

RESEARCH COMMUNICATION

Cervical Cancer Risk Levels in Turkey and Compliance to the National Cervical Cancer Screening Standard

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Abstract

Cervical cancer screening with Pap smear test is a cost-effective method. The Ministry of Health in Turkey recommends that it be performed once every five years after age 35. The purpose of this study was to determine the cervical cancer risk levels of women between 35 and 69, and the intervals they have the Pap smear test, and to investigate the relation between the two. This study was performed on 227 women aged between 35 and 69 living in Balçova District of İzmir province. Using the cervical cancer risk index program of Harvard School of Public Health, the cervical cancer risk level of 70% of the women was found below average, 22.1% average, and 7.9% above average. Only 52% of the women have had Pap smear test at least once in their lives. The percentage screening regularly in conformity with the national screening standard was 39.2%. Women in the 40-49 age group, were married, conformed significantly more ($p<0.05$) to the national screening standard. Compliance also increased with the level of education and decreased with the cervical cancer risk level ($p<0.05$). A logistic regression model was constructed including age, education level, menstruation state of the women and the economic level of the family. Not having the Pap smear test in conformity with the national cervical cancer screening standard in 35-39 age group was 2.52 times more than 40-49 age group, while it was 3.26 times more in 60-69 age group ($p<0.05$). Not having Pap smear test in 35-39 age group more than other groups might result from lack of information on the cervical cancer national screening standard and the necessity of having Pap smear test. As for 60-69 age group, the low education level might cause not having Pap smear test. Under these circumstances, the cervical cancer risk levels should be determined and the individuals should be informed. Providing Pap smear test screening service to individuals in the target group of national screening standard, as a public service may resolve the inequalities due to age and educational differences.

Keywords: Cervical cancer - risk levels - Pap smear screening compliance - Turkish national guidelines

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Introduction

Cervical cancer constitutes 10% of all the cancer cases seen in women all over the world. Cervical cancer is the second frequent cancer type in women and the third cause of cancer deaths after breast and lung cancer. In Turkey, cervical cancer is ranked at eighth both in terms of frequency and in terms of mortality for women (Ferlay et al., 2010).

It is known that cervical cancer is caused by the Human Papilloma Virus (HPV) which is transmitted sexually. Although the HPV infection is mostly endemic, cervical cancer is relatively rare. It is thought that, in some women with HPV infection, there are some other risk factors that influence carcinogenesis. Other risk factors for cervical cancer are: early sexual intercourse, numerous sexual partners, sexual partner having sex with more than one person, uncircumcised sexual partner, sexually transmitted disease history, Human Immunodeficiency Virus (HIV) / Acquired Immune Deficiency Syndrome (AIDS) history, bad hygiene conditions, numerous childbearing, use of

oral contraceptives, smoking, malnutrition, and use of diethylstilbestrol by the mother (Brant, 1999; National Cancer Institute, 2009; American Cancer Society, 2010).

In order to decrease deaths caused by cancer, cancer should be diagnosed in early stages. World Health Organization (2007) states that cervical screening programs are effective in decreasing mortality and morbidity. The early diagnosis in cervical cancer is realized through Pap smear tests. Pap smear test is a cytological screening test based on the collection and examination of cervical cells (Brant, 1999). Cervical cancer screening with Pap smear test is a cost-effective method. Cervical cancer rates have decreased dramatically in the USA, Finland, Sweden, Denmark and Norway after the cytological screening (Pap smear test) began (Garcia et al., 2005). The frequency of cancer is gradually increasing in developing countries like Turkey. This increase puts forth the necessity of cancer screening programs to be started.

The principles and the standard for the public based cervical cancer screening conducted in Turkey were determined by the Ministry of Health in 2007. According

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to this standard the Pap smear test screening should start at age 35 and should be repeated in 5 years periods, and the screening should be stopped in women over 65 whose last two test resulted negative (The Turkish Ministry of Health, 2009).

The purpose of this study was to determine the cervical cancer risk levels of women between 35 and 69, and the intervals they have the Pap smear test, and to investigate the relation between the risk levels of these women and their compliance to the national cervical cancer screening standard.

Materials and Methods

This study was a cross-sectional study conducted on women between 35 and 69 living in district of Balçova, İzmir, which is the third biggest city at the west coast of Turkey. The data were collected through a survey conducted between 30 March 2009 and 30 September 2009.

Sample Size and the Participants

The sample of the study, was calculated with the prevalence as 20%, precision as 5%, with 95% confidence interval level as 227 women, using the Epi-info Statcalc software. In comprising the sample with a 10 % addition 250 women were selected by simple random sampling.

