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Breast self-examination in Greek midwives and midwifery students

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The aim of this study is to assess breast self-examination (BSE) practice in a representative sample of Greek midwives and midwifery students. Breast self-examination (BSE) is infrequent in healthcare professionals, including physicians and nurses. All midwives (n=245) and graduating midwifery students (n=165) who attended a congress of midwives were eligible to participate in the study, and a self-administered, anonymous questionnaire was developed to assess BSE practice. Midwives performed BSE more frequently than students (p<0.001). In addition, 27.0% of students performed BSE less frequently than every year whereas the midwives' rate is 14.0% (p<0.001). The proportion of subjects searching for specific signs of breast cancer during BSE and the BSE technique did not differ between midwives and students. In midwifery students, higher perceived knowledge of breast cancer-related issues was associated with more frequent BSE. Only a minority of Greek midwives and midwifery students practice BSE every month, and therefore implications for nursing management in BSE education should be included in midwifery school curricula to ensure increased BSE frequency, improved BSE accuracy and the promotion of BSE teaching to patients.

Key words: breast self-examination, midwives, students, breast cancer

Breast cancer is a leading global cause of morbidity and mortality in women [1, 2]. Detection of breast cancer at an early stage is associated with better prognosis [1, 2] and therefore, early diagnosis is of paramount importance [1, 2]. The American Cancer Society reports that mammography reduces breast cancer mortality [2] and advises the following: women should have the opportunity to begin annual mammography screening between 40 and 44 years of age and it recommends annual screening mammography in all women 45–54 years old and biennial or annual screening mammography in all women ≥55 years old [3].

In contrast breast self-examination (BSE) for the early diagnosis of breast cancer is controversial. Most studies showed that BSE does not reduce breast cancer mortality [4–7] but some reports suggest that breast cancer at diagnosis is less advanced and mortality is lower in women who perform BSE [8–12]. In addition, mammography does not detect all palpable cancers and new palpable cancers can develop during the interval between mammographies [13]. Accordingly, the National Comprehensive Cancer Network Guidelines recommend breast awareness, and specifically that all women should be familiar with their breasts and promptly report any change to their health care provider [14].

The controversial benefit of BSE also contributes to the low rates of BSE in the general population [15–17]. BSE practice is also infrequent in healthcare professionals including physicians [18, 19] and nurses [20–24]. However, most of these studies in healthcare professionals were performed in previous decades and it is unclear whether rates of BSE have changed over the past years.

This study therefore assesses current BSE practice in a representative sample of Greek midwives and midwifery students.

Subjects and methods

All midwives (n=245) and graduating midwifery students (n=165) who attended the 2010 annual Hellenic Congress of Midwives were eligible to participate in the study. A self-administered, anonymous questionnaire was developed to assess BSE practice. Members of our research team explained the purpose of the study and distributed the questionnaire to all midwives and graduating midwifery students at the beginning of the Congress. The participation rate was 91.0% (223/245) and 86.1% (142/165) in midwives and midwifery students, respectively (p=NS).

Data analysis was performed with the statistical package SPSS (version 17.0; SPSS Inc., Chicago, IL) and data is presented in absolute numbers and percentages. The chi-squared test was then used for group comparisons, and p-value <0.05 was considered significant.

Results

The demographic characteristics of the study population are shown in Table 1. As expected, midwives were older and more frequently married and had higher income than midwifery students (p<0.001 for all comparisons). Other characteristics of the study population are shown in Supplementary Table S1. Similar proportions of midwives and students reported a family history of benign breast disease (19.4 and 13.4%, respectively) but a family history of breast cancer was more frequent in midwives (20.5 vs 7.8% in students; p<0.005).

Answers regarding BSE are shown in Table 2. Midwives performed BSE more frequently than students; 52.5% of midwives practiced BSE every month compared with 45.4% of midwifery students (p<0.001). In addition, 27.0% of students did not perform BSE every year, whereas the respective rate in midwives was 14.0% (p<0.001). The proportion of subjects searching for specific signs of breast cancer during BSE did not differ between groups. Almost two thirds of both midwives and students were examining their breasts for lumps, nipple discharge and skin hardening. However, less than one third was looking for skin ulceration, puckering or dimpling.

