

RESEARCH COMMUNICATION

Knowledge about Cervical Cancer Risk Factors and Pap Testing Behaviour among Turkish Women

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Abstract

Background: The aim of the paper was to examine knowledge about cervical cancer and in relation to Papanicolaou (Pap) testing among Turkish women. **Methods:** This cross-sectional study research was carried out at Ege University Faculty of Medicine Hospital's Obstetric and Gynecology Outpatient Clinic between March 1st, and May 30th, 2008 with 92 volunteer women who were sexually active and aged 25 to 61. Data was collected through survey forms by interviews conducted by researchers. The form consisted of 30 questions and three parts. **Results:** Of the women who participated in the research, 33.7 % were aged 42-49 and 44.6 % were primary school graduates. It was determined that 53.3 % of the women had long experience of living in a province and big city and that 82.6 % had middle income. Approximately two-thirds (68.5%) had received a Pap test. The knowledge of the women within the scope of the research concerning cervical cancer risk factors (having a sexually transmitted disease, giving birth to many children, smoking, having sexual activity with a man who has had partners with a cervical cancer and having sexual intercourse at an early age) was found to be related with their condition of having pap testing. **Conclusion:** The women's condition of having pap testing is influenced by their age group, having a history of cancer in their family and having knowledge of cervical cancer in advance ($p < 0.01$). This research once again demonstrated that having knowledge is influential on the habit of having pap testing. Taking this conclusion into consideration, it is crucial that information services aimed at the whole society, specifically women, should become widespread with the participation of health workers.

Key Words: Cervical cancer - knowledge level - risk factors - Pap smear test

Asian Pacific J Cancer Prev, 10, 345-350

Introduction

Cervical cancer is a widespread and often fatal disease affecting 1 million women globally in 2005. Not only is it the second most common cancer in women, but also it is the second leading cause of cancer deaths, accounting for over 250,000 deaths in 2005 (Behtash & Mehrdad 2006; WHO 2007). The developing world has carried a disproportionate share of the burden and 80 % of the 250,000 cervical cancer deaths in 2005 occurred there (WHO, 2007).

Developed countries have been successful in controlling the incidence of cervix cancer, whereas developing countries have failed dismally in this respect. The success of developed countries is largely attributed to the widespread and systematic use of the Papanicolaou (Pap) smear (Elovainio et al., 1997; Cronje 2005). The value of the cervical cancer screening in reducing the risk of cervical cancer and mortality has been firmly established, and it is estimated that regular screening reduces the risk of cancer up to 80% (Stewart and Kleihues 2002; Özgül, 2007). In Sweden, for example, the overall incidence of cervical cancer declined by 67% over a 40-

year period, from 20 cases per 100 000 women (world standard rate) in 1965 to 6.6 cases per 100 000 women in 2005 (Andrea et al., 2008).

Of the 27,755 cancer cases observed in Turkey in 2002, 1,364 (4.9 %) cases were cervix cancer. Of the 17,768 women who died in the same year, the death of 725 (4.1 %) was caused by cervix cancer. According to these data, cervix cancer is the eighth most common cancer type in terms of both incidence and cause of death (Özgül, 2007). The frequency of the occurrence of cervix cancer in Turkey is below the rates of many developed countries which skillfully implement their national screening programs. However, it should not be ignored that Turkey is a country with young population, which experiences a demographic and social transformation (Kaya, 2009). Taking measures against cervix cancer is among the primary concerns of our country because of many risk factors such as polygamy, having a polygamous spouse, involvement in sexual activity at an early age (<16 years of age), smoking, human papilloma virus (HPV) history, not being previously screened, low socio-economic status and poor hygiene (Hoai Do et al., 2007; Özgül, 2007; Yaren et al., 2007; Kaya 2009). In Turkey, cancer screening activities

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are being conducted at Cancer Early Diagnosis and Screening Centers located in 49 provinces as well as Mother and Child Care and Family Planning Centers within the scope of the Reproductive Health Program and by means of the polyclinic and clinic activities of hospitals (Özgül 2007; Kaya, 2009). For the early diagnosis of cervix cancer, a community-based pap-smear screening program has not been implemented in our country yet except a few pilot studies (Demircier et al. 2007, Özgül 2007).

