ORIGINAL RESEARCH ARTICLE

Prevalence of cervical cancer in Ain Defla region (Algeria)

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Abstract

The high rate of cervical cancer in Algeria and the absence of organized screening programs are well shown in this study, which aims to determine the prevalence of cervical cancer and describe the risk factors associated with this alarming prevalence. This retrospective study is based on data collected from medical records and A questionnaire was developed to assess the risk factors (such as: parity, age at first marriage, smoking, oral contraceptive, and Hormonal status) of cervical cancer among the participants. Face to Face interview were conducted with the participants. The result obtained from this study revealed that cervical cancer occupies the fourth place of cancer in the Wilaya of Ain Defla (4,71 %); the results confirm the effect of several risk factors such as early marriage age (below 20 years: 46.66 %), multiparity (53.33%), menopause (66.66 %); taking contraception (53.33%) and smoking in the development of this pathology. The adoption of an early and annual screening program in our region would be very important to us. In addition, the interest of annual screening is to raise women's awareness of this pathology, particularly in isolated regions. *(Afr J Reprod Health 2022; 26 [11]: 15-22).*

Keywords: Cervical cancer, risk factor, epidemiology, prevalence, Algeria

Résumé

Le taux élevé de cancer du col de l'utérus en Algérie et l'absence de programmes de dépistage organisés sont bien mis en évidence dans cette étude qui vise à déterminer la prévalence du cancer du col de l'utérus et à décrire les facteurs de risque associés à cette prévalence alarmante. Cette étude rétrospective est basée sur des données recueillies à partir de dossiers médicaux et un questionnaire a été élaboré pour évaluer les facteurs de risque (tels que : la parité, l'âge au premier mariage, le tabagisme, la contraception orale et le statut hormonal) du cancer du col de l'utérus chez les participants. Des entretiens en face à face ont été menés avec les participants Les résultats obtenus de cette étude ont révélé que le cancer du col de l'utérus occupe la quatrième place des cancers dans la Wilaya d'Ain Defla (4,71 %) ; les résultats confirment l'effet de plusieurs facteurs de risque tels que l'âge précoce du mariage (moins de 20 ans : 46,66 %), la multiparité (53,33 %), la ménopause (66,66 %) ; la prise de contraception (53,33%) et le tabagisme dans le développement de cette pathologie. L'adoption d'un programme de dépistage précoce et annuel dans notre région serait très importante pour nous. De plus, l'intérêt d'un dépistage annuel est de sensibiliser les femmes à cette pathologie, notamment dans les régions isolées *(Afr J Reprod Health 2022; 26[11]: 15-22).*

Mots-clés: Cancer du col de l'utérus, facteur de risque, epidémiologie, prévalence, Algérie

Introduction

Cervical cancer is the fourth most common cancer in women, and the seventh overall, with an estimated 528,000 new cases and 266,000 deaths in 2012[1]. Almost 87 % of cervical cancer deaths occur in less-developed regions of the world. The cervical cancer incidence significantly increases after 20 years and peaks in the 50 -55 age group. Cervical cancer mainly affects African women at a relatively young age, the socio-economic consequences are enormous[1]. Cervical cancer (CC) is a cancer model with the characteristic of presenting as a precancerous, asymptomatic lesion for many years before progressing to invasive cancer[2]. Tenacious infection of the cervical mucosa with human

papillomavirus constitutes a necessary condition to provoke cervical cancer and these precancerous lesions[3]. Although the incidence rate of cervical cancer in Algeria is increasing year by year, the mortality rate is increasing due to the lack of widespread early screening and medical therapies. The objective of this study - strictly limited to the region of Ain Defla - is to provide a prevalence of cervical cancer in Algeria according to demographic characteristics. In addition, we examined the relationship between this prevalence and these risk factors such as parity, age of first marriage, smoking, and oral contraceptive.

