

Knowledge, Attitudes and Practices about Breast Self-Examination and Mammography among Women at Diyala Governorate

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Abstract: **Background:** Globally, breast cancer is the most frequently diagnosed cancer in women. Early detection using breast self-examination (BSE) and mammography remains crucial in reducing mortality, especially in settings where screening infrastructure is limited. This study aims to evaluate the knowledge, attitude, and practice of women in Diyala Governorate, Iraq, about BSE and mammography. **Objective:** **Methods:** A cross-sectional study was conducted on 140 women in Diyala governorate through a structured questionnaire included socio-demographic characteristics and knowledge, attitudes and practices toward BSE and mammography. Data were analysed using SPSS version 27.0 and associations between variables were assessed using chi-square tests ($p < 0.05$ was considered significant). **Results:** The majority of the participants were married (62.4%) and housewives (50.0%). While 68.6% had heard of BSE and 58.7% knew that mammography is a breast X-ray, only 30.0% had good overall knowledge and practice was even worse: 28.6% performed BSE monthly and 24.3% had ever had mammography. Not knowing the correct technique was the commonest barrier to BSE (51.4%). Cost and time constraints were the major barriers to mammography. Knowledge and attitude were significantly associated with education, marital status and occupation ($p < 0.05$). **Conclusion:** The level of women knowledge of BSE in Diyala Governorate was fairly good but this did not translate into confident or consistent practice. Knowledge and attitudes were closely linked to education, marital status, and occupation. Addressing this gap will likely require educating women on correct BSE technique and improving access to mammography.

Keywords: Breast self-examination, Mammography, Breast cancer, KAPS, Breast, Iraq.

INTRODUCTION

Breast cancer continues to be the most common cancer diagnosed in women globally. The most recent GLOBOCAN estimates suggest that in 2022 there were around 2.3 million new cases of female breast cancer and 670,000 female breast cancer-related deaths worldwide. If current trends persist, the incidence is expected to increase by about 38% and the mortality by 68% by 2050, with the burden of female breast cancer falling disproportionately on countries with lower human development indices [Kim, J. *et al.*, 2025]. Breast cancer incidence and mortality rates have been declining in many high-income countries due to organized screening programs and improved treatment. However, such progress has not been seen in much of the Middle East, where the disease is still diagnosed at a more advanced stage and, importantly at a younger age than observed in Western populations [Mehdi, I. *et al.*, 2014]. Iraq is no exception to this regional trend. Local data from Najaf showed that the peak incidence of breast cancer was in women aged 40–49 years, approximately 10 years earlier than the age distribution in Western registries, with almost half of the tumours studied being triple-negative, a more aggressive subtype [Khalaf, H. *et al.*, 2022]. In keeping with this trend of late presentation, a recent study of women in Baghdad who had already been diagnosed with breast cancer showed that most had never checked

themselves for a lump before diagnosis, had not been trained on how to perform breast self-examination (BSE), and had not undergone any screening, with poor communication with physicians and limited decision-making autonomy identified as key barriers to earlier detection [Mawlood Ibrahim, A. *et al.*, 2026]. Like the other two studies, a third study among patients at Baghdad Medical City also found that the majority of women had heard of BSE, mostly through social media, but a large number of women did not practice BSE correctly or regularly even after being diagnosed [Al-Obaidi, M. N. *et al.*, 2024]. Early detection is still the most effective means of reducing breast cancer mortality [Nelson, H. D. *et al.*, 2016]. Systematic reviews and meta-analyses of randomized trials have demonstrated that mammography screening reduces breast cancer mortality, particularly in women ≥ 50 years of age, and reduces the incidence of advanced-stage disease at diagnosis [Farkas, A. H., & Nattinger, A. B. 2023]. In settings where organized mammography programs are limited by cost, infrastructure, or geographic access, breast self-examination and clinical breast examination remain accessible, low-cost complementary tools that help women become familiar with their breast tissue and prompt earlier consultation when they notice changes. [Coleman, C. 2017] Despite this evidence, knowledge, attitudes, and practices

regarding breast cancer screening remain inconsistent across the Arab world, and even where knowledge is good, practice often lags far behind it, as seen in Saudi Arabia, Mosul, Jourden and Gaza, where regular BSE practice ranged from only 7% to about a third of women despite much higher levels of awareness[Alduraiddi, H. *et al.*, 2025], [Alqahtani, T. *et al.*, 2021], [Al-Qazaz, H. K. *et al.*, 2020], [Abo Al-Shiekh, S. S. *et al.*, 2021], [Atrooz, F. *et al.*, 2023]. These gaps are exacerbated by low health literacy, limited access to services, and gender norms around who can conduct an examination[Atrooz, F. *et al.*, 2023], [IDonnelly, T. T. *et al.*, 2017].

