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General Practitioners and Breast Imaging Modalities: Their Knowledge and Associated Determinants

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ABSTRACT

Background: General practitioners (GPs) are usually the first-line doctors visiting patients with breast problems. Therefore, their knowledge about breast diseases is of significant importance for proper screening and referral of patients and warrants scrutiny. The purpose of this study was to assess the knowledge of GPs regarding different breast imaging modalities.

Methods: In this cross-sectional study, we asked participants in an annual GP conference to complete a structured questionnaire. The questionnaire elicited information about the GP's characteristics such as age, gender and work experience and eight multiple choice questions about how to use different imaging modalities and manage patients with breast disorders were also proposed.

Results: In total, 270 GPs completed the questionnaire (155 females and 115 males). The results showed a significant association between frequency of GPs choosing the correct imaging modality in a 50-year-old asymptomatic patient and participants' age ($\leqslant$40) and duration of work experience ($\leqslant$5) (P = 0.002 and P = 0.016, respectively). Also, a significant association was revealed between gender of GPs (female) and correct answers regarding management of nipple discharge (P = 0.024). There were no significant associations between the other variables and answers to the other questions.

Conclusions: The findings of this study highlight the importance of implementing continuous medical education for GPs in approach to breast diseases.

Introduction

General practitioners (GPs) play an important role in prevention, screening and diagnosis of cancer and also referral to specialist services. Breast cancer is the most common malignancy among women throughout the world. In Iran, according to the national center for cancer registration, breast cancer incidence is estimated to be 22.09 in 100,000 women, with the age-standardized incidence rate estimated at 28.25 in 100,000 women.[1]

A GP's knowledge about breast disease is of utmost importance, especially in breast cancer screening programs. Studies have shown that providing GPs with educational sessions significantly improves decision making in referral of patients with breast problems.[2] Therefore, clinical knowledge regarding breast imaging and practical guidelines are crucial for the effective management

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of breast diseases.

clinical knowledge regarding breast imaging and practical guidelines are crucial for the effective management of breast diseases.The present study was designed to evaluate the knowledge of GPs in Iran with respect to breast imaging modalities and recommended guidelines, as well as the factors that have contributed to obtaining their knowledge.

Methods

A cross-sectional study was conducted to evaluate Iranian GPs' knowledge of using different breast imaging modalities and primary management of breast disorders. A structured questionnaire was designed and validated by an expert panel comprised of two radiologists, two surgeons and one epidemiologist. The participants were GPs who attended the annual GP conference in March 2008 in Tehran.

The questionnaire addressed GP characteristics including age, gender and duration of work experience. In addition, respondents were asked to answer eight questions about how to approach breast problems. The questions covered topics such as choosing the best imaging modality (mammography or ultrasonography) for each specific case and management of the patients (observation or treatment).

Continuous variables are presented as mean and standard deviation, while categorical variables are demonstrated as percentage. Chi-square test was used to investigate the association between demographic variables and correct answers to the study questions.

Results

A total of 270 participants completed the questionnaire. The mean age of the respondents was 34.4±8.56 years (range: 25-62 years). The frequency of participants with more than five years of experience was 47%. The demographic information of the study population is shown in Table 1.

Regarding the participants' knowledge, the findings showed that only 36.5% of GPs answered correctly to half of the questions. The relationship between GPs' knowledge and the studied variables, *i.e.* age, gender and duration of work experience, was analyzed and shown in Table 2.

According to results of chi-square test, there was a significant association between answers to question 1 (appropriate imaging technique in the case of an asymptomatic 50-year-old patient) and age and duration of work experience (P = 0.002 and P = 0.016, respectively), in which 207 (90%) young participants (<40 years old) answered correctly and 132 (92.3%) GPs with less than or equal to five years of experience correctly chose the suitable imaging technique.

Table 1. Demographic characteristics of study population

	N (%)
Age	
⩽ 40	230 (85.2%)
> 40	40 (14.8%)
Gender	
Male	115 (42.6%)
Female	155 (57.4%)
Duration of work experience	
⩽5 years	143 (53.0%)
>5 years	127 (47.0%)

A significant association was observed between the number of GPs correctly answering the question of choosing the appropriate imaging technique in a young pregnant woman (question 4) and duration of work experience (P = 0.012), with more experienced GPs being the majority of participants choosing the correct imaging modality in this case.

Furthermore, a significant association was detected between answers to question 8 (management of nipple discharge) and gender; male physicians gave incorrect answers more frequently (68.7% vs. 54.8%, P = 0.024).

Discussion

In this cross-sectional survey, the knowledge of GPs on breast imaging modalities used in clinical practice for diagnosis and management of breast disease was studied. The results indicated that a significantly higher frequency of older GPs, male GPs and more experienced GPs chose the wrong answer to certain questions, compared to their counterparts.

