Assessment of Breast Screening Program in Al -Yarmouk Teaching Hospital

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Abstract: Background: Breast screening program had been set in Al-Yarmouk Teaching Hospital since 2001. It involved clinical assessment combined with ultrasound and mammography. **Aim of Study:** To evaluate the efficacy of breast screening program at AL-Yarmouk Teaching Hospital in early detection of malignant breast diseases. **Design:** A prospective analytic study for breast screening cases attended for screening breast program at breast clinic in Al-Yarmouk Teaching Hospital for the period from October 2012 to October 2013. **Patients and Method:** The present study included 6268 cases, 6007 patient were females and 15 patients males were attended breast clinic complaning of symptomatic breast pathology and asking for treatment and 246 asymptomatic females cases asking for breast screening. So we divided the cases in to two groups; (I) symptomatic group, and (II) asymptomatic cases attended for screening program. Cases in group (II) were analyzed according to a questioner which included cause of attendance, age, marital state, menstrual history (age of menarch, age of first child bearing, age of menopause), personal and family history of breast cancer and other malignancy, drug history of contraception, habits (smoking), occupation, and residency. All cases were examined clinically, investigated by mammogram and/or ultrasound according to age group (38 year old and more for mammogram) and those with positive finding in the (clinical and radiological) examination subjected to tissue sampling and histological examination and followed up period was till January 2014. **Results:** Total number attended breast clinic were 6268 cases including 6022 symptomatic group (I) and 246 asymptomatic groups II (with a drop of 34 cases from second group in the first round). Only cases in group (II) were enrolled in this analysis. Only 165 cases were sent for mammogram (indicated) but only 138 cases did the examination due to cases dropped from the second round of the program. From the 138 cases that did the mammogram only 85 cases had different positive findings. 85cases (with positive mammogram findings) plus 27 cases with younger age group (112 cases) were sent for ultrasonography. Only 96 cases attended ultrasound (16 cases were dropped), from these cases only 58 cases (with positive mammographic and ultrasonography findings) were sent for tissue sampling. Out of those 58 cases only 40 cases attended tissue sampling study but only 22 cases brought their results to the hospital for follow up. From those 22 cases, 9 cases were normal while 3 cases had inflammatory findings, 3 cases had malignant findings and 7 cases had premalignant findings. **The Conclusions:** Low numbers of cases attending the breast screening and high rate of dropped cases participating in the program in different levels of the program and low number of screened cases who are diagnosed as having malignant breast diseases in relation with long duration of the study. **The Recommendations:** Promote the process of public awareness and health education about breast cancer and the importance of prevention and methods for early detection of tumors and pre-cancerous lesions. Improvement of the capacity in primary care center and improving the skills of primary care practitioners for breast clinical examination (BCE) and appropriate referral.

Keywords: Breast screening, breast malignancy, Breast cancer.

INTRODUCTION

Breast cancer is the most common cancer in women worldwide and the incidence of this cancer shows varied rates. These rates are low in less developed countries and greatest in the more developed countries. The World Health Organizations recorded Breast cancer as the most frequently diagnosed cancer and the leading cause of cancer death in females worldwide, accounting for 23% (1.38 million) of the total new cancer cases and 14% (458,400) of the total cancer deaths in 2008. About half the breast cancer cases and 60% of the deaths are estimated to occur in economically developing countries (Jemal, A. *et al.*, 2011). After skin cancer, breast cancer accounts for more than 25% of cancers in women worldwide. This rate is twice that of colorectal cancer and cervical cancer and about three times that of lung cancer. Death rates are also 25% greater than that of lung cancer in women

(Chalasani, P. *et al.*, 2010). In Iraq, Breast cancer accounts for 34% of all female cancers & it is the second leading cause of cancer related mortality in women today (after lung cancer) (Iraqi Cancer Board, 2007). So Breast cancer still remains one of the most commonly diagnosed cancers among women and kills thousands worldwide each year.

Breast cancer is a malignant tumor that starts in the cells of the breast. These are several signaling systems of growth factors and other mediators that interact between stromal cells and epithelial cells. Disrupting these may lead to breast cancer as well. The immune system normally seeks out cancer cells and cells with damaged DNA and destroys them. Breast cancer may be a result of failure of such an effective immune defense and surveillance (Cuzick, J. *et al.*, 2011).

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Epidemiological studies have identified many risk factors that increase the chance of a woman developing breast cancer. Being female, increasing age ; (The average age at diagnosis is usually around 40- 60 years). Most advanced breast cancer cases are found in women over age 50 supporting a link with hormonal status, with only 5% of all breast cancers occur in women under 40 years old). Men can also get breast cancer, but they are 100 times less likely than women to get breast cancer (NCCN, 2012).

A personal history of breast cancer, a family history of breast cancer, inherited genes that increase cancer risk (BRCA1 and BRCA2), radiation exposure, obesity and HRT that increase estrogen levels in postmenopausal women, early menarche, nuliparity, and late menopause that increase lifetime exposure to estrogen in premenopausal women, drinking alcohol (Warner, E. *et al.*, 2011), all increases the incidence of having breast cancer.

Breast cancer is diagnosed on routine screening procedures or after detection of symptoms. Most of patient donot presents early that is why many protocols and trails were introduced to detect breast cancer by early detection and screening. Morbidity and mortality from breast cancer will be reduced. Screening is a method of detecting breast cancer at a very early stage. Since 1977, there were several protocols that had been introduced and developed by the World Health Organization in all countries of the world to organize and develop centers for early detection of breast cancer. Newly introduced Clinics with a high specialization and selection. For screening of high risk patient (breast cancer family History breast clinic) also had been introduced. 1982 Breast Cancer Foundation was dedicated for fighting breast cancer and originated the Race for the cure fitness walk and fundraiser in 1983 (Mcdonald, K, 2007).

This race since then is an international event, with more than 1.6 million participants in over 140 races. In 1990 the race was held in Washington, where the Komen Foundation distributed pink visors to participants. The following year, at a walk in New York City, the organization handed out symbolic pink ribbons. Since then the pink ribbon has become a symbol of fighting against breast cancer (Sulik, G.A, 2010). In 2009, Out of the Shadow of Pink, ac Man's pink and the Brandon Greening Foundation for Breast Cancer

in men came together to make third week of October as male breast cancer awareness week. National Breast Cancer Awareness Month is observed in October for survivors. Family and friends of survivors and/or victims of the disease are invited for this event. For whole of this month, the symbolic pink ribbon is worn to salute and recognize the struggle against this deadly and common cancer. Pink for October is an initiative started by Matthew Oliphant. It asks the sites willing to help make people aware of breast cancer to change their template or layout to include the color pink. This may lead to increase worldwide awareness regarding breast cancer (Sulik, G.A, 2010). In Iraq especially in Baghdad namely in our hospital (Al-Yarmouk teaching hospital), the foundation of breast clinic started since 2001 as an isolated unit. Since that time; this breast clinic started to receive patients complaining of breast pathology who are asking for treatment and also receives cases attending for breast screening. The most common symptom of breast cancer is the feeling of the presence of a lump or change in the size or shape of one or both breasts, and formation of dimples; which is called Peau d'orange or orange peel appearance. Other symtoms include change in the shape and appearance of one or both nipples, discharge from one or both nipples, rash or sores around the nipple, pain not related to menstrual period, and swelling of the arm. Symptoms of spread of the cancer and an advanced cancer include bone pain or easy fractures, skin ulcers, weight loss, fatigue, convulsions or seizures etc (Katz, V.L. *et al.*, 2012).

