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Knowledge toward breast cancer prevention among secondary school female student in Mosul city

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Abstract
Background: Breast cancer is the most common cancer among women worldwide, comprising 23% of the female cancers and among the Iraqi population in general, preventive activities aimed to reduce risks to health, which is of four type primordial, primary, secondary and tertiary.
Aim: To assess the level of knowledge of female secondary school students in Mosul city toward breast cancer prevention methods
Subject and method: A Cross-sectional study design involved 3000 female student. Using standardized questionnaire form consist from six part. Simple percentage calculated and the answer are scaled according to three point Likert scale as (yes, uncertain, and no), the mean score was calculated.
Result: The Grand mean assessment value for all variable regarding knowledge of healthy life style was 2.8, Knowledge regarding taking care of breast, Don't use of hormonal contraception and hormonal replacement therapy for more than 5 years and pregnancy, childbirth, and breast feeding at early age were 84.2%, 48.4%, and 33.0% respectively. The Grand mean assessment value for all variable toward preventive measure to women with high risk to breast cancer was 2.1, Most common source of information regarding preventive measure toward breast cancer was health professional 969 (32.3)%, and least source in information was school (book and/or teacher) 150 (5.0%).
Conclusion: Unsatisfactory result was seen toward preventive measure of breast cancer to women with high risk. The most common source of information was health professional and least one were school (book and/or teacher).
Recommendation: Expanding the topic of breast cancer in the school curriculum and adding a section of preventive measures and emphasis on the role of female teachers in delivering awareness against breast cancer.

Keywords: Breast cancer prevention, high risk women, secondary school females, Iraqi national plan.

Introduction

Breast cancer is the most common cancer among women worldwide, comprising 23% of the female cancers and among the Iraqi population in general [1, 2]. It accounts for approximately one third of the registered female cancers according to the latest Iraqi Cancer Registry [2], with trend to affect women at younger age groups and diagnosed at advanced stages with an obvious increase in the incidence rates [3]. In the last two decades breast cancer became one of the major threats to Iraqi female health [4]. In Mosul, It represent the top ten cancer causes and death rate among females, it was 20.2 and 4.29 respectively, the incidence rate per 100000 population was 9.1% [2, 5]. Preventive measures can be applied at any stage along the natural history of a disease, with the goal of preventing further progression of the condition to reduce unnecessary demand on the healthcare system [6]. Preventive activities aimed to reduce risks or threats to health, it is essential element of preventive medicine/public health which is of four type primordial, primary, secondary and tertiary [7]. Primordial prevention level act to prevent development of risk factors of disease using education for its purpose [7]. Primary prevention level include health promotion with specific protection for target population and selected group who is healthy population, its goal to decrease new cases and incidence of exposure [8]. Among their preventive activities that is recommended by WHO 2002, are tobacco control, healthy diet, increase physical activities, avoidance of obesity specially after menopause, decrease exposure to occupational and environmental carcinogen and health education related to reproductive factors [9]. Secondary prevention level act on screening of asymptomatic persons, case finding, early intervention and periodic examination to stop progress of the disease, its goal to decrease severity, complication, incidence and morbidity of disease [10]. Its action include protective measures and knowledge with utilization of early detection methods such as breast self-examination, clinical breast examination, mammography, and chemoprevention and prophylaxes surgery [11]. American Cancer Society 2019, recommended that the importance of usage of Chemoprevention as tamoxifen and raloxifene or aromatase inhibitors (postmenopausal women only), these drugs block estrogen in some tissues of the body for women with high risk factors [12, 13]. Prophylactic surgery include prophylactic mastectomy, removal of both breasts to reduce the risk of breast cancer by 90% or more. Prophylactic salpingo-oophorectomy reduces the risk of ovarian cancer, but the benefit for breast cancer in high-risk women is less clear and may be limited to BRCA2 mutation carriers.[14] Iraqi National Program for early detection of breast cancer was established in 2000, by Ministry of health and environment with collaboration of Ministry of Higher Education and Scientific Research, Ministry of Education and other local National Government Organizations to promote public awareness

regarding breast cancer risk factors, to educate 90% of women aged more than 15 years regarding proper methods of breast self-examination (BSE) and to screen of more than 50% of female aged 30 years by clinical breast examination (CBE) [15, 16]. In 2009, a National Breast Cancer Early Detection and Research Program was established in Iraq whose main objective raising the general population awareness regarding methods of early detection of the disease by BSE, CBE and mammography. During 2010–2011 we implemented educational awareness campaigns in various universities, ministries and provinces in Iraq [17]. Early detection and screening, especially when combined with adequate therapy, offer the most immediate hope for a reduction in breast cancer mortality.[3] The aim of present study to assess the level of knowledge of female secondary school students in Mosul city toward breast cancer prevention methods.

