Women's Knowledge and Behavior on Cervical Cancer, in Kayseri, Turkey

Kayseri İlindeki Kadınların Serviks Kanseri Hakkındaki Bilgi ve Davranışları

Vesile ŞENOL, Dr., Assis.Prof.,[a]
Elçin BALCI, MD, Assis.Prof.,[b]
Fevziye ÇETİNKAYA, MD, Prof.,[b]
Ferhan ELMALI, Dr., Assis.Prof.[c]

[a]Erciyes University
Vocational Health College,
Departments of
[b]Public Health,
[c]Biostatistics,
Erciyes University Faculty of Medicine,
Kayseri

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Yazışma Adresi/*Correspondence:*
Vesile ŞENOL, Dr., Assis.Prof.
Erciyes University
Vocational Health Collage, Kayseri
TÜRKİYE/TURKEY
vsenol@erciyes.edu.tr

ABSTRACT Objective: Cervical cancer, the second leading cause of death in women worldwide, can be prevented by education, routine screening and HPV immunization. This study was aimed to determine the level of knowledge and behavior of married women over 18 years regarding cervical cancer in the city of Kayseri, Turkey. **Material and Methods:** In this cross-sectional study performed in 2009 in the province of Kayseri, a questionnaire was filled out for 1000 married women over 18 with face-to-face interview. Women were asked a series of questions that evaluated their knowledge about cervical cancer, its risk factors, early signs and symptoms and whether they had undergone a Pap smear test within the last three years. Questions and correct answers were developed in accordance with the relevant literature. **Results:** The mean age, age at first marriage, and parity were 35.40±12.77, 19.15±3.41, 2.57±1.86, respectively. The age of first sexual experience was the same as the age at first marriage and the rate of marriage before 20 years of age was 61%. The most prominent source of information was the media (63.4%). Smoking (13.3%) and having multiple sexual partners (13.0%) were the most well-known risk factors. Fifteen point four percent of women stated that early detection of cervical cancer was possible, and 15.0% stated that women at risk should have a Pap smear test at least once a year. Although 12.3% indicated that the Pap smear was the best diagnostic method, only 7.2% thought that this should be repeated every year. Eleven percent knew there was a vaccine for cervical cancer and 9.0% indicated that condom use was a protective measure. Only 16.1% of women stated that their knowledge about cervical cancer was sufficient, and the rate of women who underwent a Pap smear test within the last three years was 23.0%. While the level of knowledge was closely associated with age, occupational status, family income and educational background, having a Pap smear within the last three years was only associated with age and family income. **Conclusion:** There is a serious lack of knowledge and behaviour among married women regarding cervical cancer, risk factors and protective measures. Therefore, there is an urgent need for educational programs to enhance the level of awareness and motivation, and to enable routine screenings.