Data Collection

This study was conducted after the approval of Dokuz Eylül University Faculty of Medicine Clinical and Laboratory Research Ethics Committee. All women (n=227) filled out a survey comprising of socio-demographic features, questions on having Pap smear test, and questions determining the cervical cancer risk level after having their verbal consents by face-to-face interview method. In order to determine the cervical cancer risk level, the cervical cancer risk index program of Harvard School of Public Health (2008) was used. In this risk index program, medical history variables which are the main identifiers for cervical cancer risk such as age, having any type of cancer, smoking, early sexual intercourse, numerous sexual partners, sexually transmitted disease history, numerous childbearing and screening history are used.

Data Analysis

In data analysis SPSS 15.0 software package and Epi-info Statcalc software were used. The socio-demographic data of the women were calculated as numbers and percentages. In terms of compliance to the Turkey screening standard, of the 35-69 ages group women who had had at least one Pap smear test in last five years were grouped as ‘conforming’ and women who had had Pap smear test in a longer period or who had not have any tests so far were grouped as ‘nonconforming’ to the cervical cancer screening standard. In evaluating the compliance to the screening standard Pearson’s Chi-square test, Fisher’s exact test, Chi-square for trend tests were used. If the p value obtained was less than 0.05, the difference was accepted as significant. The influence of the socio-

demographic and individual features of the women on not having Pap smear test in conformity with the screening standard was examined using a logistic regression analysis method. The variables of age and education level of the women were taken into the model as they were found statistically significant in analyses on compliance to the national cervical cancer screening standard; and the variables of menstruation states and the economic level of the family were included as confounding variables.

Results

Some 227 women participated in this study and the access rate was determined as 90.8%. 32.6% of the women participated were in 40-49 age group. More than half of the women (51.1%) were primary school graduates and 63.4% were unemployed. 78.4% of the women were married. 91.6% of them had social security. Nearly half of the women’s families (47.6%) had a monthly income below 1000 TL (approximately 700 US \$) .

The characteristics of the participants related to the cervical cancer risk factors were presented in Table 1. Nearly one third of the women (31.7%) were smokers, 87.2% of them never used alcohol. 91.0% of the women had their first sexual intercourse at 16 or above; the average of first sexual intercourse age was calculated as 20.5±4.67 (mean ± standard deviation). 92.8% of the women were monogamous. 93.0% of the women declared that they have not been using condoms regularly during sexual intercourse. The cervical cancer risk levels of 70% of the women was found below average, 22.1% of them average, and 7.9% was found above average.

Fifty two percent of the women have had Pap smear

Table 1. Characteristics of the Participants Related to Cervical Cancer Risk Factors

Factors	N	%
Smoking (n=227)	Yes	72 31.7
	No/quit	155 68.3
Age at first sexual intercourse (n=222)†	<16	20 9.0
	≥16	202 91.0
Sexual partners (n=222) †	1 partner	206 92.8
	2 partners	14 6.3
	3 partners	2 0.9
Number of live births (n=212)	1	37 17.5
	2	87 41.0
	3	48 22.6
	≥4	40 18.9

† 5 women were never in-union

Table 2. Reasons for Women’s not having Pap Smear Test (n=109)

Factors	N	%
Did not know it was necessary	56	51.4
Did not know where to have the test	37	33.9
Negligence	30	27.5
Fear of having smear test	17	15.6
Ashamed	16	14.7
Fear of bad result	9	8.3
Because of single or widowed	7	6.4
Because of no social security	5	4.6

Table 3. Compliance with the National Cervical Cancer Screening Standard

Varibale	Compliance n (89) %		Non-compliance n (138) %		p-value
Age groups					0.006*
35-39	14	32.6	29	67.4	
40-49	40	54.1	34	45.9	
50-59	23	38.3	37	61.7	
60-69	12	24.0	38	76.0	
Education					0.018‡
≤Primary	50	34.0	97	66.0	
Secondary/high	28	45.9	33	54.1	
University	11	57.9	8	42.1	
Marital status					0.040*
Married	76	42.7	102	57.3	
Single/widowed	13	26.5	36	73.5	
Employment status					0.177*
Employee	16	50.5	16	50.5	
Retired/housewives	73	37.4	122	62.6	
Health insurance					0.477*
Have	83	39.9	125	60.1	
Not have	6	31.6	13	68.4	
Monthly income of the family (TL)					0.252*
≤1000	52	36.4	91	63.6	
≥1001	37	44.0	47	56.0	
Menstruation state					0.406*
Menopause	44	36.7	76	63.3	
Premenopause	45	42.1	62	57.9	
Cervical cancer risk level					0.001‡
Low	82	51.6	77	48.4	
Average	6	12.0	44	88.0	
High	1	5.6	17	94.4	