The findings as a whole suggest a gap between knowledge of breast cancer risk and practice, which is likely to be influenced and perhaps worsened by local social and health-care access factors specific to each governorate. However, few published data so far characterize the knowledge, attitudes, and practices of women in Diyala Governorate toward breast self-examination and mammography. The present study was therefore carried out to determine the knowledge, attitudes, and practices regarding BSE and mammography among attending women to identify specific gaps that may inform locally targeted breast cancer awareness and early-detection initiatives.

PATIENTS AND METHODS

Study design and duration: This questionnaire-based, cross-sectional study was conducted on 140 women attending Baqubah Teaching Hospital, Diyala Governorate, Iraq, over a period from October 18, 2025, to March 1, 2026. Participants were selected using simple random sampling. The study was conducted according to the ethical standards of the Declaration of Helsinki and approved by the Ethical Committee of the University of Diyala, College of Medicine. Written informed consent was obtained from all participants. Confidentiality and privacy were strictly maintained.

Ten patients participated in a pilot study that began two weeks prior to sample collection in order to evaluate the questionnaire's reliability. The pilot study's eligibility requirements are the same as those for the study sample. These people were excluded from the research sample.

Inclusion criteria: females aged >18 years old willing to participate.

Exclusion criteria: patients with a history of breast cancer, pregnant, and women who decline to participate.

Face-to-face interviews were conducted by trained female data collectors to ensure cultural sensitivity and participant comfort. Each participant was assigned a unique ID number to ensure confidentiality. Interviews were conducted in private hospital rooms to encourage honest answers and to reduce social desirability bias. The questionnaire was administered section by section (demographics, knowledge, attitudes, practices). Each interview took approximately 20-25 minutes.

The questionnaire included four main sections

1-Demographic data: age, marital status, education, occupation, place of residence

2-Knowledge: risk factors, awareness (BSE/mammography), sources, recommended age/frequency, understanding of mammography, prior uptake, symptoms — 1 point each: Good (11–15) / Average (6–10) / Poor (0–5)[Galary, K. M. *et al.*, 2020]

3-Attitudes: confidence, efficacy belief, comfort, encouragement, perceived awareness, barriers – 3-point Likert scale, Positive ($\geq 70\%$)/Neutral (50–69%)/Negative ($< 50\%$).[Kayode, F. O. *et al.*, 2005]

4-Practice: frequency/technique of BSE, abnormality follow-up, uptake of mammography, barriers to either

Data Analysis

Data were entered and analyzed using SPSS version 27.0. Descriptive statistics, including frequencies, percentages, means, and standard deviations, were calculated. Chi-square (χ^2) tests were applied to evaluate associations between knowledge, attitudes, practices, and sociodemographic variables. A p-value < 0.05 was considered statistically significant.

RESULTS

Table 1 summarizes participants' socio-demographic characteristics. Most were aged 20–39 years (60.0% combined) and university-educated (42.9%), and half were housewives (50.0%). Marital status was reported by 125 of the 140 participants; among these, most were married (62.4%). Overall, the sample skews toward a young-to-middle-aged, married cohort with moderate-to-high educational attainment.

Table 1: Socio-Demographic Characteristics of the Study Population

Variable	Category	n (%)
Age	Under 20	12 (7.7%)
	20–29	48 (31.0%)
	30–39	36 (23.2%)
	40–49	28 (20.0%)
	50+	16 (11.4%)
Marital Status	Single	44 (35.2%)
	Married	78 (62.4%)
	Divorced	1 (0.8%)
	Widowed	2 (1.6%)
Educational Level	Illiterate	14 (10.0%)
	School	52 (37.1%)
	University	60 (42.9%)
	Master's/Doctorate	14 (10.0%)
Occupation	Housewife	70 (50.0%)
	Employee	40 (28.6%)
	Student	30 (21.4%)

Table 2 summarizes knowledge of breast cancer risk factors, BSE, and mammography, showing the leading response for each multi-option question. Obesity (71.4%) and unhealthy diet (57.1%) were the most widely recognized risk factors, while awareness that breast cancer can occur in men was low (28.6%). Most participants had heard of BSE (68.6%), primarily through social media (27.1%),

but only 41.4% knew the correct technique and 24.3% had received formal training. Mammography knowledge was similarly mixed: most correctly identified it as a breast X-ray (58.7%) and knew 40 years as the recommended starting age (51.4%), and 44.3% recognized its role in detecting cancer before symptoms appear.

