RESEARCH ARTICLE

Factors Associated with a Lack of Knowledge of Performing Breast Self-Examination and Unawareness of Cervical Cancer Screening Services: Evidence from the 2015 Egypt Health Issues Survey

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Abstract

   Background: The incidence of breast and cervical cancers is growing rapidly among Egyptian women. In this context, we assessed the prevalence of, and factors associated with the lack of knowledge among Egyptian females of performing breast self–examination (BSE) and unawareness of cervical smear cancer screening services. **Methods:** Secondary data analysis was performed on a representative population-based sample of 7,518 Egyptian females aged 15–59 years from the 2015 Egypt Health Issues Survey (EHIS). Crude and adjusted odds ratios (aOR) were used to explore the relationship between sociodemographic variables and having a lack of knowledge of performing BSE or unaware of cervical smear cancer screening service amongst 6,572 and 6,942 Egyptian females aged 21–59 years, respectively. **Results:** Mean age of females was 36.9 years with 62% aged between 21–39 years. The proportion of women with a lack of knowledge of performing BSE or who were unaware of cervical smear cancer screening service was 87.4% and 92.3%, respectively. After adjusting for potential confounding of sociodemographic and obstetric characteristics, young women aged 21–29 years (P<0.001), primary education or below (P<0.001), residing in rural areas (aOR, 1.37 and 1.48, P=0.001), accessing different media outlets "not at all or less than once a week" (aOR, 2.81 and 1.46, P≤0.05), were associated with a greater likelihood of being with lack knowledge of performing BSE or being unaware of cervical smear cancer screening services. **Conclusions:** In a country burdened with breast and cervical cancers, the majority of Egyptian women have a lack of knowledge on how to perform BSE or were unaware of the available cervical smear cancer screening services. Robust health campaigns are warranted to raise public knowledge of the method of BSE and of cervical smear cancer screening services, especially amongst females aged less than 30 years, with low levels of education, or those living in rural areas.

Keywords: Breast neoplasms- uterine cervical neoplasms- breast self-examination- Papanicolaou test- Egypt

Introduction

   Breast and cervical cancer are among the most common of all cancers in developing countries (Parkin et al., 2008; Sankaranarayanan and Boffetta 2010; Jemal et al., 2011). Breast cancer is the fifth most common cause of death from cancer in women (Breast cancer statistics, 2012). Globally, 1.7 million incident breast cancer cases were diagnosed in 2012 and 571,000 deaths occurred in women in 2015 (Breast cancer statistics, 2012). Breast cancer represents approximately 12% of all new cancer cases and 25% of all cancers in women worldwide (Breast cancer statistics, 2012). Human papillomavirus (HPV) infection is now a well-established cause of cervical cancer (zur Hausen, 2009) and cervical cancer is the fourth most common cancer among women worldwide (Ferlay et al., 2012). In 2012, there were an estimated 527,624 new cervical cancer cases and 265,672 deaths occurring in women globally, with an age-standardized incidence rate of 14 cases per 100,000 women worldwide (GLOBCAN, 2012). Both breast and cervical cancers have high cure rates when detected and treated early (World Cancer Report, 2014). Therefore, population-based public health programs need to educate at-risk females about the signs and symptoms, and available screening services for these cancers.

   Egypt is a lower-middle income developing country and the age-standardized incidence rate for all cancers is 157 cases per 100,000 Egyptian women (Ibrahim et al., 2014). In Egypt, both the morbidity and mortality of breast cancer have been consistently increasing, and this cancer is the most commonly encountered malignancy afflicting Egyptian women (Omar et al., 2003). Almost a third (32%) of the incident cancer cases in Egypt in 2012 were in breast tissue followed by 14% in the liver (Ibrahim et