Methods

Study design

This study is a retrospective descriptive epidemiological study carried out over a period from January 2016 to March 2019 deals with the estimation of the prevalence of cervical cancer in the region of Ain Defla. This study was reviewed and approved by the Ethics Committee of the Hospital of Chlef and Ain Defla

Data collection

Data from medical records were collected on the following: Prevalence of cervical cancer with other cancers, year, age group, and lesion type based on registers and medical records at the level of the public health department. The Factors associated with the prevalence of cervical cancer concern a transversal survey elaborated from the questionnaires intended for cancer patients on the risk factors associated with this prevalence.

Statistical analyses

Data admission and analysis were conducted with the R STUDIO software, results are presented in value and percentage for qualitative variables and in average for quantitative variables.

Results

Epidemiological study of cervical cancer

Prevalence of cervical cancer with other cancers

According to the obtained results (Figure 1), cervical cancer occupies the 4*t*h place with a percentage of (4.74%), of all cancers spread among women, in the department of oncology from January 2016 to March 2019.

Prevalence of cervical cancer by the year

Cervical cancer increased in the year 2018 (Figure 2) (33.23 %) compared to the years 2016 and 2017 (26.66 %).

Prevalence of cervical cancer by age group

Our results (Figure 3) show that the most affected age group is between 45 to 50 years, and they represented (26.66 %), followed by 50 to 55 years with 20.00 %, with extremes of age 38 and 97 years with an average of 54.4 years.

Prevalence of cervical cancer by lesion type

In this study, we have found that the majority of patients (80 %) have squamous cell carcinoma of the cervix (SCC) (Figure 4A). However, 20 % of patient samples have adenocarcinoma.

Association of risk factors with cervical cancer

Parity

In this study, we have found a decrease in the incidence of cervical cancer among the number of pregnancies. The subgroup of large multiparous women was the most representative in our study (53.33 %), while the subgroup of nulliparous women was the most reduced (6.66 %) (Figure 4.B).

Age at first marriage

In our study population (Figure 4.C), we have found a decline in the incidence of cervical cancer regarding the age of marriage. The largest proportion, 46.66 %, represents women whose age at first marriage is less than 20 years (early age of marriage), while women married between the ages of 20 and 25 years represent a relatively high rate, 33.33 %. Only 20 % of women married after 26 years of age.

Oral contraception

Patients using oral contraceptive (OC) (Figure 4.D) methods represent (73%) of our study population, while those not using had represented (27 %).

