

## RESEARCH ARTICLE

# Assessment of Cervical Cancer Risk in Women between 15 and 49 Years of Age: Case of Izmir

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### Abstract

**Background:** The aim of the study was to determine risk factors for cervical cancer for women in Izmir. **Methods:** This cross-sectional, descriptive field covered a population of 4319 women of reproductive age (15-49) (household registration in the Mukhtar's office-2007). A total of 1,637 women were included in the sample given a four-part questionnaire through face-to-face interview by visiting the women in their homes in order to determine socio-demographic factors, obstetric history, genital hygiene and the use of family planning methods. In addition, during the data collection process, the women were given group training in order to raise awareness of cervical cancer. The number and percentage distributions of the data were calculated. **Results:** While the average age of the women was 31.9±9.77 (Min: 15.00-Max: 49.00), education level of 43.4% of them was elementary school only. It was determined that 70.3% of the women experienced at least one pregnancy, 71.0% had vaginal delivery and 75.9% used a contraceptive method. In the study it was determined that among the cervical cancer related risks vaginal delivery, vaginal lavage and having three or more pregnancies had the highest rates, while having sexual intercourse before 16 years of age and having more than one sexual partner constituted lower rates. The rate of the women who stated not having a smear in the last three years was 82.4%. **Conclusions:** Considering the case in terms of having Pap smear test, women's awareness on the risk factors and early diagnosis of cervical cancer was found to be low. Due to this reason, awareness of women has to be raised through education.

**Keywords:** Cervical cancer - cervical cancer risk factors - pap smear - early diagnosis - Izmir, Turkey

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### Introduction

Cervical cancer is the second most common cancer type in women worldwide and nearly half million new cancer cases occur in a year. Ninety percent of these new cases occur in developing countries. The fact that the prevalence of cervical cancers in developing countries is high results from the lack of effective screening programmes which are used for detecting and treating cancer precursor lesions before they turn into invasive cancer (WHO, 2002). In Turkey, to decrease of cancer as primary prevention, early diagnosis and reduction of cancer mortality are also among major targets. In Turkey, the main targets of cancer control plan, which has now become state policy, are the accurate and regular registration of the cancer burden and the establishment of a cancer screening and training center in each province and cervical cancer screening began as a national program in 81 provinces in 2008 (Tuncer and Ozgül, 2010). In Turkey, according to the data released by the Ministry of Health - Department of Cancer Control in 1999, cervical cancer consists of 3% of all cancer types

seen among women (TR Ministry of Health Department of Cancer Fighting, 2002). According to the data of Izmir Cancer Registry (KIDEM) (2003), the annual incidence rate of cervical cancers in Izmir is 5.4 out of 100.000.

In the research conducted by the Turkish Republic Ministry of Health - Department of Cancer Fighting that covered eight cities including Izmir and was considered to represent the whole country, cervical cancer was diagnosed in 844 cases that occurred between the years of 2004 and 2006, and its incidence was determined to be 4.6 per hundred thousand (T.R. Ministry of Health, 2006).

It is believed that cervical cancer, which is more common in developing countries, is closely related with many factors such as life style, cultural differences, fertility behaviors, etc. Nowadays, although the etiologic causes of cervical cancers are not known for sure, as in most cancer types, epidemiologic studies show that factors such as starting to have intercourse at an early age, getting married before 18, giving birth at an early age, giving birth to more than three babies, poor genital hygiene, risky sexual behavior, refractory reproductive

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tract infection caused by Human Papilloma Virus (HPV), smoking cigarettes, lack of fruit/vegetable intake in a diet are cervical cancer risk factors (Juneja et al., 2003; Reiter et al., 2009). Women with a late first pregnancy have a lower risk of developing cervical cancer than those with an early pregnancy. The risk rises with the number of pregnancies (NHS Cervical Screening Programme, 2009).

Poverty is also a risk factor for cervical cancer. Many women with low incomes do not have ready access to adequate health care services, including Pap tests. This means they may not get screened or treated for cervical pre-cancers (American Cancer Society, 2012).