Key Words: Uterine cervical neoplasms; knowledge; behavior; women

ÖZET Amaç: Dünyada kadınlarda ikinci en sık ölüm nedeni olan serviks kanseri, eğitim, sistematik tarama ve HPV aşılaması ile önlenebilir. Bu çalışmada, 18 yaşın üzerindeki evli kadınların serviks kanseri hakkındaki bilgi ve davranış düzeyinin belirlenmesi amaçlandı. **Gereç ve Yöntemler:** 2009 yılında Kayseri il merkezinde yapılan bu kesitsel çalışmada, 18 yaş üzerindeki 1000 evli kadına yüz-yüze anket uygulandı. Kadınlara serviks kanseri, erken bulguları, risk faktörleri, tanısı ve son üç yıl içinde Pap smear testi yaptırıp yaptırmadıklarına ilişkin sorular soruldu. Sorular ve doğru yanıtlar konuyla ilgili literatüre uygun olarak hazırlandı. **Bulgular:** Ortalama yaş, ilk evlilik yaşı ve doğum sayısı sırasıyla 35,40±12,77, 19,15±3,41, 2,57±1,86 idi. İlk cinsel deneyim yaşı ilk evlilik yaşı ile aynıydı ve 20 yaşından önce evlenme oranı %61 idi. En önemli bilgi kaynağı medyaydı (%63,4). Sigara içme (%13,3) ve birden fazla cinsel eşe sahip olma (%13,0) en çok bilinen risk faktörleriydi. Kadınların %15,4'ü serviks kanserinin erken tanısının mümkün olduğunu, %15,0'i risk altındaki kadınların yılda en az bir kez Pap smear testi yaptırması gerektiğini söyledi. Kadınların %12,3'ü Pap smear testinin etkin bir tanı yöntemi olduğunu söylemesine rağmen sadece %7,2'si bunun her yıl tekrarlanması gerektiğini düşünüyordu. Katılımcıların %11,0'i serviks kanserinin aşısı olduğunu, %9,0'u kondom kullanımının serviks kanserinden koruduğunu ifade etti. Kadınların sadece %16,1'i serviks kanseri hakkında yeterli bilgi sahibi olduğunu ve %23,0'ü son üç yıl içinde Pap smear testi yaptırdığını belirtti. Bilgi sahibi olma, yaş, çalışma durumu, eğitim ve gelir düzeyine göre anlamlı farklılık gösterirken, son üç yılda Pap testi yaptırma yalnızca yaş ve gelir düzeyine göre anlamlı farklılık sergilemekteydi. **Sonuç:** Evli kadınlarda serviks kanseri, risk faktörleri ve korunma önlemleri hakkında ciddi düzeyde bilgi ve davranış yetersizliği mevcuttur. Bu nedenle hedef grubun serviks kanseri hakkında farkındalık ve motivasyon düzeylerini artırmak ve sistematik taramaları başlatmak için acil eğitim programlarına gereksinim vardır.

Anahtar Kelimeler: Uterin servikal tümörler; bilgi; davranış; kadınlar

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Cervical cancer is the second leading cause of death among women in the world.[1] Despite diagnostic advances in cervical cancer, women unfortunately still die from the disease. Twenty-five thousand women in Europe and 500 000 women worldwide are diagnosed with cervical cancer on a yearly basis, with mortality rates of 25 000 in Europe and 250 000 worldwide.[2] Eighty percent of deaths occur in developing countries with low socio-economical levels.[3] As the nineth most common female cancer in Turkey with an incidence rate of 4.76 per thousand, cervical cancer remains a signicant public health problem threatening women.[4]

Many factors have been proposed as causes of cervical cancer including early onset of sexual activity or early marriage, multiple sexual partners, unprotected sexual intercourse, a high-risk sexual partner, smoking, history of sexually transmitted diseases, prolonged use of oral contraceptives, high parity, family history and low socio-economic status.[5-10]

Cancer control aims at reducing the burden and suffering from cancer, to prevent exposure to risk factors, and to enable early detection, effective treatment and relief from symptoms and pain in incurable advanced cases.

Early detection both by screening and early clinical diagnosis represents an important component of cancer control in countries with low and medium socio-economical levels.[11] The Pap smear test is the gold standard for the early diagnosis of cervical cancer, and has been widely used since 1950 as a routine screening test. The mortality rate from invasive cervical cancer has decreased by 70% since the introduction of the Pap smear test and the age of diagnosis has decreased to 35 in the last 30 years, compared to 50 in the 1950s.[5,12]

Knowledge about cervical cancer and the population-based risk factors is important. Enlightening sexually active women, before their fertile years about cervical cancer, the risk factors, and early diagnostic and primary preventive methods is of utmost importance in reducing morbidity and mortality.