WHO guidelines for cervical cancer recommend the conventional Papanicolaou test as a routine screening test in the female population (WHO, 2007). Screening coverage of 80 % or more of the female population is considered to be a successful rate of screening. However, coverage of screening programs in developing countries like Turkey is still incomplete, due to poor health care access and unorganized health care systems (Markman 2007, Kaya 2009). From 1999 to 2004, only 5 % of the women in low-income countries received a Pap smear (Alliance for Cervical Cancer Prevention, 2007). The Pap smear test is a simple and inexpensive test, acceptable to both the general population and the medical professionals. (Cronje 2005, Idestrom 2002). Within this context, pap smear test is a screening method which should be considered a cost-effective method in dealing with the burden of cancer in developing countries like Turkey (Kaya 2009, Techakehakij & Feldman, 2008). Although it has been already proven that the efficiency of regular pap tests reduced the mortality rate of cervical cancer, its application in the developing countries is less compared with the developed countries (Cronje, 2005, Yaren et al., 2008). About 80 % of all cervical cancers occur in developing countries, where screening covers only about 5 % of the female population (Rydstrom & Tornberg, 2006). The lack of knowledge concerning cervical cancer may be related to this fact (Mcavoy & Raza, 1991; Kottke et al., 1995; Dignan et al. 1996). On the other hand, cervical cancer continues to be a disease related to socio-economic and demographic disparities in both developing as well as developed countries (Juon & Klassen, 2003; Kaku et al., 2008). In the U.S., despite the overall downward trend in cervix cancer there still exists a disparity in mortality rates for cancer-related deaths among certain ages as well as geographic and socio-economic groups. It has been found that lower education, lack of health coverage, and rural location are associated with inadequate preventative cervical cancer screening (Juon et al., 2003; Nelson et al., 2003; Coughlin et al., 2006). In Kuwait, Sairafi & Muhamed (2009) found that the level of education was the only significant factor independently associated with inadequate knowledge and attitude towards cervical cancer screening when adjusted for the effect of other factors in multivariate logistic regression analysis. In similar studies conducted in Turkey, it was stated that as the level of education and age increased and in the presence of social security, the frequency of having pap-smear testing also increased (Kalyoncu et al., 2003; Ayküz et al., 2008).

The objectives of this study were determined to be: 1) to evaluate the level of knowledge of women who did

and did not receive a pap smear test on cervix cancer; 2) to analyze the impact of certain socio-demographic characteristics such as women's age group, marital status, level of education, level of income, having a history of cancer in the family and having received information on cervix cancer previously on the habit of having pap smear testing.

Materials and Methods

Methodology

This cross-sectional study research was carried out at Ege University Faculty of Medicine Hospital's Obstetric and Gynecology Outpatient Clinic between March 01, 2008 and May 30, 2008. Ege University Faculty of Medicine has been located in western Turkey.

Participants

The research was conducted with 118 volunteers who were sexually active and aged 25 to 61. Twenty-two women were excluded from this analysis because they provided incomplete information about their Pap testing history or cervical cancer risk factors questions. The research sample consisted of 92 women.

Data Collection

Data was collected through survey forms by the interviews conducted by researchers. The form consists of 30 questions and three parts. The first part of the survey focuses on the socio-demographic characteristics of women while the second part concentrates on their family risks in terms of cancer and their habit of having pap smear testing. As for the third part, a 14-question information form was included consisting of three questions on pap smear testing and eleven questions on cervical cancer risks which were prepared to determine the level of knowledge (Hoai Do et al., 2007; Özgül, 2007; Yaren et al., 2007; Kaya 2009). Respondents specified whether or not they thought known pap smear testing procedures and risk factors increase the risk of cervical cancer.

