Original Article

BREAST CANCER AWARENESS, FINDINGS FROM A CROSS-SECTIONAL STUDY AMONG ALBANIAN WOMEN.

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ABSTRACT

Background: Breast cancer is the leading cause of death worldwide. Achieving early detection through screening and increasing awareness about risk factors and clinical signs, and symptoms is of vital importance. Studies have indicated that often awareness is not adequate, and screening methods are not accessible or affordable in low-resource settings.

Methods: A cross-sectional study surveyed Albanian women using an online questionnaire. Information was collected on socio-demographics, personal history, and knowledge of breast cancer cases, risk factors, signs and symptoms, as well as screening methods, frequency of examinations, etc. The data was analyzed with Stata 16, looking at uni and bivariate analysis, for three levels of education. Chi-square tests for independence between other characteristics and education were considered significant at a p-value of 0.05.

Results: A total of 455 Albanian women completed the online questionnaire. The mean age of respondents was 39.9±12.4 years, 92% lived in urban settings, and 67% in the capital, Tirana. 70.8% had knowledge of breast cancer in close relatives, and only 9.5% had a history of benign breast disease. Only the number of weekly hours of exercise and age at first breast examination were associated with educational level. Of all the risk factors asked, only giving birth after the age was 30 was associated with education level. None of the lifestyle-related risk factors was associated with education level. Of all the clinical signs and symptoms asked, only the breast lump, the armpit mass, and abrupt changes in the shape of the breast were associated with education level. Awareness of when and at what age to start/conduct breast self-examination, and its frequency, was associated with education level.

Conclusion: The findings are like other studies conducted in low-resource settings on three continents, suggesting inadequate breast cancer awareness. Breast awareness campaigns should target Albanian women of all educational backgrounds at the primary health care level.

Keywords. breast cancer, awareness-raising, socioeconomic conditions, education.

ABSTRAKT

NDËRGJEGJËSIMI PËR KANCERIN E GJIRIT, GJETJET NGA NJË STUDIM CROSS-SECTIONAL MIDIS GRAVE SHQIPTARE

Hyrje. Kanceri i gjirit është shkaku kryesor i vdekjes në mbarë botën. Arritja e zbulimit të hershëm përmes shqyrtimit dhe rritjes së ndërgjegjësimit rreth faktorëve të rrezikut dhe shenjave e simptomave klinike është me rëndësi jetike. Studimet kanë treguar se shpesh ndërgjegjësimi nuk është i mjaftueshëm dhe metodat e shqyrtimit nuk janë të arritshme ose të përballueshme në mjedise me burime të ulëta.

Metoda: Një studim anketoi gratë shqiptare duke përdorur një pyetësor online. U mblodhën informacione mbi socio-demografinë, historinë personale dhe njohuritë për rastet e kancerit të gjirit, faktorët e rrezikut, shenjat dhe simptomat, si dhe metodat e shqyrtimit, frekuencën e ekzaminimeve etj. Të dhënat u analizuan me Stata 16, duke parë analizën uni dhe bivariate, për tre nivele arsimi. Testet Chi katror për pavarësinë midis karakteristikave të tjera dhe arsimit u konsideruan të rëndësishme në vlerën p prej 0.05.

Rezultatet: Një total prej 455 grash shqiptare plotësuan pyetësorin online. Mosha mesatare e të anketuarve ishte 39.9±12.4 vjeç, 92% jetonin në mjedise urbane dhe 67% në kryeqytetin e Tiranës. 70.8% kishin njohuri për kancerin e gjirit tek të afërmit e ngushtë dhe vetëm 9.5% kishin një histori të sëmundjes beninje të gjirit. Vetëm numri i orëve të ushtrimeve javore dhe mosha në ekzaminimin e parë të gjirit ishin të lidhura me nivelet e arsimit. Nga të gjithë faktorët e rrezikut të pyetur, vetëm lindja pas moshës 30 vjeç ishte e lidhur me nivelin e arsimit. Asnjë nga faktorët e rrezikut të lidhur me stilin e jetës nuk ishte e lidhur me nivelin e arsimit. Nga të gjitha shenjat dhe simptomat klinike të pyetura, vetëm noduset e gjirit, masa në sqetull dhe ndryshimet e menjëhershme të formës së gjirit ishin të lidhura me nivelin e arsimit. Ndërgjegjësimi se në cilën moshë dhe kur të ciklit menstrual duhet të fillojë/kryhet vetë ekzaminimi i gjirit dhe frekuenca e tij ishin të lidhura me nivelin e arsimit.

Përfundim. Gjetjet janë të ngjashme me studime të tjera të kryera në mjedise me burime të pakta në tre kontinente, duke sugjeruar ndërgjegjësim të pamjaftueshëm për kancerin e gjirit. Fushatat e ndërgjegjësimit për gjirin duhet të synojnë gratë shqiptare të të gjitha prejardhjeve arsimore në nivelin e kujdesit shëndetësor parësor.

Fjalë kyce: kanceri gjirit, ngritje ndergjegjesimit, kushtet socio ekonomike, edukimi.

INTRODUCTION

Some 2.3 million new cases of breast cancer were diagnosed worldwide in 2022, with over 670 thousand deaths globally [1]. Half of these cases occurred in women with no risk factors other than sex and age. In 95% of the countries, breast cancer is the first or second leading cause of female deaths [2]. In 2022, breast cancer became the second most common type of cancer after lung cancer [3]. The US National Cancer Institute reported an estimated 310 thousand new cases of breast cancer and over 40 thousand deaths, or 6.9% of all cancer deaths in the United States [4]. The European Cancer Information System estimated over 370 thousand new cases of breast cancer in females in the 27 countries of the EU, with over 95 thousand estimated deaths in 2022 [5].

