Avicenna J Neuro Psych Physio. 2014 November; 1(2): e23051. DOI: 10.17795/ajnpp-23051

Published online 2014 November 11. **Research Article**

Frequency of Undergoing Mammogram and Pap Test Among Healthcare Providers in Hospitals of Hamadan

Shahla Nasrolahi [1,2]; Nasrin Matinnia [3,4]; Mohammad Haghighi [2,4]; Mohammad Ali Seif Rabiei [2]; Marjan Ghahri Saremi [2]; Ali Ghaleiha [2,4,*]

[1]Research Center of Endometrium and Endometriosis, Hamadan University of Medical Sciences, Hamadan, IR Iran
[2]Faculty of Medicine, Hamadan University of Medical Sciences, Hamadan, IR Iran
[3]Department of Nursing, Islamic Azad University, Hamadan, IR Iran
[4]Research Center for Behavioral Disorders and Substances Abuse, Hamadan University of Medical Sciences, Hamadan, IR Iran
*Corresponding author: Ali Ghaleiha, Research Center for Behavioral Disorders and Substances Abuse, Hamadan University of Medical Sciences, Hamadan, IR Iran. Tel: +98-9123378337, Fax: +98-81138271066, E-mail: alighaleiah@yahoo.co.uk

Received: August 30, 2014; **Accepted:** October 28, 2014

Background: The Mammograms and Papanicolaou (Pap) test of women aged 25 to 64 years are Iran's national strategy for breast and cervical cancer screening, respectively. Widespread primary care services are supplied through a network of primary health centers; nonetheless, little is known about breast and cervical cancer screening-related practices among healthcare workers in hospitals.

Objectives: The present study aimed to investigate the frequency of undergoing breast and cervical cancer screening among Iranian healthcare providers.

Materials and Methods: In this cross-sectional study, 460 female healthcare providers from four public hospitals in Hamadan were recruited. Data were collected using a questionnaire, which included socio-demographic characteristics, family history of breast and cervical cancers, and history of undergoing mammography and Pap smear test.

Results: The rate of positive family history of breast cancer was 15.6%. The mean age at undergoing the first mammogram was 40.7 ± 3.9 years and the mean number of lifetime mammographies was 1.12 ± 0.33. From 460 women in this study, 42.6% had undergone mammography. Specialist physicians had undergone mammography more frequently than other healthcare providers had done. Only 72 participants (15.6%) had positive family history of breast cancer among which 15 (62.5 %) had undergone mammography. The frequency of undergoing mammography was significantly different among different healthcare providers ($\chi^2 = 12.16$; $P = 0.007$) and positive family history of breast cancer were significant. A total of 268 cases out of 420 had the positive history of undergoing Pap test. The mean age at undergoing the first screening was 27.9 ± 4.6 years and the mean number of lifetime Pap test was 1.64 ± 0.92. Most of the midwives (88.1%) had undergone Pap test; the rate was 77.8% in specialist physicians, 61.8% in nurses, and 51.7% in general practitioner. Only 14 out of 420 respondents had positive family history of cervical cancer among which 13 (92.9%) had undergone Pap rest. The frequency of undergoing Pap test was significantly different among different healthcare providers ($\chi^2 = 12.16$, $P = 0.007$) and positive family history of cervical cancer among those older than 40 years ($\chi^2 = 7.24$, $P = 0.02$) were significant.

Conclusions: Screening for gynecologic cancer is important in early diagnosis and women wellbeing. The acceptance of cancer screening test was low in most of the healthcare providers. The attitude and practice of healthcare provider can affect women's acceptance of cancer screening test.

Keywords: Mammogram; Women; Cancer; Screening

1. Background

Breast cancer is the most common cancer among women worldwide (Centers for Disease Control and Prevention [CDC], 2013a). In 2013, the numbers of new cases of and mortality due to breast cancer were estimated at 232340 and 39620, respectively (1). It was expected that 192370 new cases of invasive breast cancer would be diagnosed in women in 2009 and 40170 breast cancer-related deaths were expected (2). Cervical cancer is less common. New cases of invasive cervical cancer and cervical cancer-related deaths were estimated at respectively 11270 and 4070 in 2009 (2). Although cervical cancer causes fewer deaths in the United States than breast cancer does, both cancers have disproportionately higher mortality rates in developing countries than in developed countries. Furthermore, the rates are rising in women living in developing countries (3). Breast cancer is still an international health problem regardless of advances in its early diagnosis, treatment and as well as increased knowledge of its risk factors. Early diagnosis of breast cancer would significantly improve the chance of success in treatment. Early detection could save thousands of lives each year if more women and their healthcare providers took advantage of screening tests (4). Evidence suggests that early diagnosis and screening