Data Analysis

Statistical Package for Social Sciences (version 15.0) was used to compute frequency and descriptive statistics related to demographic data. We compared the characteristics of women who did and did not report a Pap test. Statistical methods included the chi-square test (Aksakoglu, 2001; Özdamar 2002). A level of $p < 0.05$ was considered statistically significant.

Ethical Considerations

Permission for use of the questionnaire form was obtained from the Ethics Committee of the hospital. The study's objective was explained orally to the participants at the study site.

Results

Study group characteristics

Of the women who took part in the research, 33.7 % were aged 42-49 with a median age of 47. It was

Table 1. Pap Testing According to Socio-Demographic Characteristics

Demographic variable	Pap (+) n=63 (%)	Pap (-) n=29 (%)	χ ²	p-value
Age			0.206	0.977
26-33	11 (73.3)	4 (26.7)		
34-41	14 (66.7)	7 (33.3)		
42-49	21 (67.7)	10 (32.3)		
≥50	17 (68.0)	18 (32.0)		
Marital status			0.136	0.713
Married	56 (69.1)	25 (30.9)		
Widowed	7 (63.6)	4 (36.4)		
Education			4.450	0.217
Primary	25 (61.0)	5 (62.5)		
Secondary	25 (61.0)	16 (39.0)		
High school	22 (84.6)	4 (15.4)		
Faculty	11 (64.7)	6 (35.3)		
Place of residence			7.541	0.056
Village/town	4 (40.0)	6 (60.0)		
County	20 (60.6)	13 (39.4)		
Province	30 (78.9)	8 (21.1)		
Large city	9 (81.8)	2 (18.2)		
Income status			3.795	0.150
Low	6 (50.0)	6 (50.0)		
Medium	53 (69.7)	23 (30.3)		
High	4 (100)	0 (0.0)		
History of cancer in the family			5.540	0.019
Yes	24 (85.7)	4 (14.3)		
No	39 (60.9)	25 (39.1)		
Information on Cervix Cancer			18.26	<0.001
Yes	47 (85.5)	8 (14.5)		
No	16 (43.2)	21 (56.8)		

determined that 88 % of the women were married, 38.0 % had given birth three times or more and the average number of children was 2.31±0.97. 44.6 % of the women included within the scope of the research were primary school graduates and 55.3% were homemakers. It was determined that 53.3 % of the women had the longest experience of living in a province and big city and that 82.6 % had middle income. When family risks in terms of cancer were analyzed, it was seen that 30.4 % of the women had a history of cancer in their families. 21.4 % of those with a cancer history in their family had cancer as well and 50.0 % had first-degree relatives with a history of cancer.

The demographic data about the women have been assessed by categorizing them into two groups according to the response they have given to the question; "Have you ever had pap testing in your life?" 63 out of the 92 (68.5 %) women who participated in the research had received a pap test before while 29 of them (31.5 %) had never done.

Pap Testing Behavior

When the women's condition of having received a pap test according to their socio-demographic characteristics is analyzed in Table 1; the rate of having received a pap test is seen to be high in the 26-33 age group, married women, secondary school graduates, inhabitants of big cities, those with medium and high income, those with a history of cancer in their family and those who had been informed about cervical cancer previously. While no statistically significant relationship has been determined between the women's condition of having received a pap