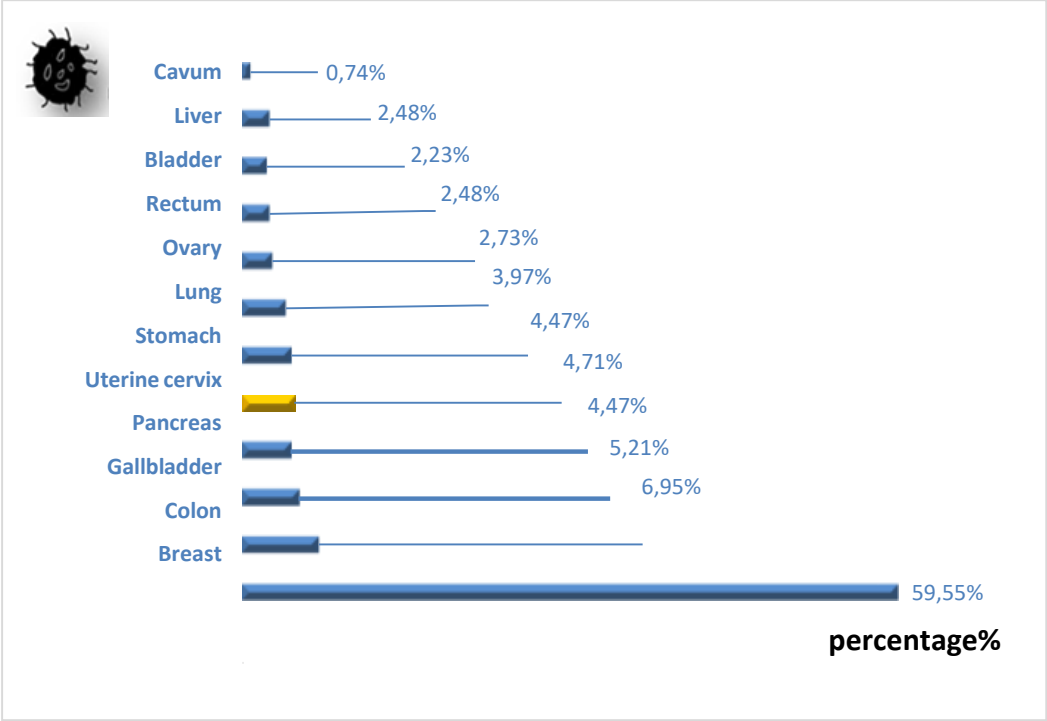

Figure 1: Place of cervical cancer with other cancers

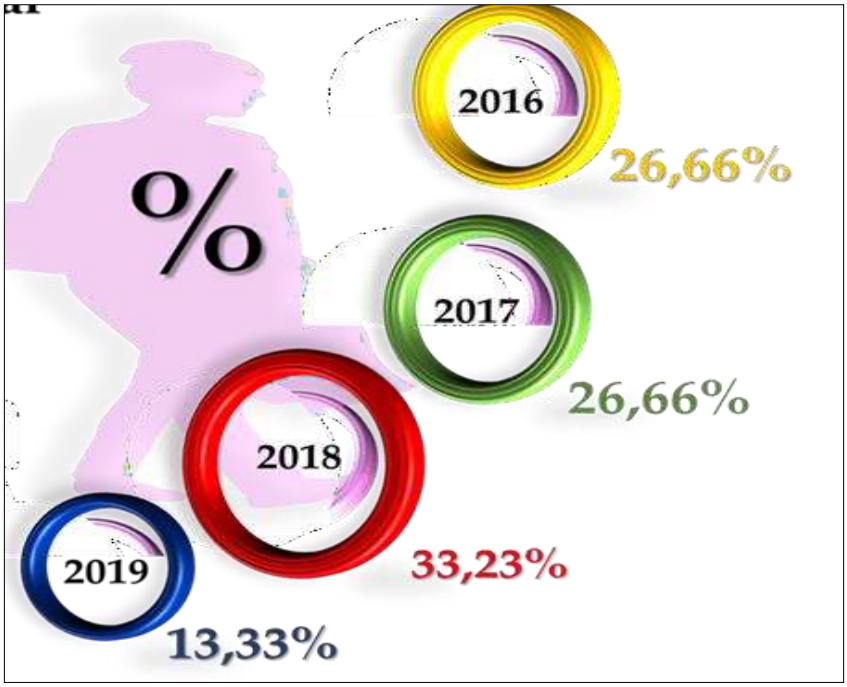

Figure 2: Prevalence cervical cancer by the year 2016-2019

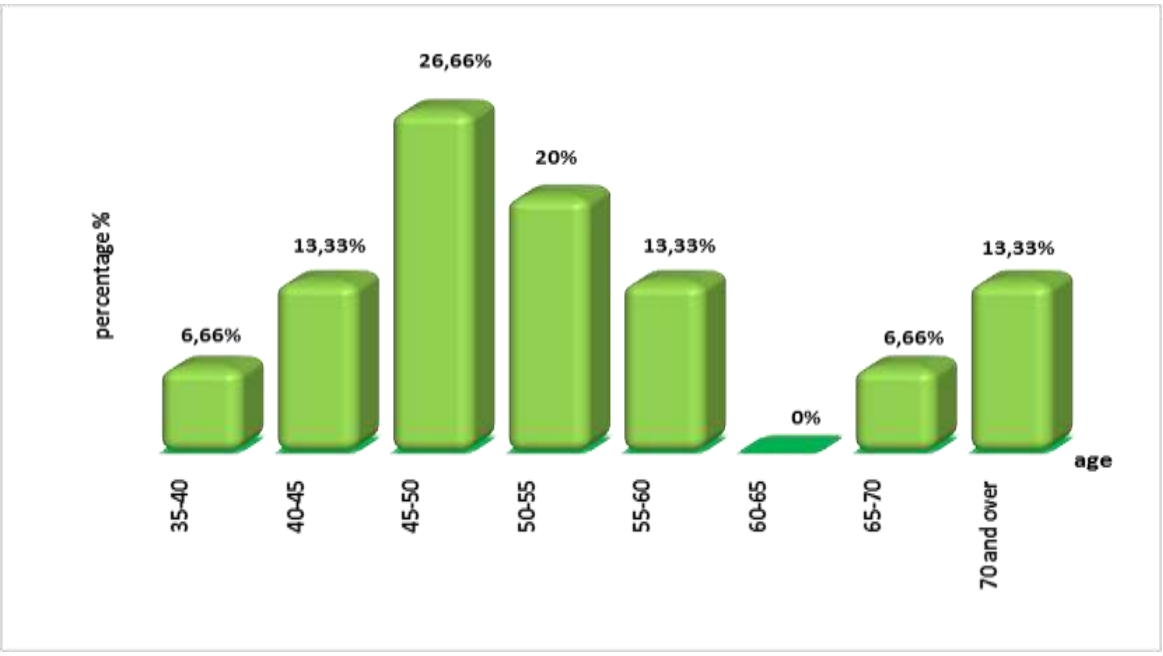

Figure 3: Distribution of the population of the study by age group

Hormonal status

Among the patients who participated in our study, 66.66 % of the women are menopausal, whereas non-menopausal women represent the remaining portion (33.36 %).

Smoking

In our sociocultural context, smoking is still very uncommon among women (0.00 %), in our study this notion has not been found (Figure 4.E).

Discussion

In this retrospective study carried out in the Ain Defla region, we have found that cervical cancer occupies the fourth place with a percentage of 4.74%. The overall prevalence of cervical cancer in Ain Defla was only 2018 of 33.23%, with the age range most affected at 45 to 50 years.

In Algeria, cervical cancer is ranked second in terms of incidence after breast cancer. The increased prevalence of cases in Algeria was justified by several risk factors[3,4], such as the lack of prevention through screening resulting in the main cause. Hence, more than half of Algerian women have been diagnosed their cancer very late, at an advanced stage of the disease, when cancer has already spread to the entire female reproductive system or further.

Our results are consistently equivalent to those obtained by Pigneux5, therefore, they are higher than those observed in other Maghreb countries, which average age is 46 years with a maximum between 45-54 years[6]. The relationship between age and postmenopausal in increasing cervical cancer rates may be less well protected by screening than are younger women. This may be due to age-related biological differences in the natural history of cervical cancer such as a shorter pre-invasive phase and/or compromised sensitivity of the cervical smear due to physiological changes of the cervix associated with age[7]. Another study conducted by Fritih *et al*.[8] has found an average age of 54 years with extremes of 32 and 98 years. Women between the ages of 40 and 54 are the most affected, at 44%. However, the increased rates of cervical Squamous cell carcinoma SCC or adenocarcinoma were higher notably in group 40-49 years[9].