interventions might help to improve outcomes. In the Islamic Republic of Iran, breast cancer is the most prevalent cancer among women, comprising 21.4% of all malignancies among Iranian females (5) and affects them at least one decade earlier than their counterparts in developed countries (6). Breast cancer is the most common cancer among women in Tehran (25.5% of the total) with a crude incidence rate of 22.4 per 100000 women (7). Among Iranian women, continuous increase in the incidence of breast cancer-related death is in part due to low screening rates and late diagnosis of breast cancer (8). Efforts to increase the early diagnosis of breast cancer rate are important for decreasing the burden due to cancer death. Experiential evidence suggests that use of screening test helps reduce cancer deaths and improve survival rates (9). According to Iranian population-based cancer registration report, breast cancer is becoming number one prevalent cancer among Iranian women, accounting for 24.82% of all cancers diagnosed among women. Furthermore, 6456 new cases of breast cancer were diagnosed in 2006 with the age-adjusted incidence rate of 25.06 per 100000 women (5). Harirchi et al. study acknowledged that breast cancer affects Iranian women at least one decade earlier than women in developed countries (6).

Cervical cancer continues to be an important public health problem Worldwide and it is still a leading cause of cancer death in women in many developing countries (10). Since the introduction of the Papanicolaou (Pap) test in the 1950s, both the incidence and mortality rate of cervical cancer have decreased considerably in the United States. In the United States, 12000 women are diagnosed as a cervical cancer each year and about 4000 women die from this preventable disease (11). The early diagnosed cervical cancer is both treatable and curable, and the Pap test can find premalignant lesions (12). In the United States, current screening guidelines for cervical cancer of average risk recommend that women begin screening at the age of 21 years or within three years of the first sexual activity, whichever comes first. Women with three consecutive negative cytology tests can be screened every three years (12). Iran has had the lowest incidence rates for breast cancer among the Asian countries, but its rising incidence during the last four decades has acknowledged it as the most prevalent cancer (24 per 100000 women) among Iranian women (13).

2. Objectives

Reductions in cancer prevalence are not equal across countries. Asian women continue to have high levels of breast and cervical cancer, partly due to inconsistent adherence to screening guidelines (14). There are few studies investigating the status of undergoing breast and cervical cancer screening among healthcare providers in developing countries such as Iran.

3. Materials and Methods

In this cross-sectional study, 460 female employees in healthcare from four public hospitals in Hamadan were recruited. A brief description of the study and consent form was given to the respondents in a covering letter. The Ethics Committee of Hamadan University of Medical Sciences approved the study protocol. Data were collected via a structured questionnaire derived from the literature. The questionnaire consisted of demographic characteristics, history of personal breast problems, family history of breast and cervical cancer, using the screening methods including Pap smear, and practice of breast self-examination (BSE) and Mammography. Analysis included descriptive statistics and the Chi squared test where necessary. $P < 0.05$ was considered statistically significant.

4. Results

4.1. Screening Breast Cancer Through Mammography

The mean age of the respondents (460 healthcare provider) was 34.2 ± 7.1 years; most of those who had assessed by Pap test were married (91.3%) with the mean age of 34.9 ± 7 years. Family history of breast cancer was reported by 84.4% of the respondents. The mean age at undergoing the first mammography was 40.7 ± 3.9 years and the mean number of obtained mammograms was 1.12 ± 0.33. The rate of undergoing mammography was 46.2% in those ≥ 50, 42.6% in those between 40 and 49, and 1.7% in those < 40 years old. The rate of undergoing mammography was 90% in specialist physicians, 50% in midwives, 42.9% in general practitioner, 31.4% in nurses, and 49.1% in other healthcare providers. Among the participants < 40 years old (n = 346), only 48 (13.9%) had positive family history of breast cancer among which only two women had undergone mammography. Among 24 women aged ≥ 40 years with positive family history of breast cancer, 15 women (62.5%) had undergone (Table 1). mammography. The difference between undergoing mammography and age ($\chi^2 = 11.7$, $P = 0.009$), Different health care provider ($\chi^2 = 12.16$, $P = 0.007$), and those who were less than 40 years of age with positive family history of breast cancer ($\chi^2 = 14.97$, $P = 0.002$) and ≥ 40 years ($\chi^2 = 7.24$, $P = 0.02$) were significant.