Table 2. Cervical Cancer Knowledge Associated with Pap Testing

Knowledge variable	Pap (+) n=63 (%)	Pap (-) n=29 (%)	χ ²	p-value
Sexually active women under the age of 18 should have pap testing			9.298	0.002
No	31 (56.4)	24 (43.6)		
Yes	32 (86.5)	5 (13.5)		
Getting regular Pap tests			1.719	0.190
No	44 (64.7)	24 (35.3)		
Yes	18 (79.2)	5 (20.8)		
Only women with risk factors should have pap testing			25.70	0.000
No	50 (87.7)	7 (12.3)		
Yes	13 (37.1)	22 (62.9)		
Having multiple sexual partners			0.465	0.495
No	1 (100)	0 (0.0)		
Yes	62 (68.1)	29 (31.9)		
Having a sexually transmitted disease			5.970	0.015
No	4 (36.4)	7 (63.6)		
Yes	59 (72.8)	22 (27.2)		
Cervix cancer could be prevented through vaccination			5.252	0.022
No	23 (56.1)	18 (43.9)		
Yes	40 (78.4)	11 (21.6)		
Going through menopause is influential on cervix cancer			0.345	0.557
No	35 (66.7)	18 (33.3)		
Yes	28 (71.1)	11 (28.9)		
Giving birth to many children			14.43	<0.001
No	19 (47.5)	21 (52.5)		
Yes	44 (84.6)	8 (15.4)		
Smoking			14.46	<0.001
No	3 (23.1)	10 (76.9)		
Yes	60 (75.9)	19 (24.1)		
Having sexual activity with a man who has had partners with a cervical cancer case			3.964	0.046
No	19 (55.9)	15 (44.1)		
Yes	44 (75.9)	14 (24.1)		
Having sexual intercourse at an early age			15.19	<0.001
No	27 (51.9)	25 (48.1)		
Yes	36 (90.0)	4 (10.0)		
Abnormal vaginal bleeding			0.104	0.746
No	8 (72.7)	3 (27.3)		
Yes	55 (67.9)	26 (32.1)		
Vaginal infection			2.329	0.127
No	20 (58.8)	14 (41.2)		
Yes	43 (74.1)	15 (25.9)		
Bleeding during sexual intercourse			0.545	0.460
No	13 (61.9)	8 (38.1)		
Yes	50 (70.4)	21 (29.6)		

test and their demographic characteristics such as age, marital status, level of education, place of residence and level of income (p>0.05), a statistically significant relationship was determined between having received a pap test and having a history of cancer in the family or having been previously informed about cervical cancer (p<0.01).

Cervical Cancer Knowledge

Table 2 gives information about the knowledge of risk factors for cervical cancer among Turkish women who had a Pap smear and did not. When compared to the women who did not have a Pap smear, it was determined that those who had the test (%86.5) had accurate knowledge on "sexually active women under the age of 18 should have pap testing" at a statistically significant

level ($\chi^2=9.298$, $p<0.01$). Although the women who had pap smear testing (79.2 %) had more accurate knowledge on having pap smear testing regularly than those who did not, a statistically significant difference was not observed ($\chi^2=1.719$, $p>0.05$). 87.7% of the women who had Pap smear testing was correct about the fact that “not only women with risk factors but also all sexually active women should have pap testing” and a statistically significant difference was determined when their level of knowledge was compared to the women who did not have pap testing ($\chi^2=25.697$, $p<0.0001$).

When the knowledge of the women who had and did not have pap testing on cervical cancer risk factors were analyzed; the percentage of those who had pap testing and were aware of the risk factors were as follows; 68,1 % were informed of the risk factor; “having multiple sexual partners”, 71,1 % of “going through menopause”, 75,9 % of “smoking”, 75,9 % “having sexual activity with a man who has had partners with cervical cancer”, 90,0 % of “Having sexual intercourse at an early age”, 67,9 % of “abnormal vaginal bleeding”, 74,1 % of “foul smelling vaginal discharge”, 70,4 % of “Bleeding during sexual intercourse” and 78,4 % were informed of the preventive vaccine against cervical cancer.

When the knowledge of the women who had and did not have pap testing on cervical cancer risk factors were analyzed; a significant difference between their level of knowledge on the titles “Having multiple sexual partners”, “Going through menopause”, “Abnormal vaginal bleeding”, “vaginal infection” and “Bleeding during sexual intercourse” was not determined ($p>0.05$). Knowledge of the five following risk factors were all associated with Pap testing: Having a sexually transmitted disease ($p<0.01$), giving birth to many children ($p<0.001$), smoking ($p<0.001$), having sexual activity with a man who has had partners with a cervical cancer ($p<0.05$) and having sexual intercourse at an early age ($p<0.001$). Furthermore, it was also observed that women who had pap smear testing had more accurate knowledge on prevention form cervical cancer through vaccination than those who did not have pap testing at a significant level ($p<0.05$).

