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Cervical Cancer: Sociodemographic and Clinical Risk Factors among Adult Egyptian Females

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Abstract

Background: Cervical cancer is an important health problem world-wide. Low socioeconomic status, no screening attendance, smoking, Oral Contraceptives (OCs) usage, multiparous, and sexual multi-partners are important risk factors.

Aim: To determine the sociodemographic and clinical risk factors of cervical cancer among Egyptian women.

Patients and methods: Eighty six adult females with cervical cancer and 200 adult healthy females were recruited as the cases and controls. A case-control study design was used in this research. A comprehensive interviewing form was used to collect data.

Results: Significant sociodemographic risk factors were low education, low occupation, and age ≥50 (OR=3.42, 4.79, 3.35; respectively). Also, significant sexual behavior risk factors were premarital sexual practice, practice with STDs symptomatic partner, none circumcised partner, and ≥3 life time sexual partners (OR=5.36, 3.1, 12.28, 26.25; respectively). Meanwhile, significant gynecological and reproductive risk factors were age at marriage <18, age at first full term labor <20, multiparity >5, vaginal delivery, and OCs usage (OR=2.63, 2.06, 2.19, 11.86, 4.93; respectively). Significant medical and family history risk factors were obesity, history of STDs, and positive family history of cervical cancer (OR=5.42, 4.44, 14.93; respectively). Significant life style risk factors were low fruits and vegetables intake, passive smoker, alcohol use, and poor genital hygiene (OR=7.04, 10.23, 4.34, 2.36; respectively).

Conclusions and recommendations: Risk factors of cervical cancer are mostly preventable. More studies should be conducted on big number of patients in different areas to understand the true epidemiology and situation of cervical cancer in Egypt and to doubling of efforts to address high-risk groups. Also, the need for a national prevention and control program, the integration of screen services into health facilities that women use.

Keywords: Cervical cancer; Risk factors; Sociodemographic; Clinical; Egypt

Introduction

Cervical cancer is an important health problem world-wide, being the second most common cancer among women, ranking first in many developing countries [1]; about 80.0% of total cases are present in developing countries [2]. It was once, one of the most common causes of cancer death. Over the last 30 years, the cervical cancer death rate has gone down by more than 50.0% for American women. The main reason for this change was the increased use of the Pap test [3]. Preventable cases of cervical cancer in developed countries such as UK are 100.0% [4].

Low socioeconomic status, prostitution, and urban residence were observed more common among females with cervical cancer [5]. The increased risk with low socioeconomic status is attributed mainly to the non-attendance of screening, and by consequence failure of treating precancerous lesions, and to the lack of knowledge about prevention of infections. Most of women with cervical cancer experience a long asymptomatic period before the disease clinically onset. Regular screening offers early detection against progression from pre invasive to invasive stage [6].

Epidemiological studies have shown an increased risk for cervical cancer attributable to sexual and reproductive behavior [6]. Cervical cancer was almost unknown in nuns; it has been thought that sexual activity is a major factor in cervical cancer genesis. Other related factors associated with cervical cancer include early age at first coitus, multiple marriage, extramarital sexual activity, premarital sexual activity, early age at first pregnancy, multiple sexual partners of the women and husbands, and uncircumcised sexual partners [7].

A number of important epidemiological risk factors have been identified as early age at marriage, coitus before the age of 18 years, multiple sexual partner, delivery of the first baby before the age of 20 years, multiparty with poor birth spacing between pregnancies, and poor personal hygiene [8]. Women with Sexually Transmitted Diseases (STDs) like HIV infection, herpes simplex virus 2, and Human Papilloma Virus (HPV) infection [8,9]. Other factors associated with increased risk are smoking, Oral Contraceptives (OCs) and lack of some nutritional factors like beta-carotene, vitamin C, and low intake of fruits [10].

Negligence by patient of initial symptoms like leucorrhoea, post-coital bleeding; unawareness of symptoms, illiteracy, and lack of adequate screening facilities are increase incidence among women [11].