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al., 2014). Overall, there were an estimated 19,105 breast cancer cases among Egyptian women in 2015 (Ibrahim et al., 2014). The current demographic changes including population growth, delayed age at marriage leading to delayed maternal age, lifestyle and eating behaviours, and aging favor the likelihood that breast cancer will become an even greater public health concern in Egypt in the near future. It is predicted that relative to 2013 the number of breast cancer cases would increase by three–fold to reach more than 45,000 breast cancer cases in 2050 (Ibrahim et al., 2014). Moreover, there are approximately 30.55 million women in Egypt aged 15 years and older who are at risk of developing cervical cancer. Cervical cancer ranks as the 13th leading cause of female cancer and is the 10th most frequent cancer in women aged 15 to 44 years in Egypt (Bruni et al., 2017). In 2012, 866 new cervical cancer cases were diagnosed and 373 cervical–cancer related deaths occurred in Egypt (Bruni et al., 2017). The age–standardized incidence rate of cervical cancer among Egyptian women was reported as 2.3 cases per 100,000 in 2012 (Bruni et al., 2017).

Early detection is critically important in reducing deaths from both breast and cervical cancer. Breast self-examination (BSE) is not considered to be an effective detection method on a population basis but is encouraged as it raises awareness among women of breast cancer risks and may contribute to the detection of some breast cancers on an individual basis. Early detection of breast cancer can be achieved by improving public and professional awareness of the signs and symptoms associated with cancer or through screening which involves the systematic use of testing, such as mammography, to detect and treat cancer or pre–cancerous cells across an asymptomatic population (World Health Organization, 2014). According to the 2015 Egypt Health Issues Survey (EHIS), only 6.2% of Egyptian women reported performing a BSE in the previous 12 months (El-Zanaty et al., 2015). Cervical cancer screening is carried out by performing a Papanicolaou smear (Pap smear) examination to detect the oncogenic effect of HPV (zur Hausen, 2009). Women are typically encouraged to begin regular BSE between the age of 20 and 30 years. Sexually active women or those aged ≥21 years are recommended to undergo an annual Pap smear examination. However, in 2015 only 0.3% of Egyptian females reported ever having completed a Pap smear test (El-Zanaty et al., 2015).

Against this background, our study aims to assess the prevalence of, and sociodemographic and obstetric factors associated with a lack of knowledge of Egyptian females on performing BSE and their unawareness of cervical smear cancer screening services.

Materials and Methods

Data source

This study utilized secondary data from the EHIS–2015 that was conducted from May to September, 2015 (El-Zanaty et al., 2015). The EHIS–2015 is part of the Demographic and Health Surveys (DHS) program (El-Zanaty et al., 2015). This survey shared the same national sample as the Egypt DHS–2014. It involved a

systematic random selection of a subsample of 614 out of the 884 primary sampling units in the Egypt DHS–2014 (El-Zanaty et al., 2014). Detailed information related to the procedures and methodologies implemented in the EHIS–2015 can be found elsewhere (El-Zanaty et al., 2015). Briefly, the sample for the EHIS–2015 was designed to provide estimates of the key health indicators for the country as a whole (El-Zanaty et al., 2015). In addition, the EHIS–2015 investigated the ability of Egyptian females to perform BSE or if they had ever heard of the Pap smear test.

The total sample size in the EHIS–2015 was 16,671 individuals with a self–reported age range of 15–59 years. For the purpose of this study, 7,518 women aged >20–59 years who responded "yes or no" to the questions "Do you know how to give yourself a breast exam to look for signs of breast cancer?" or "Have you ever heard of a pap smear?" were included in the analysis, after excluding 7,462 men and 1,692 women with an age group of 15–20 years. The flow of study participants selection is presented in Flow Chart.

Study variables

Two binary outcome variables were measured: (1) knowledge of performing BSE and (2) awareness of cervical smear cancer screening services.