Subjects and Methods

All work is approved by the ethical and scientific committee of Nineveh Health Directory / MOH / Iraq by licenses' Number (7436) in date (14 / 3 / 2019). A cross sectional study design was carried out at 4 randomly selected female secondary school, including 3000 female student who had no history of breast disease or family history of breast cancer. Using self-administer standardize data collection form consist from six part as follow.

Part I- Healthy life style consist from 4 items include: (healthy diet, movement and exercise, avoidance of increasing weight and obesity especially after menopause, and avoidance of smoking and alcohol).

Part II- Knowledge toward reproductive health consist from 3 items include: (take care of breast, don't use of hormonal contraception and hormonal replacement therapy for more than 5 years and pregnancy, childbirth, and breast feeding at early age). Part III- National early detection plan for BC among women with usual risk consist from 3 items include: (BSE monthly from age of 20 year, CBE once every three years from age of 30and once yearly from age of 50 years and mammogram once every 5 years from age of 40 and once every 3 year from age of 50 years). Part IV- National early detection plan for BC among women with high risk consist from 3 items include: (practicing BSE monthly from age of 20 years, CBE once every year from age of 20 years, mammogram once every 5 years from age of 30 and once yearly from age of 40 years Part V- Preventive measure to women with high risk to BC consist from 4 items include: Using preventive drug such as (tamoxifen, etc.), prophylactic mastectomy, survey for early detection of breast and ovarian cancer and prophylactic oophorectomy). Part VI- Source of information include: (TV program, health professional, friends, printed material, school book and/or teachers and social media).

Statistical analysis: The information regarding each women was transferred into a code sheet. Data were tabulated, categorized, and analyzed using SPSS (version 23) software program. Simple percentage is used. The answer of Part I, II and III, VI and V are scaled according to three point Likert scale as (yes, uncertain, and no), the mean score was calculated as follows: (No. of students said correct answer × 3 + No. of students said uncertain answer ×2 + No. of students said incorrect answer × 1)/3000 which is the total No. of sample size. The deviation of the score using the following formula: Cut-of point (3+2+1)/3=2.

Result

Table (1) revealed the percentage of knowledge regarding healthy life style among study sample, 93% of student agreed that healthy diet and avoidance of smoking and alcohol an important factors in prevention of breast cancer. Grand mean assessment value for all variable of healthy life style was 2.8 Knowledge toward reproductive health seen in Table (2). Knowledge regarding taking care of breast, Don't use of hormonal contraception and hormonal replacement therapy for more than 5 years and pregnancy, childbirth, and breast feeding at early age were 84.2%, 48.4%, and 33.0% respectively. Regarding national early detection plan for BC among women with usual risk, female student reported that BSE monthly from age of 20 years was 43.6% and mammogram once every 5 years from age of 40 and once every 3 year from age of 50 years reported uncertain in 64.5%. While Iraqi National early detection plan of BC in women with high risk reported that 55.4 % of study sample had knowledge regarding practicing BSE monthly from age of 20 years. This is seen in Table (3.a) and (3.b). Table (4) showed that preventive measure to women with high risk to BC. The study showed that 35.9% had knowledge regarding using preventive drug such as (Tamoxifen, etc.), 35.8% regarding prophylactic mastectomy. The mean score of prophylactic oophorectomy was 2.0. The Grand mean assessment value for all variable was 2.1. Most common source of information regarding preventive measure toward breast cancer was health professional and TV program, it was 969(32.3) %, and 869(29.0%) respectively and least source in information was school (book and/or teacher) and social media, it was 398 (13.3%) and 150 (5.0%) respectively.

