. In contrast, the findings of the study done in India by Nene [42] and Ferreira in Brazil [43] showed that the majority of women had high knowledge about the importance and suitable time of breast self examination.

Health Belief Model (HBM) suggests that if a woman perceives herself at risk then she is more likely to practice breast self examination. It is estimated that breast self examination may reduce the mortality by as much as 18% and that this figure may increase with women who are particularly competent. Hence, developing strategies to increase its performance is a major challenge to health professionals [16].

It is amazing that, the findings of the present study revealed that only less than one third (30.7%) of the employees practiced breast self examination while the majority did not do so. These results might be attributed to the fact that the employees lack knowledge regarding the importance of BSE, they do not know how to perform BSE or do not like to practice it. These findings are in agreement with the study done in Nigeria by kayode [44] who reported that the majority of female secondary school teachers were not practicing breast self examination. However this result is contradicting with a study carried out in Jordan by Abu Salem [45] who showed that most of the female nurses practiced breast self examination. This is because they are well aware of these information by virtue of their work as health professionals.

Mammography is considered the suitable or convenient breast cancer screening for asymptomatic women. It is the only available screening method proven to reduce breast cancer mortality. It plays a major role in early detection of breast cancer. Mammogram performed every 1 to 2 years for women aged 40 years or older, can reduce mortality by approximately 20%–25% over 10 years [7]. Randomized controlled trials have shown that screening by mammography can significantly reduce mortality from breast cancer by up to 40% in those who attend [29]. Findings of the current study revealed that, the majority of the studied employees did not perform any diagnostic breast investigation such as mammogram or clinical breast examination. These results could be attributed to, lack of knowledge about importance of performed diagnostic breast investigation for early detection of breast cancer, their cost or they are unaware of places performing these investigations. These findings are congruent with a study done in Africa by Sadler and Weldon. [46] investigating Breast Cancer knowledge, attitudes and screening behaviors among African American women. They stated that the majority of women do not perform mammogram.

The findings of the present study revealed that a statistically significant difference was observed between knowledge scores on breast cancer and employees' age. It was observed that the female employees aged 30 years to 39years tended to have higher knowledge than older ones.This indicates that middle age of the studied employees are more careful about this disease and their health than older ones.The same result was mentioned by Kalantari *et al.* in Iran [38]But these results are contradicting with a study carried out in Nigeria by Okabia [47] who revealed that the higher knowledge scores were among older women.

It is worth noting that employees' level of education had a significant impact on their knowledge about breast cancer in the present study. The higher the educational level of the female employees the higher was the knowledge scores about breast cancer. This study finding is in the same line with the study carried out in Nigeria by AKpo [48] who revealed that knowledge scores were higher among better educated women.

This study also indicated a statistically significant association between knowledge scores of breast cancer and employees' family history of cancer.The higher knowledge scores of the female employees about breast cancer were associated with positive family history of tumor. This finding could be logic because having previous family history of tumor can provide information and experience about this disease. The study finding is in the same line with the study carried out in Saudi Arabia by Alam [49]. But these results are in contrast with a study by Kalantari *et al.* [38], who reported that no significant association between family history and knowledge of breast cancer.

The findings of the present study revealed that a statistically significant difference was found between practice of breast self examination and employees' age. These findings aren't in agreement with a study by Kalantari *et al.* in Iran. [38] They revealed that there was a significant relation between practice of breast self examination and age. But these results agree with a study by Abu Salem [45], who revealed that no significant relation was observed between subjects' age and practice of breast self examination.

On studying the relationship between practice of breast self examination and employees' level of education

the findings of the study revealed that there was no significant difference between practice of breast self examination and their level of education These results could be attributed to fact that fear from discovery of any abnormalities of the breast although highly educated. Yet, they had not practiced breast self examination. These findings are contradicting with the study done in Nigeria by Okabia [47], who revealed that higher education was statistically significantly associated with practice of breast self examination.

With respect to the relation between practice of breast self examination and employees' family history of breast cancer. The current study showed that a statistically significant difference was observed between practice of breast self examination and their family history of breast cancer. The findings were in the same line with the study carried out in Alexandria by El-Shazly [50] who found that a statistically significant between family experience from the tumor and practice of breast self examination.

The present study portrayed that approximately half (46.5%) of studied employees didn't receive any information about breast cancer, more than one third (34.3%) of them had obtained their information from television, 12.4% from relatives and friends and only 6.8% from magazine and newspaper. These results could be attributed to the insufficiency of discussing this topic in media. These results are supported with the study carried out in Iran by khaleghi *et al.*[51] They reported that the important source of information about breast cancer is the television.

The findings of the present study proved a statistically significant difference between knowledge of breast cancer and practice of breast self examination. This result was in agreement with the study done in Nigeria by Akpo [48] who found that the woman with higher knowledge scores were more likely to practice breast self examination. On the other hand, the findings were contradicting with the study carried out in Iran by Kalantari *et al.*[38] They reported that although the woman had higher knowledge of breast cancer yet, they were not practicing breast self examination. This results may be attributed to the fact that the female employees were fear from discover any abnormalities in the breast.

Finally, screening for breast cancer prior to the onset of symptoms is important in the early detection of cancer through various methods as breast self examination, clinical breast examination, mammogram MRI and CT [27]. The current study findings showed a negative statistically significant difference between knowledge scores of breast cancer and performance of diagnostic breast investigation. This may be due to the unawareness of female employees on where to go for this breast investigation, besides its high cost or they would not like to do this investigation to avoid any worry. In contrast, the study carried in Nigeria by Akpo [48], on studying Breast cancer knowledge and screening practices among Nigerian women. It showed that although they had low knowledge scores about screening methods of breast cancer yet most of them had performed breast cancer screening.

To sum up, breast cancer is a serious health problem, which had a serious impact on women health, their children, family and the community. So many efforts should be directed to the prevention of breast cancer, it is the key for reducing the morbidity and mortality of the disease [51].

Based on the current study results, it can be concluded that, most of the female employees have poor knowledge about breast cancer regarding definition, risk factors, signs and symptoms, preventive measures, breast self examination and early detection methods of breast cancer. As for preventive practices, the majority of the studied employees were consuming saturated fat, eat large amount of carbohydrates, did not practice physical exercise and the minority of the female employees were consuming soy products. As regards screening methods, the majority of the studied employees did not practice breast self examination and also performance of breast diagnostic investigation as mammogram, CT, MRI. Although the majority of the studied employees had good knowledge about breast cancer yet did not perform breast self examination, clinical breast examination and mammogram.

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