From the EHIS–2015, we selected different sociodemographic and obstetric variables that might influence a women's knowledge of performing BSE or awareness of cervical smear cancer screening service. Age was categorized into four groups (21–29, 30–39, 40–49, and 50–59 years). Woman's educational attainment was defined as "completed primary school or below" or "completed secondary school or above". Women were divided into Muslims or Christians according to their self-reported religious belief and into "never" or "ever" according to their current marital status. Self-reported employment status was dichotomized into two groups (i) having an income–producing job or business; or (ii) unemployed. Geographical location of residence was categorized into either urban or rural. Response to the frequency of reading newspapers or magazines, frequency of listening to radio, frequency of accessing social
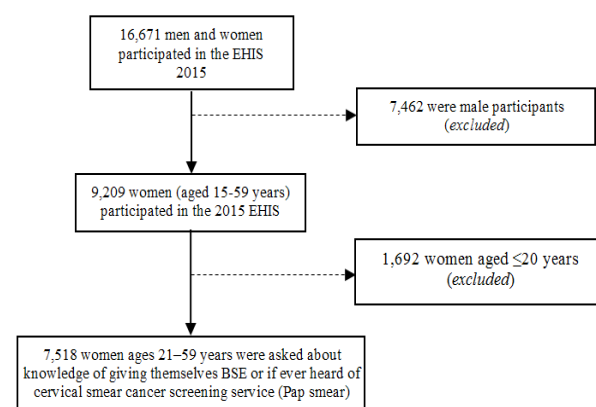
Flow Chart. Flow of Participants Through the Study and Sample Selection. Weighted Numbers. EHIS: Egypt Health Issues Survey. BSE, Breast Self-Exam.

media (Facebook or Twitter), or frequency of watching television, were re–categorized into a one variable "frequency of accessing read, heard, visualized, or social media" with a potential response of "at least once a week" or "not at all/less than once a week". The two selected obstetric variables were lifetime parity (nulliparous/never–married, 1–2, or ≥3 children) and pregnancy status (yes or no/unsure).

Statistical analyses

Descriptive statistics are presented as weighted numbers and percentages for the measured variables for the whole sample and for each outcome. Weighted percentages were calculated for the proportion of women who responded "No" to the questions assessing their knowledge of performing BSE or their awareness of cervical smear cancer screening services. Potential differences in the reported responses were evaluated according to each measured characteristic's sub-category using Chi–square or Fisher's exact tests as appropriate. A sampling weight was developed by EDHS–2014 according to the sample allocation. Weighted analysis was conducted to adjust for the complex household survey design including potential over–sampling or under–sampling and to ensure the actual representativeness of the survey results at the national level as well as at the cluster level.

Bivariate and multivariable logistic regression analyses were conducted to investigate the sociodemographic and obstetric characteristics associated with the lack of knowledge of performing BSE or unawareness of cervical smear cancer screening service. Replying by "No" to ability to perform BSE or being unaware of cervical smear cancer screening service were coded "1". To control for any potential confounders, all measured variables in bivariate analysis were included simultaneously in the multivariable models, to adjust for any influence of potential confounding effect. All analyses were performed using the statistical software package IBM SPSS Statistics version 23. A two–tailed P value of ≤0.05 was regarded as denoting statistical significance.

The protocol for EHIS–2015 was approved by the Scientific and Research Ethics Committee of the Ministry of Health and Population of Egypt and the Institutional Review Board at ICF International. All females participating in the EHIS–2015 provided written informed consent. Institutional ethical clearance from the research ethical committee of the United Arab Emirates University was not needed given the utilization of publicly available data.

Results

Of the 16,671 subjects surveyed in the EHIS–2015, 7,518 women aged 21–59 years were asked about their knowledge of performing BSE or if they were aware of cervical smear cancer screening services (Flow Chart). Table 1 shows the background characteristics of the 7,518 females according to their declared knowledge of performing BSE and self-reporting that they aware of cervical smear cancer screening services. Briefly, the mean age (±SD) of women was 36.9 ±10.8 years and

60.6% of them had completed secondary education or above. The majority of women were Muslims (95.6%) and ever-married (93.3%). Nearly two-thirds (63.4%) of Egyptian females were living in rural settings, 83.5% reported accessing different media outlets less than once a week or not at all, only 4% were nulliparous, and more than half of participants (60%) had a lifetime parity of ≥3 children with a mean (±SD) lifetime parity of 2.85±1.69 children per women (Table 1).