Table 1: Percentage of knowledge regarding healthy life style among study sample to prevent breast cancer

knowledge regarding Healthy life style		Total No. of student = 3000			Mean of score	Grand mean assessment value
		% of Yes	% of Uncertain	% of No		
1-	Healthy Diet	93.0	5.0	2.0	2.9	2.8
2-	Movement and Exercise	89.0	7.0	4.0	2.8	
3-	Avoidance of increasing weight and obesity specially after menopause	84.0	13.0	4.0	2.7	
4-	Avoidance of smoking and alcohol	93.0	5.0	2.0	2.9	

Table (1) revealed the percentage of knowledge regarding healthy life style among study sample, 93% of student agreed that healthy diet and avoidance of smoking and alcohol an important factors in prevention of breast cancer. Grand mean assessment value for all variable of healthy life style was 2.8

Table 2: Study sample knowledge toward reproductive health

Knowledge toward reproductive health		Total No. of student = 3000			Mean of score	Grand mean assessment value
		% of Yes	% of Uncertain	% of No		
1-	Take care of breast	84.2	14.0	1.8	2.8	2.4
2-	Don't use of hormonal contraception and hormonal replacement therapy for more than 5 years	48.4	48.3	3.3	2.4	
3-	Pregnancy, childbirth, and breast feeding at early age	33.0	41.1	26.0	2.0	

Knowledge toward reproductive health seen in Table (2). Knowledge regarding taking care of breast, Don't use of hormonal contraception and hormonal replacement therapy for more than 5 years and Pregnancy, childbirth, and breast feeding at early age were 84.2%, 48.4%, and 33.0% respectively.

Table 3: Iraqi National early detection plan of BC in women with usual risk.

Iraqi National early detection plan for BC among women with usual risk		Total No. of student = 3000			Mean of score	Grand mean assessment value
		% of Yes	% of Uncertain	% of No		
1-	BSE monthly from age of 20 years	43.6	38.1	18.3	2.2	2.1
2-	CBE once every three years from age of 30and once yearly from age of 50 years.	29.7	54.1	16.3	2.1	
3-	Mammogram once every 5 years from age of 40 and once every 3 year from age of 50 years.	20.4	64.5	15.2	2.0	

Table 4: Iraqi National early detection plan of BC in women with high risk.

National early detection plan for BC among women with high risk		Total No. of student = 3000			Mean of score	Grand mean assessment value
		% of Yes	% of Uncertain	% of No		
1-	Practicing BSE monthly from age of 20 years	55.4	35.6	9.0	2.4	2.2
2-	CBE once every year from age of 20 years.	33.9	47.8	18.3	2.1	
3-	Mammogram once every 5 years from age of 30 and once yearly from age of 40 years.	28.1	59.2	12.7	2.1	

Regarding national early detection plan for BC among women with usual risk, female student reported that BSE monthly from age of 20 years was 43.6% and Mammogram once every 5 years from age of 40 and once every 3 year from age of 50 years reported uncertain in 64.5%. While Iraqi National early detection plan of BC in women with high risk reported that 55.4 % of study sample had knowledge regarding practicing BSE monthly from age of 20 years. This is seen in Table (3.a) and (3.b).

Table 5: Knowledge of study sample toward preventive measure to women with high risk to BC

Preventive measure to women with high risk of BC		Total No. of student = 3000			Mean of score	Grand mean assessment value
		% of Yes	% of Uncertain	% of No		
1-	Using preventive drug such as (Tamoxifen, etc.)	35.9	55.1	9.0	2.2	2.1
2-	Prophylactic Mastectomy	35.8	45.6	18.6	2.1	
3-	Survey for early detection of breast and ovarian cancer	42.7	52.1	5.2	2.3	
4-	Prophylactic Oophorectomy	20.3	61.4	18.3	2.0	

Table (4) showed that preventive measure to women with high risk to BC. The study showed that 35.9% had knowledge regarding using preventive drug such as (Tamoxifen, etc.), 35.8% regarding prophylactic mastectomy. The mean score of prophylactic oophorectomy was 2.0. The Grand mean assessment value for all variable was 2.1.