4.2. Screening Cervical Cancer by Pap Test

Totally, 268 out of 420 respondents (63.8%) had undergone Pap test. The mean age at undergoing the first Pap test was 27.9 ± 4.6 and the mean number of obtained Pap test was 1.64 ± 0.92. Most of the respondents (50.7%) had undergone Pap test between 18 and 34 years of age. The cervical cancer screening behaviors were influenced by occupation category; the rate of undergoing Pap test was 88.1% in midwifes, 77.8% among specialist physicians, 61.8% in nurses, and 51.7% in general prac-

titioners. Only 14 out of 420 respondents had positive family history of cervical cancer among which 13 (92.9%) had undergone Pap rest. There were significant differences between undergoing Pap test and age (χ^2 = 11.7, P = 0.009) and different healthcare providers (χ^2 = 12.16, P = 0.007) and those who were more than 40 years of age with positive family history of cervical cancer (χ^2 = 7.24, P = 0.02).

The difference between performing of Pap test and those who were less than 40 years of age with positive family history of cervical cancer was not significant (χ^2 = 0.05, P = 0.82) (Table 2).

Table 1. Relationship Between Socio-Demographic and Performing Mammogram [a]

Socio-Demographic Characteristics	History of Undergoing Mammography		Test-Statistics	P Value [b]
	Yes	No		
Age				
< 40 Years (n = 346)	6 (1.7)	340 (98.3)		
40-59 Years (n = 101)	43 (42.6)	58 (57.4)	χ^2 = 11.7	0.009
60 ≥ Years (n = 13)	6 (46.2)	7 (53.8)		
Occupation			χ^2 = 12.16	0.007
Specialist	9 (90)	1 (10)		
General practitioner	3 (42.9)	4 (57.1)		
Midwife	2 (50)	2 (50)		
Nurse	11 (31.4)	24 (68.6)		
Others healthcare providers	27 (49.1)	28 (50.9)		
Family History of Breast Cancer				
< 40 Years (n = 346)				
Yes (n = 48)	2 (4.2)	46 (95.8)	χ^2 = 0.05	0.82
No (n = 298)	4 (1.3)	294 (98.7)		
40 ≥ Years (n = 114)			χ^2 = 7.42	0.02
Yes (n = 24)	15 (62.5)	9 (37.5)		
No (n = 90)	34 (37.8)	36 (62.2)		

[a] Data are presented as No. (%).
[b] P < 0.05 is significant.

Table 2. Association of Socio-Demographic Characteristics With History of Previous Pap Test

Socio-Demographic Characteristics	History of Previous Pap Test		Test-Statistics	P Value
	Yes	No		
Age			χ^2 = 7.42	0.02 [a]
18-35 (n = 249)	136 (54.6)	113 (45.4)		
36-50 (n = 165)	130 (78.8)	35 (21.2)		
50 > (n = 6)	2 (33.3)	4 (66.7)		
Occupation			χ^2 = 13.9	0.001 [a]
Specialist (n = 27)	21 (77.8)	6 (22.2)		
General Practitioner (n = 58)	30 (51.7)	28 (48.3)		
Midwife (n = 42)	37 (88.1)	5 (11.9)		
Nurse (n = 131)	81 (61.8)	50 (38.2)		
Others Healthcare Provider (n = 162)	99 (61.1)	63 (38.9)		
Family History of Cervical Cancer			χ^2 = 14.97	0.002 [a]
Yes (n = 14)	13 (92.9)	1 (1.7)		
No (n = 406)	255 (62.8)	151 (37.2)		

[a] P < 0.05 is significant.