The protocols that are followed on by breast screening clinics are based on triple assessment for each patient which include clinical breast examination, and radiological evaluation "mammography and ultrasound". tissue sampling (FNAC, True-cut biopsy and excisional biopsy) are added to these protocols. Many new modalities had been introduced for investigation of breast diseases

The protocols of Iraqi National program of breast screening is a part of National breast Cancer control program which is a nation-wide initiative under the direction of Ministry of Health aims to provide high quality services for increasing public awareness & screening of breast cancer of all females in Iraq within the age group of 20 year

above & education on its risk factors, symptoms & signs. Overall, objectives to improve availability and accessibility of screening services, especially to those with low income and those residing in remote areas with little access to healthcare services and to increase the knowledge of the public on the benefits of breast cancer prevention and to change the attitude and behavior of the target population to seek early detection services (Iraqi Cancer Board, 2007).

The plan of action of Iraqi National program of breast screening recommends that the normal and high risk women (Inheritance, histological type, family history, personal history of breast cancer and history of radiation therapy to the chest) should have self breast examination, clinical breast examination, and mammography in different frequencies. (Table A and B) (Iraqi Cancer Board, 2007)

Table (A): Recommended protocols for women with no risk (Iraqi Cancer Board, 2007)

Screening/ Age	20-29 year	30-39 year	40-49 year	50+year
Self Breast Exa	Monthly	Monthly	Monthly	Monthly
Clinical Breast Exam	Once every 3 years	Once every 3 years	Annually	Annually
Mammogram	----------	----------	Every 3years	Every 3years

Table (B): Recommended protocols for high risk women (Iraqi Cancer Board,)

Screening/ Age	20-29 year	30-39 year	40-49 year	50+year
Self Breast Exam	Monthly	Monthly	Monthly	Monthly
Clinical Breast Exam	Annually	Annually	Annually	Annually
Mammogram	----------	Every 5 year	Annually	Annually

AIM OF STUDY

To evaluate the efficacy of breast screening program at AL-Yarmouk Teaching Hospital in early detection of malignant breast diseases.

PATIENTS AND METHODS

This study was done in the breast clinic at Al-Yarmouk Teaching Hospital for the period from October 2012 to October 2013 and follow up them till January 2014 including a total of 6268 cases (6007) patients were females and (15) patients were males attended breast clinic complaining of symptomatic breast pathology and asking for treatment and 246 asymptomatic females cases asking for breast screening.

Before starting this study we design a formula of questioner for cases complaining symptomatic breast pathology or group (I) and another questioner for asymptomatic cases asking for screening assessment or group (II).

History was taken from all cases attended breast clinic and the causes of coming to breast clinic and clinical breast examination were done for both group.

The criteria of selection in this study were asymptomatic cases attending for screening (group II). The questioner paper that was designed for asymptomatic cases included a direct question about the causes of attendance, age, marital state, menstrual history, socioeconomic status, habit of smoking, drug history of contraception, occupation,residency, family history of breast cancer of first degree relative and other type of relative and other type of malignancy related to cases or to the relative.

This had been followed by clinical examination of the breast which reveled some of cases had positive finding or suspicious and other negative finding among all cases.

Some of attended cases (group II) were excluded from the study because they missed from the first round of follow up (that included history taking and sending for investigation but no feedback of the results) and other cases that attended the second round (during 1 to 6 months) for follow up were included in our data. Cases were sent for mammogram as a part of screening program whom ages were more than 38 year and other cases sent for ultra sound examination whom ages were below 38 year after clinical examination due to suspicious finding in the clinical examination of the breast. Some cases that did mammogram were sent for ultrasound to confirm the positive finding of mammogram. Cases that had been sent for histopathological and cytological examination are those who had suspicious finding by imaging studies (mammogram and ultrasound). The

procedures included fine needle aspiration under ultra sound guidance with local anasthesia under aseptic technique, Tru-cut biopsy under ultrasound guidance with local anasthesia under aseptic technique, and excisional biopsy under local or general anasthesia under aseptic technique.

Exclusion Criteria:
Some of attended cases for breast screening were excluded from the study because they were missed from the follow up in the first round.

A. Questioner paper for Screening cases

name	age	S	M	Date:		
F.H.		S.C.		Sm.	C.P.	No.
Mode of screening						

Mammography:
U/S:
FNA:
Core cut:
Follow up:

B. Questioner paper for complaint and referral cases

name	age	S	M	Date:		
F.H.		S.C.		Sm.	C.P.	No.

Presentation
Mammography:
U/S:
FNA:
Core cut:
Staging:
Follow up:

THE RESULTS

Six thousands two hundreds sixty eight (6268) cases of male and female with 6257 (99.76%) females and 15 (0.23%) males attended breast clinic in Al-Yarmouk teaching hospital apart from the total number 246 (3.91%) cases who were all females were included in this study and 6022 (96.08%) cases attended breast clinic complaining breast pathology and asking for treatment were excluded. Demographic characteristics are shown in figure 1
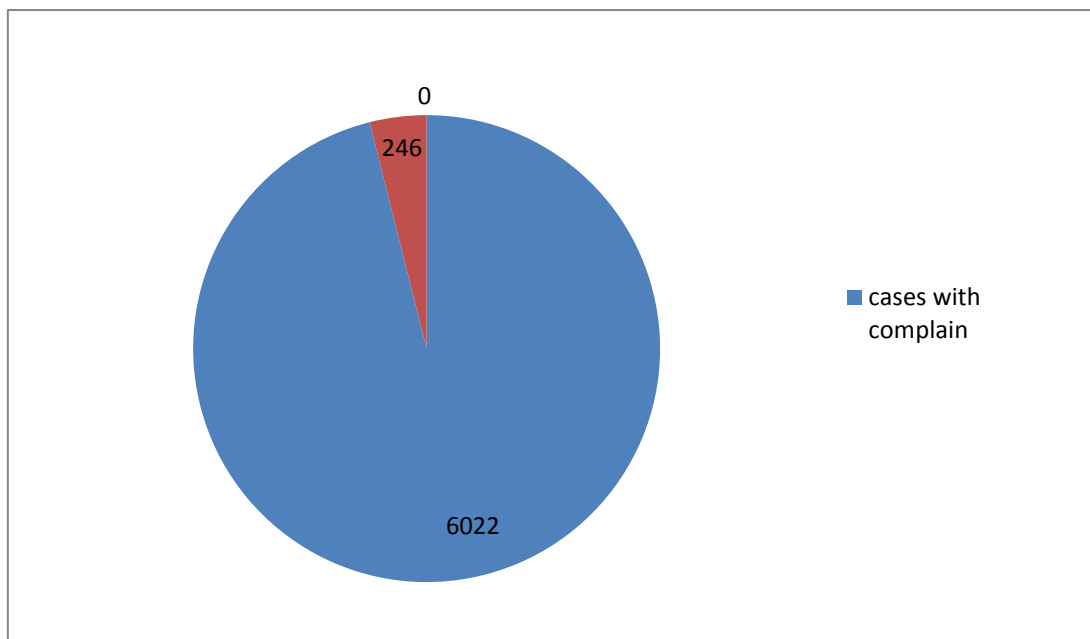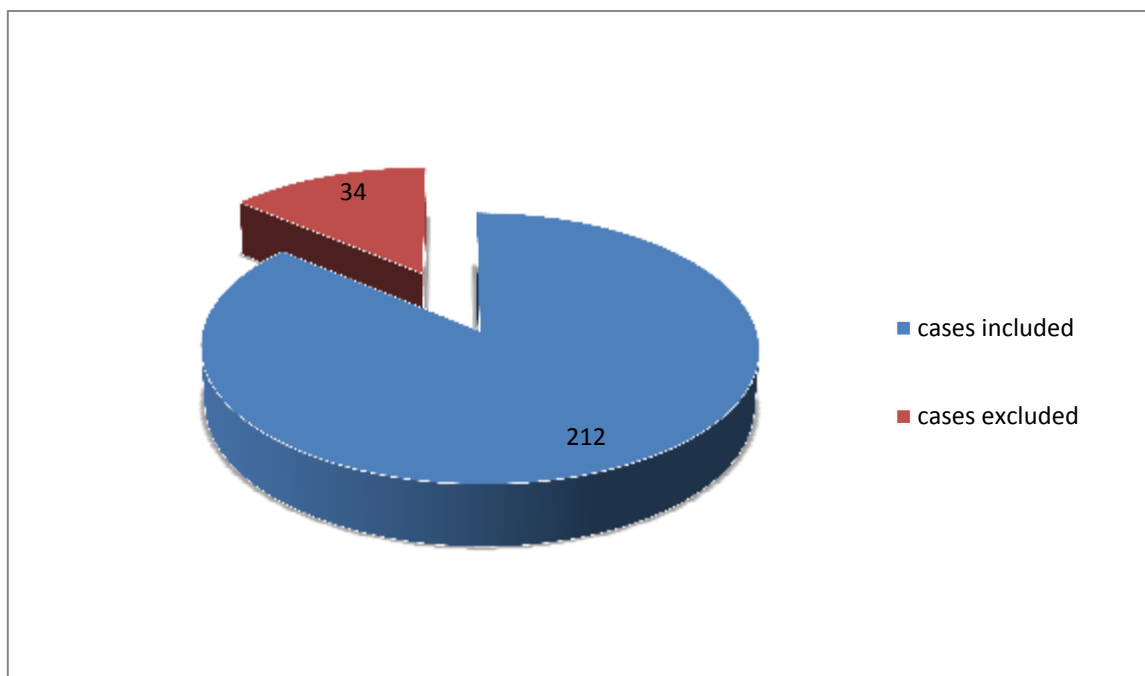.

Figure 1: Demographic Characteristics of cases attended breast clinic

From 246 cases of breast screening, 212 (86.178%) cases included and 34 (13.82%) cases were excluded from the study because they were missed during follow up from 1st round. The no. of the cases attended for breast screening are summarized in figure 2.

Figure 2: No. of cases attended for breast screening

In this study we evaluate the factors that force the cases to attend breast clinic for breast screening which reveled one of the following factors which either positive family history, health awareness, phobia from disease and death, newly death of far relative complaining breast cancer, personal history of breast cancer or other organ cancer, past history of benign breast pathology, T.V, net, journal and other means method of propaganda.

Table 1 shows the causes of attendance to this clinic which show highest percentage 69 (32.547%) for (+ve) family history.

Table 1: Triggering factors that force cases to attend breast screening.

factors that force the cases for breast screening	No.	*%*
(+ve)family history	69	32.547
Health awareness	42	19.811
phobia from disease	20	9.433
Hx. Of other side ca. breast (mastectomy)	9	4.245
Hx. Of hysterectomy (ca. cervix)	1	0.471
Past Hx. Of benign breast conditions	15	7.075
Patients of ca. breast known to attendance (friends, neighbors)	48	22.641
Television and other method propaganda	8	3.773
Total	**212**	**100**

In this study the degree of relation between the attended cases for breast screening to other member of their family that had a history of malignant disease of the breast or other organ in this study we saw that a large percentage of attended cases had first degree relative especially the mother{ 20 (28.985%) }and less to the sister {15 (21.739%)}. These findings are shown in table 2.

Table 2: Distribution of cases with (+ve) family Hx. according to degree of relation

Degree of relation to cases of (+ve) family Hx.and their no.	No. of cases	%
Mother ca. breast	20	28.985
(1) Sister ca. breast	15	21.739
More than (1) Sister ca. breast	4	5.797
(Mother + Sister) ca. breast	2	2.898
First degree ca. breast+ Second degree ca. breast	6	8.695
First degree ca. breast+ First degree other cancer	3	4.347
First degree ca. breast+ Second degree other cancer	1	1.449
Second degree ca. breast + First degree other cancer	2	2.898
First degree ca. breast + First degree benign breast mass	1	1.449
Second degree ca. breast + First degree benign breast mass	1	1.449
Second degree ca. breast	14	20.289
total	**69**	**100**

The age distribution of the cases that were included in our study ranged between 18 to 72 year old with the mean age of 45 year old. This is summarized in table 3. This table shows that the largest age group attended in the breast clinic for screening were from 41-50 year old or 89 (41.98%) cases and the lowest age group were those ≤ 20 year old with only 2 (0.94%) cases and those ≥ 71 year old make only 2 (0.94%) cases.