Overall, 87.4% and 92.3% of the women had a lack of knowledge of performing BSE and were unaware of cervical smear cancer screening service, respectively. The proportion of women who reported that they lacked the knowledge on how to perform BSE or were unaware of cervical smear cancer screening services was concentrated among young women aged 21–29 years (32.1% and 32.0%, respectively), completed secondary education or above (56.4% and 59.3%, respectively), ever–married (93.5% and 93.4%, respectively), residing in rural settings (66.0% and 64.7%, respectively), reported never accessing media outlets or less than once a week (87.1% and 84.8%, respectively), and women with lifetime parity of ≥3 children (65.4% and 64.7%, respectively) (Table 1).

Table 2 shows the crude and adjusted relationship between female characteristics and having a lack of knowledge of performing BSE or unaware of cervical smear cancer screening service. In the crude analysis, the six female characteristics that were positively associated with a lack of knowledge of performing BSE retained their significance in the multivariable analyses after adjustment for the potential confounding effect of all the measured characteristics. Overall, young women in the age group 21–29 years were more likely to report lacking the required knowledge to perform BSE or unawareness of available cervical smear cancer screening services (P≤0.05 for both). Women with primary education or below were 70% (P<0.001) or 26% (P≤0.05) more likely to lack the knowledge to perform BSE or be unaware of cervical smear cancer screening services compared to women with secondary education or above, respectively. Compared to women residing in urban settings, women residing in rural settings had a greater likelihood of lacking the knowledge to perform BSE (aOR, 1.37, P=0.001) or being unaware of cervical smear cancer screening services (aOR, 1.48, P=0.001). Accessing media outlets "not at all or less than once a week" was the characteristic that had the strongest association with having a lack of knowledge on how to perform BSE (aOR, 2.81, 95% CI, 2.24–3.53). In the adjusted model, lifetime parity negatively influenced knowledge of performing BSE or awareness of cervical smear cancer screening services. Mothers with ≥3 children were 21% or 29% more likely to have a lack of knowledge of how to perform BSE (P=0.001) or be unaware of the existence of cervical cancer screening services (P=0.001), respectively, compared to mothers with 1–2 children (Table 2).

Discussion

The results of a large nationally representative survey in Egypt showed an apparent lack of knowledge pertaining

Table 1. Descriptive Characteristics of Study Participants According to Their Knowledge on How to Perform BSE and Awareness of Cervical Cancer Screening Service