BSE technique did not differ between midwives and students. Most subjects in both groups were examining their breasts with the contralateral arm but <17% were performing BSE in 2 or more different positions (standing up with the hands up or pressing against the waist and lying supine). On the other hand, more midwives were performing BSE early during the menstrual cycle (32.1 vs 28.1% of midwifery students; p<0.005), and they were also examining their axillae every month (57.1 vs 43.2% of midwifery students; p<0.001).

The midwives practicing BSE more frequently were also more likely to examine their axillae more frequently (p<0.001) and look for lumps (p<0.005), skin puckering or dimpling (p<0.05), ulceration (p<0.05) and also nipple discharge (p<0.01). Students who were practicing BSE more frequently also examined their axillae more frequently (p<0.001) and were more likely to look for lumps (p<0.05) and for skin sclerosis (p<0.05).

Answers to other relevant questions are shown in Table 3. A greater percentage of midwives than students knew that screening mammography should begin at 40 years of age (70.2 vs 59.2% of students; p<0.001). In addition, fewer midwives than students stated that mammography radiation incurs health risks (15.0 and 30.0%, respectively; p<0.001). Almost all midwives (99.1%) and all students (100.0%) stated that midwives should participate in breast cancer prevention programs (p=NS).

The demographics and other characteristics for both midwives and midwifery students are listed in Table 1 and Supplementary Table S1; but these were not associated with BSE frequency. The answers to the questions listed in Table 3 were also unrelated to the frequency of BSE except in students, where those who had a higher perceived knowledge of breast cancer-related issues performed BSE more frequently (p<0.01).

Discussion

Our study shows that only 52.5% of Greek midwives practice BSE every month, and rates are even lower in midwifery students (45.4%). Our results agree broadly with earlier studies which reported that only 20–50% of nurses BSE every month [20–24]. In addition, a study in female physicians showed that only 30.6% BSE every month and that 19.2% never BSE [19]. Regarding students, previous studies in nursing students reported even lower rates than our group; only 27–33% of nursing students performed BSE every month [25, 26] and this rate was similar to non-nursing college students [27]. It should also be emphasized that 33–43% of women in the general population perform BSE every month [16, 17]. This rate is comparable with midwifery students and not much lower than midwives. Therefore, presumably greater awareness of the role of BSE in breast cancer prevention in our healthcare professionals did not result in greater adherence to BSE practice.

Midwives performed BSE more frequently than students in our study. While better knowledge of the importance of BSE in midwives may contribute to this difference, the higher perceived risk for breast cancer in midwives because of their age may also have had some effect on the higher frequency of

Table 1. Demographic characteristics of the study population (absolute numbers and percentages).

	Midwives (n=223)	Midwifery students (n=142)	p-value
Age (years)			<0.001
18–30	50 (22.4)	139 (97.9)	
31–40	62 (27.8)	1 (0.7)	
41–50	80 (35.9)	2 (1.4)	
>51	31 (13.9)	0 (0.0)	
Married	147 (65.9)	8 (5.6)	<0.001
Monthly income (€)			<0.001
0–600	15 (6.8)	122 (87.8)	
601–1,200	68 (31.1)	14 (10.1)	
1,201–1,800	124 (56.6)	3 (2.2)	
>1,801	12 (5.5)	0 (0.0)	
Area of birth			<0.001
Rural	142 (64.0)	58 (41.4)	
Urban	80 (36.0)	82 (58.6)	

Table 2. Answers to the questions regarding breast self-examination (BSE) (absolute numbers and percentages).