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Aim of the Study

The aim of this study is to determine the sociodemographic, gynecological, obstetrics, reproductive, life style, and health care behavior risk factors for cervical cancer among Egyptian women in Assiut Governorate.

Patients and Methods

Study design

An analytic, case-control, clinic-based study design was chosen to perform this research.

Administrative design

Required approvals to conduct the study in the hospitals were obtained before starting the field work.

Study settings and patients

Eighty six adult female patients with cervical cancer attending Gynecology Clinics, Al-Hussein and Tanta University Hospitals for follow up were recruited as a patients group in this study. Two hundred apparently normal female adults (relatives to other patients attending the clinic and free from cervical cancer) were enrolled in the study as controls. Both the patients and controls were females and their age range, 35-71 years.

Study tools

A specially designed comprehensive interviewing form contains data relevant to the topic of study was used. Also, all the patients and the controls had undergone anthropometric measurements; height (cm) and weight (kg) were measured with participants standing without shoes and heavy outer garments and accordingly Body Mass Index (BMI) was calculated and classified according to WHO [12].

Ethical consideration

The study was approved by Ethics Committees in Al-zhar and Tanta University. The purpose of the study and procedures were explained to the patients and controls. Consents of both of them were given before starting the field work and confidentiality and security were guaranteed.

Statistical analysis

Odds Ratio (OR) test was used to detect the risk factors. To determine the significance of OR the 95% Confidence Interval (CI) or Exact Confidence Limits (ECL) was used.

Results

Table 1 clears significant sociodemographic risk factors for cervical cancer are lowest education level (illiterate and read and write) [OR=3.42, 95% CI: 1.93-6.07], lowest occupation level (unskilled labor) [OR=4.79, 95% CI: 2.46-9.37], low social class [OR=2.2, 95% CI: 1.27-3.81], higher age (≥50 years) [OR=3.35, 95% CI: 1.83-6.15], and rural residence [OR=1.95, 95% CI: 1.11-3.42].

Table 2 illustrates significant sexual behavior risk factors for cervical cancer are premarital sexual practice [OR=5.36, 95% CI: 1.93-15.37], practice with STDs symptomatic partner [OR=3.11, 95% CI: 1.14-8.56], none circumcised partner [OR=12.28, 95% ECL: 1.33-583.82], and number of life time sexual partners 2 [OR=2.81, 95% CI: 1.21-6.54] and ≥3 [OR=26.25, 95% ECL: 8.62-105.4].

Table 3 reports significant gynecological and reproductive risk factors for cervical cancer are young age at marriage (<18 years) [OR=2.63, 95% CI: 1.44-4.83], age at first full term labor (<20 years) [OR=2.06, 95% CI: 1.12-3.79], grand multiparity (>5) [OR=2.19, 95% CI: 1.21-4.0], vaginal delivery [OR=11.86, 95% ECL: 1.85-494.47], birth spacing <2 years [OR=2.13, 95% CI: 1.09-4.21], and OCs usage [OR=4.93, 95% ECL: 1.16-44.15] for >5 years [OR=2.86, 95% CI: 1.62-5.07].

Table 4 shows significant medical and family history risk factors for cervical cancer are obesity (BMI ≥30) [OR=5.42, 95% CI: 3.03-9.74], history STDs [OR=4.44, 95% CI: 1.93-10.35], genital warts [OR=12.28, 95% ECL: 1.33-583.82], genital herpes [OR=4.34, 95% ECL: 1.06-20.68], positive family of history cervical cancer [OR=14.93, 95% ECL:

Sociodemographic risk factors	Patients (n=86)		Controls (n=86)		OR* (95%CI)**
	No.	%	No.	%	
Educational level					
Illiterate and read and write	59	68.6	78	39.0	3.42 (1.93-6.07)
Elementary	18	20.9	48	24.0	0.84 (0.43-1.61)
Secondary and university	9	10.5	74	37.0	0.2 (0.09-0.44)
Occupational level					
House wife	16	18.6	68	34.0	0.44 (0.23-0.85)
Unskilled	32	37.2	22	11.0	4.79 (2.46-9.37)
Semi-skilled and skilled	28	32.6	68	34.0	0.94 (0.53-1.66)
Professional	10	11.6	42	21.0	0.49 (0.22-1.09)
Social class					
Low	52	60.5	82	41.0	2.2 (1.27-3.81)
Middle	24	27.9	58	29.0	0.95 (0.52-1.72)
High	10	11.6	60	30.0	0.31 (0.14-0.66)
Age (years)					
<40	19	22.1	76	38.0	0.46 (0.25-0.86)
40-49	32	37.2	90	45.0	0.72 (0.42-1.26)
≥50	35	40.7	34	17.0	3.35 (1.83-6.15)
Residence					
Urban	50	58.1	146	73.0	0.51 (0.29-0.9)
Rural	36	41.9	54	27.0	1.95 (1.11-3.42)

Table 1: Distribution of the studied females with cervical cancer and control group according to sociodemographic risk factors.

Sexual behavior risk factors	Patients (n=86)		Controls (n=200)		OR* (95% CI)** OR (95% ECL)***
	No.	%	No.	%	
Premarital sexual practice					
Yes	14	16.3	7	3.5	5.36 (1.93-15.37)
Practice with STDs symptomatic partner					
Yes	11	12.8	9	4.5	3.11 (1.14-8.56)
None circumcised partner					
Yes	5	4.7	1	0.5	12.28 (1.33-583.82)*
Number of lifetime sexual partners					
1	41	47.7	182	91.0	0.09 (0.04-0.18)
2	15	17.4	14	7.0	2.81 (1.21-6.54)
≥3	30	34.9	4	2.0	26.25 (8.62-105-4)*
*Odds ratio. **Confidence intervals. ***Exact confidence limits.					

Table 2: Distribution of the studied females with cervical and control group according to the sexual behavior risk factors.

Gynecological and reproductive history risk factors	Patients (n=86)		Controls (n=200)		OR* (95%CI)** OR (95% ECL)***
	No.	%	No.	%	
Age at marriage					
<18	28	32.6	38	19.0	2.63 (1.44-4.83)
≥18	58	67.4	162	81.0	0.38 (0.21-069)
Age at first full term labor:					
<20 years	28	32.6	38	19.0	2.06 (1.12-3.79)
≥20 years	58	67.4	162	81.0	0.49 (0.26-0.9)
Parity					
0	3	3.5	18	9.0	0.37 (0.07-1.31)*
1-5	19	22.1	68	34.0	0.55 (0.29-1.03)
>5	64	74.4	114	57.0	2.19 (1.21-4.0)
Mode of delivery:	(n=83)		(n=182)		
Normal vaginal	82	98.8	159	87.4	11.86 (1.85-494.47)*
Cesarean section	1	1.2	23	12.6	0.38 (0.21-069)
Birth spacing:	(n=83)		(n=182)		
<2 years	71	82.6	138	69.0	2.13 (1.09-4.21)
Oral contraceptives (OCs) usage					
Yes	84	97.7	179	89.5	4.93 (1.16-44.15)*
Duration of OCs use:	(n=84)		(n=179)		
≤ 5 years	31	36.9	112	62.6	0.35 (0.2-0.62)
>5 ears	53	63.1	67	37.4	2.86 (1.62-5.07)
*Odds ratio. **Confidence intervals. ***Exact confidence limits.					

Table 3: Distribution of females with cervical cancer and control group according to gynecological and reproductive history risk factors.