* Pearson χ^2 ; χ^2 for trend

test at least once in their lives. It was found that 75.4% of the women who had Pap smear test before had their test in the last five years, but in 24.6% the period was over five years. Among the reasons for the women not having Pap smear test, the first was that they did not know it was necessary; the second was that they did not know where to have the test; and the third was negligence (Table 2). The percentage of the ones who have screening regularly in conformity with the national screening standard was 39.2%. The number of the women who had Pap smear test in conformity with the national cervical cancer screening standard among 40-49 age group was significantly more than the ones in older and younger women ($p < 0.05$). As the education level of the women increased, their compliance to the national cervical cancer screening standard also increased ($p < 0.05$). Married women conformed the national standard significantly more than unmarried ones ($p < 0.05$). There were not any statistically significant differences between women in conforming to the national standard for the variables such as women's chronic disorders, their first sexual intercourse ages, total number of pregnancy and menstruation states. As the cervical cancer risk level decreased the compliance to the national standard significantly increased ($p < 0.01$) (Table 3).

In the logistic model the age, monthly income of the family, education level and menstruation state of the women were investigated. Not having a Pap smear test was significantly higher in 35-39 age group (OR=2.52,

95% CI 1.14-5.57) and in 60-69 age group (OR=3.26, 95% CI 1.45-7.33) when compared to 40-49 age group.

Discussion

Half of the participants had had at least one or more than one Pap smear test. In other countries, the rate of having Pap smear test at least once was found similar to our study in some studies (Buki et al., 2007), or higher than ours (Behbakht et al., 2004; Juan et al., 2003). In a study conducted in Nigeria, the rate of having at least one Pap smear test was found very low (Ezem, 2007). In this study, the rate of having at least one Pap smear test was found compatible with other studies conducted in Turkey (Akyüz et al., 2006; Yaren et al., 2008), but was found lower than another study conducted on women who applied to gynecology services (Uysal et al., 2009). They reported that the reasons for the differences in the ratios might have resulted from the women's knowledge and awareness levels of cervical cancer being higher.

There are differences between countries in terms of the starting age of cervical cancer screening and screening frequency (IARC, 2005). When the last test period of the women who had Pap smear test was investigated, it was seen that two thirds of the women (nearly one third of all participants) had Pap smear test in last three years. In a cross-sectional study conducted in Turkey (Özaydın et al., 2009), and in another study conducted on academicians with high levels of education (Oran et al., 2008), when resembling age groups were investigated, the percentages were similar. In other countries the ratio of having Pap smear test in the last two years varied between 44% and 94% (Augustson et al., 2003; Jirojwong and Manderson, 2001; Mayrand et al., 2006; Sadler et al., 2010). There were studies with results between 25% and 89% for having Pap smear test in the last three years (Fretts et al., 2000; Hernandez-Avila et al., 1998; Rodriguez et al., 2005; Sirovich et al., 2003; Wee et al., 2005).

Half of the women declared that they have not had any Pap smear test before. The reasons for not having Pap smear test was found similar in other studies (Yaren et al., 2008; Juan et al., 2003; Ezem, 2007).

In Turkey, the public based cervical cancer screening is being conducted by applying Pap smear test in five years period between ages 35 and 65 (The Turkish Ministry of Health, 2007). Women who had Pap smear test in the last five years were deemed conforming to the national cervical cancer screening standard. 39.2% of the women participated in the study conformed to the national cervical cancer screening standard. Women, having Pap smear test in conformity with the national standard in 40-49 age group were significantly more than the ones in younger and older age groups. The reason for this might be the high rate of consultation to the gynecology services due to premenopausal complaints. In some studies conducted in Canada (Mayrand et al., 2006) and in Mexico (Lazcano-Ponce et al., 1997), having Pap smear test in the last two years was similarly found significantly higher in 40-49 age group. There are a small number of studies on the frequency of cervical cancer screening in Turkey. In a study conducted on academician women, the percentage

of the women that had Pap smear test in the last three years was found higher than younger ones, but found similar to ones over 50 (Oran et al., 2008). In a study on women over 50 it was found that as the age of women increased the percentage of having Pap smear test decreased significantly (Couture et al., 2008).

High level of education is an important factor on the individuals' health perception and action. As the education levels of women increased their rate in conforming to the national cervical cancer screening standard increased significantly. In some other studies, similar correlations between education level and having Pap smear test were found (Couture et al., 2008; Mayrand et al., 2006; Sadler et al., 2010). The initiatives for improving and supporting the education levels of women would increase the compliance to the cervical cancer screening program.

Married women conformed to the national cervical cancer screening standard significantly more than unmarried ones. Since married women have more regular sexual intercourse, they might have more gynecological complaints and they might have conducted to gynecology service more than unmarried women. The association between marital status and having Pap smear test was found similar in other studies conducted in Canada (Mayrand et al., 2006) and Mexico (Couture et al., 2008). Oran et al. (2008) also found similar results in Turkey.