Improved awareness among the public and health care providers, supported by accessible healthcare services, is crucial in the early clinical diagnosis of cervical cancer.[11]

Vaccines are now available to prevent the types of HPV that most commonly cause cervical cancer. There are two types of vaccines, a quadrivalent vaccine approved in 2006, and a bivalent one approved in 2007. Currently, the Food and Drug Administration (FDA) in the US, and the European Commision have approved the vaccine comprising type 6, type 16, and type 18 HPV.[13]

This study aimed to determine the knowledge and behavior of married women older than 18 years of age in the city of Kayseri, regarding cervical cancer, its risk factors and the protective measures.

MATERIAL AND METHODS

This cross-sectional study was performed in 2009 in the city of Kayseri, an important commercial and industrial centre, located in the central Anatolia, with a population of approximately 1 million.

We assumed that 50% of the sample group was aware of cervical cancer and its risk factors. According to an alpha value of 0.05 and 0.80 power, the minimum size of the study population was determined to be 786. The study was drawn using two-stage stratified random and clustering sampling method; in first-stage,out of 260 midwife regions, and 42 district health centers, 26 were selected as samples according to the 1/10 systematic sampling technique. In the second stage, 1040 women were included into the study by selection of 40 dwellings from 26 different midwife regions by clustering sampling.

The data were gathered by house visits. Women in each household who were 18 years and older and who volunteered to participate were enrolled in the study. No women had objection for participating. For cases who were not at home at the house visit and who were not within reach, individuals from the same group but from different households were included in the study. Out of 1,040 questionnaires, only 1000 without any missing or conflicting data were evaluated.

The questionnaire was filled out by voluntary interns who are members of the scientific research

club, using the face-to-face interview technique. The interns were trained for two hours about the aim of the study and the questionnaire before the field visits started. Data were controlled while entering in the software and inadequate and conflicting questionnaires were excluded. The standardized questionnaire consisted of questions regarding demographic characteristics (age, educational level, occupation, monthly income, social security, age at first marriage, number of births, etc.), as well as questions inquiring knowledge and behavior regarding cervical cancer. Women were asked a series of questions which evaluated their knowledge about cervical cancer and its risk factors (8 items), about the early signs and symptoms and detection methods (10 items), and whether they had undergone a Pap smear test within the last three years. Women chose one answer from three choices; "true", "false" and "no opinion". An answer of "true" was considered sufficient knowledge. Questions and their correct answers were prepared in accordance with the information in the literature.

STATISTICAL METHODS AND EXPERIMENTAL PROCEDURES

Frequency and percent distribution were used for the analysis of data and a chi-square test was used for the comparison of the qualitative variables. Data were analyzed by SPSS Version 15.0 Statistical package and $p<0.05$ was considered significant.

The study was approved by the Scientific Research and Ethical Committee of Erciyes University. Oral consent was received from each participant before enrollment in the study.

METHODOLOGICAL STRENGTHS AND LIMITATIONS

The present study provided useful information about the level of knowledge and behavior of married women over 18 years regarding cervical cancer in a Central Anatolian city in Turkey. Sample size and high response rate resulted in an unbiased prevalence. However, there are some limitations to the study. One of the limitations is that responses can be affected by the memory factor. Second limitation is not to be used standard questionnaire that has been determined the validity and reliability. In addition, lack of cut-off criteria for the evaluation of level of knowledge is a major limitation of the present study. Thus, study results cannot be generalized.

RESULTS

The age at first marriage and the age at first intercourse was the same; mean 19.15±3.41 years (min 13-max 39 years). The mean number of pregnancies was 3.35±2.46, and the mean number of parity was 2.57±1.86. The distribution of the socio-demographic characteristics of the study group was shown in Table 1.

Overall, 38.2% of the participants stated that they did not use any kind of family planning method. Among the family planning methods used, intrauterine device ranked first with a rate of 19.7% followed by condoms at 14.6%, and the rate of women using oral contraceptives was 7.5%.