Table 2: Knowledge of Breast Cancer Risk Factors, Self-Examination, and Mammography

Item	Category	n (%)
Breast Cancer Risk Factors and General Awareness		
Smoking identified as a risk factor	Yes	68 (48.6%)
Obesity identified as a risk factor	Yes	100 (71.4%)
Regular physical exercise reported	Yes	55 (39.3%)
Hormonal medication / contraceptive use	Yes	62 (44.3%)
Family history of breast cancer	Yes	46 (32.9%)
Unhealthy diet reported	Yes	80 (57.1%)
Aware breast cancer can occur in men	Yes	40 (28.6%)
Breast Self-Examination (BSE) Knowledge		
Had heard of BSE	Yes	96 (68.6%)
Leading source of BSE knowledge (n = 96)	Social media	38 (27.1%)
Leading response for recommended BSE frequency*	Monthly	42 (30.0%)
Leading response for recommended age to start BSE*	20 years	50 (35.7%)
Most cited symptom prompting medical consultation†	Breast lump	108 (77.1%)
Knows the correct BSE method	Yes	58 (41.4%)
Trained by a healthcare professional	Yes	34 (24.3%)
Mammography Knowledge		
Correctly identified mammography as a breast X-ray	Yes	82 (58.7%)
Correctly identified 40 years as the recommended starting age	Yes	72 (51.4%)
Leading response for recommended screening frequency*	Annually	64 (45.7%)
Believes mammography can detect cancer before symptoms appear	Yes	62 (44.3%)

Table 3 presents practice and behavior related to mammography and BSE. Despite reasonable

knowledge, only 24.3% had ever had a mammogram, most often due to lack of time

(22.9%) and cost (17.1%). Similarly, while 55.7% had performed BSE at least once, only 28.6% did so monthly, most often citing not knowing the correct method (30.0%) or forgetting (21.4%). Few participants (10.0%) reported noticing an

abnormality during BSE, and follow-up on such findings appeared limited. Awareness of basic technique was otherwise high (BSE at home, 85.7%; using a mirror, 77.1%; while standing (80.0%).

Table 3: Practice and Behavior Related to BSE and Mammography

Item	Category	n (%)
Mammography Practice		
Has ever had a mammogram	Yes	34 (24.3%)
Reason for never having a mammogram (n = 106)	No time	32 (22.9%)
	Cost	24 (17.1%)
	No symptoms	22 (15.7%)
	Fear	18 (12.9%)
	Don't know where to go	10 (7.1%)
BSE Practice and Behavior		
Performs BSE monthly	Yes	40 (28.6%)
Reason for not performing BSE regularly (n = 100)	Doesn't know the method	42 (30.0%)
	Forgets	30 (21.4%)
	Afraid	16 (11.4%)
	Doesn't believe it's important	12 (8.6%)
Has ever performed BSE	Yes	78 (55.7%)
Frequency of BSE among those who perform it (n = 78)	Monthly	42 (30.0%)
	Every few months	28 (20.0%)
	Annually	8 (5.7%)
Noticed anything abnormal during BSE	Yes	14 (10.0%)
	No	110 (78.6%)
	Unsure	16 (11.4%)
Sought medical advice after noticing an abnormality*	Yes	10 (7.1%)
	No	30 (21.4%)
BSE can be performed at home	Yes	120 (85.7%)
	No	10 (7.1%)
	Unsure	10 (7.1%)
A mirror is helpful during BSE	Yes	108 (77.1%)
	No	18 (12.9%)
	Unsure	14 (10.0%)
BSE can be performed while standing	Yes	112 (80.0%)
	No	12 (8.6%)
	Unsure	16 (11.4%)

Table 4 presents attitudes, perceived awareness, and barriers related to BSE. Confidence in performing BSE was limited (20.0% very confident), though half of participants (50.0%) agreed BSE is effective and 64.3% would encourage others to practice it. Most participants

(72.9%) considered their own BSE awareness insufficient, yet the large majority (77.1%) were willing to learn. Lack of knowledge (51.4%) was the leading barrier, and internet sources (41.4%) and educational workshops (35.7%) were the most preferred ways to improve awareness.