The predominance of squamous cell carcinoma compared to adenocarcinoma represent a proportion of 80% to 90% for squamous cell carcinomas and 10 % to 20% for adenocarcinomas. This increase was reported essentially among young women. It could be explained, in part, by the decrease in squamous cell carcinomas whose precancerous lesions are better detected by the smear cervical[10]. In our series, 53.33 % of

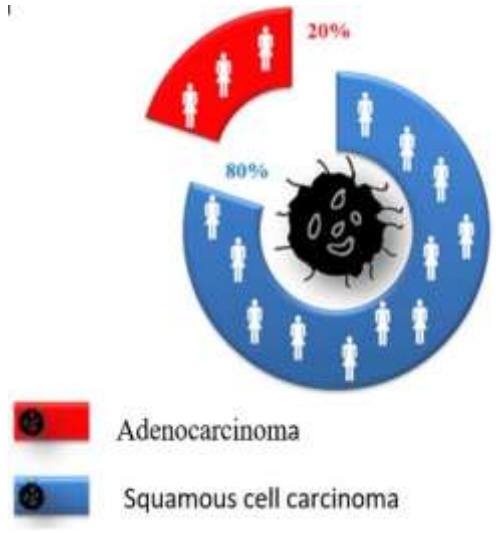

Figure 4.A: Distribution of patients by type of cervical cancer

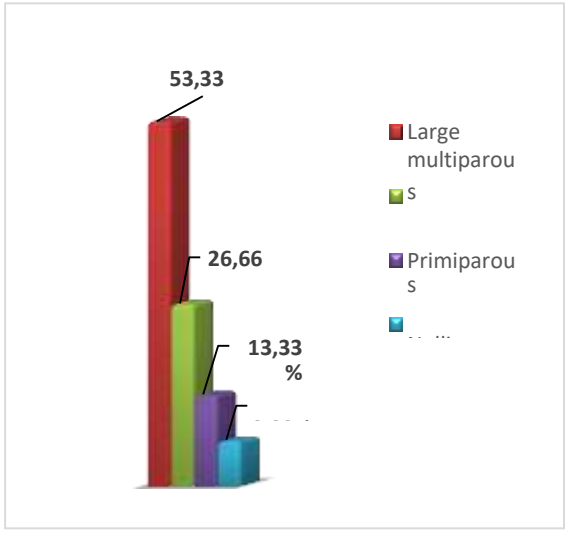

Figure 4.B: Distribution of patients by parity

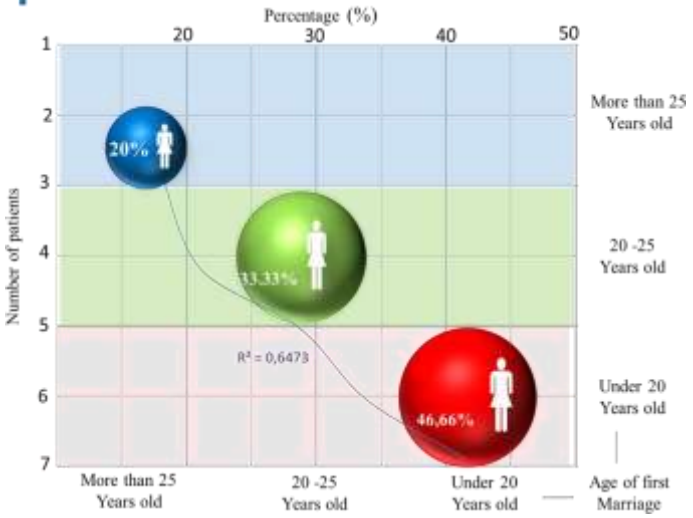

Figure 4.C: Distribution of patients by age at first marriage

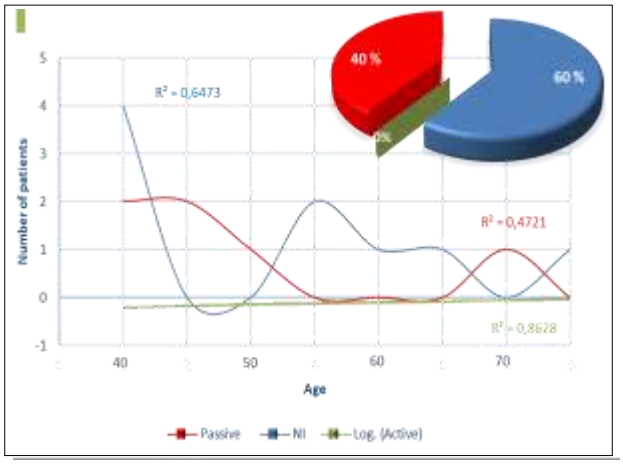

Figure 4.D: Distribution of patients by oral contraception

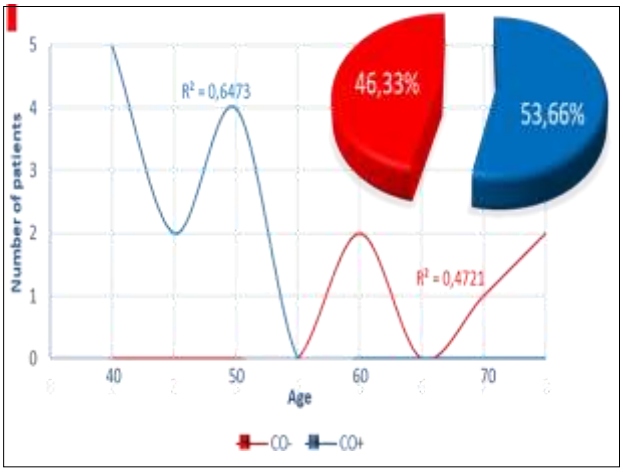

Figure 4.E: Distribution of patients by smoking status

Figure 4: Prevalence cervical cancer the risks factor

patients were large multiparous with parity (to 6 pregnancies). Therefore, these results are consistent with those described by Sahraoui *et al*.[11] which multipartyism was noted in 53 % of cases. Moreover, results are higher than those reported by, the large multiparous constituted 63.37 %, followed by the multiparous represented 19.37 %. Many studies reviewed that high parity and poor genital hygiene conditions were the main co-factors for cervical cancer in the population with prevalent Human papillomavirus (HPV) infections. Therefore, the role of persistent infection with oncogenic types of HPV in the etiology of cervical cancer has encouraged the evaluation of HPV testing as a screening tool[12]. In addition, Nulliparous women were at lower risk of squamous-cell carcinoma of the cervix than parous ones, and among parous women, a vibrant increasing risk with an increasing number of full-term pregnancies emerged. However, the decline in risk is mainly attributable to adjustment for age at first intercourse, the number of full-term pregnancies, and first full-term pregnancy[13].