	N	Knowledge of how to perform BSE		Aware of cervical cancer screening services	
		Yes	No	Yes	No
All	7,518	946 (12.6%)	6,572 (87.4%)	576 (7.7%)	6,942 (92.3%)
Socio–demographics					
Age (mean = 36.9 ± 10.77 SD years)					
21–29	2,395	30.3	32.1	30.2	32
30–39	2,260	31.3	29.9	33.2	29.8
40–49	1,560	24.6	20.2	19.3	20.9
50–59	1,303	13.9	17.8	17.4	17.3
P–value		<0.001		0.367	
Education attainment					
Completed primary or below	2,961	10.3	43.6	23.7	40.7
Completed secondary or above	4,556	89.7	56.4	76.3	59.3
P–value		<0.001		<0.001	
Religion					
Muslim	7,176	96.9	95.3	97.2	95.3
Christian	338	3.1	4.7	2.8	4.6
P–value		0.072		0.114	
Missing		1		1	
Marital status					
Ever	7,013	92.0	93.5	91.8	93.4
Never	504	8.0	6.5	8.2	6.6
P–value		0.082*		0.141*	
Have an income–producing job/business					
Yes	46	2.6	0.5	3.5	0.5
No/unemployed	6,283	97.4	99.5	95.5	99.5
P–value		<0.001*		<0.001*	
Missing		1,189		1,189	
Residence					
Urban	2,754	55.1	34.0	53.0	35.3
Rural	4,764	44.9	66.0	47,0	64.7
P–value		<0.001		<0.001	
Accessing read, heard, visualized, or social media					
At least once a week	1,237	41.0	12.9	31.1	15.2
Not at all or less than once a week	6,280	59.0	87.1	68.9	84.8
P–value		<0.001		<0.001	
Obstetric characteristics					
Lifetime parity (mean = 2.85 ± SD 1.69)					
Nulliparous/never–married	297	4.4	4.2	3.1	4.3
1–2	2,201	39.0	30.4	37.8	30.9
≥3	4,502	56.6	65.4	59.2	64.7
P–value		<0.001		0.003	
Missing		518		518	
Currently pregnant					
Yes	387	6.2	6.9	7.5	6.7
No/Unsure (only 34 women)	5,320	93.8	93.1	92.5	93.3
P–value		0.583		0.547	
Missing		1,811		1,811	

Weighted numbers and frequencies; P-value, obtained from cross-tabulation between each category and each outcome; *Fisher's exact test. BSE, breast self-exam

Table 2. Crude and Adjusted Factors Associated with having a Lack of Knowledge on How to Perform BSE or being Unaware of the Existence of Cervical Cancer Screening Service

	Lack the knowledge of how to perform BSE		Unaware of cervical cancer screening service	
	OR (95% CI)	aOR (95% CI)	OR (95% CI)	aOR (95% CI)
Socio–demographics				
Age, years				
21–29	1	1	1	1
30–39	0.90 (0.76–1.07)	0.76 (0.60–0.96)[c]	0.85 (0.69–1.05)	0.69 (0.52–0.90)[b]
40–49	0.78 (0.64–0.93)[a]	0.51 (0.38–0.66)[a]	1.02 (0.79–1.31)	0.68 (0.48–0.95)[c]
50–59	1.22 (0.98–1.52)	–	0.94 (0.73–1.22)	–
Education attainment				
Completed primary or below	1	1	1	1
Completed secondary or above	0.15 (0.12–0.18)[a]	0.30 (0.23–0.40)[a]	0.45 (0.37–0.55)[a]	0.74 (0.56–0.98)[c]
Religion				
Muslim	1	1	1	1
Christian	1.55 (1.05–2.28)[c]	1.81 (1.04–3.14)[c]	1.65 (1.0–2.73)	1.42 (0.78–2.61)
Marital status				
Never	1	1	1	1
Ever	1.26 (0.98–1.62)	0.92 (0.55–1.53)	1.23 (0.94–1.744)	0.94 (0.49–1.80)
Have an income–producing job/business				
No/unemployed	1	1	1	1
Yes	0.19 (0.10–0.36)[a]	0.38 (0.18–0.80)[c]	0.15 (0.08–0.27)[a]	0.45 (0.19–1.06)
Residence				
Urban	1	1	1	1
Rural	2.39 (2.08–2.75)[a]	1.37 (1.12–1.68)[b]	2.08 (1.75–2.46)[a]	1.48 (1.17–1.89)[b]
Accessing read, heard, visualized, or social media				
At least once a week	1	1	1	1
Not at all or less than once a week	4.68 (4.04–5.43)[a]	2.81 (2.24–3.53)[a]	2.52 (2.08–3.04)[a]	1.46 (1.08–1.97)[c]
Obstetric characteristics				
Lifetime parity				
≥3	1	1	1	1
1–2	0.67 (0.58–0.78)[a]	0.79 (0.64–0.98)[c]	0.75 (0.62–0.90)[b]	0.71 (0.55–0.91)[b]
Nulliparous/never–married	0.83 (0.59–1.19)	0.73 (0.47–1.14)	1.28 (0.77–2.14)	1.20 (0.64–2.24)
Currently pregnant				
Yes	1	1	1	1
No/Unsure (only 34 women)	0.90 (0.66–1.24)	0.76 (0.50–1.14)	1.11 (0.76–1.63)	1.21 (0.79–1.85)