Discussion

Of the women included within the scope of the research, 78 % were in the age group of 35-59 years which is the first peak period for diagnosis of cervix cancer (Özgül 2007). As long as the women in this group are more informed and sensitive about cervix cancer, early diagnosis will be possible.

Pap smear test is one of the most crucial screening tools for the early diagnosis of cervix cancer (Elovainio et al., 1997; WHO, 2007; Kaya 2009). While the rate of women having pap testing is equal to or above 80 % in developed countries (Welensek et al., 2002; Carrasquillo & Pati, 2004; Sirovich & Welch, 2004; Coughlin et al. 2006), this rate varies between 2.6-68 % in developing countries (Farland, 2003; Behbackt et al. 2004; Imani et al., 2008). In this study, the rate of women having pap

smear testing is at the upper limit of developing countries (68.5 %). This rate could be considered quite a high value when compared to the findings of other research conducted in our country. For example, in the community-based study conducted by Sirin et al. (2006) in Izmir, the rate of women having pap-smear testing was determined to be 14.6 %. Nevertheless, in the study conducted by Akyüz et al. at a gynecology policlinic of a university hospital in Ankara (2006), it was determined that 51.1% of the women has pap smear testing. Similar to the findings of our study, this high rate could be associated with the fact that the study was conducted at a university hospital where regular pap testing screenings are carried out which may lead to a high rate of women having pap testing when compared to normal population.

In many studies, it was determined that the socio-demographic characteristics of women had an influence on the rate of having pap testing (Siahpush & Singh, 2002; Holdroy et al., 2004; Akyüz et al., 2006; Kaku et al., 2008; Jun et al., 2009). In this study, the women’s demographic characteristics such as age group, marital status, level of education or status of income were not determined as influential factors on having pap testing. However, when the literature is viewed, it is seen that demographic variables such as women’s age group (Akyüz et al., 2006; Jun et al., 2009) marital status (Hoai do et al., 2006), level of education, place of residence (Nelson et al., 2003; Coughlin et al., 2006) and status of income are influential on having pap testing (Kaku et al., 2008). In the studies conducted in developing countries, it is pointed out that women’s status of education is particularly influential on having pap testing. For instance, in Kuwait, Sairafi & Muhamed (2009) found that the level of education was the only significant factor independently associated with inadequate knowledge and attitude towards cervical cancer screening. In another study conducted in Turkey to analyze the influence of women’s demographic characteristics on their condition of having pap testing, it was determined that as the level of education increased, the rate of women having pap testing also increased (Akyüz et al., 2006). In our study, only the age group factor among demographic variables demonstrated a significant difference. The fact that the sample group consisted of a population with similar demographic characteristics who pay a visit to a certain hospital was considered to have led to this conclusion.

It was determined that 85.7 % of the women who had a personal or family history of cancer and considered themselves with cervical cancer risks had pap testing and that there was a significant relationship between considering themselves with risks and having pap testing ($p<0.01$) (Table I). In the studies conducted, it was determined that the women who considered themselves to have cervical cancer risk factors had a higher rate of having pap testing which is in parallel to our research (Nuguyen et al., 2002; Wellensiek et al., 2002; Gichangi et al., 2003).

It is emphasized in many studies that being informed of cervical cancer is an influential factor on the increase in the rate of having pap testing (Mcavoy and Raza, 1991; Kottke et al., 1995; Dignan et al., 1996; Akyüz et al., 2006;

Yaren et al., 2008). In this study, it was determined that the women who had knowledge of cervical had a higher rate of having pap testing. Similarly, a study conducted by Wellensiek et al (2002) demonstrated that having knowledge of cervix cancer and Pap smear increased the rate of having testing.

In this study, the level of knowledge of pap testing procedures and cervical cancer risk factors of the women who have and do not have pap testing was analyzed. Of the women who have pap testing, 86.5 % have the knowledge of the fact that sexually active women under the age of 18 should have pap testing and 79 % are aware that whether or not there exists any risk factors, testing screening at certain intervals is necessary.