Table 3: No. of cases and percentage for screening according to age group distribution

Age group	No.	%
18-20	**2**	0.943
21-30	**11**	5.189
31-40	**43**	20.283
41-50	**89**	41.981
51-60	**55**	25.943
61-70	**10**	4.716
71-72	**2**	0.943
Total	**212**	100

The marital state of screend cases are shown in table 4. Which reveled 183 (86.32%) women were married and 29 (13.68%) women were single.

Table 4: Distribution of cases for breast screening according to marital state

Marital state		%
Married	183	86.32
Single	29	13.68
Total	212	100

In this study the menstrual history of attended cases was evaluated (age of Menarche, age of Menopause, age of first child birth). 57 (26.89%) cases had high risk menstrual history according to age group, 16 (7.54%) cases had early menarche (<12 year old), 29 (13.68%) cases had first child birth > 30 year old and 12 (5.66%) cases had late menopause (>55 year old). This is shown in table 5.

Table 5: Distribution of cases with high risk menstrual and obstetric history in different age groups

Menstrual and obstetric Hx.	Age In year	Type of risk	Age group							Total
			(18-20)	(21-30)	(31-40)	(41-50)	(51-60)	(61-70)	(71-72)	
Menarche	<12	High	1	1	2	7	4	1	_____	16
	%		0.47	0.47	0.943	3.3	1.886	0.47	____	7.54
First child birth	>30	High	____	____	7	14	6	2	____	29
	%		_____	____	3.3	6.6	2.83	0.943	____	13.68
Menopause	>55	High	_____	_____	_____	_____	9	2	1	12
	%		_____	_____	_____	_____	4.245	0.943	0.47	5.66
Total	**No.**		**1**	**1**	**9**	**21**	**19**	**5**	**1**	57
	%		**0.47**	**0.47**	**4.245**	**9.9**	**8.96**	**2.36**	**0.47**	26.89

The socioeconomic status of cases included in this study based on direct questioning to each attendant about her financial state and whether she got salary or not and the type of job. This study showed that 171 (80.66%) cases were with medium class and 36 (16.98%) cases were of low class and 5 (2.358%) cases of high class, this shown in table 6.

Table 6: Classification of cases for breast screening according to social class

Social class	No.	%
H	5	2.358
M	171	80.66
L	36	16.98
Total	212	100

In this study, the history of smoking was included and table 7 shows that 24 (11.32%) cases were smoker and 188 (88.68%) cases were non smoker.

Table 7: Distribution of cases according to smoking habit

Cases with habit of smoking	No.	%
Smoker	24	11.32
Non smoker	188	88.68
Total	212	100

In this study, the history of pharmacological contraception was included and each case was asked whether she was on contraception or if she had a history of taking contraception previously. Table 8 shows the cases that were taking or having a history of taking contraception.

Table 8: Classification of cases according to use of Oral contraceptive therapy (OCT)

History of contraception	No.	Percentile
Positive (Pharmacological contraceptive)	96	45.28
Negative	116	54.72
Total	212	100

In this study, the family history of breast cancer specifically and other type of cancer relatively was taken and table 9 shows that 69 (32.55%) cases had positive family history of first and second degree relatives and 143 (67.45%) cases had no family history.

Table 9: Classification of cases for breast screening according to family history of ca. breast

Family history of ca. breast	No.	%
Positive	69	32.55
Negative	143	67.45
Total	212	100

In this study the occupation of each case attended for screening program was recorded to see the level of education and degree of knowledge. Figure 3 Shows that the largest percentage among the attended cases was between house wives whom were 100 (47.61%) cases and the lowest percentage was between lawyers and doctors whom make 1 (0.47 %) case for each one as shown in figure 3.
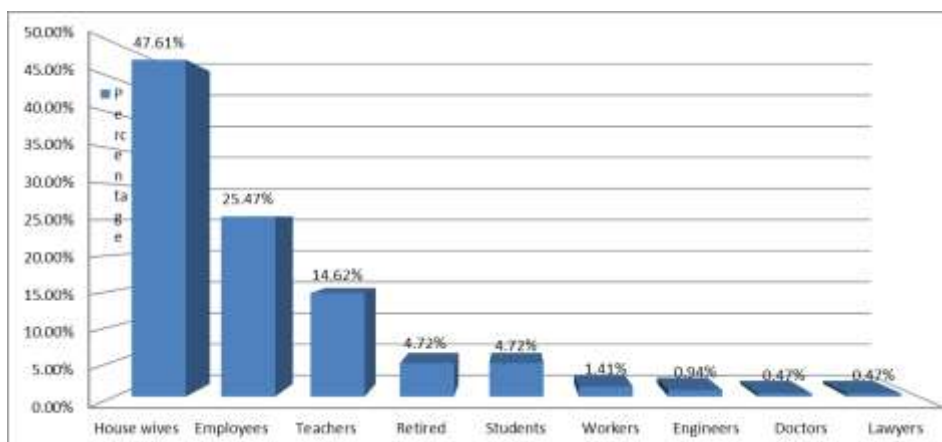

Figure 3: Distribution of cases according to their occupation

In this study, the largest percentage of cases that attended the breast clinic were resident at Al-Karkh and the highest incidence in Al-Dora sector (16.509%) and lowest were at Al-Rusafa. Cases attended from urban areas represent 90.1% while those for rural areas represent 9.9% as shown in table no. 10.

Table 10: The distribution of cases according to their locality

Locations	No.	%
Urban	191	90.1
Rural	21	9.9
Total	212	100

Triple Assessment of the Study Cases:
1-Clinical Breast Examination
In this study, clinical breast examination was done for all cases attended breast clinic. For cases attended breast screening, clinical breast examination revealed either positive finding which was ranging from more benign to less suspicious finding and normal breast examination. Table 11 shows that younger age group (20-30 year old) had the positive findings more than the negative findings, while in the older age groups (30-70 year old) the negative findings were the predominant.

Table 11: Association of clinical finding with age group

Clinical breast examination	Finding	Age group						
		(18-20)	(21-30)	(31-40)	(41-50)	(51-60)	(61-70)	(71-72)
	(+ve)	1	10	9	13	8	2	-----
	%	0.47	4.718	4.245	6.13	3.773	0.94	----
	(-ve)	1	1	34	76	47	8	2
	%	0.47	0.47	16.037	35.849	22.169	3.773	0.94
Total		2	11	43	89	55	10	2
%		0.94	5.188	20.283	41.98	25.943	4.716	0.94

2-Radiological Findings:

A: Mammogram Findings:

The lowest age groups (2 cases) which were sent for mammogram screening program were 38 year old, and all the age groups who were more than 40 year old were sent for mammography examination after clinical examination according to the Iraqi National Breast Screening and diagnosis program of 2010.