[a], P<0.001; [b], P<0.001; [c], P≤0.05; BSE, breast self-exam; OR, crude odds ratio; aOR, adjusted odds ratio for all variables listed in the table; 95% CI, 95% confidence interval

to performing BSE and awareness of the existence of cervical smear cancer screening service. The present study indicated that several sociodemographic and obstetric characteristics may play a role in the lack of woman's a knowledge of performing BSE or awareness of the cervical smear cancer screening services. Young, unemployed women, with primary education or lower, residing in rural settings, who reported not accessing media outlets at all or less than once a week, or being a multipara woman with ≥3 children appeared to negatively influence the likelihood of Egyptian women knowing how to preform BSE or being aware of the existence of cervical smear cancer screening services. This indicates

that women of reproductive age living in the lower socioeconomic strata may be less likely to benefit from the early cancer detection and intervention programs being implemented in the country.

The high proportion of women with lack of a knowledge of performing BSE or unawareness of the cervical smear cancer screening services persist in Egypt despite country–wide efforts to improve maternal health and to control the rising epidemic of breast and cervical cancers. Since establishment in 2004, the Breast Cancer Foundation of Egypt (BCFE) has conducted several population-based health campaigns to raise awareness of breast cancer amongst Egyptian women from different

social and economic strata around the country (Cancer Foundation of Egypt). The main aims of such awareness and outreach campaigns are reducing the stigma and fear associated with breast cancer, providing knowledge on the navigation of early detection services, and teaching BSE and encouraging women to adopt early detection advice (Cancer Foundation of Egypt). Despite these efforts, the present results imply that the strategies implemented to teach Egyptian women how to perform BSE may need to be reviewed and modified to enhance their reach and effectiveness.

Higher proportions of women with a lack of knowledge of performing BSE or being unaware of the existence of the cervical smear cancer screening services were found among women in the lower socioeconomic strata. Younger age, residence in rural settings, lower educational attainment, or infrequently accessing different media outlets, were positively associated with a higher likelihood of having a lack of knowledge of how to preform BSE or of the existence of the cervical smear cancer screening services. In Egypt, women are typically encouraged to begin regular BSE in their 20s (Montazeri et al., 2008; Sim et al., 2009); however, our study revealed that older Egyptian women were more likely to be able to perform BSE or were aware of the existence of cervical smear cancer screening services. Older age women are more likely to experience more health issues and to visit healthcare providers where they might have had an opportunity to be trained on how to perform BSE or to undergo opportunistic cervical smear cancer screening (Amarin et al., 2008). Living in a higher socioeconomic status, as in the case of a higher level of education generally leads to an improved economic status, is associated with healthier lifestyles and easier access to advanced healthcare services. These findings are in line with those reported from other Arabic countries in the region that share similar social and cultural backgrounds (Maaita and Barakat 2002; Al Sairafi and Mohamed 2009; Al-Meer et al., 2011). Young Egyptian females are less likely to experience health issues and visit healthcare providers were they might receive cancer education; therefore, mandatory health education lessons covering BSE and cervical cancer screening should be implemented within all Egyptian secondary schools.

Residence in rural settings was also a strong positive factor associated with a lack of knowledge of how to perform BSE or unawareness of the existence of cervical smear cancer screening services. The nationwide country efforts implemented through the BCFE to raise awareness about early cancer screening and detection through different population-based means and outreach programs were designed to eliminate this place of residence disparity. In Egypt, over half (57%) of the population reside in rural settings (Central agency for public mobilization and statistics, Egypt). Strengthening awareness programs to empower and educate women living in rural settings on how to perform BSE and to raise their awareness about the existence of cervical smear cancer screening services would reach a high proportion of the female population in Egyp.