A significant difference was not determined between the level of knowledge of the women who had and those who did not have pap testing concerning the factors increasing the cancer risk such as "Having multiple sexual partners", "Going through menopause", "Abnormal vaginal bleeding", "vaginal infection" and "bleeding during sexual intercourse" ($p < 0.05$) (Table 2). This significant difference might have resulted from the fact that polygamy is not approved according to the traditional structure of our society and that those with multiple partners consider any vaginal health problem to be natural. On the other hand, going through menopause, abnormal vaginal bleeding, vaginal infection and bleeding during sexual intercourse might have been perceived as regular women health problems and might not have been associated with any cancer risk. Since the Turkish women's attitude and beliefs concerning reproductive health were not evaluated in this research, the aforementioned comments are the projection of the researchers within the social framework of our country.

This study demonstrated that having knowledge of cervical risk factors such as having a sexually transmitted disease ($p < 0.01$), giving birth to many children ($p < 0.001$), smoking ($p < 0.001$), having sexual activity with a man who has had partners with a cervical cancer ($p < 0.05$) and having sexual intercourse at an early age ($p < 0.001$) were related with having pap testing. Similarly, in the study conducted with Vietnamese women, Hoai Do et al. (2006) determined a significant relationship between cervical cancer risk factors such as having multiple sexual partners ($p < 0.003$), having sexual activity with a man who has had multiple sexual partners ($p < 0.001$), having a sexually transmitted disease ($p < 0.001$) and having pap testing.

For many years, Human Papilloma Virus (HPV) infection has been considered as a sexually transmitted disease; however, it has been brought to the agenda that it is related with invasive cervical cancer and that it causes almost all cases of cervix cancer (WHO 2007; Kaya, 2009). Since HPV infection risk increases parallel to the age of starting sexual intercourse, an early implementation of an effective, safe vaccine against infection is an effective method of prevention (Markman 2007; Kaya 2009). In this study, determination of a significant relationship between the knowledge of this new method of preventing cervical cancer and having pap testing ($p < 0.001$) is a valuable finding. This conclusion might have been influenced by the awareness campaigns against

cervical cancer held in our country since 2007 as well as the health education efforts of the health staff working at gynecology policlinics of university hospitals and AÇSAP centers.

In conclusion, the women who applied to the gynecology policlinic of a university faculty of medicine hospital were included within the scope of the research ($n=92$). Since women who have complaints about their health generally apply to these policlinics, the women have a prerequisite sensitivity concerning gynecological diseases. Therefore, the women's level of knowledge of cervical cancer and their rate of having pap testing (68.5 %) is at a higher level when compared to certain field studies conducted in our country. The condition of having pap testing is influenced by their age group, having a history of cancer in their family and having knowledge of cervical cancer in advance ($p < 0.01$). This research once again demonstrated that having knowledge is influential on the habit of having pap testing. Taking this conclusion into consideration, it is crucial that information services aimed at the whole society, specifically women should become widespread with the participation of health workers. The knowledge of the women within the scope of the research concerning cervical cancer risk factors (having a sexually transmitted disease, giving birth to many children, smoking, having sexual activity with a man who has had partners with a cervical cancer and having sexual intercourse at an early age) was found to be related with their condition of having pap testing. This study was conducted with a limited sample group in order to determine women's condition of having pap testing and level of knowledge of cervical cancer. It will be beneficial to plan studies to be carried out with larger sample groups in determining traditional beliefs and attitudes concerning cervical cancer and having pap testing.