Breast cancer was the leading cause of death for females in Albania in 2022, and the third cause of death for both sexes [6]. WHO also indicated that survival from breast cancer is widely inequitable between and within countries; nearly 80% of deaths from breast and cervical cancer occur in low- and middle-income countries [2]. While the incidence is higher in developed countries, the cases in developing countries are detected at an advanced stage [7-10]. Screening and early detection improve outcomes in breast cancer cases, and several countries [11], including Albania, have initiated pilots in improving screening and early detection of breast cancer, including the use of clinical breast examination and mammography. Breast self-examination is still considered an early detection tool in many countries with limited access to mammography or high costs [8] that are not covered by national screening schemes.

In developed countries, breast self-examination is not seen as reliable or beneficial [8, 12,13], but it is largely regarded as beneficial in many developing countries in low-resource settings. Numerous articles published advocate for more to be done in raising breast awareness to curb the preventable mortality linked to breast cancer. Studies conducted to assess breast awareness and evaluate the impact of education across Africa [11, 14-18], Asia [7,19-28], and Europe [12, 13, 29, 30] advocate for targeted training programs that have an impact on increasing breast awareness, health behavior, and health service utilization. These studies look at breast awareness in low-resource settings [10, 21, 31], risk factors linked to breast cancer, and health behavior and utilization patterns in women of different age groups and backgrounds. A recurring theme is the need to strengthen breast awareness and support health education measures on risk factors and a healthy lifestyle.

Knowledge of breast cancer risk factors and regular testing through imaging, clinical, or self-examination methods play an important role in early detection and treatment. As such, assessing awareness levels and healthy behaviors might bring insights into what population groups would need to benefit from more awareness campaigns or education programs. In this study, we look at the awareness of Albanian women of reproductive age on breast cancer, its risk factors, factors linked to lifestyle, awareness of screening procedures, and their frequency.

MATERIALS AND METHODS

The study population was the Albanian women aged 16-80 residing in the capital Tirana, other districts, and abroad. The study was a cross-sectional study with convenience sampling, with respondents contacted through a social media account. Respondents were approached either directly by the principal investigator or relatives who had previously visited a private clinic where screening procedures for breast cancer were completed. The respondents received a link to the study page that provided more information on the survey (in Albanian) and explained the reasons and importance of the responses. We have no information on the number of people who received the invitation link but refused to respond.

Data collection was done online making use of Google forms, with questions determined to ask information on socio-demographics (age, education level, residence, province), personal history, and knowledge of breast cancer (knowledge of breast cancer in close relatives, chest radiation at a young age, use of oral contraceptives, history of benign breast disease, and hormone replacement therapy). We also asked the respondents about risk factors (menstruation before age of 12, late menopause, giving birth after age 30, and not having given birth to a child). Another group of questions focused on lifestyle-related risk factors (low activity, obesity, age over 40, lack of breastfeeding, smoking, alcohol consumption, stress, high consumption of red meat or fatty food, low consumption of vegetables and fruits, etc.). knowledge of clinical signs and symptoms of breast cancer was also assessed by asking of breast lumps, masses under the armpit, bleeding discharges of the nipple, changes of the nipple and breast skin, changes on the shape of the breast etc. the last block of questions was linked to perceived risks of mammography, biopsy, as well as the best time to have examinations of the breasts and when was the age of first exam.

The study received the approval of the ethical committee of the Medical University on January 2024. No information that could be used to identify the respondents was collected or stored in any way. The data was entered directly through self-reporting and analyzed with Stata 16. The analysis focused on univariate frequencies, bivariate analysis of all variables with education level, and looking at chi-square tests of independence between the variables. Associations for which the p-value was 0.05 or less were considered statistically significant and were further investigated for the strength of the association and multivariate analysis modelling. The results were displayed as both numbers and percentages, keeping missing values in the tables for reporting purposes.

RESULTS

A total of 455 Albanian women living in Albania and abroad participated in the study and completed the self-reported questionnaire online. Mean age was 39.9±12.4 years. Of all of them, 66% were married, and 92% lived in urban settings. 67% of them lived in Tirana, and only 5.7% responded from abroad. The socio-demographic characteristics are displayed in Table 1.

Table 1. Socio-demographic characteristics

Characteristics		Education				p-value
		Middle	*Uni*	*Postgrad*	*Total*	
Marital Status	*Single*	14 (18.9%)	56 (31.3%)	57 (28.2%)	127 (27.9%)	0.080
	Married	51 (68.9%)	114 (63.7%)	135 (66.8%)	300 (65.9%)	
	Other	9 (12.2%)	9 (5.0%)	10 (5.0%)	28 (6.2%)	
Urbrur	*Rural*	18 (24.3%)	7 (3.9%)	10 (5.0%)	35 (7.7%)	0.000
	Urban	56 (75.7%)	172 (96.1%)	192 (95.0%)	420 (92.3%)	
Residence	*Abroad*	4 (5.4%)	9 (5.0%)	13 (6.4%)	26 (5.7%)	0.018
	Districts	32 (43.2%)	43 (24.0%)	49 (24.3%)	124 (27.3%)	
	Tirana	38 (51.4%)	127 (70.9%)	140 (69.3%)	305 (67.0%)	

In terms of personal history and knowledge of disease, the only characteristics that were significantly linked to education level were hours of activity per week and age at first breast exam. The personal history of disease and characteristics of other health-related items are listed in Table 2.