Medical and family history risk factors	Patients (n=86)		Controls (n=200)		OR* (95% CI)** OR (95% ECL)***
	No.	%	No.	%	
Obesity (BMI, kg/ m²):					
Normal <25	24	27.9	94	47.0	0.44 (0.24-0.78)
Pre-obese 25- 29.9	28	32.6	62	31.0	1.07 (0.6-1.91)
Obese ≥30	52	60.5	44	22.0	5.42 (3.03-9.74)
History of STDs:					
Yes:	19	22.1	12	6.0	4.44 (1.93-10.35)
Genital warts (GW)	5	5.8	1	0.5	12.28 (1.33-583.82)*
Genital herpes (GH)	7	8.1	4	2.0	4.34 (1.06-20.68)*
Trichomonas vaginalis	7	8.1	7	3.5	2.44 (0.74-8.06)
Positive family history of cervical cancer					
Yes	6	5.8	1	0.5	14.93 (1.75-689.83)*
1st degree relative (mother, sister)	5	4.7	1	0.5	12.28 (1.33-583.82)*
2nd and 3rd degree relatives	1	1.2	0	0.0	Undefined
Positive family history of other cancers type					
Yes	3	3.5	1	0.5	7.19 (0.56-379.44)*
*Odds ratio. **Confidence intervals. ***Exact confidence limits.					

Table 4: Distribution of females with cervical cancer and control group according to the associated medical and family history risk factors.

1.75-583.82], and 1st degree relatives with cervical cancer [OR=12.28, 95% ECL: 1.33-583.82].

Table 5 clarifies significant life style risk factors for cervical cancer are low intake of fruits and vegetables [OR=7.04, 95% CI: 3.48-14.37], passive and ex-smoker [OR=10.23, 95% ECL: 3.14-52.46 and OR=2.49, 95% CI: 1.4-4.44; respectively], alcohol use [OR=4.34, 95% ECL: 1.06-20.68], low physical activity [OR=2.03, 95% CI: 1.17-3.52], and poor genital hygiene [OR=2.36, 95% CI: 1.34-4.15].

Discussion

The association noticed between cervical cancer and low socioeconomic level likely relates to poor cervical screening attendance and unhealthy life style. Income and education influence the access to proper early detection and treatment of precancerous conditions [6]. Health care disparities arise from a complex interplay of economic, social, and cultural factors [13]. Further, socioeconomic factors influence other risk factors for cancer like tobacco use, poor nutrition, physical inactivity, and obesity. Usually, poor and minority communities are targeted by the marketing strategies of tobacco companies, and they also may have limited access to healthy nutrition, or recreational physical activity [6].

In the present study we showed low education and occupation levels are significant risk factors. Health problems of women from low resources settings are often linked to excessive workload along with a low level of education [6]. Also, percentage of incident cervical cancer cases in the UK in 2010 due to occupation was 0.7% [4]. On the other hand, a lower risk was associated with higher level of education; 7.3% and 23.7% of patients have a low and high level of education, respectively [6].

In the current study we cleared low socioeconomic level is a significant risk factor. Cervical cancer is more common in poor people with low socioeconomic class than in the high socioeconomic. Low socioeconomic status may exert its effect through poor sexual hygiene, multiparity, or early age of first coitus. The incidence by at least of 3-fold was occurring in the wives of the lower social classes [14]. In the US, Hispanic women are most likely to get cervical cancer, followed by African-Americans, Asians and Pacific Islanders, and whites [3]. Our result is agreement with Irimie et al. [6]; 33.3% of patients had a poor economic condition and only 20.0% of them had good socioeconomic status. Also, 7.3% and 23.7% of patients have a low and high level of education, respectively. On the other hand, Mhaske et al. [15] reported socioeconomic status was found to be statistically non-significant.

In the present study we showed old age is a significant risk factor. Cervical cancer tends to occur in midlife. Most cases are found in women younger than 50 years. It rarely develops in women younger than 20 years. Older women do not realize that the risk of developing cervical cancer is still present as they age. More than 15.0% of cervical cancer cases are found in women over 65 [3]. In Egypt, prevalence of the disease is very low for those below 35 years but significantly increase above that age [16]. Also, Irimie et al. [6] cleared the mean age in their patients was 49.96±11.74 with range 23- 74 years.