The studies performed show that a substantial proportion of women do not know Pap smear test and the risk factors that cause cervical cancers (Ideström et al., 2002; Twinn et al., 2002; Hoque et al., 2008; Mishra et al., 2009). That risk factors and smear test are not known result in not using early diagnosis and treatment methods (Kelly et al., 1996; Pearlman et al., 1999; Gupta et al., 2002).

For this reason, it is important to give training to women about the risk factors related to cervical cancers and early diagnosis. The need for community education practices in order to raise awareness of cancer screening practices and their objectives is stated in many studies (Thomas and Fick, 1994; Buga, 1998; Lee, 2000; Hoque et al., 2008; Yucel et al., 2009).

## Materials and Methods

### Sample and procedures

The aim of the study was to determine risk factors for cervical cancer for women in Izmir. The risk factors were determined by considering obstetric histories and genital hygiene behaviors. This study was a cross-sectional, descriptive field research. It was realized in Kızılây Neighborhood of Bornova District in Izmir. The population of the study was consisted of 4319 women aged 15-49 and were in reproductive age (household registration in the mukhtar's office-2007), while a total of 1637 women were included in the sample with a minimum sample size of 1121 due to 99% confidence interval and 5% margin of error. The total number of the women who voluntarily took part in the research was 1637 women although all the women were wanted to participate in the research. 1637 women who were reached and gave their informed consents were taken within the scope of the study. In this study, which was planned as a community-based field research but, women could not be reached because of not live in the same addresses which were kept as a household registration in the mukhtar's office, not at home, moved into another place and not want to participate in the research.

### Instruments

In the study used a questionnaire form which a four-part questionnaire was used which included the information about socio-demographic, obstetric, genital hygiene and the use of contraceptive methods of the participants.

### The process of data collection and methods

The data of the study were collected by specially-trained interviewers through face-to-face interview method during home visits realized between the dates of March 10, 2008-May 15, 2008. Data were collected by conducting three additional visits to those who were not available in their houses in the first visits. Data collection phase of the research in accordance with the principle of beneficence; the women were given group training called "The Protection Against Cervical Cancers, The Importance of Early Diagnosis and Smear Test" by researchers. Group trainings were done seven times in parallel with the data gathering during the project, and the number of the women who voluntarily took part in the trainings was 350 (Figure 1).

### Statistical analyses

SPSS 16.0 statistics programme was used to calculate the number and percentage distributions and descriptive of the data related to the purpose of the study.

### Ethics

In order to conduct the research, the necessary permits were obtained from the Research Advisory Commission of Izmir Atatürk Health College, from the Bornova Municipality where the Kızılây Neighborhood is connected to, and from the Mukhtar's Office of Kızılây Neighborhood. Also, the objective of the research was explained to the participating women and their verbal approvals were taken. The participants were informed by the investigators and through an ethical approval protocol that they would not be paid for their participation in the study. The participants did not receive payment for their participation in the study. Also, this study has been approved by the appropriate committees related to the institution

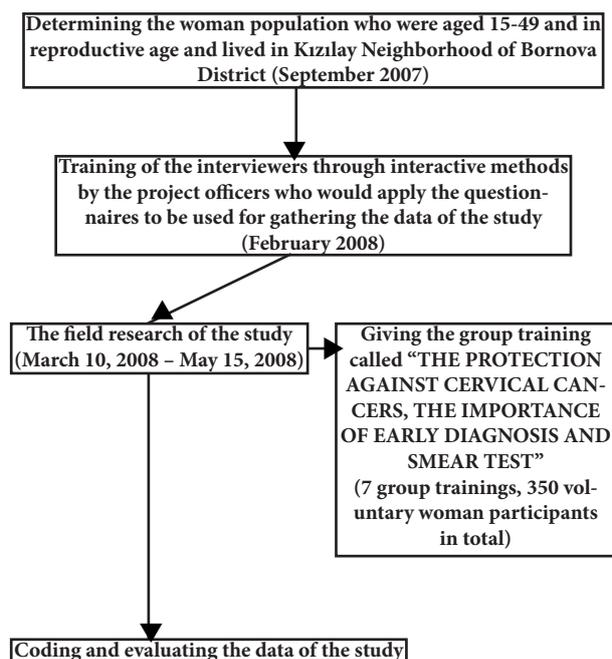


Figure 1. Study Flowchart

## Results

The mean age of the women that participated to the research conducted within the scope of the study made for the purpose of determining cervical cancer risk factors was 31.92±9.77 (Min: 15.00-Max: 49.00).