Table 2. History, knowledge of disease, and other characteristics**.**

Characteristics		Education				p-value
		Middle	***Uni***	***Postgrad***	***Total***	
History of cancer in the family	Yes	21 (28.4%)	44 (24.6%)	66 (32.7%)	131 (28.8%)	0.220
	No	51 (68.9%)	135 (75.4%)	136 (67.3%)	322 (70.8%)	
	NA	2 (2.7%)	0 (0.0%)	0 (0.0%)	2 (0.4%)	
OC uses 5 years plus	*Yes*	5 (6.8%)	9 (5.0%)	12 (5.9%)	26 (5.7%)	0.846
	No	68 (91.9%)	169 (94.4%)	190 (94.1%)	427 (93.8%)	
	NA	1 (1.4%)	1 (0.6%)	0 (0.0%)	2 (0.4%)	
Hormone Replacement Therapy	*Yes*	2 (2.7%)	8 (4.5%)	4 (2.0%)	14 (3.1%)	0.353
	No	70	168	198	436	

		(94.6%)	(93.9%)	(98.0%)	(95.8%)	
	NA	2 (2.7%)	3 (1.7%)	0 (0.0%)	5 (1.1%)	
History of Benign Disease	*Yes*	8 (10.8%)	17 (9.5%)	18 (8.9%)	43 (9.5%)	0.844
	No	63 (85.1%)	161 (89.9%)	184 (91.1%)	408 (89.7%)	
	NA	3 (4.1%)	1 (0.6%)	0 (0.0%)	4 (0.9%)	
High Radiation on the Chest/Breast	*Yes*	1 (1.4%)	8 (4.5%)	3 (1.5%)	12 (2.6%)	0.148
	No	70 (94.6%)	170 (95.0%)	199 (98.5%)	439 (96.5%)	
	NA	3 (4.1%)	1 (0.6%)	0 (0.0%)	4 (0.9%)	
Do you think mammography radiation may cause cancer?	*Yes*	14 (18.9%)	22 (12.3%)	30 (14.9%)	66 (14.5%)	0.067
	No	27 (36.5%)	107 (59.8%)	105 (52.0%)	239 (52.5%)	
	NA	33 (44.6%)	50 (27.9%)	67 (33.2%)	150 (33.0%)	
Which diagnostic method is more accurate?	*ECHO*	32 (43.2%)	76 (42.5%)	82 (40.6%)	190 (41.8%)	0.249
	MRI	21 (28.4%)	78 (43.6%)	91 (45.0%)	190 (41.8%)	
	NA	21 (28.4%)	25 (14.0%)	29 (14.4%)	75 (16.5%)	
Do you think biopsy increases the risk of cancer by spreading it?	*Yes*	18 (24.3%)	37 (20.7%)	32 (15.8%)	87 (19.1%)	0.106
	No	33 (44.6%)	102 (57.0%)	122 (60.4%)	257 (56.5%)	
	NA	23 (31.1%)	40 (22.3%)	48 (23.8%)	111 (24.4%)	
Do you suffer from other diseases?	*Yes*	13 (17.6%)	28 (15.6%)	21 (10.4%)	62 (13.6%)	0.140
	No	53 (71.6%)	142 (79.3%)	171 (84.7%)	366 (80.4%)	
	NA	8 (10.8%)	9 (5.0%)	10 (5.0%)	27 (5.9%)	
If in menopause, how many kg did you gain?	*< 2*	4 (5.4%)	2 (1.1%)	4 (2.0%)	10 (2.2%)	0.282
	2-4	7 (9.5%)	14 (7.8%)	9 (4.5%)	30 (6.6%)	
	5-9	9 (12.2%)	13 (7.3%)	16 (7.9%)	38 (8.4%)	
	>=10	6 (8.1%)	2 (1.1%)	9 (4.5%)	17 (3.7%)	
	NA	48	148	164	360	

		(64.9%)	(82.7%)	(81.2%)	(79.1%)	
How many hours per week do you exercise?	*<2*	12 (16.2%)	36 (20.1%)	37 (18.3%)	85 (18.7%)	0.000
	2-7	18 (24.3%)	83 (46.4%)	96 (47.5%)	197 (43.3%)	
	>=8	32 (43.2%)	32 (17.9%)	39 (19.3%)	103 (22.6%)	
	NA	12 (16.2%)	28 (15.6%)	30 (14.9%)	70 (15.4%)	
Do you use an IUD	*Yes*	1 (1.4%)	11 (6.1%)	5 (2.5%)	17 (3.7%)	0.082
	No	71 (95.9%)	165 (92.2%)	196 (97.0%)	432 (94.9%)	
	NA	2 (2.7%)	3 (1.7%)	1 (0.5%)	6 (1.3%)	
Did you ever use IVF	*Yes*	2 (2.7%)	3 (1.7%)	5 (2.5%)	10 (2.2%)	0.827
	No	68 (91.9%)	165 (92.2%)	185 (91.6%)	418 (91.9%)	
	NA	4 (5.4%)	11 (6.1%)	12 (5.9%)	27 (5.9%)	
At what age did you have your first exam	*< 20*	5 (6.8%)	13 (7.3%)	4 (2.0%)	22 (4.8%)	0.006
	20-29	11 (14.9%)	42 (23.5%)	66 (32.7%)	119 (26.2%)	
	30-39	37 (50.0%)	63 (35.2%)	76 (37.6%)	176 (38.7%)	
	>=40	12 (16.2%)	19 (10.6%)	17 (8.4%)	48 (10.5%)	
	NA	9 (12.2%)	42 (23.5%)	39 (19.3%)	90 (19.8%)	