The number of mammogram examinations that were requested was 165 (100%) requests. 138 (83.64%) mammogram exams were done and the report of each exam was recorded. 85 (61.59%)

reports show positive findings which were ranging from suspected benign lesions to suspicious lesion, and 53 (38.41%) reports show normal breast radiological imaging. The number and percentage of each type of the findings that recorded from mammogram report didn't represent the total number of mammogram exam with positive finding, because many reports contain more than one type of variables which represent abnormal finding. 27 (16.36%) mammogram exams were dropped due to loss of feed back of the mammogram report or the exam was not done originally. This was summarized in table 12.

Table 12: Finding of mammogram in all cases submitted to breast screening program

Type of finding in mammogram		Variable	% from mammogram done
Mass	Well defind	23	16.66%
	Ill defind	10	7.25%
	Calcified	4	2.89%
	Speculated	2	1.45%
	Suspicious	1	0.72%
Lymph node calcified	Single	0	0
	Multiple	1	0.72%
Lymph node not calcified	Single	14	10.14%
	Multiple	15	10.87%
Cystic changes		7	5.07%
Micro calcification		39	28.26%
Macro calcification		23	16.67%
Ductal dilatation		22	15.94%
Increase density		35	25.36%
Calcified blood vessels		5	3.62%
Thickenings		1	0.72%
Normal report (-ve) finding		53	38.41%
Total no.of mammogram requested=165 (100%)			
Total no.of mammogram done=138 (83.64%)			
No.of mammogram with (+ve) finding=85 (61.59%)			
No.of mammogram with (-ve) finding=53 (38.41%)			
Drop in mammogram=27 (16.36%)			

B: Ultrasound Finding:

Apart from radiological assessment of patient for breast screening program is breast ultrasonography. The number of ultrasound exams requested was 112 (100%), 96 (85.71%) ultrasound exams were done, and 16 (14.29%) ultrasound exams were dropped. These 2 values represent number of cases sent for this exam. 66 (68.75%) reports show positive radiological findings, and 30 (26.79%) reports with negative or normal ultrasonic reports. The detailed

radiological character (types, numbers and percentages) of abnormal radiological finding are listed in table 13. These abnormal findings were ranging from benign lesions to highly suspicious lesions. The numbers and percentages of abnormal radiological findings that listed in table 13 is not representing the number of cases that got the ultrasound examination because many of the reports of ultrasonography contain more than one radiological findings in each report.

Table 13: Ultrasound finding in all cases submitted to the screening program

Type of finding in ultra sound		Variable	%
Mass	Dense	3	3.125
	Calcified	6	6.25
	Fibroadenosis	2	2.08
	hypoechoic	1	1.042
	Suspicious	1	1.042
	Lipoma	3	3.125
	Soft tissue	14	14.58
Lymph node	Single	1	1.042
	Multiple	9	9.38
Cystic lesion		4	4.17
Fibrocystic changes		4	4.17
Ductal dilatation		21	21.88
Increase density		3	3.125
Prominent duct		2	2.08
Ductal collection	Engorged milk	2	2.08
	slugged	5	5.208
Normal report (-ve) finding		30	26.79
Total no. of ultrasound requested=112 (100%)			
Total no. of ultrasound done=96 (85.71%)			
No. of ultrasound with (+ve) finding=66 (68.75%)			
No. of ultrasound with (- ve) finding= 30 (31.25%)/ Drop in ultrasound =16 (14.29%)			

Table 14: The association between radiological investigations (mammogram and ultrasound) and the positive findings in different age groups

Type of radiological examination	finding	Age group							Total	
		18-20)(	(21-30)	31-40)(	41-50)(	51-60)(	61-70)(	71-72)(		
Mammogram	(+ve)	_____	_____	5	43	28	7	2	85	138 100%
	%	_____	_____	3.62	31.16	20.29	5.07	1.45	61.59	
	(-ve)	_____	_____	4	29	17	3	-----	53	
	%	_____	_____	2.9	21.02	12.32	2.17	____	38.41	
Ultrasound	(+ve)	1	3	6	36	16	4	____	66	96 100%
	%	1.04	3.125	6.25	37.5	16.67	4.17	_____	68.75	
	(-ve)	-----	7	12	5	3	2	1	30	
	%	_____	7.29	12.5	5.208	3.125	2.08	1.04	31.25	
Mammogram and ultrasound	(+ve) mammo .& (+ve) u/s	_____	_____	3	36	16	4	_____	59	71 100%
	%	_____	_____	4.23	50.71	22.54	5.633	_____	83.11	
	(+ve) mammo .& (-ve) u/s	_____	_____	1	5	3	2	1	12	
	%	_____	_____	1.4	7.04	4.23	2.82	1.4	16.89	

3-Cytological and Histopathological Findings of the Study:

Tissue sampling is one of three part of triple assessment of breast (clinical breast examination, radiological evaluation "mammography" and histological evaluation) which breast screening program based on it.

In this study we see that 58 (27.358%) cases from the total number of cases 212 (100%) send for tissue sampling either by FNAC under ultrasound guidance, or by True-cut biopsy under ultrasound guidance. Other type of tissue sampling is excisional biopsy.

The number of tissue sampling requested by the breast clinic is 58 (100%). 40 (68.97%) cases cope

with this exam and 18 (31.034%) cases were dropped from the procedure. For those cases whom did tissue sampling, 22 (55%) cases the cytological and histopathology reports were evaluated and recorded, and 18 (45%) cases they loss of feed back of the cytological and histopathology report. 13 (59%) reports were with (+ve) findings. 3 (13.636%) reports were with malignant findings which was the same numbers and percentages for inflammatory findings. 7 (31.818%) reports were with premalignant findings. 9 (40.9%) reports were with (-ve) or normal findings.

These results are summarized in table 15.

Table 15: Histopathological and cytological findings in all cases submitted

Type of Histopathological and cytological examination	Site	Histopathological and cytological finding	No.	%
True-cut biopsy under ultrasound guidance	Breast	Ductal carcinoma insitu	1	4.545%
		Normal fatty tissue (no malignancy)	2	9.09%
		Benign looking ductal epithelium	1	4.545%
		Moderate nuclear atypical	1	4.545%
FNAC under ultrasound guidance		Dense fibrous tissue+histocyte	1	4.545%
		Malignant looking ductal epithelial cell	1	4.545%
		Benign looking ductal epithelium	2	9.09%
		Atypical cell	3	13.64%
		Inflammatory cell+histocyte	2	9.09%
	Lymph node	Lymphoid atypical cell	1	4.545%
Excisional biopsy	Breast	Moderate nuclear atypical	2	9.09%
		Infiltrative ductal cell ca.	1	4.545%
		Dense fibrous tissue+histocyte	2	9.09%
	Lymph node	Benign looking Lymphoid	1	4.545%
		Inflammatory lymph node	1	4.545%
Total no. of tissue sampling procedures requested=58				
Total no. of tissue sampling procedures done=40 (68.97%)				
No. of cases feedback the result of tissue sampling= 22 (55%)				
No. of cases lost from feedback the result of tissue sampling= 18 (45%)				
No. of tissue sampling with (+ve) finding= 13 (59%) (Inflammatory = 3 (13.636%), premalignant = 7 (31.818%), malignant = 3 (13.636%)				
No. of tissue sampling with (-ve) or normal finding= 9 (40.9%)				
Drop in tissue sampling procedure=18 (31.034%)				

to breast screening program.