References

- Alliance for Cervical Cancer Prevention (2007). Preventing cervical cancer worldwide 2004.
- Aksakoglu G (2001) Sağlıkta Araştırma Teknikleri ve Analiz Yöntemleri (Research Techniques and Analysis Methods in Health). Dokuz Eylül University Rectorate Press, Izmir.
- Akyüz A, Güvenç G, Yavan T, et al (2006). Evaluation of the Pap smear test status of women and of the factors affecting this status. *J Gulhane Med*, **48**, 25-9 (in Turkish).
- Andrae B, Kemetli L, Sparén P, et al (2008). Screening-preventable cervical cancer risks: Evidence from a nationwide audit in Sweden. *J Natl Cancer Inst*, **100**, 622-9.
- Badar F, Anwar N, Meerza F, Sultan F (2007). Cervical carcinoma in a muslim community. *Asian Pacific J Cancer Prev*, **8**, 24-6.
- Behbakht K, Lynch A, Teal S, Koen D, Massad S (2004). Social and cultural barriers to papanicolaou test screening in urban population. *Obstet Gynecol*, **104**, 1355-61.
- Behtash N, Mehrdad N (2006) Cervical cancer: screening and prevention. *Asian Pac J Cancer Prev*, **7**, 683-6.
- Carrasquillo O, Pati S (2004). The role of health insurance on pap smear and mammography utilization by immigrants living in the United States. *Prev Med*, **39**, 943-50.