Egyptian females that reported a low frequency of accessing different media outlets "not at all or less than once a week" were more likely to report having a lack of knowledge of how to perform BSE or being unaware of the existence of cervical smear cancer screening services. Media outlets are important communication channels utilized by the BCFE to raise public awareness through providing clear and simple health warning texts, flyers on how to preform BSE, as well as information on the location of facilities where cancer screenings are performed. Nevertheless, only small fraction (16.4%) of Egyptian women reported accessing different media outlets "at least once a week", continuing to rely on this outreach method may not help in increasing the rate of cancer screenings in Egypt. Future cancer awareness campaigns may want to trial utilizing various social media platforms to target younger Egyptian females.

Surprisingly, our study revealed that multiparous women with ≥3 children were more likely to report a lack of knowledge of how to perform BSE or unawareness of the existence of cervical cancer screening services. In addition, our study documented that only a small proportion of Egyptian women who were "currently pregnant" at the time of the survey reported a lack of knowledge of how to perform BSE or were unaware of the existence of cervical cancer screening services. In Egypt in 2014, 90.3% or 82.8% of the Egyptian women completed "at least one" or "≥4" antenatal care (ANC) visits during their pregnancies, respectively (El-Zanaty et al., 2015). With this high coverage of ANC visits among the Egyptian women, the recommendation that features prominently here is to seize this opportunity of having women at the health facility to train them on how to perform BSE and encouraging them to undergo cervical smear cancer screening. A previous study reported that performing BSE was associated with undergoing clinical breast examination (CBE), and both BSE and CBE were independently associated with undergoing cervical smear cancer screening (Sim et al., 2009; Yoo et al., 2012; Al Rifai and Nakamura, 2015). Integration of cervical cancer screening to the BCFE would provide a potential dual action in empowering women to seek breast and cervical cancer screenings simultaneously.

This study has numerous strengths. Firstly, it utilized a nationally representative sample of Egyptian women who completed face-to-face interviews following a standardized methodology. Secondly, the study also assessed the socioeconomic inequality on being unable to perform BSE or being unaware of the existence of cervical smear cancer screening services in Egypt and identified the sociodemographic and economic groups where these two measured outcomes are concentrated among Egyptian women. Despite these strengths, our study is limited by the cross–sectional study nature that precludes the establishment of a causal pathway between the various sociodemographic and obstetric characteristics and having a lack of knowledge of performing BSE or being unaware of the existence of cervical smear cancer screening services. In addition, the cultural barriers and shyness against answering such sensitive questions could have resulted in a response bias. To minimize this potential bias, well–trained female interviewers were employed to

personally interview the subjects. Finally, cervical smear cancer screening is often underreported since many physicians might order Pap smear examination without informing the women about the purpose of this test.

In conclusion, this study indicated that the majority of adult Egyptian females had a lack of knowledge of how to perform BSE or were unaware of the existnce of the cervical smear cancer screening services in the country. The study also identified socioeconomic and demograpghic inequalities associated with a lack of knowledge of how to perform BSE or being unaware of the existence of of the cervical smear cancer screening service. Females living in a lower scioeconmic strata were more likely to report a lack of knowledge of how to perform BSE or unawareness of available cervical smear cancer screening services. This reduced likelihood of the knowledge of how to perform BSE or awarness of the existence cervical smear cancer screening services may contribute to the late detection and treatment of cancer in this group. Consequently, the incidence of breast and cervical cancers among Egyptian women in lower socioeconmic groups may increase in the near future. This study highlights the necessity of robust health awareness campaigns that reach the entire target population by effectively reducing socio–economic inequalities to empower and teach Egyptian women to perform BSE and educate them about the available cervical cancer screening services.

Statement conflict of Interest

We declare that there is no conflict of interest.

Acknowledgements

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