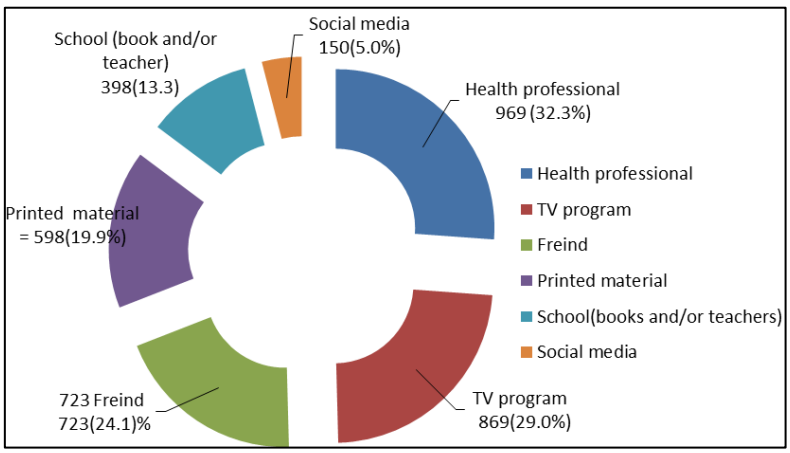

Fig 1: Source of information toward breast cancer prophylactic measure among female student

Fig (1) revealed that the most common source of information regarding preventive measure toward breast cancer was health professional and TV program, it was 969 (32.3) %, and 869 (29.0%) respectively and least source in information was school (book and/or teacher) and social media, it was 398 (13.3%) and 150 (5.0%) respectively.

Discussion

I-Socio-demographic characters

The present study implemented among secondary school students in Mosul city aimed to assess knowledge regarding preventive measure of breast cancer (Healthy life style, Knowledge toward reproductive health, preventive measure to women with usual and high risk for breast cancer and source of information). The study sample included female student aged between 16-20 years, all from urban area in Mosul, Muslim, single, with same degree of education and had no personal history or family history of first degree relative of breast cancer. The researcher concentrate on choosing young female because those had ability to teach their mothers and sibling later on and adapted healthy behavior in their life course [18], these finding accepted by study done in Manipal, India 2011and in study done in Mosul city 2020 [19, 20].

II- Healthy life style

The present study showed that more than four fifth of study sample agreed that healthy diet and avoidance of smoking and alcohol an important factors in prevention of breast cancer. Grand mean assessment value for all variable of healthy life style was 2.8. WHO 2020, recommended to control of modifiable risk factors as promotes healthy diet, physical activity and control of alcohol intake, avoidance of overweight and obesity, could eventually have an impact in reducing the incidence of breast cancer in the long term [21]. A similar finding was seen among sample of educated population in Iraq 2012, as 72.2% of participant (360) believed that healthy life style as physical activity, healthy diet and control body weight a preventive measure of breast cancer [17]. Other study among school teacher (80 interventional group and 70 control group) in Mosul 2012, showed low level of knowledge regarding the importance of adaptation of healthy life style to prevent breast cancer and we notice improve knowledge among interventional group from 59% to 79.5% after 3 months interval from application of educational program [22]. The finding of our study high if compeer with study in Al-Diwanyia City 2019, the grand mean assessment of women's knowledge of healthy life style to prevent breast cancer was 1.3 below the cut-off point. This could be attributed to cultural issues, limited availability of the information, resources and screening techniques for this disease [23]. Low level knowledge also was seen among 106 women in India 2019, as only 8.3% of participant had good knowledge regarding healthy life style [24].

III- Knowledge toward reproductive health

Knowledge regarding taking care of breast 84.2%, don't use of hormonal contraception and hormonal replacement therapy for more than 5 years 48.4% and pregnancy, childbirth, and breast feeding at early age 33.0%. A similar finding was seen among sample of educated participant (387) Baghdad 2012, as oral contraceptive pills and HRT may increase the risk if used for > 5 years 37.4%, early pregnancy 64.8%, avoidance of un prescribed hormonal therapy (72.2)% [17]. The result of present study was high if compeer with other study among 600 rural women in Egypt 2017, knowledge regarding null parity, old primgravida and no breast feeding 22%, hormonal therapy 23.7% [25] also percentage of knowledge among 150 nursing girl in India 2020, was low regarded the item of null parity and old primgravida 15% at the same time similar finding toward hormonal replacement therapy 54% [26]. While in Turky 2008, agreed that oral contraceptive pills a risk factors of breast cancer [27].