The data shows that 70.8% of respondents have knowledge of breast cancer in close relatives, but only 5.7% have used oral contraceptives for longer than 5 years. Only 3.1% have used hormonal therapy after menopause, and only 9.5% have a history of benign breast disease. Only 2.6% reported a history of high radiation on the chest when young. The responses to additional questions on beliefs are interesting. 14.5% believe mammography can cause cancer, and both ultrasound and mammography are equally the best screening methods. 19.1% believe that a biopsy taken to diagnose can cause the spread of the disease. 13.5% suffer from other illnesses (metabolic or hormonal). The mean weight gain reported after menopause was 6.2±5.7 (median 5kg). The median number of hours exercising per week was 4. Of all the ob-gyn-related risk factors, only giving birth after the age of 30 was significantly associated with education. Table 3 shows the ob-gyn-related risk factors.

Table 3. OB-GYN-related risk factors increase the risk of breast cancer

Characteristics		Education				p-value
		Middle	***Uni***	***Postgrad***	***Total***	
Started menstruating before 12 years	*Yes*	19 (25.7%)	33 (18.4%)	50 (24.8%)	102 (22.4%)	0.318
	No	53 (71.6%)	138 (77.1%)	149 (73.8%)	340 (74.7%)	
	NA	2 (2.7%)	8 (4.5%)	3 (1.5%)	13 (2.9%)	
Late menopause (after age 55)	*Yes*	9 (12.2%)	20 (11.2%)	22 (10.9%)	51 (11.2%)	0.975
	No	52 (70.3%)	123 (68.7%)	140 (69.3%)	315 (69.2%)	
	NA	13 (17.6%)	36 (20.1%)	40 (19.8%)	89 (19.6%)	
Giving birth after age 30	*Yes*	22 (29.7%)	95 (53.1%)	109 (54.0%)	226 (49.7%)	0.000
	No	47 (63.5%)	65 (36.3%)	79 (39.1%)	191 (42.0%)	
	NA	5 (6.8%)	19 (10.6%)	14 (6.9%)	38 (8.4%)	
Giving birth to a child increases the risk of cancer	*Yes*	4 (5.4%)	3 (1.7%)	5 (2.5%)	12 (2.6%)	0.210
	No	60 (81.1%)	159 (88.8%)	174 (86.1%)	393 (86.4%)	
	NA	10 (13.5%)	17 (9.5%)	23 (11.4%)	50 (11.0%)	

It seems that Albanian women are not aware that early menses and late menopause are risk factors for breast cancer, with 74.4% and 69.2% saying no, respectively. Opinions are split on whether giving birth after the age of 30 is a risk factor for breast cancer (48.7% saying yes), and only 2.6% reported that giving birth to a child increases the risk of cancer.

When asked about lifestyle-related risk factors to breast cancer, the responses are shown in Table 4. Only breastfeeding seems to be associated with education levels, with only 4.2% responding that breastfeeding can increase the risk of breast cancer.

Table 4. Lifestyle-related breast cancer risk factors

Characteristics		Education				p-value
		Middle	*Uni*	*Postgrad*	*Total*	
Low Activity	*Yes*	37 (50.0%)	108 (60.3%)	118 (58.4%)	263 (57.8%)	0.438
	No	33 (44.6%)	67 (37.4%)	79 (39.1%)	179 (39.3%)	
	NA	4 (5.4%)	4 (2.2%)	5 (2.5%)	13 (2.9%)	
Obesity	*Yes*	43 (58.1%)	103 (57.5%)	116 (57.4%)	262 (57.6%)	0.983
	No	29 (39.2%)	73 (40.8%)	82 (40.6%)	184 (40.4%)	
	NA	2 (2.7%)	3 (1.7%)	4 (2.0%)	9 (2.0%)	
Age over 40 years	*Yes*	49 (66.2%)	92 (51.4%)	110 (54.5%)	251 (55.2%)	0.072
	No	22 (29.7%)	81 (45.3%)	86 (42.6%)	189 (41.5%)	
	NA	3 (4.1%)	6 (3.4%)	6 (3.0%)	15 (3.3%)	
Breastfeeding	*Yes*	2 (2.7%)	13 (7.3%)	4 (2.0%)	19 (4.2%)	0.031
	No	66 (89.2%)	160 (89.4%)	191 (94.6%)	417 (91.6%)	
	NA	6 (8.1%)	6 (3.4%)	7 (3.5%)	19 (4.2%)	
Smoking and Alcohol	*Yes*	53 (71.6%)	138 (77.1%)	150 (74.3%)	341 (74.9%)	0.839
	No	17 (23.0%)	37 (20.7%)	45 (22.3%)	99 (21.8%)	
	NA	4 (5.4%)	4 (2.2%)	7 (3.5%)	15 (3.3%)	
Stress	*Yes*	63 (85.1%)	168 (93.9%)	185 (91.6%)	416 (91.4%)	0.120
	No	9 (12.2%)	9 (5.0%)	14 (6.9%)	32 (7.0%)	
	NA	2 (2.7%)	2 (1.1%)	3 (1.5%)	7 (1.5%)	
High consumption of red meat	*Yes*	41 (55.4%)	87 (48.6%)	101 (50.0%)	229 (50.3%)	0.467
	No	27 (36.5%)	82 (45.8%)	85 (42.1%)	194 (42.6%)	
	NA	6 (8.1%)	10 (5.6%)	16 (7.9%)	32 (7.0%)	
Low-vegetable diet	*Yes*	40 (54.1%)	81 (45.3%)	93 (46.0%)	214 (47.0%)	0.417