	Midwives (n=223)	Midwifery students (n=142)	p-value
How frequently do you perform BSE?			<0.001
Every month	116 (52.5)	64 (45.4)	
Every 6 months	41 (18.6)	31 (22.0)	
Every year	33 (14.9)	8 (5.7)	
More rarely/never	31 (14.0)	38 (27.0)	
What do you look for when performing BSE?			
Any new discrete lump	134 (61.5)	76 (53.9)	NS
Puckering or dimpling of the skin	75 (34.4)	44 (31.2)	NS
Skin ulceration	63 (28.9)	36 (25.5)	NS
Skin hardening	125 (57.3)	92 (65.2)	NS
Discharge from the nipple	124 (56.9)	82 (58.2)	NS
Which hand do you use when performing BSE?			NS
The ipsilateral with the breast examined	68 (32.2)	63 (44.7)	
The contralateral with the breast examined	127 (60.2)	70 (49.6)	
Both hands	16 (7.6)	8 (5.7)	
In which position do you perform BSE?			NS
With the hands up	97 (45.8)	79 (56.0)	
With the hands pressing against the waist	68 (32.1)	27 (19.1)	
Lying supine	7 (3.3)	6 (4.3)	
At no specific position	4 (1.9)	6 (4.3)	
More than 2 specific positions	22 (10.4)	15 (10.6)	
More than 3 specific positions	14 (6.6)	8 (5.7)	
When do you perform BSE?			<0.005
Early during the menstrual cycle	68 (32.1)	39 (28.1)	
At the middle of the menstrual cycle	112 (52.8)	59 (42.4)	
Late during the menstrual cycle	32 (15.1)	41 (29.5)	
How frequently do you examine your axillae?			<0.001
Every month	125 (57.1)	60 (43.2)	
Every 6 months	38 (17.4)	15 (10.8)	
Every year	30 (13.7)	14 (10.1)	
More rarely/never	26 (11.9)	50 (36.0)	

NS = not significant

BSE in this group. Indeed, age is a major confounding factor in this study and it can potentially explain the difference in BSE rates between midwives and midwifery students.

It is well-known that most cases of breast cancer occur in postmenopausal women [1, 2]. Older age was independently associated with higher frequency of BSE in the general population, university educated women and nurses [16, 19, 28, 29]. However, in our study, when midwives were analyzed separately, age was unrelated to BSE frequency, and this agrees with an earlier report in physicians [19]. Nevertheless, it is possible that the small sample size limited the statistical power of our study in identifying this association.

The midwives also had more frequent family history of breast cancer, and this may also have contributed to the higher rate of BSE in this group compared to midwifery students. However, when midwives were analyzed separately, family history of breast cancer was not related to the frequency of BSE. Finally, midwives' better knowledge of breast cancer screening and prevention can also potentially explain the higher BSE rates in this group compared to midwifery students.

Our study further suggests that Greek midwives and midwifery students do not search for all signs indicative of cancer during their BSE. Only two thirds of both midwives and students were examining their breasts for lumps and nipple discharge. In the general population, 85 and 70% of women, respectively, are aware that the two former findings are signs of breast cancer [30]. In addition, less than one third of our study population was looking for skin puckering or dimpling. In the general population, 39% of women know that dimpling of breast skin suggests the presence of cancer [30]. Therefore, healthcare professionals in our study do not

Table 3. Answers to other relevant questions (absolute numbers and percentages).

	Midwives (n=223)	Midwifery students (n=142)	p-value
When should women start having screening mammography?			
After the age of 30 years	61 (28.0)	52 (37.4)	<0.001
After the age of 40 years	153 (70.2)	82 (59.0)	
After the age of 50 years	4 (1.8)	5 (3.6)	
After the age of 60 years	0 (0.0)	0 (0.0)	
Does mammography radiation pose health risks?			<0.001
Yes	33 (15.0)	42 (30.0)	
No	187 (85.0)	98 (70.0)	
Which are your sources of information regarding breast cancer?			
Healthcare professionals only	198 (90.4)	105 (75.0)	<0.001
Television	7 (3.2)	13 (9.3)	
Family	0 (0.0)	3 (2.1)	
Healthcare professionals and other sources*	14 (6.4)	19 (13.6)	
Do you prefer to discuss gynecologic issues with a male or a female healthcare professional?			
Male	5 (2.3)	11 (7.9)	<0.001
Female	32 (14.5)	36 (25.7)	
No preference	183 (83.2)	93 (66.4)	
How to you rate your knowledge of breast cancer-related issues?			
Excellent	11 (5.0)	4 (2.9)	<0.001
Better than average	126 (57.5)	61 (43.6)	
Average	48 (21.9)	24 (17.1)	
Below average	34 (15.5)	51 (36.4)	
Do you think that midwives should participate in breast cancer prevention programs?			
Yes	217 (99.1)	140 (100.0)	NS
No	2 (0.9)	0 (0.0)	

* Friends, family, television; NS = not significant

appear to differ considerably from the general population in their awareness of breast cancer signs. In addition, the level of knowledge is similar in midwives and students.