IV- Knowledge regarding preventive measures

Early detection plane for breast cancer include starting BSE at age of twenty years, CBE and mammogram once yearly after the age of 40and 50 year respectively with beginning of this measure at earlier age among women with high risk. The present study showed that the preventive measure was just above the mean. The grand mean assessment for all variable was only 2.1. WHO 2020, encourage women to practice BSE to take responsibility for their own health at the same time CBE lower age-standardized incidence rate for advanced-stage breast cancer and population-based mammography screening programs can reduce BC mortality to 20% [21]. A study among 500 Kurdish Women in Sulaimani Governorate/Iraq 2017, the study sample had good knowledge regarded the usefulness of BSE, timing and frequency of practicing, at the same time low knowledge was reported toward CBE and mammography and their ideal age to screen [28]. Another study among 206 rural women in north Kerala 2019, as 36.8% of the respondent know that the BC can be detected early by BSE, at the same time only 7.8% believed that BC can be prevented by early ultrasound and mammography [24]. Also a study among undergraduate female student in University of Bamenda, Cameroon revealed that knowledge toward the importance of BSE as preventive measure was good but timing and frequency of practicing was very low [29]. While a poor knowledge (less than 50%) was reported among 97 Palestinian female nurses students and among 600 female in Egypt 2017, as 2% of study sample had knowledge related to breast cancer screening program as the study sample from rural area, 54% illiterate, 88.7% not working, 79.9% no health insurance [30, 25]. Minimal financial support for families, low education, difficulty in getting necessary health services are more frequently encountered in developing countries. Education and occupation enable the women to get better health care [31]. A high knowledge was seen among 166 undergraduate female student in University of Buea 2015, revealed that 88.6% of participant had good knowledge regarding the importance of BSE is in the early detection of breast cancer, the finding was not representative to all entire population of Cameroonian women as it carried out among young educated women, from a semi-urban, a majority of participant from the two English speaking regions and the study was based on self-report – women resulted in over estimation [32]. Other study in Mosul city 2018, among 1000 female student showed that 80% agreed that BSE as preventive measure of BC, 71% know right time of dong it and 68.7% had knowledge toward frequency of practicing it, [20] this finding attributed to wide expanding program of health education to school health services of public health department, early detection methods of breast cancers was studied in Mosul 2020, the secondary school student agreed that BSE, CBE

and mammography as screening methods of BC in 81%, 58%, and 47% respectively at the same time the frequency and timing of beginning and age the screening test didn't study [33]. The grand mean assessment just above the mean in spite of presence of the BSE and related topic in school curriculum since 2000 as national program to fight against BC since that time [15]. another study among sample (387) of educated population in Baghdad 2012, revealed that 43.8% of study sample believed that BSE, CBE, and mammography as method of screening but didn't study the actual age to start screening, and only 17% had knowledge toward Prophylactic Oophorectomy as a preventive measure [17].

V- Source of the information

Most common source of information regarding preventive measure toward breast cancer was health professional and TV program, it was 969(32.3) %, and 869(29.0%) respectively and least source of information was school (book and/or teacher) and social media, it was 398(13.3%) and 150(5.0%) respectively. This finding explain on bases that wide expanding health education by health professional of school health program/ public health department in Mosul at the same time weakness of the internet in the city and young youth prefer electronic game and be away from the educational program. in Mosul 2019, health professional was commonest source of knowledge (32.3%), followed by TV (27.6%) and a least percent seen among teachers and school book (9.8%), [20] in 2020, T.V. program rank the top of six source of information, and school book and teachers rank least one, [33] also Baghdad 2012, TV program and health professional were the main source of information as 55% and 31.3% respectively [17] in Al-Suadia 2007, TV and radio most popular media can reach to wide scale of audience and in 2018 social media was the commonest source of information in Al-Qassim Region [34, 35]. while in Egypt 2017, network, social media and support group by younger healthy educated women play an important role in transmission of the massage of the awareness toward breast cancer prevention measure and in India 2020, book constitute 86% followed by friends constituted 36%, while TV program reported by only 12% [25, 26].

Limitation

Choosing young females with nearly equal socio-demographic characters may affect generalizability of the study.

Conclusion

In general knowledge of secondary school student female was above the cut-off point. Best result was seen regarding healthy life style, unsatisfactory result seen toward preventive measure to women with high risk of BC. The most common source of information was health professional and TV program, and least one were school (book and/or teacher) and social media

Recommendation

1. Share participant with different socio-demographic characters with larger sample size.
2. Implement wide educational awareness campaigns to include all secondary school in Mosul city to increase awareness of young female and their teachers toward preventive measure of BC.
3. Expanding the topic of breast cancer in the school curriculum and adding a section on preventive measures and emphasis on the role of female teachers in delivering awareness against breast cancer

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Conflict of Interest

The authors of this study declares no conflict of interest.

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