Table 16 The relationship between different types of malignant breast tissue findings with different variabilities

Tissue sampling	age	Mammogram finding	Ultrasound finding	Marital state	Family history	Early menarche <12	Age of first child birth>30	Late menopause	Pharmacological contraceptive	Socioeconomic status	Smoking	occupation	Residency
Ductal carcinoma insitu	53	Scattered micro calcification	Cystic lesion	M	-ve	NO	YES	----	+ve	M	-ve	House wife	urban
Infiltrative ductal cell ca. stage 1	47	Ill defind mass &micro calcification	1.2cm suspicious mass	M	-ve	YES	NO	-----	+ve	M	+ve	employee	urban
Malignant looking ductal epithelial cell	40	Increase density	0.7Hypoechoic mass	M	-ve	NO	NO	-----	-ve	L	-ve	House wife	rural

Table 17: Master table shows the distribution of Histopathological findings to the type of risk factors

topathology	No	Age	Family Hx. of ca. breast (+ve)	(-ve)	Marital state Married	single	Social class H	M	L	contraception taking	Not taking	Smoking smoker	Non smoker	Age of early menarch (<12 year)	Age of first child birth (>30 year)	Age of late menopause (>55 year)
Neoplastic	1.	47		*	*			*		*		*		*		
	2.	53		*	*			*		*			*			*
	3.	40		*	*				*		*		*			

			C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13
Premalignant	1.	52	*		*		*		*			*			
	2.	44	*		*	*			*		*	*	*		
	3.	54		*	*	*		*	*						
	4.	50		*	*	*		*		*		*			
	5.	39		*	*	*		*			*				
	6.	52		*	*	*		*		*		*	*		
	7.	59		*	*	*			*		*	*	*		*
Inflammatory	1.	48	*		*	*		*		*					
	2.	42		*	*	*		*			*				
	3.	45		*	*	*		*			*				
Normal	1.	67	*		*	*			*		*				
	2.	35	*		*	*		*			*	*			
	3.	48		*	*	*		*			*				
	4.	42		*	*	*			*		*				
	5.	48		*	*	*		*	*	*				*	
	6.	52		*	*	*					*				
	7.	56		*	*	*			*		*				
	8.	45		*	*	*			*		*	*			
	9.	60		*	*	*			*	*					*

Table 18: The distribution of (+ve) and (-ve) family history to the variable risk factors

Cases according to family Hx.		Age group							Marital state		Menstrual and obs.Hx.		Social class			smoking		contraception	
													M	H	L				
		(18-20)	(21-30)	(31-40)	(41-50)	(51-60)	(61-70)	(71-72)	Married	Single	high risk	low risk				Smoker	Non smoker	Pharmacological contraceptive	Negative
Cases with (+ve) family Hx.	69	1	4	19	32	11	2	---	60	9	18	51	54	1	14	7	62	29	34
%	32.55	0.47	1.89	8.96	15.09	5.19	0.94	---	28.30	4.25	8.49	24.06	25.47	0.47	6.6	3.3	29.25	13.68	16.04
Cases with (-ve) family Hx.	143	1	7	24	57	44	8	2	123	20	39	104	117	4	22	17	126	67	65
%	67.45	0.47	3.3	11.32	26.89	20.75	3.77	0.94	58.02	9.43	18.396	49.05	55.19	1.89	10.38	8.02	59.43	31.6	30.66
Total	212	2	11	43	89	55	10	2	183	29	57	155	171	5	36	24	188	96	116
%	100	0.94	5.188	20.283	41.98	25.943	4.716	0.94	86.32	13.68	26.886	73.113	80.66	2.358	16.98	11.32	88.68	45.28	54.72

Table 19: Comparison between positive and negative family history cases according to the radiological and histopathological findings

	mammogram					ultrasound					Mammogram and ultrasound					Tissue sampling								
	No. requested	No. done	(+Ve) finding	(-Ve) finding	drop	No. requested	No. done	(+Ve) finding	(-Ve) finding	drop	No. requested	No. done	(+ve)finding in mammo & (+ve) finding in u/s	(+ve)finding in mammo & (-ve) finding in u/s	drop	No. requested	No. done	Recalled result	Normal finding	Inflammatory	Premalignant	Malignant	Drop in result	Drop from exam.
Cases with (+ve) family Hx.	40	37	18	19	3	37	32	20	12	5	24	21	13	8	3	13	9	5	2	1	2	-----	4	4
%.	24.24	22.42	13.04	13.77	1.82	33.04	28.57	20.83	12.5	4.64	28.24	24.7	18.3	11.27	3.53	22.41	15.5	12.5	9.09	4.55	9.09	-----	10	6.1
Cases with (-ve) family Hx.	125	101	67	34	24	75	64	46	18	11	61	50	46	4	11	45	31	17	7	2	5	3	14	14
%	75.76	61.21	138	24.64	14.55	66.96	57.14	47.92	18.75	9.82	71.76	58.82	64.788	5.633	12.94	77.59	53.4	42.5	31.8	9.09	22.73	13.64	35	24.137

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Total	165	138	85	53	27	112	96	66	30	16	85	71	59	12	14	58	40	22	9	3	7	3	18	18
	100	83.64	61.59	38.41	16.36	100	85.71	68.75	31.25	14.29	100	83.53	83.11	16.89	16.47	100	68.97	55	40.9	13.636	31.818	13.636	45	31.034

DISCUSSION

In this study, the Percentage of female cases attended breast clinic for screening program is 3.91% from the total cases that attended breast clinic. This is compared with attendance in United Kingdom which was 73.8% in 2008 (Health and social care information center, 2014), this reveal low rate of participation in breast screening in Iraq.

Compared with international criteria of breast clinic foundation, our breast clinic lacks the essential features of modern recommended criteria. In such a way the recommended breast clinic should have multidisciplinary working groups representing all the professional disciplines involved in the management of cases presenting for breast screening from initial presentation in primary care to diagnosis at the breast clinic multidisciplinary meeting. Improvement in breast cancer treatment and early detection have resulted in a steady drop in breast cancer mortality rate, A number of scientific and national organizations have published guidelines supporting periodic breast screening examinations (von Eschenbach, A.C, 2004).