- Coughlin SS, King J, Richards TB, et al (2006). Cervical cancer screening among women in metropolitan areas of the United States by individual-level and area-based measures of socioeconomic status, 2000 to 2002. *Cancer Epidemiol Biomarkers Prev*, **15**, 2154-60.
- Cronje HS (2005). Screening for cervical cancer in the developing world. *Best Practice & Research Clinical Obstets Gynaecol*, **19**, 517-29.
- Demircier M, Kaya O, Bayrakçı A, Altun A (2009). Measurement of the knowledge and behaviours of health professionals about cervical cancer and breast cancer. (<http://ukdk.org/pdf/kitap/en/49.pdf>)
- Dignan M, Michelutée R, Bliason K (1996). Effectiveness of health education to increase screening for cervical cancer among Eastern-band Cherokee Indian women in North Carolina. *J Natl Cancer Inst*, **88**, 70-3.
- Elovainio L., Nieminen P., Miller A.B. (1997) Impact of cancer screening on women's health. *International Journal of Gynecology and Obstetrics* 58, 137-147.
- Farland DM (2003) Cervical cancer and Pap smear screening in Botswana: knowledge and perceptions. *Int Nurs Rev*, **50**, 167-75.
- Gichangi P, Estambale B, Bwayo J, et al (2003) Knowledge and practice about cervical cancer and Pap smear testing among patients at Kenyatta National Hospital, Nairobi, Kenya. *Int J Gynecol Cancer*, **13**, 827-33.
- Hoai do H, Taylor VM, Burke N, et al (2007). Knowledge about cervical cancer risk factors, traditional health beliefs, and Pap testing among Vietnamese American women, *J Immigrant Health*, **9**, 109-114
- Holdroy E, Twinn S, Adab P (2004). Socio-cultural influences on Chinese women's tendency for cervical cancer screening. *J Adv Nursing*, **46**, 42-52.
- Ideström M, Milsom I, Ellström AA (2002). Knowledge and attitudes about the Pap smear screening program: a populationbased study of women aged 20-59 years. *Acta Obstetr Gynecol Scand*, **81**, 962-67.
- Imam SZ, Rehman F, Zeeshani MM, et al (2008). Perceptions and practices of a Pakistani population regarding cervical cancer screening. *Asian Pacific J Cancer Prev*, **9**, 42-4.
- Jun KJ, Choi KS, Jung KS, et al (2009) Effectiveness of an organized cervical cancer screening program in Korea: Results from a cohort study. *Int J Cancer*, **124**, 188-93.
- Juon HS, Seung-Lee C, Klassen AC (2003). Predictors of regular pap smears among Korean-American women. *Prev Med*, **37**, 585-92.
- Kalyoncu C, Lıkılı B, Özalp S, Küçük N. (2003) Knowledge, Attitude and Behaviours of those who applied to Osmangazi University Women's Health and Birth policlinic concerning Pap smear). *Saglık ve Toplum*, **13**, 60-6 (in Turkish).
- Kaku M, Mathew A, Rajan B (2008). Impact of socio-economic factors in delayed reporting and late-stage presentation among patients with cervix cancer in a major cancer hospital in South India. *Asian Pacific J Cancer Prev*, **9**, 589-94.
- Kaya M. (2009) Halk saglığı yaklaşımlarıyla servikal kanser (Cervical Cancer with Public Health Perspective) (Edit. Akın A.) HÜKSAM Yayınları (HUKSAM Publication), Ankara.
- Kotke TE, Trapp MA, Fores MM, et al (1995). Cancer screening behaviors and attitudes of women in Southeastern Minnesota. *JAMA*, **273**, 1099-105.
- Markman M (2007). Human papillomavirus vaccines to prevent cervical cancer. *Lancet*, **369**, 1837-9.
- Mcavoy BR, Raza R (1991). Can health education increase up rate of cervical smear testing among Asian women? *Br Med J*, **302**, 833-6.
- Nelson D.E, Bohen J, Marcus S, et al (2003). Cancer screening estimates for U.S. metropolitan areas. *Am J Prev Med*, **24**, 301-9.
- Nuguyen T, McPhee SJ, Nguyen T, et al (2002). Predictor of cervical pap smear screening awareness, intention, and receipt among Vietnamese-American women. *Am J Prev Med*, **23**, 207-14.
- Özdamar K. (1997) Paket Programları ile _statistiksel Veri Analizi (Package Software and Analysis of Statistical Data). Publications of Anadolu University, Eskisehir.
- Özgül N (2007) Türkiye'de Serviks Kanserin Durumu ve Servikal Kanser Tarama Çalışmaları (The Condition of Cervix Cancer in Turkey and Cervical Cancer Screening Programs), Editör: Tuncer AM, Türkiye'de Kanser Kontrolü (Cancer Control in Turkey), T.C. Sağlık Bakanlığı, (Ministry of Health) , sayfa: 349-358.
- Sairafi M, Mohamed FA (2009). Knowledge, attitudes, and practice related to cervical cancer screening among Kuwaiti women. *Med Princ Pract*, **18**, 35-42.
- Siahpush M, Singh GK (2002). Socio-demographic predictors of Pap test receipt, currency and knowledge among Australian women. *Prev Med*, **35**, 362-8.
- Sirin A, Atan S, Tasci E (2006). Protection from cancer and early diagnosis applications in Izmir, Turkey. *Cancer Nursing*, **29**(3), 207-213.
- Sirovich BE, Welch G (2004). The frequency of Pap smear screening in the United States. *J Gen Intern Med*, **19**, 243-50.
- Stewart BW, Kleihues P (Eds) (2003). Cancers of the female reproductive tract. In World Cancer Report, International Agency for Research on Cancer. IARC Press, Lyon, France.
- Techakehajib W, Feldman RD (2008). Cost-effectiveness of HPV vaccination compared with Pap smear screening on a national scale: A literature review. *Vaccine*, **26**, 6258-65.
- Wellensiek N, Moodley M, Moodley J, Nkwanya N (2002). Knowledge of cervical cancer screening and use of cervical screening facilities among women from various socioeconomic backgrounds in Durban, Kwazulu Natal, South Africa. *Int J Gynecol Cancer*, **12**, 376-82.
- World Health Organization (2007). Comprehensive cervical cancer control: a guide to essential practice 2006; (6/30).
- Yaren A, Ozkılıç G, Güler A, Oztop I (2008). Awareness of breast and cervical cancer risk factors and screening behaviours among nurses in rural region of Turkey. *Eur J Cancer Care*, **17**, 278-84
- World Health Organization(WHO) (1986). Control of cancer of the cervix uteri. *Bull WHO*, **64**, 607-18.
- World Health Organization (WHO) (2002). Cervical Cancer Screening in Developing Countries, Report of a WHO Consultation, Geneva, p:3-16
- World Health Organization (WHO) (2004). Progress in Reproductive Health Research Cervical Cancer Prevention: Screening Still The Only Option, Geneva, 2-8.