Many women with symptoms and problems related to breast diseases are evaluated and treated in their first visit by GPs. The three principal steps that lead to efficient management of these patients are prompt attention to symptoms of the breast problem, meticulous physical examination and use of appropriate imaging tools. This systematic approach will provide patients with an accurate diagnostic and therapeutic plan, especially in patients suspected to have breast cancer. Considering the high incidence of breast cancer among women and the importance of early detection and its impact on the quality of management, GPs must obtain a sufficient knowledge of signs and symptoms of breast cancer and the appropriate approach to the disease, based on symptoms and age of patients.

Tamblyn *et al.* study with a sample size of 614 showed that physicians with higher scores in medical course examinations make more appropriate decisions for patients with breast problems than doctors with lower scores and their knowledge influenced subsequent diagnostic and treatment planning for these patients.[3]

Table 2. Frequency of GPs giving correct and incorrect answers to different scenarios of the questionnaire and its association with participants' characteristics

		Age			Gender			Work experience		
		⩽40	>40	P-value	Male	Female	P-value	⩽5	>5	P-value
Choosing the correct imaging modality	Asymptomatic 50-year-old patient			0.002			0.266			0.016
	Incorrect	23 (10.0%)	11 (27.5%)		11 (9.6%)	23 (14.8%)		11 (7.7%)	23 (18.1%)	
	Correct	207 (90.0%)	29 (72.5%)		104 (90.4%)	132 (85.2%)		132 (92.3%)	104 (81.9%)	
	31-year-old patient with breast mass			0.074			0.155			0.523
	Incorrect	155 (67.4%)	21 (52.5%)		69 (60.0%)	107 (69.0%)		96 (67.1%)	80 (63.0%)	
	Correct	75 (32.6%)	19 (47.5%)		46 (40.0%)	48 (31.0%)		47 (32.9%)	47 (37.0%)	
	Asymptomatic 55-year-old patient with a previous normal mammogram (3yrs ago)			0.099			0.289			0.114
	Incorrect	67 (29.1%)	17 (42.5%)		40 (34.8%)	44 (28.4%)		38 (26.6%)	46 (36.2%)	
	Correct	163 (70.9%)	23 (57.5%)		75 (65.2%)	111 (71.6%)		105 (73.4%)	81 (63.8%)	
	27-year-old pregnant patient with breast mass			0.714			0.894			0.012
	Incorrect	71 (30.9%)	11 (27.5%)		34 (29.6%)	48 (31.0%)		53 (37.1%)	29 (22.8%)	
	Correct	159 (96.1%)	29 (72.5%)		81 (70.4%)	107 (69.0%)		90 (62.9%)	98 (77.2%)	
	Pregnant patient with bloody nipple discharge in 3rd trimester			0.064			0.231			0.112
	Incorrect	156 (67.8%)	33 (82.5%)		76 (66.1%)	113 (72.9%)		94 (65.7%)	95 (74.8%)	
	Correct	74 (32.2%)	7 (17.5%)		39 (33.9%)	42 (27.1%)		49 (34.3%)	32 (25.2%)	
	45-year-old patient with right breast mass			0.781			0.844			0.846
	Incorrect	24 (10.4%)	5 (12.5%)		13 (11.3%)	16 (10.3%)		16 (11.2%)	13 (10.2%)	
	Correct	206 (89.6%)	35 (87.5%)		102 (88.7%)	139 (89.7%)		127 (88.8%)	114 (89.8%)	
Management	Nipple retraction in a 40-year-old patient			0.086			0.176			0.180
	Incorrect	107 (46.5%)	25 (62.5%)		62 (53.9%)	70 (45.2%)		64 (44.8%)	68 (53.5%)	
	Correct	123 (53.5%)	15 (37.5%)		53 (46.1%)	85 (54.8%)		79 (55.2%)	59 (46.5%)	
	Bilateral green nipple discharge in a 40-year-old patient			0.482			0.024			0.315
	Incorrect	138 (60.0%)	27 (67.5%)		79 (68.7%)	85 (54.8%)		84 (58.7%)	83 (65.4%)	
	Correct	92 (40.0%)	13 (32.5%)		36 (31.3%)	70 (45.2%)		59 (41.3%)	44 (34.6%)	

Boissel *et al.* studied the effects of an educational program on GPs tendency to order cervical and breast cancer screening tests and assessed the willingness of GPs to participate in screening programs. The study involved 278 participants and suggested that positive influence on GPs regarding their participation in screening programs is feasible, but the message intended for their persuasion should be carefully presented, since negative effects are possible.[4]

Our study showed that female GPs have greater knowledge about breast problems and use of breast imaging modalities. We found that older and more experienced GPs had a significantly lower base of knowledge considering the appropriate use of diagnostic techniques in breast diseases.

Conclusively, it seems that taking part in training courses designed for learning breast problems and breast disease-related patient management is important and necessary for GPs.

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