	No	31 (41.9%)	91 (50.8%)	97 (48.0%)	219 (48.1%)	
	NA	3 (4.1%)	7 (3.9%)	12 (5.9%)	22 (4.8%)	
High-fat diet	*Yes*	47 (63.5%)	106 (59.2%)	108 (53.5%)	261 (57.4%)	0.293
	No	23 (31.1%)	69 (38.5%)	83 (41.1%)	175 (38.5%)	
	NA	4 (5.4%)	4 (2.2%)	11 (5.4%)	19 (4.2%)	

The majority (57.8%) are aware that low physical activity might lead to breast cancer and similarly think that obesity is a risk factor too. 55.2% responded that age over 40 is a risk factor, while 74.9% responded that smoking or alcohol is a risk factor for breast cancer. Over 91% responded that stress is a risk factor, and 57.4% that a high-fat diet is a risk factor. About half responded that red meat and a low-vegetable diet may be a risk factor.

When asked about recognizing the clinical signs and symptoms of breast cancer, the respondents confirmed that a breast lump (71.2%) and an armpit mass (70.8%) could be related to breast cancer. 65.9% of them also reported that a sudden change in the shape of the breast may be related to breast cancer. The rest of the signs were not significantly linked to the level of education. Table 5 shows the distribution of signs and symptoms by education level.

Table 5. Clinical signs and symptoms of breast cancer

Characteristics		**Education**				**p-value**
		Middle	***Uni***	***Postgrad***	***Total***	
Nodus	*Yes*	43 (58.1%)	128 (71.5%)	153 (75.7%)	324 (71.2%)	0.002
	No	31 (41.9%)	44 (24.6%)	39 (19.3%)	114 (25.1%)	
	NA	0 (0.0%)	7 (3.9%)	10 (5.0%)	17 (3.7%)	
Mass under armpit	*Yes*	43 (58.1%)	124 (69.3%)	155 (76.7%)	322 (70.8%)	0.004
	No	29 (39.2%)	47 (26.3%)	39 (19.3%)	115 (25.3%)	
	NA	2 (2.7%)	8 (4.5%)	8 (4.0%)	18 (4.0%)	
Bleeding or discharge from nipple	*Yes*	39 (52.7%)	105 (58.7%)	132 (65.3%)	276 (60.7%)	0.140
	No	28 (37.8%)	62 (34.6%)	56 (27.7%)	146 (32.1%)	
	NA	7 (9.5%)	12 (6.7%)	14 (6.9%)	33 (7.3%)	

Pulling of nipple inwards	*Yes*	32 (43.2%)	80 (44.7%)	105 (52.0%)	217 (47.7%)	0.126
	No	37 (50.0%)	84 (46.9%)	76 (37.6%)	197 (43.3%)	
	NA	5 (6.8%)	15 (8.4%)	21 (10.4%)	41 (9.0%)	
Wound around the nipple	*Yes*	34 (45.9%)	94 (52.5%)	103 (51.0%)	231 (50.8%)	0.701
	No	32 (43.2%)	74 (41.3%)	76 (37.6%)	182 (40.0%)	
	NA	8 (10.8%)	11 (6.1%)	23 (11.4%)	42 (9.2%)	
Redness of the breast skin	*Yes*	29 (39.2%)	103 (57.5%)	96 (47.5%)	228 (50.1%)	0.112
	No	36 (48.6%)	70 (39.1%)	83 (41.1%)	189 (41.5%)	
	NA	9 (12.2%)	6 (3.4%)	23 (11.4%)	38 (8.4%)	
Abrupt changes in the size of the breast	*Yes*	39 (52.7%)	114 (63.7%)	127 (62.9%)	280 (61.5%)	0.158
	No	30 (40.5%)	59 (33.0%)	56 (27.7%)	145 (31.9%)	
	NA	5 (6.8%)	6 (3.4%)	19 (9.4%)	30 (6.6%)	
Abrupt changes in the shape of the breast	*Yes*	41 (55.4%)	117 (65.4%)	142 (70.3%)	300 (65.9%)	0.021
	No	28 (37.8%)	56 (31.3%)	44 (21.8%)	128 (28.1%)	
	NA	5 (6.8%)	6 (3.4%)	16 (7.9%)	27 (5.9%)	

Lastly, the study participants responded to the best time to have a breast examination. Almost half responded that the best time to have a clinical examination by a doctor and nurse was after age 40 (45.7%), 54.5% said that after 40 years of age is the best time to have a mammography examination, and 61.8% reported that the best time to start breast self-examination is after the age of 20 years old. Details are shown in Table 6.