The limited awareness of breast cancer signs other than lumps is of particular importance. In approximately one third of women who identify breast cancer signs, the sign is not a breast lump [31]. More importantly, women who have breast cancer signs other than a breast lump are more likely to seek later medical advice, thus resulting in more advanced cancer at diagnosis [31, 32]. However, both midwives and students who were practicing BSE more frequently were also more likely to look for breast skin changes and nipple discharge. Our findings are also supported by previous studies which suggest that the proficiency of BSE among other healthcare professionals, such as nurses, is quite low [23, 28]. Poor proficiency in BSE has also been reported in all high-risk subjects, including those who are first degree relatives of breast cancer patients [33].

Although performing BSE in different positions increases the possibility of detecting a lump [5], less than 17% of the subjects in our study were performing BSE in two or more different positions. In addition, less than one third were performing BSE at the recommended time in relation to the menstrual cycle. In a previous study in nurse students, only 37% practiced BSE early in the menstrual cycle [26].

Studies in the general population showed that married women [29, 34] and those in lower social classes perform BSE more frequently [17]. However, other studies reported no association between socioeconomic status and BSE practice [29].

There is also conflicting data in healthcare professionals on the association between marital status and BSE frequency [18, 19], and the effect of income has not been assessed. In our study, however, neither marital status nor income had any effect on BSE frequency in either midwives or students. In an earlier study in Greek healthcare professionals, those who were more knowledgeable of breast cancer were more likely to perform BSE [18] and we confirmed this finding in midwifery students, but not in midwives.

An alarming finding in our study is that women at higher risk of breast cancer, such as those with a family history of breast cancer and those using oral contraceptives [1, 2], did not practice BSE more frequently; and similar findings were previously reported in a study of Norwegian physicians [19].

Most midwives and students knew that mammography screening should be recommended to all women over 40 years of age. Although almost all other subjects thought that it should begin earlier, 30% of students and 15% of midwives were concerned about radiation exposure during mammography. While 33% of nurses in an earlier study considered mammography moderately dangerous [20], its advantages should be made clear to all healthcare professionals because many professionals consider that mammography radiation risk is low compared to its benefits [3]

Only a minority of Greek midwives and midwifery students practice BSE every month. Even though the benefits of BSE are controversial and BSE is not currently recommended [3], some women choose to practice BSE. Instructing healthcare professionals how to perform BSE increases its frequency, improves BSE accuracy and promotes BSE teaching to patients [28, 35–37]. Furthermore, BSE training of lay women by healthcare professionals increases BSE frequency and improves BSE proficiency [33, 38–40]. Therefore, BSE education should be included in the curricula of midwifery schools. Since a proportion of midwives do not consider teaching BSE part of their duties [41], it is important to emphasize the role midwives can play in breast cancer prevention by educating the women who choose to perform BSE.

Supplementary information is available in the online version of the paper.

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Supplemental Material

Suppl. Table S1. Other characteristics of the study population (absolute numbers and percentages).

	Midwives (n=223)	Midwifery students (n=142)	p-value
Frequency of visiting a gynecologist			NS
Every 6 months	24 (10.8)	18 (13.3)	
Once a year	154 (69.3)	100 (74.1)	
Every 2 years	25 (11.3)	10 (7.4)	
Every 3–4 years	19 (8.6)	7 (5.2)	
Use of any contraceptive method	90 (41.3)	111 (79.3)	<0.001
Method of contraception			<0.001
Condom	48 (55.2)	85 (76.6)	
Coitus interruptus	16 (18.4)	8 (7.2)	
Oral contraceptive pill	12 (13.8)	7 (6.3)	
Spermicides	2 (2.3)	0 (0.0)	
Intrauterine contraceptive device	4 (4.6)	0 (0.0)	
More than 1 method	5 (5.7)	11 (9.9)	
Family history of benign breast disease	43 (19.4)	19 (13.4)	NS
Family history of breast cancer	45 (20.5)	11 (7.8)	<0.005

NS = not significant