Age groups and education levels of the participating women are presented in Table 1. It was determined that 70.3% of the participating women had pregnancy, 66.6% had parturition, 28.6% had miscarriage and 6.2% had stillbirth (Table 2). While 71.0% of the women made only vaginal delivery, 22.2% of them made sectio delivery. Furthermore, it was determined that 75.9% of the women used contraceptive methods with the use of intrauterine devices being in the first place (34.2%) and withdrawal method being in the second place (21.3%) (Table 3).

The gynecological history and illnesses of the women who took part in the research were analyzed. According to this; genital hygiene behaviors of the participating women are shown in Table 4. 7.2% of the participating women stated that they use homemade pads during their menstrual bleeding. Also, 43.9% of the women stated that they do vaginal lavage. It was determined that 4.7% of them had a medical intervention/operation for their genital systems. While 60% of these interventions/operations were related with uterus (25.7% myomectomy, 24.3% hysterectomy, 5.7% salpingoopherectomy, 2.9% uterus prolapses, and 1.4% was related to laparoscopy), 40% was cervix related interventions/operations (cervical cryotherapy with 32.9%, 2.9% nabothian cyst operation, 2.9% polyp removal, and 1.4% cervical conization). When the data of the study were gathering, 3.1% of the women stated that they had a problem with their genital systems. It was determined that these problems were cervical erosion with 27.4%, vaginal discharge with 21.6%, genital warts/herpes with 13.7%, and myoma with 5.9%. When it was inquired whether the participating and respondent women had any

**Table 1. Descriptive Characteristics of the Women Participated to the Research**

Characteristic	n	%
Age Group (years)		
15-19	190	11.6
20-29	509	31.1
30-39	502	30.7
40-49	436	26.6
Total	<b>1637</b>	<b>100</b>
Mean Age	31.92±9.77	(Min: Max 15.00-49.00)
Educational level		
Literate (not graduate)	92	5.6
Elementary School Graduate	710	43.4
Secondary School Graduate	208	12.7
High-school Graduate	627	38.3
Total	<b>1637</b>	<b>100</b>

**Table 2. Obstetric Characteristics of the Participating Women (n=1637)**

Obstetric Characteristics	Yes		No		Total	
	No.	%	No.	%	No.	%
Pregnancy	1150	70.3	487	29.7	1637	100
Parturition	1091	66.6	546	33.4	1637	100
Miscarriage	468	28.6	1169	71.4	1637	100
Stillbirth	101	6.2	1536	93.8	1637	100

**Table 3. Types of Deliveries and Use of Contraceptive Methods**

	No.	%
Type of delivery*		
Vaginal	806	71
Sectio	252	22.2
Vaginal and Sectio	77	6.8
Total	<b>1135</b>	<b>100</b>
Using status of Contraceptive method**		
Yes	930	75.9
No	296	24.1
Total	<b>1226</b>	<b>100</b>
Contraceptive Methods***		
Intrauterine Device	467	34.2
Withdrawal	291	21.3
Barrier Methods	286	20.9
Hormone Methods	264	19.3
Surgical Methods	59	4.3
Total	<b>1367</b>	<b>100</b>

\*More than one delivery method was given, \*\*Respondents, \*\*\*More than one contraceptive method was given