Table 4: Attitudes, Awareness, and Barriers Related to BSE

Item	Category	n (%)
Attitudes and Perceptions		
Confidence in performing BSE	Very confident	28 (20.0%)
	Neutral	62 (44.3%)
	Not confident	50 (35.7%)
Believes BSE is effective for early detection	Agree	70 (50.0%)

	Neutral	42 (30.0%)
	Disagree	28 (20.0%)
Comfortable discussing breast health	Comfortable	60 (42.9%)
	Neutral	50 (35.7%)
	Uncomfortable	30 (21.4%)
Would encourage others to perform BSE	Yes	90 (64.3%)
	Neutral	34 (24.3%)
	No	16 (11.4%)
Awareness and Barriers		
Considers own BSE awareness insufficient	Yes	102 (72.9%)
Would like to learn how to perform BSE	Yes	108 (77.1%)
Main barrier to practicing BSE	Lack of knowledge	72 (51.4%)
	Lack of time	34 (24.3%)
	Fear of finding an abnormality	22 (15.7%)
	Educational/cultural factors	12 (8.6%)
Preferred source for improving knowledge	Internet sources	58 (41.4%)
	Educational workshops	50 (35.7%)
	Support groups	32 (22.9%)

Overall knowledge of BSE and mammography was average for nearly half the sample (48.6%), good for 30.0%, and poor for 21.4%; overall

attitude was positive for 44.3%, negative for 34.3%, and neutral for 21.4% (Table 5).

Table 5: Overall Knowledge and Attitude Levels Regarding BSE and Mammography

Domain	Level	n (%)
Knowledge	Good	42 (30.0%)
	Average	68 (48.6%)
	Poor	30 (21.4%)
Attitude	Positive	62 (44.3%)
	Neutral	30 (21.4%)
	Negative	48 (34.3%)

Table 6 presents the association between socio-demographic characteristics and both knowledge and attitude levels. Knowledge level was significantly associated with age ($p = 0.041$), marital status ($p = 0.032$), educational level ($p = 0.004$), and occupation ($p = 0.009$). Attitude level was significantly associated with marital status (p

$= 0.037$), educational level ($p = 0.004$), and occupation ($p = 0.009$), while its association with age approached but did not reach significance ($p = 0.052$). Across both outcomes, younger, married, university-educated participants and housewives consistently showed better knowledge and more positive attitudes.

Table 6: Association between Socio-Demographic Variables and Knowledge / Attitude Levels Regarding BSE and Mammography

Demographic Variable	Outcome	Category	Good/ Positive, n (%)	Average/ Neutral, n (%)	Poor/ Negative, n (%)	Total (n)	p-value
Age	Knowledge	Under 20	4 (2.9%)	6 (4.3%)	2 (1.4%)	12	0.041*
		20–29	18 (12.9%)	22 (15.7%)	8 (5.7%)	48	
		30–39	10 (7.1%)	18 (12.9%)	8 (5.7%)	36	
		40–49	6 (4.3%)	14 (10.0%)	8 (5.7%)	28	
		50+	4 (2.9%)	8 (5.7%)	4 (2.9%)	16	
	Attitude	Under 20	4 (2.9%)	2 (1.4%)	6 (4.3%)	12	0.052
		20–29	20	8 (5.7%)	20 (14.3%)	48	