Table 6. Best time for breast examinations

Characteristics		**Education**				**p-value**
		Middle	***Uni***	***Postgrad***	***Total***	
When is the best time to start the breast exam by the doctor or midwife?	*After 20 yr*	19 (25.7%)	47 (26.3%)	61 (30.2%)	127 (27.9%)	0.431
	After 25 yr	15 (20.3%)	53 (29.6%)	52 (25.7%)	120 (26.4%)	
	After 30 yr	40 (54.1%)	79 (44.1%)	89 (44.1%)	208 (45.7%)	

When is the best time to start mammography?	*After 20 yr*	11 (14.9%)	25 (14.0%)	24 (11.9%)	60 (13.2%)	0.895
	After 30 yr	26 (35.1%)	56 (31.3%)	65 (32.2%)	147 (32.3%)	
	After 40 yr	37 (50.0%)	98 (54.7%)	113 (55.9%)	248 (54.5%)	
When is the best time to start self-breast exams?	*After 20 yr*	37 (50.0%)	107 (59.8%)	137 (67.8%)	281 (61.8%)	0.002
	After 30 yr	22 (29.7%)	60 (33.5%)	50 (24.8%)	132 (29.0%)	
	After 40 yr	15 (20.3%)	12 (6.7%)	15 (7.4%)	42 (9.2%)	
When is the best time to do a self-breast exam in the menstrual cycle?	*1 wk after menses*	47 (63.5%)	138 (77.1%)	156 (77.2%)	341 (74.9%)	0.046
	1 mo after menses	27 (36.5%)	41 (22.9%)	46 (22.8%)	114 (25.1%)	
How often should a breast cancer self-examination be performed?	*Each month*	31 (41.9%)	65 (36.3%)	89 (44.1%)	185 (40.7%)	0.046
	Quarterly	43 (58.1%)	114 (63.7%)	113 (55.9%)	270 (59.3%)	

Some 74.9% of respondents said the best time for an examination is 1 week after menstruation starts, and 59.3% of respondents said self-examination is best done quarterly. The mean age at first breast examination was 31.8±9.24 years.

DISCUSSION

The study population was heavily populated by university graduates who had additional training (master's and PhD degrees). Only 16% had less than a university degree. The overall majority with a residence in Tirana and otherwise in urban settings indicates that the findings of this study cannot be extrapolated to the rest of the Albanian women. Nonetheless, the information collected through this study, the first in Albania, will help understand some of the focus areas where health information efforts might be of value.

The study findings seem to suggest that the awareness of breast cancer is not adequate. Similar findings came from other studies in the UAE Emirates [23], Saudi Arabia[28], Oman[16], Cameroon[18], Gaza[26], Bangladesh[32], Pakistan[25], and Türkiye[29].

Several studies suggest that health education or awareness campaigns need to be planned, initiated, and supported, either for health personnel or women, as part of primary health care settings [12, 17-20, 24- 27, 30, 33- 36].

Our study suggests that breast awareness is not related to education level or achievements; hence, our suggestion is that when the Ministry of Health in Albania initiates country health education campaigns on breast cancer, the campaign should focus on all, irrespective of socio-demographic backgrounds. The only clinical signs and symptoms linked to education

level were the presence of lumps or masses and changes in the shape of the breast. In this case, the higher the level of education completed, the larger the percentage of respondents who responded positively. As the age of start of self-examination and the frequency were relatively high, the suggestion would be to focus on women of lower education for further health education sessions on the clinical signs and symptoms.

The health education can be integrated into the primary health care, and informative materials can be produced and distributed in the large network of primary health care facilities across Albania. Negative beliefs on the dangers of mammography or biopsy will need to be addressed, while establishing a national screening program for women as part of the health insurance scheme [10,11,25, 33, 35].

CONCLUSIONS

The breast awareness campaign should target Albanian women of all educational backgrounds at the primary health care level. Awareness is not always related to education level or achievements, so it is mandatory to include health education in school programs and to extend informative materials and hands-on training in the primary health care system. A national screening program helps to bring technology not only to large and important cities but also to most rural areas where the facilities are almost nonexistent.

Conflicts of interest: The authors declare that they have no conflicts of interest.

REFERENCES

1. WHO. Breast cancer key facts. https://www.who.int/news-room/fact-sheets/detail/breast-cancer. Accessed on 23 June 2024.
2. WHO. WHO launches new roadmap on breast cancer.https://www.who.int/news/item/03-02-2023-who-launches-new-roadmap-on-breast-cancer. Accessed on 23 June 2024.
3. International Agency for Research on Cancer. Breast Cancer. https://www.iarc.who.int/cancer-type/breast-cancer. Accessed on 23 June 2024.
4. US National Cancer Institute. Cancer Stat Facts: Female Breast Cancer. https://seer.cancer.gov/statfacts/html/breast.html. Accessed on 23 June 2024.
5. European Cancer Information System. Cancer Factsheets in EU-27 countries – 2022. https://ecis.jrc.ec.europa.eu/factsheets_2022.php. Accessed on 23 June 2024.
6. Global Cancer Observatory. Albania factsheet. https://gco.iarc.who.int/media/globocan/factsheets/populations/8-albania-fact-sheet.pdf, accessed on 27 June 2024.
7. Akram M, Iqbal M, Daniyal M, Khan AU. Awareness and current knowledge of breast cancer. Biol Res. 2017 Oct 2;50(1):33. doi: 10.1186/s40659-017-0140-9. PMID: 28969709; PMCID: PMC5625777.
8. Albeshan SM, Hossain SZ, Mackey MG, Brennan PC. Can Breast Self-examination and Clinical Breast Examination Along With Increasing Breast Awareness Facilitate Earlier Detection of Breast Cancer in Populations With Advanced Stages at