**Table 4. Hygienic Behavior of Genital and Gynecological Problems**

	No.	%
Genital Hygienic Behavior:		
Type of sanitary pad used during menstrual bleeding**		
Ready pad	1464	92.8
Homemade pad	113	7.2
Total	<b>1577</b>	<b>100</b>
Vaginal lavage*		
Yes	656	43.9
No	838	56.1
Total	<b>1494</b>	<b>100</b>
Gynecological Problems:		
Reproductive system related medical intervention/operation		
Yes	77	4.7
No	1560	95.3
Total	<b>1637</b>	<b>100</b>
Gynecological Intervention/Operation Type*		
Uterus-related interventions	42	60
Cervix-related interventions	28	40
Total	<b>70</b>	<b>100</b>
Whether or not there is any current problem related with reproductive system		
Yes	51	3.1
No	1586	96.9
Total	<b>1637</b>	<b>100</b>
Type of Problem/Diagnosis*		
Cervical erosion	14	27.4
Vaginal Discharge	11	21.6
Genital Warts/herpes	7	13.7
Myoma	3	5.9
Unknown/undiagnosed problem/disease	16	31.4
Total	<b>51</b>	<b>100</b>
Reproductive organ related diseases in the last three months*		
Yes	24	1.9
No	1253	98.1
Total	<b>1277</b>	<b>100</b>
Bleeding during intercourse *		
Yes	37	3
No	1185	97
Total	<b>1222</b>	<b>100</b>
Diseases related with the reproductive organ of the spouse until today*		
Yes	6	0.5
No	1222	99.5
Total	<b>1228</b>	<b>100</b>

\*Respondents, \*\*Women with amenorrhea were not included

**Table 5. Risk Factors for Cervical Cancer (n=1637)**

Risk Factors for Cervical Cancer	No.	%
Not having a smear in the last three years	1011	82.4
Vaginal Delivery**	883	71.0
Vaginal Lavage	656	43.9
Three times and over pregnancies	504	43.8
Using Intrauterine device	467	34.2
Three times and over births	280	25.7
Before 16 age to start having intercourse	93	7.6
Have more than one partner	79	6.7

\*Sample size was taken as (n=1637). \*\*Both those who gave birth through vaginal

genital system related diseases in the last three months, it was understood that 1.9% of them had experienced a disease and 3.0% of them had postcoital bleeding. It was also determined that 0.5% of the women's spouses experienced genital diseases (Table 4).

Data concerning the cervical cancer related risk factors born by the participating women are presented in Table 5. According to this while it was determined that 82.4% of the participating women did not have pap smear test carried out in the last three years and that cervical cancer risk is high in terms of the factors of vaginal delivery, vaginal lavage, three or more instances of pregnancy and delivery, and Intrauterine device use for contraception, the risk was found out to be lower in terms of number of parturitions, having intercourse in early ages and number of sexual partners.

## Discussion

The present study is a descriptive field research conducted with the purpose of determining cervical cancer risk factors. The cervical cancer related risks born by the women between 15 and 49 years of age and living in the Kizilay Neighborhood in Izmir and their states of having pap smear test conducted were determined.

Cervical cancer which a global health problem is the cause of % 5.31 all malignancies affecting Turkish women (Tuncer, 2009). Although it is mainly found in women within the age group of 30-55, it is started to be seen also in younger women. Also, it is reported that human papilloma virus (HPV) is the most important etiological agent today in the development of cervical cancer (Taskin, 2012). In addition to this, it is now a known fact that there are many other factors causing the occurrence of cervical cancer such as the socio-economic status, age of starting to have sexual intercourse, number of sexual partners, smoking, having high number of childbirth, etc.

The mean age (31.92±9.77) of the participating women shows that they are not included in the high risk group for cervical cancer (<http://seer.cancer.gov/statfacts/html/cervix.html>). In terms of the socio-economic status of the participating women, in the study where the large majority of the participants were elementary school graduates the rate of illiteracy (5.6%) was found out to be lower than the 2011 data of Turkish Statistical Institute (8.1%) (TUIK, 2011). The difference between these data indicates that the women participated to the research generally had a higher level of education. This can be explained with

the fact that the study was conducted in the city of Izmir. Also according to the Turkish Population Health Research 2008 (TNSA), the rate of illiteracy among the women in the Aegean Region was 7%, while 52% of them were elementary school graduates (Eryurt et al., 2009).