In this study we observed rural residence is a significant risk factor. In Egypt there is still persistent gap regarding socioeconomic status between rural and urban settings. The inhabitants from rural areas facing large problems of poverty and a more difficult access to health care services. Irimie et al. [6] showed 66.7% of their cervical cancer patients were residents in rural area.

In the current study we reported early age at marriage, premarital sexual practice, non-circumcised partner, and ≥3 lifetime sexual partners were significant risk factors. Our results consistent with Herrero et al. [17] and Piper [5]; they cleared young age at first intercourse and high numbers of sexual partners have consistently emerged as significant risk factors for cervical cancer. However, these appear to be linked with sexual behavior and the acquisition of HPV; none being consistently shown as a significant independent risk factor [18]. Also, Piper [5] reported the association between cervical cancer and early age at first intercourse as biological activity in the cervical cell is at a maximal level during adolescence. Further, Spriggs [19] assumed; firstly cell might be more susceptible to carcinogenic transformation by early coital experience and secondly the multiplicity of sexual partners. Furthermore, epidemiological studies show that there is a strong correlation with multiple partners. Also, the result of this study is compatible with Reid et al. [7]; they proposed sperm act as the carcinogen in cervical cancer. They found two basic types of

Life style risk factors	Patients (n=86)		Controls (n=200)		OR* (95% CI)** OR (95% ECL)***
	No.	%	No.	%	
Low fruits and vegetables intake					
Yes	42	48.8	17	34.0	7.04 (3.48-14.37)
Tobacco smoking					
Never smoke	18	20.9	92	46.0	0.31 (0.16-0.58)
Passive smoker	83	96.5	146	73.0	10.23 (3.14-52.46)*
Ex-smoker	61	70.9	99	49.5	2.49 (1.4-4.44)
Current smoker	7	8.1	9	4.5	1.88 (0.61-5.75)
Alcohol use					
Yes	7	8.1	4	2.0	4.34 (1.06-20.68)*
Physical activity					
Low	42	48.8	64	32.0	2.03 (1.17-3.52)
Genital hygiene					
Poor	39	45.3	52	26.0	2.36 (1.34-4.15)
Negligence of initial symptoms:					
Yes	84	97.7	182	91.0	4.15 (0.96-37.6)*
History of Pap smears testing:					
No	85	98.8	194	97.0	2.63 (0.31-122.32)*
*Odds ratio. **Confidence intervals. ***Exact confidence limits.					

Table 5: Distribution of females with cervical cancer and control group according to the life style risk factors.

protein; histone and protamine in the ejaculate of human sperm. They believe that these basic proteins found in the sperm head particularly the protamines; might have a role in the etiology of cervical carcinoma. They showed in tissue culture that sperm can actually penetrate normal mammalian cells particularly cervical metaplastic epithelium. While, Harris et al. [20] clarifies the well-known correlation with early age at first coitus and at first pregnancy have been disappear when correction is made for the number of partners. Further, more than 40.0% of patients have become sexually active before the age of 18, and 66.7% and 33.3% of patients had one and >1 sexual partners, respectively during lifetime. The majority of patients' life partners had affirmatively multiple partners during lifetime, which increases the risk of acquiring HPV infection [6]. A significant association between age at marriage (<17 years) and age at first childbirth (<20 years) and cervical cancer was reported [15]. Lastly, regarding circumcised partners, Spriggs [19], noticed cervical cancer might be induced by smegma, lake of hygiene or by some mutagenic factor in sperm head. Male circumcision is an Islamic tradition among Egyptians; all Muslims and majority of Christian's follow.