The recommendations for best practice are the result of discussion between the disciplines represented on the working group and are a consensus opinion (Willett, A.M. *et al.*, 2010). Deciding whether a woman is indeed at risk that are of positive family history of breast cancer and this require some specialist knowledge that may be lacking in a junior staff. Knowing if and how frequently to offer, screening requires a familiarity with protocols; risk explanation and counseling takes time, which is always in short supply in a busy symptomatic clinic, hence there is a need for specialized family history clinic to be necessarily research-based and actively audited their activity. So worldwide recently set up a breast cancer family history clinic (Byrne, G.J. *et al.*, 1997).

The Age Distribution of the Study:
The majority of screened cases were in the age group between 41-50 year old or 89 (41.981%) cases, while the age groups of 20 year old and below and the age group of 71 year and above were the least attended age groups or only 2 (0.943%) cases for each. This distribution of age group attendance in this study is compatible with a thesis done by Ava Kwong et al in Honk Kong, China in 2008 in which the women in their fifth decade made the majority of attended cases (41.71%) (Ava, K. *et al.*, 2007), this may be due to high medical education and apprehension

regarding breast cancer in this age group, and the incidence of breast cancer start to appear in a high percentage in 41-50 age group and younger than this group.

In a study done by Magdalena lagerlund et al. in Sweden from pilot study to nationwide program, they found that the majority of cases were in the age group limit more for 44-50 (30.2%) which is higher percentage among age group in his study (Lagerlund, M. *et al.*, 2014).

Marital State:
Regarding marital state of cases involved in this study, the majority of cases {183 (86.32%) cases} were married and less 29 (13.68%) cases were single. This distribution of marital status in this study is compatible with a study done by Tarek Tawfik Amin et al. in Saudi Arabia, College of Medicine, King Faisal University-Al Hassa 2009 in which the majority of cases included in their study were married (87.8%) and only 12.2% were single. This may be due to the fact that married women are more apprehended regarding their health and the risk of developing breast ca. than single women (Amin, T.T. *et al.*, 2009).

Menstrual and Obstetrical History:
In this study, 6 out of 10 (60%) cases whom had early menarche (<12year old), 4 out of 10 cases (40%) cases whom had first child birth >30 year old and 1 out 10 cases (10%) cases who had late menopause all of them had breast malignant and premalignant histological findings. This demonstrates that early menarche and late first child bearing age are significant risk factors for developing breast cancer.

In a study done by Nagata et al. in 1995, they concluded that the onset of mensturation at the age of 16 is found to be significantly associated with decrease in breast cancer relatively when the age of menstruation was less than 14 year old (McIntosh, A. *et al.*, 2004).

In a study done by Negri et al in 1988, 75% increase in risk of breast cancer for women with age of first child birth more than 28 year old (McIntosh, A. *et al.*, 2004).

Socioeconomic Status:
Regarding socioeconomic status of cases were included in this study, the majority of cases were attended breast clinic for breast screening 80.66% were within medium socioeconomic class, while 16.98% of cases were within low socioeconomic class and only 2.358% of cases were within high

socioeconomic class. This reflects the low rate of attendance and participation from the high socioeconomic class women**.**

In a study done by Duport, N. et al., (2008) and another study done by Chamot, E. et al., in (2009), both studies Referring to the relationship between socioeconomic status and adherence to organized screening programs versus opportunistic screening, the results of both studies showed that women who attended an organized breast cancer screening program were more likely to be of a lower socioeconomic status.

In another 2 studies done by Aro, A.R. et al., in 1999; and Mickey, R.M. et al., in 1997, they concluded that organized public breast screening programs tend to attract women from lower socioeconomic classes.

This may be due to lack of confidence in the programmed general public service added to the anxiety and phobia from the result, this reflect the greater extent of private purchase of screening offered by women with high socioeconomic status outside public services.

Smoking:
Regarding the Smoking habit of cases that included in this study, the majority (88.68%) of cases were non smoker and less than 24 (11.32%) cases were smokers. While only 3 out of ten cases (diagnosed as neoplastic and malignant) were smokers.

In a study made by K. McPherson et al. called Breast cancer—epidemiology, risk factors, and genetics in 2000, it didn't link the smoking as a risk factor for developing breast cancer (McPherson, K. *et al*., 2000).

Contraception:
In this study regarding the use of contraception by the cases who attended for breast screening, cases that not took or having no history of taking contraception previously were 116 (54.72%) cases of which only one out of three cases had malignancy while only 3 out of seven cases had premalignant pathology.

While those women who took contraceptive were 96 (45.28%) cases, from them 2 cases out of three cases had malignant pathology and 4 out of 7 cases had premalignant pathology.

In a study done by Chris Kahlenborn et al. in 2006 called Oral Contraceptive Use as a Risk Factor for Premenopausal Breast Cancer, they concluded a significant relation between OCP and the development of breast cancer (Kahlenborn, C. *et al*., 2006).

Family History:
Regarding the family history of cases whom attended for breast screening program which included in this study, the majority of cases (67.45% or 143 cases) had a negative family history of breast cancer while 69 (32.55%) cases had positive family history of breast cancer. At the same time in this study we found that positive family history rank at the top of the list of triggering factors that forces the cases to attend breast clinic for breast screening.

In this study the degree of relation and number of family members suffering breast cancer were undertaken, we note that attended cases that had positive family history of breast cancer were more of first degree relative, 20 (28.985%) cases their mother had breast cancer.

This study is compatible with a study done by Patricia A. Carney et al, they found that the positive family history is the main trigger for attending the breast screening program (Carney, P.A. *et al*., 2006). While in a study done by Nathan S. Consedine et al they found that greater fear of developing breast cancer in a positive family history members is associated with a higher likelihood of screening, perhaps for both intentions and actual behavior (Consedine, N.S. *et al*., 2004).

In another study done by McIntosh A. et al 2004, a large reanalysis of epidemiological data world-wide has found that the probability that women in more-developed countries will develop breast cancer increases according to the number of affected first degree relatives. The probability of a woman aged 20 developing breast cancer by the age of 80 who has no affected relatives is 7.8%, 1 affected relative, 13.3% and 2 affected relatives, 21.1% (McIntosh, A. *et al*., 2004).

Occupation
Regarding the occupational status of cases attended breast clinic for breast screening that included in this study, we note in this study that the majority of cases were housewives {100

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(47.61%) cases} while the lowest a high quality occupation.