Diagnosis? Clin Breast Cancer. 2020 Jun;20(3):194-200. doi: 10.1016/j.clbc.2020.02.001. Epub 2020 Feb 11. PMID: 32147405.
9. Malik R, Vera N, Dayal C, Choudhari A, Mudaliar J, Noovao Hill A, Kubuabola I, Gunnarsson R. Factors associated with breast cancer awareness and breast self-examination in Fiji and Kashmir India - a cross-sectional study. BMC Cancer. 2020 Nov 10;20(1):1078. doi: 10.1186/s12885-020-07583-w. PMID: 33167928; PMCID: PMC7654031.
10. Ayele W, Addissie A, Wienke A, Unverzagt S, Jemal A, Taylor L, Kantelhardt EJ. Breast Awareness, Self-Reported Abnormalities, and Breast Cancer in Rural Ethiopia: A Survey of 7,573 Women and Predictions of the National Burden. Oncologist. 2021 Jun;26(6):e1009-e1017. doi: 10.1002/onco.13737. Epub 2021 Mar 19. PMID: 33650727; PMCID: PMC8176994.
11. Mwenda V, Bor JP, Gitungo H, Kirika L, Njoroge R, Mugi B, Ojuka D, Nyangasi M. Breast health awareness campaign and screening pilot in a Kenyan County: Findings and lessons. Cancer Rep (Hoboken). 2022 Mar;5(3):e1480. doi: 10.1002/cnr2.1480. Epub 2021 Jul 8. PMID: 34235881; PMCID: PMC8955074.
12. McCready T, Littlewood D, Jenkinson J. Breast self-examination and breast awareness: a literature review. J Clin Nurs. 2005 May;14(5):570-8. doi: 10.1111/j.1365-2702.2004.01108.x. PMID: 15840071.
13. Thornton H, Pillarisetti RR. 'Breast awareness' and 'breast self-examination' are not the same. What do these terms mean? Why are they confused? What can we do? Eur J Cancer. 2008 Oct;44(15):2118-21. doi: 10.1016/j.ejca.2008.08.015. Epub 2008 Sep 20. PMID: 18805689.
14. Osei-Afriyie S, Addae AK, Oppong S, Amu H, Ampofo E, Osei E. Breast cancer awareness, risk factors and screening practices among future health professionals in Ghana: A cross-sectional study. PLoS One. 2021 Jun 24;16(6):e0253373. doi: 10.1371/journal.pone.0253373. PMID: 34166407; PMCID: PMC8224936.
15. Maitanmi JO, Fadare O, Kolawole M, Aduroja DM, Faleti DM, Maitanmi BT, Akingbade O. Awareness and practice of breast self-examination among female staff at Babcock University, Nigeria. Ecancermedicalscience. 2023 Oct 30;17:1615. doi: 10.3332/ecancer.2023.1615. Erratum in: Ecancermedicalscience. 2024 Jan 05;18:1652. doi: 10.3332/ecancer.2024.1652. PMID: 38414968; PMCID: PMC10898883.
16. Al-Ismaili Z, Al-Nasri K, Al-Yaqoobi A, Al-Shukaili A. Awareness of Breast Cancer Risk Factors, Symptoms and Breast Self-Examination Among Omani Female Teachers: A cross-sectional study. Sultan Qaboos Univ Med J. 2020 May;20(2):e194-e201. doi: 10.18295/squmj.2020.20.02.010. Epub 2020 Jun 28. PMID: 32655912; PMCID: PMC7328847.
17. Suh MA, Atashili J, Fuh EA, Eta VA. Breast self-examination and breast cancer awareness in women in developing countries: a survey of women in Buea, Cameroon. BMC Res Notes. 2012 Nov 9;5:627. doi: 10.1186/1756-0500-5-627. PMID: 23140094; PMCID: PMC3522012.
18. Sama CB, Dzekem B, Kehbila J, Ekabe CJ, Vofo B, Abua NL, Dingana TN, Angwafo F III. Awareness of breast cancer and breast self-examination among female undergraduate students in a higher teachers training college in Cameroon. Pan Afr