TABLE 1: Socio-demographic characteristics (n:1000)

Variables	Number	%
Age groups (years)		
15-24	214	21.4
25-44	555	55.5
45-64	195	19.5
≥ 65	36	3.6
Level of education		
Illiterate	145	14.5
Primary school and below	700	70.0
High school and University	155	15.5
Having a job with salary		
Employed	46	4.6
Unemployed	954	95.4
Monthly Income (TL)		
Low (0-500)	459	45.9
Middle (501-999)	417	41.7
High (1000 and ↑)	124	12.4
Age at first marriage (:age at first intercourse)		
13-19	609	60.9
20-30	380	38.0
31-39	11	1.1
Parity		
Nullipar (no children)	95	9.5
1-3	661	66.1
4-10	244	24.4

TL: Turkish Lira.

For the question inquiring knowledge on cervical cancer 16.1% of the women answered "Yes I do have enough knowledge". Among these, 63.4% stated that they derived this knowledge from the visual and written media, 40.4% from healthcare personnel, 14.0% from their friends, 10.6% from their families and 11.8% from other sources.

Table 2 shows the level of knowledge of women on the risk factors for cervical cancer. Table 3 shows opinions of women regarding some characteristics and early symptoms of cervical cancer.

Table 4 shows the relationship between sufficient knowledge of cervical cancer, having Pap smear test and socio-demographic variables. The rate of women stating they had sufficient knowledge of cervical cancer was significantly higher in the 25-44 age group, in those with high school or university level education, in those working outside home and those with a good income compared to other groups ($p<0.001$). Only 23.0% of the women interviewed had had a Pap smear test within the last three years; most of those were within the 45-64 age group and in the good income level group ($p<0.001$). Illiterate women and those working in a job with a salary had undergone more Pap smear tests, compared to housewives but this was statistically insignificant ($p>0.05$).

DISCUSSION

This study is important because it enables us to assess the level of knowledge and behavior of women regarding cervical cancer, the second most common cancer in women worldwide.

TABLE 2: Knowledge of women on risk factors for cervical cancer.

	Level of knowledge							
	Yes		No		No opinion		Total	
Risk factors for cervical cancer	Number	%	Number	%	Number	%	Number	%
Is smoking cigarettes a risk factor for cervical cancer?	133	13.3	28	2.8	839	83.9	1000	100.0
Is having multiple sex partners for the male partner a risk factor for cervical cancer?	132	13.2	29	2.9	839	83.9	1000	100.0
Is having multiple sex partners for the female partner a risk factor for cervical cancer?	129	12.9	32	3.2	839	83.9	1000	100.0
Is early sexual experience a risk factor for cervical cancer?	90	9.0	71	7.1	839	83.9	1000	100.0
Is sexual transmission a risk factor for cervical cancer?	90	9.0	71	7.1	839	83.9	1000	100.0
Is abnormal menstruation a risk factor for cervical cancer?	72	7.2	89	8.9	839	83.9	1000	100.0
Is having family history of cervical cancer a risk factor for cervical cancer?	61	6.1	100	10.0	839	83.9	1000	100.0
Is high parity a risk factor for cervical cancer?	46	4.6	115	11.5	839	83.9	1000	100.0

TABLE 3: Knowledge of women regarding some charateristics of cervical cancer.

	Level of knowledge							
	Yes		No		No opinion		Total	
Charateristics of cervical cancer	Number	%	Number	%	Number	%	Number	%
Is early diagnosis possible in cervical cancer?	154	15.4	7	7.0	839	83.9	1000	100.0
Is Pap smear test an effective method in early diagnosis for servical cancer?	123	12.3	38	3.8	839	83.9	1000	100.0
Should Pap smear test be repeated every year for women with high risk?	150	15.0	11	1.1	839	83.9	1000	100.0
Should every high-risk woman undergo Pap smear?	72	7.2	89	8.2	839	83.9	1000	100.0
Is there any vaccine for cervical cancer?	110	11.0	51	5.1	839	83.9	1000	100.0
Does condom use protect againts cervical cancer?	90	9.0	71	7.1	839	83.9	1000	100.0
Is abnormal vaginal discharge an early symptom of cervical cancer?	98	9.8	63	6.3	839	83.9	1000	100.0
Is postcoital bleeding an early symptom of cervical cancer?	72	7.2	89	8.9	839	83.9	1000	100.0
Is pain durign intrcourse an early symptom of cervical cancer?	72	7.2	89	8.9	839	83.9	1000	100.0

TABLE 4: Believing to have sufficient knowledge and having a Pap smear according to some demographic characteristics.