In the present study we illustrated age at first full term labor, ≥4 parity, vaginal delivery, OCs use, and ≥5 years OCs use were significant risk factors. Our results consistent with Dutta et al. [21]; they cleared relative risk of acquiring disease was 6-fold more in cases of women who had first parity before age 18 years compared to those who had first parity after the age of 18 years ($p<0.001$). Also, Mhaske et al. [15] noticed, among women with cancer, 19.2% had their first child before 20 years of age and 9.5% ≥20 with statistically significant difference. Meanwhile, we observed high parity (≥4) is significant risk factor for cervical cancer. High parity had consistently emerged as significant risk factor for cervical cancer [17]. The association was strongest for women with seven or more full term pregnancies [22]. Also, significant association between high parity (>4) and cervical cancer was reported [15]. Further, our result agrees with Skegg et al. [14] and Munoz [22]; they reported a significant association between high parity and increased risk of cervical cancer. Also, Irimie et al. [6] showed 37.5% of their patients had ≥3 childbirth. In the present study, we reported OCs usage is significant risk factor for cervical cancer. Oral contraceptives (OCs) has been shown to increase the risk of cervical cancer, some epidemiologic studies have suggested an increased risk or a shorter time of transition from dysplasia to carcinoma in situ [6]. Our finding is in agreement with Vessey et al. [23], they suggested OCs usage might encourage sexual promiscuity and increase the exposure to carcinogenic agents but they also commented that the mitotic inhibitory effect of oral OCs on the cervical epithelium may offset this. On the other hand, our result does not agree with Valents and Hanjani [24]; they reported OCs has not been shown clearly to increase the risk of cervical cancer. While, evidence showed that long-term use of oral contraceptives (≥ 5) may be associated with an increased risk of cervical cancer [25]. Also, a review of the research has shown that women positive for HPV who have been used OCs for ≥10 are 2.5-fold as likely as never- users to develop cervical cancer [26]. Further, HPV positive women who had ever used OCs were 1.5-fold more likely to develop cervical cancer than controls. Women who used OCs for 5-9 years had significant association with cervical cancer [27]. Endocervical adenocarcinoma has been also associated with OCs in a number of patients, especially those with prolonged used [28]. Also, 10.0% of cervical cancer cases linked to the use of OCs in UK [4]. Further, 31.4% of patients in a sample in Romania have used OCs, but no one of these patients used for a longer than 5 years period of time [6].

In the current study we cleared vaginal delivery is risk factor for cervical cancer. This agrees with Skegg et al. [14] and Mustafa [29]. These women were exposed to more cervix trauma during normal vaginal delivery especially multipara women with low socioeconomic class.

In this study we clarify history of Sexually Transmitted Diseases (STDs) is risk factor for cervical cancer. Cancer Research UK [4] reported percent of incident cervical cancer cases in the UK in 2010 due to STDs was 1.0%. Also, 10.0% of cervical cancer cases linked to HPV infection in. HPV is classified as a cause of cervical cancer [30]. All cervical cancers in the UK are linked to HPV [31]. HPV infection is common, but it progresses to cervical cancer in a minority of cases [32]. Around 12.0% of women without cervical abnormalities in the UK and Ireland are infected with high-risk HPV types [33]. Fewer than 10.0% of persistent HPV infections progress to carcinoma in situ [34], which left untreated, can progress to cervical cancer [32]. Cervical cancer risk is higher in women with Genital Warts (GWs) versus those without; though GWs are usually caused by low-risk HPV types, co-infection with high-risk HPV types is likely [35]. Meanwhile, in this study trichomonas infection is significant as risk factor for cervical cancer. Our result agrees with De Carneri [36], who reported cervical cancer and precancerous state are more frequent in women with trichomonasis. The role of trichomonasis has been emphasized by the presence of significantly higher antibody titer against trichomonas vaginalis in patients with cervical carcinoma. On the other hand, our result not agrees with Mustafa [29].