5. Discussion

Early detection of breast cancer via adherence to current screening behaviors is a key epigram to effective treatment and improved prognosis, which can reduce morbidity and mortality (15). The most commonly diagnosed cancer of women in the United States is breast cancer, which is the second leading cause of cancer-related deaths and the single leading cause of death in women aged 40 to 49 years. Strategies to reduce the mortality of this enormous public health burden include the identification and modification of risk factors, earlier diagnosis and treatment, and improved treatment strategies (2). Thus far, the second of these approaches has shown the greatest promise, which was the focus of this study. American Cancer Association recommended performing mammography for all women ≥ 40 years old without any symptoms in 1997. Only in the last two decades, screening, specifically mammographic screening, has replaced clinical presentation as the principal means of detecting breast cancer. In this regard, the adherence rates might be influenced by some socio-demographic variables as well as the occupation in health services. The objective of the current study was to determine the status of mammography and Pap test in a sample of Iranian female employees in health service. This population-based study was conducted to determine breast and cervical cancer screening behavior among Iranian women and to examine its association with women's occupation in healthcare services. Health care providers participation in health service is a timely topic, given slated increases in Medicaid eligibility under the Affordable Care Act. Although we observed differences in physician characteristics and practice settings, the beliefs and screening behaviors for both breast and cervical cancers were similar. Attitude of healthcare provider can affect the women's perceptions about medical practices (16). Our findings show that 42.6% of healthcare provider females between 40 and 49 years had undergone mammography. Although the rate of undergoing mammography was favorable among specialist physicians (90%), it was not satisfactory in other healthcare providers. The frequency of performing mammogram among those who were ≥ 40 years with positive family history of breast cancer was 62.5%. Considering this risk factor, all of the healthcare provider with positive family history of breast cancer should undergo mammogram to screen breast cancer. This frequency among those who were < 40 years with positive family history was very low (4.2%). Ma et al. reported that about 70% of their study participants had undergone at least one mammography. Other researchers reported ever-screened rates of between 58% and 50% with mammography (17-19). The higher mammography rate in the current study was particularly apparent for those aged ≥ 60 years (83.2%) in comparison with the younger cohort (77.1%). The rates of undergoing mammography in developing countries have reported to be low. Only 30.3% of the women in Saudi Arabia had heard about BSE and 18.7% of them had practiced BSE during the preceding year (20). The lack of knowledge about breast cancer in Nigerian women was shown and only 34.9% stated ever-practiced BSE (21). Although 80.9% of Chinese immigrant women in the United States had heard of BSE, only 53.9% of them had practiced BSE during the preceding year (22). It has been reported that 75% of the women practice BSE with sufficient quality in the United States. In addition, higher frequency, duration, and quality of BSE were proposed as predictors of more diagnostic examinations (23). Similarly, a study demonstrated that about 31% of Austrian women practice BSE thoroughly (24).

We observed differences by type of occupation in healthcare services. As expected for women's cancer screening, more specialist physicians reported participating in the cervical and breast screening test. In the current study, 268 out of 420 respondents (63.8%) had undergone Pap test. Alvarez-Gonzalez et al. showed that 75% of healthcare workers had undergone cancer screening test in Spain, which was higher than the rate in our respondents (25). Another study in Zimbabwe found that only 18.3% of healthcare providers had undergone Pap test. This might be due to difference between developed and developing countries (26). The rate of undergoing mammography was low among nurses while general physicians had the least rate of undergoing Pap test. Positive family history of cervical cancer was reported by 3.44% of respondents among which 92.9% had undergone Pap test. This rate was desirable for cancer screening test. Yarbrough et al. examined the overall findings of physician behavior regarding cervical cancer screening. That study found that although most Pap test providers reported that screening guidelines were very influential, few had guideline-consistent recommendations for starting and stopping Pap screening across multiple vignettes (27). Our study also shows low adherence to guideline-consistent recommendations for Pap testing for program and non-program physicians.

Acknowledgements

We would like to thank all of the healthcare providers who participated in the study. We also acknowledge the statistical consultant of Mr. Mani Kashani and assistance of the management officer and staff of the Hamadan University of Medical Sciences, Hamadan, Iran.

Authors' Contributions

Study concept and design: Ghaleiha and Nasrolahi; acquisition of data: Ghahri Saremi; analysis and interpretation of data: Ghahri Saremi and Matinnia; drafting of the manuscript: Ghaleiha, Matinnia, and Saremi; critical revision of the manuscript for important intellectual content: Haghighi and Seif Rabiei; statistical analysis: Ghahri Saremi and Matinnia; administrative, technical, and material support: Haghighi, Seife Rabiei, and Matinnia; and study supervision: Ghaleiha and Nasrolahi.