		Believing to have sufficient knowledge		Pap test	
Characteristics	**n**	**Number**	**%**	**Number**	**%**
Total	1000	161	16.1	230	23.0
Age groups					
15-24	214	29	13.6	15	7.0
25-44	555	106	19.1	128	23.1
45-64	195	21	10.8	78	40.0
p value		0.030		<0.001	
Educational status					
Illiterate	145	5	3.4	36	24.8
Primary school and below	700	92	13.1	161	23.0
High school and University	155	64	41.3	33	21.3
p value		<0.001		>0.05	
Occupational status					
Employed	46	16	34.8	12	26.1
Unemployed	954	145	15.2	218	22.9
p value		<0.001		>0.05	
Family income					
Low	459	53	11.5	81	17.6
Middle	417	62	14.9	103	24.7
High	124	46	37.1	46	37.1
p value		<0.001		<0.001	

The most commonly known risk factors for cervical cancer in our study group were multiple sexual partners in both males and females, and smoking (Table 2). In other studies also, 30-68% of women stated multiple sexual partners and smoking as risk factors for cervical cancer.[3,14,15]

In the past three decades, the number of sexual partners and its consequences on increasing the risk of cervical cancer has evolved from being married to a man with an ex-wife with cervical cancer to being married to a man who has had 6 or more sexual partners throughout his life.[16-18]

Smoking is considered a co-factor for cervical cancer because it suppresses the local immune system and thus accelerates the development of cervical cancer by increasing the risk of HPV infection.[19] Active smoking has been defined as a major risk factor in the development of cervical cancer in recent studies. In one study, it was defined as a risk factor in one tenth of women and in another one in one fourth of women.[15,20] The risk for cervical cancer increases 2.25 times with active smoking, and it also shows a significant increase with the amount of cigarettes smoked per day and the age of starting smoking.[7] Although smoking was recognized as the most commonly known risk factor within our study group, it is still dramatic that it was defined as a risk factor by only 13.3% of the women.

"Early sexual intercourse" was defined as a risk factor by one tenth of our participants; similarly, 43.0% of participants in a study by Twinn et al., and one fourth of the study group in another study by Hasenyager et al. stated it was a risk factor for cervical cancer.[14,19] Previous studies have reported that marriage at an early age increases the development of cervical cancer (age ≤23, 1.0 times), that this increase may be attributed to the age at first sexual intercourse, and that sexual attitudes among married women cause cervical cancer through HPV infection.[7,21]

In our study, more than half of the women (13-19 years old) had married at an early age, and the mean age of first intercourse was the same as the age at first marriage (Table 1). In our country, sexual intercourse before marriage is considered improper due to cultural factors. The fact that only one tenth of the women who had experienced early sexual intercourse following early marriage stated that "early sexual intercourse" was a risk factor for cervical cancer is thought provoking. This may be attributed to the misperception in our culture, in the sense that, as long as sexual intercourse is performed within marriage there will be no risk of any kind, but in reality, this just shows a lack of knowledge and awareness.