			(14.3%)				
		30–39	16 (11.4%)	6 (4.3%)	14 (10.0%)	36	
		40–49	12 (8.6%)	8 (5.7%)	8 (5.7%)	28	
		50+	10 (7.1%)	6 (4.3%)	0 (0%)	16	
Marital Status	Knowledge	Single	14 (10.0%)	20 (14.3%)	10 (7.1%)	44	0.032*
		Married	24 (17.1%)	38 (27.1%)	16 (11.4%)	78	
		Divorced	1 (0.7%)	0 (0%)	0 (0%)	1	
		Widowed†	3 (2.1%)	2 (1.4%)	0 (0%)	5	
	Attitude	Single	18 (12.9%)	8 (5.7%)	18 (12.9%)	44	0.037*
		Married	36 (25.7%)	16 (11.4%)	26 (18.6%)	78	
		Divorced	1 (0.7%)	0 (0%)	0 (0%)	1	
		Widowed†	1 (0.7%)	2 (1.4%)	0 (0%)	2	
Educational Level	Knowledge	Illiterate	0 (0%)	4 (2.9%)	10 (7.1%)	14	0.004*
		School	18 (12.9%)	24 (17.1%)	10 (7.1%)	52	
		University	20 (14.3%)	30 (21.4%)	10 (7.1%)	60	
		Master's/Doctorate	4 (2.9%)	10 (7.1%)	0 (0%)	14	
	Attitude	Illiterate	4 (2.9%)	2 (1.4%)	8 (5.7%)	14	0.004*
		School	18 (12.9%)	10 (7.1%)	24 (17.1%)	52	
		University	28 (20.0%)	12 (8.6%)	20 (14.3%)	60	
		Master's/Doctorate‡	12 (8.6%)	6 (4.3%)	0 (0%)	14	
Occupation	Knowledge	Housewife	20 (14.3%)	36 (25.7%)	14 (10.0%)	70	0.009*
		Employee	12 (8.6%)	18 (12.9%)	10 (7.1%)	40	
		Student	10 (7.1%)	14 (10.0%)	6 (4.3%)	30	
	Attitude	Housewife	26 (18.6%)	14 (10.0%)	30 (21.4%)	70	0.009*
		Employee	20 (14.3%)	10 (7.1%)	10 (7.1%)	40	
		Student	16 (11.4%)	6 (4.3%)	8 (5.7%)	30	

DISCUSSION

Most of our sample participants are married (62.4%), just over half were housewives (50.0%), and 60% were in the reproductive age group (20–39 years). This is contrasted to the Mosul, Iraq sample of Al-Qazaz *et al.*, who surveyed a working, university-affiliated population with a much higher mean age (42.6 years) [Al-Qazaz, H. K. *et al.*, 2020] and with the Gaza University-student sample of Abo Al-Shiekh *et al.*, who were younger and all of tertiary-education status [Abo Al-Shiekh, S. S. *et al.*, 2021]. Knowledge and

practice of breast self-examination (BSE) are consistently reported to vary with age, education and occupation. This more general community composition provides a useful counterpoint to the largely occupational or student-based samples that dominate the regional literature. The knowledge and practice of BSE vary with age, education and occupation, so including a wider mix of women, instead of only students or working women as most regional studies do, provides a useful contrast.

Our cohort shows that the most identified risk factors were obesity (71.4%) and unhealthy diet (57.1%), whereas knowledge that men can develop breast cancer was low (28.6%). This pattern of greater awareness of lifestyle-related risk factors and simultaneously continuing deficits in more specific disease knowledge is seen in Gaza university students who scored well ($\geq 70\%$) on risk-factor and symptom items, but poorly on general disease knowledge [Abo Al-Shiekh, S. S. *et al.*, 2021]. Awareness of BSE itself (68.6%) was higher than the awareness reported among university students in Gaza (96.5%) [Abo Al-Shiekh, S. S. *et al.*, 2021] but lower than the awareness reported in Mosul (42.7% of participants classified as having good overall knowledge [Al-Qazaz, H. K. *et al.*, 2020], a gradient that is consistent with the more general, non-university composition of the present sample relative to Gaza and the older, more educated Mosul cohort. Social media was the most common source of BSE information (27.1%), which is consistent with Alduraidi *et al.* review that identified social media and the internet as the most common sources of information cited in Arab KAP studies [Alduraidi, H. *et al.*, 2025] and a Baghdad Medical City study where the largest proportion of patients also learned about BSE through social media [Al-Obaidi, M. N. *et al.*, 2024]. Mammography-specific knowledge – 58.7% correctly identified it as a breast X-ray, 51.4% knew 40 years as the recommended starting age, and 44.3% believed it could detect cancer before symptoms appear – closely resembled the 44.76% mammography-knowledge rate reported among women in the Asir region of Saudi Arabia, despite the fact that study found substantially higher (>90%) awareness of BSE specifically [Alqahtani, T. *et al.*, 2021], suggesting that mammography-specific knowledge lags behind general BSE awareness across different Arab populations, not just in Diyala.

It has been found that only 24.3% of participants had ever had a mammogram, a result which is higher than Mosul's 10.1% [Al-Qazaz, H. K. *et al.*, 2020] but below the roughly 40% uptake reported in Asir, Saudi Arabia [Alqahtani, T. *et al.*, 2021], and broadly consistent with the finding that 79.4% of women diagnosed with breast cancer in Baghdad had never been screened before diagnosis. [Mawlood Ibrahim, A. *et al.*, 2026].