In a study done by F. Donato et al. in 1991, they concluded that the screening programs appeared to attract disadvantaged women (unemployed) mostly with a lower participation in organized screening program than the more educated women, which was thought to reflect the greater extent of private purchase of screening outside public services (Donato, F, 1991). In another study held by Tarek Tawfik Amin et al in Saudia Arabia in 2009, he concluded that the majority of participant in breast screening program were housewives (61.9%), while the Governmental employee formed only 23.6% of participants (Amin, T.T. *et al.*, 2009). Both studies were compatible with this study results regarding the occupation distribution among the participants in the breast screening program.

Residency:
In this study, the largest percentage of cases that attended the breast clinic were resident at urban areas (90.1%) while the residents of rural areas made the minority of this study participants (9.9%). This study is compatible with a study held in united states in 2002 by Steven S. Coughlin et al., in which the majority of women participating in breast cancer screening programs came from larger cities while much less percent of women came from rural areas (Coughlin, S.S, 2013), this may be due to economical, educational and transportation difficulties associated with the residency of rural areas.

Regarding this study, all cases that were invited were subjected to the first part of triple test which is the physical breast examination. This was done to all participants who presented to the breast clinic for breast screening program.

Clinical Examination:
In this study, clinical breast examination revealed more positive benign finding {10 (4.718%) cases} in younger age group (21-30 year old) than less suspicious finding8 (3.773%) cases in older age group (51-60 year old).

Radiological Findings:
A: Mammogram Findings and Ultrasonogrphy:
In this study all women who are involved in the breast screening program were sent for mammogram examination with lower age limit of 38 year old. This is not compatible with the protocols of Iraqi National program of breast screening that recommends mammography to start earlier for women with family history of breast cancer at the age of 30 year or five-ten years younger than the youngest member who was affected by breast cancer (Iraqi Cancer Board, 2007). This reflects poor analysis and selection of high risk cases for developing breast cancer. 165 (100%) cases were sent for mammogram after clinical examination, the feedback reports were 138 (83.64%) reports and 27 (16.36%) reports were lost from the feedback of mammogram reports due to postponing to another day for doing mammogram. The drop of cases who didn't had mammogram also may be due to insufficient x-ray films available or absence of technicians who are doing the mammogram. 85 out of 138 (61.59%) reports revealed different positive findings and 53 out of 138 (38.41%) reports had negative findings. Those 85 cases with suspicious findings were sent to ultrasonography examination plus 27 cases with young age group with positive physical findings which were sent from beginning to ultrasonography after physical examinations. From the total 112 cases who were sent for U/S only 96 cases attended the exam while 18 cases didn't attend the exam.

The ultrasonography revealed that 66 cases had different types of positive findings and 30 cases had no findings. From the 66 cases only 58 cases were sent for tissue sampling (FNAC, true cut or excisional biopsy) but only 22 cases attended for tissue sampling and 36 cases were dropped and this may be due to limited specialist staff and limited appointments during the week for doing FNAC.

Out of the 22 cases who are subjected to tissue sampling only 13 cases had positive findings and 9 cases were normal, from the 13 positive cases 3 cases had inflammatory conditions, 3 cases had malignant conditions (1 had DCIS, 1 invasive ductal cell carcinoma stage 1 and 1 case malignant looking ductal epithelial cell) and 7 cases had premalignant conditions.

In a study done by Jo Brett and Joan Austoker in 2001, they concluded that having undergone further investigations did not necessarily motivate women to attend for their next routine appointment, with 15 per cent of these women not

returning for routine screening (Brett, J. *et al.*, 2001).

In comparison with other international programs, Iraqi national program recommends breast self examination to be done monthly from the age of 20 in all women with normal or high risk. Clinical examination in Iraq is recommended to be done 3 yearly in no risk women below 40 year and annually above 40 year old, while in high risk women it is recommended to be done annually for all age groups. Mammographic examination is recommended to be done for all women with no risk 3 yearly above 40 year old and for high risk groups to be done 5 yearly from 30-40 year old and annually for those above 40 year old.

For cases with thoracic radiation, the recommendation of mammogram is to be started 10 years after the radiation. The magnetic resonant imaging exam is recommended only for high risk women.

In comparison with other national programs like in memorial sloan kette ring cancer screening in USA, they recommend to do self breast examination monthly and clinical breast examination, in normal women to be started annually from 25 year old and in high risk women every 3-6 months. For mammogram the normal women recommended to be started annually at age of 40 while in high risk women to be done annually from 25 year old and above. For women with thoracic radiation to be started 8 years after radiation. The magnetic resonant imaging exam considered annually with alternation 6 months after mammogram (Baselga, C.J, 2010).

CONCLUSIONS
1. Low numbers of cases attending the breast screening program in comparision with the real number aiming by the program.
2. High rate of health ignorance among women regarding the importance of breast screening program in the early detection and prevention of malignant breast diseases.
3. Delay and complicated steps from the hospital side regarding offering facilities of screening procedures for women attending the breast screening program.
4. High rate of dropped cases participating in the program in different levels of the program.
5. Inhibitants of urban area formed the majority of cases attending the screening program.

6. Low number of screened cases who are diagnosed as having malignant breast diseases in relation with long duration of the study due to different obstacles facing the breast screening program in our country.
7. The majority of attended cases were from medium and low socioeconomic levels in comparison with low participation from people of high socioeconomic levels.

RECOMMENDATIONS
1. Promote the process of public awareness and health education among Iraqi women by organizing seminars to educate and review the factors contributing to the breast cancer and the importance of prevention and methods for early detection of tumors and pre-cancerous lesions.

2. Educate and train personnels working in different ministries and organizations of civil society and especially the medical and nursing staff about the methods used worldwide to detect breast cancer through the organization of seminars and scientific conferences and workshops related to the medical staff of all the provinces. The main objective of the training process is the graduation of trained attendants. Constitute the nucleus for the training of their peers in the future, and includes training on how self and clinical examination of breast undertaken.

3. Improvement of the capacity in primary care center and improving the skills of primary care practitioners for clinical breast examination (CBE) and appropriate referral.

4. Adequate investment in secondary and tertiary healthcare infrastructure and formation a high specialized centers for breast screening with adequate and full assessment facilities, Strength capacity for diagnostic imaging (mammography and/or ultrasonography), fine-needle aspiration cytology, histopathology and testing for hormone receptors and genetic study for detection of women on high risk of breast cancer, with well trained staff (multi-displanary staff breast clinician, radiologist, histopathologist, breast surgeon and psychotherapist).

5. Invesment of (PACS) system by feedback of data and results to the professional staff involved in the program through a computerized network

connect the departments involved in the screening process, and application of information storage system like in some of the most prestigious centers in the Arab world and worldwide and compare it to the demographic characteristics the clinical, the pathological and the treatment outcomes.

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