Med J. 2017 Sep 29;28:91. doi: 10.11604/pamj.2017.28.91.10986. PMID: 29255561; PMCID: PMC5724944.
19. Prusty RK, Begum S, Patil A, Naik DD, Pimple S, Mishra G. Increasing breast cancer awareness and breast examination practices among women through health education and capacity building of primary healthcare providers: a pre-post intervention study in low socioeconomic area of Mumbai, India. BMJ Open. 2021 Apr 27;11(4):e045424. doi: 10.1136/bmjopen-2020-045424. PMID: 33906843; PMCID: PMC8088239.
20. Jabeen Z, Shah N, Ahmer Z, Khan S, Khan AH, Khan M. Effect of health education on awareness and practices of breast self examination among females attending a charitable hospital at North Karachi. J Pak Med Assoc. 2021 Sep;71(9):2156-2162. doi: 10.47391/JPMA.04-564. PMID: 34580506.
21. Gupta R, Gupta S, Mehrotra R, Sodhani P. Risk factors of breast cancer and breast self-examination in early detection: systematic review of awareness among Indian women in community and health care professionals. J Public Health (Oxf). 2020 Feb 28;42(1):118-131. doi: 10.1093/pubmed/fdy228. PMID: 30608560.
22. Irfan R, Memon H, Umrani IN, Soomro H. Breast cancer awareness among pharmacy and physiotherapy students of medical university Nawabshah. J Pak Med Assoc. 2021 Jan;71(1(B)):297-301. doi: 10.47391/JPMA.550. PMID: 35157667.
23. Rahman SA, Al-Marzouki A, Otim M, Khalil Khayat NEH, Yousuf R, Rahman P. Awareness about Breast Cancer and Breast Self-Examination among Female Students at the University of Sharjah: A Cross-Sectional Study. Asian Pac J Cancer Prev. 2019 Jun 1;20(6):1901-1908. doi: 10.31557/APJCP.2019.20.6.1901. PMID: 31244316; PMCID: PMC7021607.
24. Koirala D, Silwal M, Pokhrel S, Adhikari R. Awareness of Breast Self-Examination among Female Community Health Volunteers of Pokhara. J Nepal Health Res Counc. 2023 Jul 20;20(4):952-957. doi: 10.33314/jnhrc.v20i4.4341. PMID: 37489683.
25. Hussain I, Majeed A, Masood I, Ashraf W, Imran I, Saeed H, Ur Rehman A, Hashmi FK, Saleem F, Akbar M, Chaudhry MO, Ullah J, Rasool MF. A national survey to assess breast cancer awareness among the female university students of Pakistan. PLoS One. 2022 Jan 21;17(1):e0262030. doi: 10.1371/journal.pone.0262030. PMID: 35061770; PMCID: PMC8782286.
26. Abo Al-Shiekh SS, Ibrahim MA, Alajerami YS. Breast Cancer Knowledge and Practice of Breast Self-Examination among Female University Students, Gaza. ScientificWorldJournal. 2021 Apr 27;2021:6640324. doi: 10.1155/2021/6640324. PMID: 34007246; PMCID: PMC8100409.
27. Al-Qazaz HK, Yahya NA, Ibrahim DK. Knowledge, awareness, and practice of breast self-examination among females in Mosul city, Iraq. J Cancer Res Ther. 2020 Oct-Dec;16(6):1376-1381. doi: 10.4103/jcrt.JCRT_736_19. PMID: 33342800.
28. Hussein DM, Alorf SH, Al-Sogaih YS, Alorf SH, Alaskar RS, Al-Mahana AM, Alsalhowb WF, Alibrahim AK, Saka MY, Alhazimi AM, Baghirova A, Hindawi SI. Breast cancer awareness and breast self-examination in Northern Saudi Arabia. A preliminary survey. Saudi Med J. 2013 Jul;34(7):681-8. PMID: 23860886.
29. Karayurt O, Ozmen D, Cetinkaya AC. Awareness of breast cancer risk factors and practice of breast self examination among high school students in Turkey. BMC

Public Health. 2008 Oct 17;8:359. doi: 10.1186/1471-2458-8-359. PMID: 18928520; PMCID: PMC2587470.
30. Soyer MT, Ciceklioglu M, Ceber E. Breast cancer awareness and practice of breast self examination among primary health care nurses: influencing factors and effects of an in-service education. J Clin Nurs. 2007 Apr;16(4):707-15. doi: 10.1111/j.1365-2702.2006.01644.x. PMID: 17402952.
31. Getu MA, Abebe M, Tlaye KG, Goshu AT. Breast Self-Examination Knowledge and its Determinants among Female Students at Addis Ababa University, Ethiopia: An Institution-Based Cross-Sectional Study. Biomed Res Int. 2022 May 30;2022:2870419. doi: 10.1155/2022/2870419. PMID: 35677100; PMCID: PMC9170413.
32. Sarker R, Islam MS, Moonajilin MS, Rahman M, Gesesew HA, Ward PR. Knowledge of breast cancer and breast self-examination practices and its barriers among university female students in Bangladesh: Findings from a cross-sectional study. PLoS One. 2022 Jun 28;17(6):e0270417. doi: 10.1371/journal.pone.0270417. PMID: 35763525; PMCID: PMC9239455.
33. Suleiman AK. Awareness and attitudes regarding breast cancer and breast self-examination among female Jordanian students. J Basic Clin Pharm. 2014 Jun;5(3):74-8. doi: 10.4103/0976-0105.139730. PMID: 25278670; PMCID: PMC4160723.
34. Hijrah H, Usman AN, Sanusi Baso Y, Syarif S, Ahmad M, Nulandari Z. Influence of variables on breast self-examination: Potential barrier or enhancement of breast cancer prevention. Breast Dis. 2024;43(1):145-155. doi: 10.3233/BD-249001. PMID: 38820008.
35. Gadgil A, Sauvaget C, Roy N, Muwonge R, Kantharia S, Chakrabarty A, Bantwal K, Haldar I, Sankaranarayanan R. Cancer early detection program based on awareness and clinical breast examination: Interim results from an urban community in Mumbai, India. Breast. 2017 Feb;31:85-89. doi: 10.1016/j.breast.2016.10.025. Epub 2016 Nov 6. PMID: 27829200.
36. O'Mahony M, Comber H, Fitzgerald T, Corrigan MA, Fitzgerald E, Grunfeld EA, Flynn MG, Hegarty J. Interventions for raising breast cancer awareness in women. Cochrane Database Syst Rev. 2017 Feb 10;2(2):CD011396. doi: 10.1002/14651858.CD011396.pub2. PMID: 28185268; PMCID: PMC6464597.