It was determined that a vast majority of the participating women had experienced pregnancy and had given birth. This is an expected and normal result in Turkey where the total fertility rate is 2.16 (Koc et al., 2009). It was determined that among the barrier methods that constitute an important factor in protection against cervical cancer, condoms are used at a rate of 20.9%. Today it is known for many years that, although being mostly used by men in Turkey, condoms provide protection from sexually transmitted disease and cervical cancer, as well as contraception. The rate of condom use found in the study was determined to be higher than the rate of condom use throughout the country (14.3%) (Ergocmen et al., 2009). Also gynecological problems and genital hygiene are important in terms of creating cervical cancer risk.

Some factors that make the development of cervical cancer easier are considered as risk factors. In the present study factors such as delivery method, number of pregnancies and deliveries, vaginal lavage, use of intrauterine devices, age of starting to have intercourse, numbers of partners were evaluated.

Some uncertainty remains on the purported influence on cancer risk of cervical trauma during vaginal delivery (Brinton et al., 1989). In a study it was determined that with the reduction of number of deliveries the mortality rate due to cervical cancer falls (Muñoz et al., 2002; Lazcano-Ponce et al., 2008). In these terms, since 71% of the participating women had vaginal deliveries, they are considered to be under cervical cancer risk. As another risk factor, vaginal lavage that is reported to facilitate vaginal infections and cause cervical cancer was used nearly by half of the participants. It is reported that vaginal lavage is made at a rate of 29% in women from the USA (Cottrell, 2003). Another study conducted in Turkey stated that vaginal lavage is used by 38.6% of women (Erbil et al., 2012). Also, in another study conducted on fertile-age women living in Erzurum it was reported that 51.4% of the participants made vaginal lavage (Hacialioglu et al., 2009). Although the rate of making vaginal lavage differs by the regions, in another study carried out on Izmir it was stated that 51.6% of the women make vaginal lavage (Hadimli et al., 2012). Being among the risk factors of cervical cancer, wrong genital hygiene applications can also cause serious women health problems (Ayhan, et al. 2008; Taskin, 2012). Ensuring genital area hygiene is important in terms of preventing possible genital infections and consequently cervical cancer. Having three or more term-pregnancies is accepted as a risk in terms of cervical cancer for a reason that could not be fully understood yet, although it is tried to be explained via a number of different theories (American Cancer Society, 2012). Considering the matter from this aspect indicates that 43.8% of the participating women bear cervical cancer risk. In a case control study conducted in Mali, it was determined that cervical cancer risk is closely related with

parity (Bayo et al., 2002). In the study it was determined that 34.2% of the participating women used intrauterine devices. Although it is reported in today's epidemiological studies that women using intrauterine devices are under smaller risk (45%) of cervical cancer than those who do not use these devices, the scientific knowledge in the 1930s indicated quite the opposite, that the use of intrauterine devices causes cervical cancer (Castellsagué et al., 2011; Mulcahy, 2011). In the compilation inquiring whether there is any relation with the use of intrauterine devices and gynecological cancers, no relation could be found between cervical cancer and intrauterine device usage, which is still a controversial method (Curtis et al., 2007). Additional of this knowledge about risk of cervical cancer a recent study found that women who had ever used an intrauterine device (IUD) had a lower risk of cervical cancer. The effect on risk was seen even in women who had an IUD for less than a year, and the protective effect remained after the IUDs were removed (Lassise et al., 1991).