The employment and social security conditions of women and the monthly income of the family did not have a significant effect on the compliance to the national cervical cancer screening standard. This situation might be explained by the 91.6% of the study group's having social security. It has been demonstrated that having Pap smear test increased significantly in women with social security when compared to the women without social security (Fretts et al., 2000; Lazcano-Ponce et al., 1997).

Women with lower levels of cervical cancer risk conformed to the national cervical cancer screening standard more than the ones with middle and high levels of risk. As the level of cervical cancer risk decreased, the compliance to the national cervical cancer screening standard increased. This finding reveals the reality of women's lack of information on cervical cancer and its risks. Women should be provided with individual awareness about cervical cancer risk and women with high risk levels should be supported for having Pap smear test.

In the logistic regression model since the highest rate of having Pap smear test was found in 40-49 age group in the univariate analysis, this group was taken as the reference. Not having any Pap smear test was found significantly higher in 35-39 age group. The reason for this might be that they were not aware of a cervical cancer screening, since only one third of the 35-39 age group had Pap smear test. This age group should be guided to have screening by giving the information that cervical cancer might be diagnosed and treated in early stages. 60-69 age group women's not having Pap smear test in compliance to the national cervical cancer screening standard might be resulted from not knowing the screening test. Not having Pap smear test increased significantly in women with secondary school education level or below when compared to the women with high school education level

or higher. Bekbaht et al. (2004) found that not having Pap smear test increased significantly in women without social security and with lower levels of education. If the general education level of women and their training on cervical cancer were supported, the rate of having Pap smear test might increase. It has an important place in resolving this problem that the staff employed both in primary healthcare and in other institutions informed the public about having Pap smear test in conformity with the national cervical cancer screening standard. In this study, being young, being over 60 and having low levels of education were the determinants in not having Pap smear test. Couture et al. demonstrated that being advanced in age, having low levels of education and not having social security were determinants in not having Pap smear test (Couture et al., 2008). In a study conducted in Mexico, similar findings were obtained (Hernandez-Avila et al., 1998). Being unmarried and poverty was shown as the basic factors in not having Pap smear test in the last three years in the USA, but not having social security was defined as the most prominent determinant (Rodriguez et al., 2005).

The cervical cancer risk of two thirds of the women was found low, and the remaining was found average and high. In the literature search, no previous study has determined the cervical cancer risk levels of women with respect to their individual and behavioral characteristics in Turkey. The reason for the majority of the women participating in this study having low levels of cervical cancer risk may result from the relative low levels of risky behavioral patterns. 91.6% of the women had their first sexual intercourse at 16 or after this age. Most of the women were monogamous, although 93% of them have not been using condoms regularly. Women who had sexually transmitted diseases were limited in number.

The risky behaviors that became prominent in cervical cancer risk calculations were smoking, having three or more childbearing and not having Pap smear test in the last three years. Nearly one third of the women continued smoking, but most of them did not use alcohol. 41% of them had three or more childbearing. The percentage of women with high levels of cervical risk was higher in 40-49 age group. In the cervical cancer risk calculation model, not having Pap smear test in the last three years was evaluated as a risk factor. Since having Pap smear test in the last three years was questioned some women might have been placed in risk group due to screening standard is one test per five years in Turkey. No matter what age, the women with high risk levels should be administered to have Pap smear test and to reduce the risky behaviors.

The strengths of our study were that the cervical cancer risk level was determined, using a cervical cancer risk assessment program, in a sample of healthy women population for the first time in Turkey. The participation rate was quite high in the study.

The limitations of the study could be that the information was collected by a questionnaire in determining the cervical cancer risk level of women retrospectively, where recall might have a role in calculating the risk levels. However, since this is a healthy population sample we believe this was a random error. Although the results of this study cannot be generalized to

the Turkish women they may represent the urban districts with middle socioeconomic level. The percentage of having Pap smear test might be detected lower than the real situation due to a possibility that the physician might have not informed the patient about taking Pap smear sample and about the results. Women might not have realized that they had Pap smear test, during a regular gynecological examination.

In conclusion, the percentage of having Pap smear test in five years periods was low in young women and women over 60. The education levels and marital statuses of women influence the compliance with the national cervical risk screening standard. Women with higher education levels and married women have more Pap smear tests. Education should be given to women to arouse awareness about the cervical cancer risks, early diagnosis and screening standards and their statuses of having regular Pap smear test should be monitored. Compliance to the screening programs is not solely the individuals' responsibility. Policy makers and health care providers have an important role in increasing the coverage of screening services. Ensuring the provision of these services to all women may resolve the non-compliance effected by age and educational differences thus decrease the inequalities.

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