In the current study we cleared obesity is risk factor for cervical cancer. Obesity has been found associated with cervical adenocarcinoma. It appears that through its hormonal actions, obesity might play a role in cervical adenocarcinoma pathogenesis; adipose tissue being an active endocrine and metabolic organ with possible far-reaching effects on the physiology of other tissues [37]. Also, a strong, graded, inverse relationship between BMI and the likelihood of undergoing screening for cervical cancer was demonstrated [38]. Obese women tend to delay medical care, especially Pap smear screen, as a result of a negative self-perception, associated with embarrassment, or because wanting to avoid weight loss advice [39]. Obesity represents not only a risk factor, but also may affect prognosis through numerous pathways, including associated adverse disease features, co morbidities that can interfere with treatment, hormonal influences, and other mechanisms [6].

In the present study we noticed positive cervical cancer family history is risk factor. It is well recognized that cancer aggregated in families, first degree relatives of a cancer patient having an increased risk of same or different site cancers. For some cancers it was noticed a 2-3 fold increase in risk for those with a positive family history as against general population [40], but it is not yet clear if the risk associated with family history of cancer is due to a genetic susceptibility, or to shared environmental and life style influences [41]. It has been documented that women with a family history of cervical cancer, especially in first degree relatives, have a 2-fold risk of developing cervical cancer, suggesting an inherited susceptibility [42]. A positive familial history of cervical cancer was found among 13.3% of the patients; the youngest patient had a positive cervical cancer history in a first-degree relative (mother) [6].

In this study we found smoking represent significant risk factor for cervical cancer. This result is in agreement with Lyon et al. [43]; they cleared increased risk of cervical cancer among smokers compared with non-smokers. Also, the mechanism by which cigarette smoking leads to increase risk of cervical neoplastic is not known. It may act independently or may promote neoplastic transformation by

interfering with normal host defense mechanisms. Further, Brintion et al. [44] showed cotinine, micotione, and other mutagens are found in cervical mucus of smokers, which could support a direct carcinogenic effect.

In the current study we cleared no Pap screen is risk factor for cervical cancer. Patient who unawareness of symptoms or neglect initial symptoms like leucorrhoea, post-coital bleeding, etc and lack adequate screening facilities is at risk for increased incidence of cervical cancer [11]. Cervical cancer rarely occurs in women who have been getting regular tests to screen for it before they were 65 [3]. Data document a very low rate of participation in cervical screening programs; 61.1% of patients had never been screened for cervical cancer. Patients who reported being screened annually or at two years interval were: younger ages, lean, residents in urban area, high level of education, and good socio-economic status [6]. Further, we found poor intake of fruits and vegetables is risk factor for cervical cancer. Health problems of women in developing countries are often linked to nutritional deficiencies [6].

This result is in accordance with Schiffman et al. [10]; they stated lack of some nutritional factors like beta-carotene, vitamin C, and low intake of fruits increased the risk of cervical cancer. Also, we observed poor personal sexual hygiene is significant risk factor for cervical cancer. Our result is agreed with WHO [8] and Skegg et al. [14]; showed the same finding.

Conclusions and Recommendations

Significant sociodemographic risk factors were low education and occupation, and age ≥50 years. Significant sexual behavior risk factors were premarital sexual practice, practice with STDs symptomatic partner, none circumcised partner, and ≥3 life time sexual partners. Significant gynecological and reproductive risk factors were age at marriage <18, age at first full term labor <20, multiparity >5, vaginal delivery, and OCs usage. Significant medical and family history risk factors were obesity, history of STDs, and positive family history of cervical cancer. Significant life style risk factors were low intake of fruits and vegetables, passive smoker, alcohol use, and poor genital hygiene. To identify the public health importance of cervical cancer in Egypt, more studies are needed; large community based studies with larger samples. More studies should be conducted on big number of patients in different areas to understand the true epidemiology and situation of cervical cancer in Egypt and to doubling of efforts to address high-risk groups. Also, the need for a national prevention and control program, the integration of screen services into health facilities that women use.

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