References

1. American Cancer Society. *Cancer facts & figures*. 2013. Available from: http://www.cancer.org/acs/groups/content/@epidemiologysurveilance/documents/document/http://www.cancer.org/acs/groups/content.
2. merican Cancer Society. Cancer prevention & early detection facts & figures. Atlanta; 2009.
3. Baquet CR, Mishra SI, Commiskey P, Ellison GL, DeShields M. Breast cancer epidemiology in blacks and whites: disparities in incidence, mortality, survival rates and histology. *J Natl Med Assoc*. 2008;**100**(5):480–8.
4. Parkin DM, Fernandez LM. Use of statistics to assess the global burden of breast cancer. *Breast J*. 2006;**12 Suppl 1**:S70–80.
5. Ministry of Health and Medical Education Treatment and Education.. *Summary report on cancer incidence in Iran Iranian Center for Prevention and Control of Disease*. Tehran Islamic Republic of Iran; 2000.
6. Harirchi I, Karbakhsh M, Kashefi A, Momtahen AJ. Breast cancer in Iran: results of a multi-center study. *Asian Pac J Cancer Prev*. 2004;**5**(1):24–7.
7. Shamsa AZ. In: Ministry of Health and Medical Education Treatment and Education, editor(s). National project for cancer registry: proposing a model by the National Center for Cancer Registry. Sponsored by the Cancer Institute of Tehran University of Medical Science. Tehran Islamic Republic of Iran; 2002.
8. Ebrahimi M, Vahdaninia M, Montazeri A. Risk factors for breast cancer in Iran: a case-control study. *Breast Cancer Res*. 2002;**4**(5):R10.
9. Harris JR, Morrow M, Osborne CK. *Diseases of the breast*.Philadelphia: Lippincott Williams and Wilkins; 2002.
10. World Health Organization.. *Cancer*. 2009. Available from: http://www.who.int/mediacentre/factsheets/fs297/en/.
11. U.S. Cancer Statistics Working Group. United States cancer statistics: 1999-2006 incidence and mortality web-based report. Atlanta: U.S. Department of Health and Human Services; 2010.
12. Guide to clinical preventive services. Agency for Healthcare Research and Quality; 2010.
13. Mousavi SM, Gouya MM, Ramazani R, Davanlou M, Hajsadeghi N, Seddighi Z. Cancer incidence and mortality in Iran. *Ann Oncol*. 2009;**20**(3):556–63.
14. Healthy People 2020 Cancer objectives. Washington: U.S. Department of Health and Human Services; 2010.
15. Charkazi A, Samimi A, Razzaghi K, Kouchaki GM, Moodi M, Meirkarimi K, et al. Adherence to Recommended Breast Cancer Screening in Iranian Turkmen Women: The Role of Knowledge and Beliefs. *ISRN Prev Med*. 2013;**2013**:1–8.
16. Faisal I, Matinnia N, Hejar AR, Khodakarami Z. Why do primigravidae request caesarean section in a normal pregnancy? A qualitative study in Iran. *Midwifery*. 2014;**30**(2):227–33.
17. Ma GX, Shive SE, Wang MQ , Tan Y. Cancer screening behaviors and barriers in Asian Americans. *Am J Health Behav*. 2009;**33**(6):650–60.
18. Lee H, Kim J, Han HR. Do cultural factors predict mammography behaviour among Korean immigrants in the USA? *J Adv Nurs*. 2009;**65**(12):2574–84.
19. Maxwell AE, Bastani R, Warda US. Demographic predictors of cancer screening among Filipino and Korean immigrants in the United States. *Am J Prev Med*. 2000;**18**(1):62–8.
20. Jahan S, Al-Saigul AM, Abdelgadir MH. Breast cancer. Knowledge, attitudes and practices of breast self examination among women in Qassim region of Saudi Arabia. *Saudi Med J*. 2006;**27**(11):1737–41.
21. Okobia MN, Bunker CH, Okonofua FE, Osime U. Knowledge, attitude and practice of Nigerian women towards breast cancer: a cross-sectional study. *World J Surg Oncol*. 2006;**4**:11.
22. Wong-Kim E, Wang CC. Breast self-examination among Chinese immigrant women. *Health Educ Behav*. 2006;**33**(5):580–90.
23. Tu SP, Reisch LM, Taplin SH, Kreuter W, Elmore JG. Breast self-examination: self-reported frequency, quality, and associated outcomes. *J Cancer Educ*. 2006;**21**(3):175–81.
24. Janda M, Obermair A, Haidinger G, Waldhoer T, Vutuc C. Austrian women's attitudes toward and knowledge of breast self-examination. *J Cancer Educ*. 2000;**15**(2):91–4.
25. Alvarez-Gonzalez MG, Cernas-Reyes L, Tene Perez CE, Trujillo-Hernandez B. [Screening of cervix uteri cancer in female health workers. Comparative analysis of insured individuals]. *Ginecol Obstet Mex*. 2001;**69**:227–32.
26. Tarwireyi F, Chirenje ZM, Rusakaniko S. Cancer of the cervix: knowledge, beliefs and screening behaviours of health workers in Mudzi District in Mashonaland East Province, Zimbabwe. *Cent Afr J Med*. 2003;**49**(7-8):83–6.
27. Yarbrough SS, Braden CJ. Utility of health belief model as a guide for explaining or predicting breast cancer screening behaviours. *J Adv Nurs*. 2001;**33**(5):677–88.