Similar to the number of pregnancies, in the study the rate of women that gave birth for three times and more was found out to be 25.7% (Public Health Agency of Canada, 2012). It is reported that in women that had multiple pregnancies the hypertrophication of cervical uterine and development of squamous epithelium metaplasia may be responsible of the increase in risk, yet the primary risk is mostly related with other factors as the age in the first marriage and first pregnancy (Karaahmet, 2008). Starting to have intercourse at 16 years of age and younger, which is referred to as early intercourse in the literature, was found out to be 7.6% in this study. Starting to have intercourse in early ages is considered as a significant risk for cervical cancer and it is reported that cervical infections caused mostly by HPV develop with the first intercourse (Louie et al., 2009). In this way with sexual intercourse in early ages, women are exposed to HPV virus at young ages (Plummer et al., 2012). As a matter of fact, a genital infection caused by HPV is a predisposing factor for cervical cancer (American Cancer Society, 2012). According to the case control study carried out by the International Cancer Research Center in developing countries, cervical cancer risk is high in women having their first pregnancy at early ages, much like the women having intercourse at early ages (Louise, 2009). Conducted studies indicate that starting to have intercourse at early ages is important in cervical cancer etiology. The risk of cervical cancer development is particularly high for the women married at early ages (16 years of age and younger). Cervical cancer risk is twice as high in women married before 16 years of age, than those who marry after 20 years of age. The cell hyperplasia predisposition of young women's cervix by the squamocolumnar junction of cervical uterine, which could not fully develop yet, sets forth the risk of cervical cancer due to intercourse at early ages (Kanbur and Canturk, 2011). Also secondary immune response against HPV is inadequate in younger ages. The rate of women having quite low level of education was 5.6% in the study. Low level of education is an important risk factor for cervical cancer because it prevents access to health possibilities and awareness. It is reported that

cervical cancer is related with poor socio-economic status particularly in developing countries, and therefore the disease is more common in rural areas and for women with low levels of income (Kanbur and Canturk, 2011). Number of sexual partners is another risk factor for cervical cancer, as determined in the literature (Kanbur and Canturk, 2011; American Cancer Society, 2012; Public Health Agency of Canada, 2012). The women under risk in this context were found out to be low in the study. However, the number of partners of the spouses is a latent risk factor that should not be ignored.

The fact that most of the participating women did not have smear tests done within the last three years, although it is cheap and has substantial importance in terms of early diagnosis, indicates that the women lack awareness on the importance of early diagnosis of cervical cancer. Lack of awareness among the women brings to mind that they do not know the early diagnosis and risks of the cancer. In this respect, a great majority (82.4%) of the women that participated to the study were considered to be under risk. In a similar study conducted in Izmir it was reported that 44.1% of women did not have any Pap smear test at all in their lives and only 23% have Pap smear test made every year (Acikgoz, 2011). In another study that took health personnel as the participants, the rate of those who never had smear test was reported to be 58% (Gungor, 2001). These findings indicate that Pap smear test is commonly ignored among women.

In conclusion, it was determined that the participating women bear cervical cancer risk due to vaginal delivery, vaginal lavage, three or more pregnancy, three or more childbirth histories, and that because they are not aware of these risk factors, the rate of pap smear application is low.

In addition, negligence of Pap smear test itself is an important risk factor that prevents early detection. In line with the principle of ethical usefulness, after the collection of data, group educations were provided to the participating women on the topics of protection from cervical cancer, early diagnosis and smear test. Similarly, the awareness of women has to be raised through the trainings to be provided by midwives that have significant roles in pregnancy and delivery with house visits and by nurses as the health instructors in women's health topics in the clinical areas.

Regarding limitations, the present study is a project that was started with the purpose of determining the cervical cancer related risk factors for fertile-age women and creating awareness in the society on cervical cancer. The project was planned to have two phases, and in the first phase the gynecological and obstetrical risk factors for cervical cancer and the rates of smear having smear tests made were determined. In the second phase it was planned to provide information to the women under risk of cervical cancer and direct them to health institutions for diagnosis. However, the second phase of the study as the awareness creation and action phase could not be realized due to the expiry of the term of the project, changes in the Turkish health system, economic reasons and the fact that not all of the participating women had social security.

Among the risk factors that cause cervical cancer only obstetrical characteristics, age of starting to have

intercourse, number of partners, gynecological problems, vaginal lavage and Pap smear could be examined within the scope of the study.

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