In our study, approximately one tenth of the women stated "sexual transmission" as a risk factor for cervical cancer (Table 2). In a study including women presenting to a university hospital for cervical screening, almost half of the women stated sexual transmission as a risk factor.[18] The disparity between the two studies may be explained by the difference between the sample groups, as well as by some cultural practices of our society; marriage, monogamy, male circumcision are perceived as a relatively safe and hygienic sexual environment,

which leads to the perception that "sexual transmission" cannot be a risk factor. As is known, cervical cancer shows a prognosis similar to sexually transmitted diseases. The "male factor", known as the transmission of the disease by a male from an infected women is the source of sexual transmission.[17]

Abnormal uterine bleeding can speed up opportunistic infections such as HPV, the main etiology of cervical cancer, due to the anemia and resulting immune suppression. In our study, 7.2% of women and in a study by Twinn et al. 53.0% of women defined "abnormal uterine bleeding" as an important risk factor in cervical cancer.

In our study, 6.1% of women thought that cervical cancer had a "genetic transition" (Table 2). Twinn et al. stated in their study that in 23.0% of Vietnamese women, ethnicity was related to an increased risk for cervical cancer.[14] Genetic transition was found to be between 22-46% in different studies.[22-24] The presence of cervical cancer in a first degree relative increases the risk 1.5-2.3 times [8] and the risk increases up to 4.8 times in twins.[8,24]

In our study, 4.6% of the women (Table 2), and in the study by Twinn et al. 46.0% of women stated that "multiple births" increased the risk of cervical cancer.[14] Analytic studies have shown that the risk of cervical cancer in women with five or more births rises from 3.8 to 4.4 and increases 5.1-8.1 times compared to nulliparous women.[25-27] In a study by Hinkula et al. including grand multipara women with cervical cancer, 1.2-1.4% of the cases were attributed to grand multiparity.[6,7]

In our study, the rate of women who were aware of an HPV vaccine was 11.0% (Table 3). In a study in 2007, the rates of women who were aware of the HPV vaccine were 24.0% in South America, 15.0% in Canada, 51.2% in Australia, and 9.3% in China.[28] Lack of knowledge may be due to the relatively recent introduction of HPV immunization (since 2007) in our country.[2] This lack of knowledge may lead to the misperception that the risk of being infected by HPV is low, and thus people may consider the vaccine unnecessary. Therefore, "HPV immunization", the most important strategy in the protection from cervical cancer, may be easily disregarded.

Condom use is protective against reinfection by HPV, the most important ethiological cause that is transmitted sexually. Therefore, condom use is an easy method for reducing the risk of cervical cancer. It is important to raise awareness in spouses.[29] Only about one tenth of women knew that condom use prevented cervical cancer (Table 3). On the other hand, condom use was as low as 15.0% in our study. This situation can be a general reflection of the limited use of birth control by spouses in our country.

Approximately one tenth of women stated abnormal vaginal discharge as an early symptom of cervical cancer, followed by postcoital bleeding and dysparenunia. Similarly, 15.0% of the participants in our study group indicated that early diagnosis of cervical cancer was possible, 12.3% that the most effective diagnostic method was the Pap smear test, and 7.2% that every woman over 18 years of age should have a Pap smear test and the test should be repeated every year (Table 3). In studies from other countries, 71.0% of the women believed that the Pap smear test was a protective measure and 86.0-96.0% stated that women older than 18 years of age should have a Pap smear test every year.[20,30]

In our study, only one fourth of the women had had a Pap smear test within the past three years (Table 4), whereas in other studies among Asian women including similar sample groups, 48.0% of Philippine women, 41.0% of Korean women, 68.0% of Vietnamese women in Seattle and 84.0% of American women had had a Pap smear test within the past three years.[31,32] On the other hand, according to national health screening studies, the rate of having a Pap smear test differed according to race and ethnic origin; over 80.0% of white and black women, 78.0% of Latino American women, and 68.0% of women from the Pacific Islands had undergone a Pap smear test within the past three years.[33] In our study, the rate of having sufficient knowledge of cervical cancer and the frequency of undergoing Pap smear tests were affected by the socio-demographic characteristics of the women (Table 4). There was a significant relationship between age and both variables, the rate of women with sufficient knowledge of cervical can-

cer was significantly higher in the 25-44 age group ($p<0.05$), and the rate of undergoing a Pap smear test was significantly higher in the 45-64 age group ($p<0.001$). In the study performed by Schumacher et al., age was a major determinant in undergoing a Pap smear test; the Pap smear test rate was highest in the 25-39 age group (82.5-83.0%) and substantially low among women younger than 20 years (46.0%).[33,34]