Also, it has been found that monthly BSE practice (28.6%) was similar to Mosul (30.3%) [Al-Qazaz, H. K. *et al.*, 2020] and Gaza (about a third) [Abo

Al-Shiekh, S. S. *et al.*, 2021], but in sharp contrast to Asir, Saudi Arabia, where over 90% knew BSE but only 6.37% practiced it regularly [Alqahtani, T. *et al.*, 2021] showing that the size of the knowledge-practice gap, not just its existence, but also differs by setting. The major reasons for not doing BSE were not knowing the correct method (30.0%) and forgetting (21.4%), which were similar to the barriers in Gaza of not knowing how to do it (37.9%) and being too busy (31%) [Abo Al-Shiekh, S. S. *et al.*, 2021]. Fear (12.9%) was less of a barrier than practical barriers (e.g., lack of time (22.9%), cost (17.1%), not knowing where to go (7.1%)) for mammography, similar to access barriers for Syrian refugee and Jordanian women [Atrooz, F. *et al.*, 2023] but unlike the Alduraidi *et al.* review, where fear of results was the leading barrier across the region [Alduraidi, H. *et al.*, 2025]

Attitudes to BSE were moderately positive but not very confident as shown in table 4, with only 20.0% feeling very confident doing BSE and 35.7% feeling not confident at all, while half agreed BSE is effective and 64.3% would encourage others to do it. Approximately four in ten (42.9%) were comfortable discussing breast health, aligning with Donnelly *et al.*'s findings among Arab men in Qatar that family and gender dynamics, not knowledge alone, shape comfort with breast-health discussion [Donnelly, T. T. *et al.*, 2017]. The main obstacle was lack of knowledge (51.4%), not fear or cultural reluctance, in line with wider evidence that knowledge is a strong predictor of practice – good BSE knowledge was associated with nearly five times higher practice in one Ethiopian study [Mohammed, A. S. *et al.*, 2026]. Most participants preferred to obtain more information through the internet (41.4%) and workshops (35.7%). This is consistent with the high dependence of the region on social media for health information and suggests that online resources and workshops are promising ways to educate women here too [Al-Obaidi, M. N. *et al.*, 2024].

Overall, 30.0% of participants had good knowledge, 48.6% average and 21.4% poor. This is roughly mid-range for the region, where poor knowledge ranged from 19.6% in Oman to 67% in parts of Saudi Arabia as reported by Alduraidi *et al.* [Alduraidi, H. *et al.*, 2025], and slightly below Mosul's 42.7% good-knowledge rate [Al-Qazaz, H. K. *et al.*, 2020], probably due to the more occupationally mixed, less uniformly educated sample in Diyala. Attitude followed a similar pattern (44.3% positive, 21.4% neutral, 34.3%

negative), confirming that positive attitudes, here as elsewhere, are loosely related to actual practice.

The demographic associations further support this regional pattern, knowledge and attitude varied significantly with marital status, education, and occupation (all $p < 0.05$), and knowledge also varied with age ($p = 0.041$), though age and attitude did not reach significance ($p = 0.052$). The association with marital status is similar to the finding of Al-Qazaz *et al.* in Mosul [Al-Qazaz, H. K. *et al.*, 2020] and the pronounced gradient in education as poor knowledge among the illiterates, good knowledge among the university educated which is consistent with the wider literature linking education with BSE knowledge and practice, including the Ethiopian study where education was one of only two significant predictors of practice [Mohammed, A. S. *et al.*, 2026]. As with other elements of this dataset, the small number of divorced and widowed participants means we should be wary of making those particular comparisons.

Overall, the pattern in Diyala is similar to the knowledge-practice gap seen in the Arab KAP literature: most women know about BSE and, to a lesser extent, mammography, but confident, regular practice lags well behind, shaped by education, marital status and occupation together rather than any single factor. This consistency across quite different populations – Mosul's older working women, Gaza's students, Saudi Arabia's Asir region, and now Diyala – suggests a durable regional pattern, and that interventions targeting practical BSE skills and access barriers (cost, time, services) would likely do more than awareness campaigns alone.

CONCLUSION

Diyala women were well aware of BSE and to a certain degree of mammography, but regular practice lagged far behind (28.6% monthly BSE, 24.3% ever had a mammogram). Knowledge and attitude were significantly associated with education, marital status and occupation. Fear was a less important barrier than lack of knowledge of the correct BSE technique and practical barriers to mammography such as cost, time and access. Targeted education on correct technique delivered via the internet and workshops, as preferred by participants, and easing access barriers rather than just general awareness campaigns would likely further close the gap.

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