In the adolescent period (15-24 years), an awareness of the risks is not fully developed and the tendency for risk taking may have a negative effect on knowledge and health seeking behavior. In fact, in our study group, in which the rate of early marriage and with it early sexual experience was substantially high, knowledge of cervical cancer was quite low, with a rate of 16.1%. On the other hand, as women get older and experience reproductive health issues more frequently, the need to be informed more may increase. In this study, the women in the 25-44 age group, in which gynecologic and obstetric problems were more common, the rate of cervical cancer awareness was highest with 19.1%. Offering counseling and education in this critical period will help prevent new cases, and/or promote early diagnosis.

While educational level significantly affected the rate of cervical cancer awareness in our study ($p<0.001$), it had no effect on the number of women undergoing Pap smear test ($p>0.05$) (Table 4). In other studies, the rate of having a Pap smear test increased significantly as educational level increased, and it increased 2.4 times (1.68-3.44) in post-graduate and doctorate students compared to those with an education below high school level.[34]

The income level of the family significantly affected both the awareness levels and the attitudes towards having a Pap smear; the knowledge level and undergoing a Pap smear test was significantly higher ($p<0.001$) in women with a higher income. Those with a lower educational

level, lower income level, and lower occupational status had a low rate of awareness and Pap smear tests (Table 4). Wong et al. reported that women who had difficulties in access to health facilities and payment had a lower rate of undergoing Pap smear tests.[3] The study by Schumacher et al. showed that in women with a high educational level and good income, the Pap smear test rate was higher.[34]

A low educational level, low income level and low occupational status, usually create a socio-cultural environment that negatively affects the utilization of daily facilities and access to healthcare facilites. The structural and socio-economic obstacles in developing countries such as Turkey decrease the cervical cancer screening rates. Social pressure on women, being voiceless regarding their own health, lack of knowledge and lack of awareness regarding the importance and need for Pap smear tests, difficulties in access to healthcare services and long waiting periods, low income, expensive vaccine and test prices, lack of social security, opportunistic approaches instead of systematic screening programs and lack of motivation, all decrease the Pap smear test rates in developing countries.[6,10]

On the other hand, as income level increases, the socio-economic level also increases, and this increases the opportunity to benefit from healthcare services and mass media.

CONCLUSIONS AND SUGGESTIONS

Very few women are aware of cervical cancer, its risk factors and the Pap smear test. Women's limited knowledge about cervical cancer and risk factors are interconnected with their healthcare seeking behavior. Women at risk need to be educated and counselled.

Smoking and multiple sexual partners are the most well known risk factors.

Only one fourth of the women had undergone a Pap smear test.

Two thirds of the women in our study had married at an early age, and experienced early sexual intercourse. One tenth of the women defined early sexual intercourse as a risk factor. Age at first marriage for women should be increased. This will decrease the rate of early sexual intercourse as well as increase the level of general education in women.

As the media and healthcare personnel are the two most common sources of information, they may be powerful tools to enlighten the society. The motivation and sensitivity of healthcare providers regarding education and counseling should be increased, and thus their outdated image should be erased.

Having sufficient knowledge of the disease had a significant relationship with age, education, occupational status and income level, and having undergone a Pap smear test within the last three years showed a significant relationship with age and income level. Increasing the level of general education and income for women may have a positive effect on knowledge of cervical cancer and undergoing Pap smear. In addition, opportunistic screening programs for women aged 15-49 could be started immediately.

In summary, the results about cervical cancer described in the present study may be useful in developing means whereby Turkish women can increase their awareness and participation in cancer screening programs.

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