Age under 20 years at first birth increased the risk of CC and CIN3 especially in premenopausal GM women while increasing parity had no effect. There are several pregnancy-induced cervical changes, which may predispose to malignant transformation[14]. Multiparity may increase the risk of CC by maintaining the transformation zone on the ectocervical region.
More- er, the number of squamous metaplastic cells in the transformation zone increases during pregnancy. In their immature phase of development, the metaplastic cells are most susceptible to HPV infection and possibly later to progression to CC. The metaplastic transformation zone in the ectocervix of a high multiparity woman will repeatedly be exposed to carcinogenetic agents. For this reason, multiparity may intensify the actions of carcinogenic infectious agents[14].

Women who have 3 or more pregnancies were 3.94 times more likely to have cervical cancer. On one hand, this research was relevant to the research conducted by, and this study has shown significant results with p= 0.008. On the other hand, this study has shown that the number of children≥ 3 in cervical cancer patients reached 37.5 %. The large proportion of children leads to high parity which increased the risk factors for cervical cancer[15]. Our observations are consistent with[16], studies that have found an early marriage rate in 50% of their series (age below 20 years), and lower than the result s of[17], he found early marriage rate (before 20 years) in 89 % of their series.

These observations lead to the conclusion that early sexual activity significantly increases the risk of cervical cancer. Since the adolescent cervix is both more exposed to infection and more vulnerable due to: physiological eversion of the glandular mucosa (monolayer epithelium more exposed to breaches allowing virus entry), and local cellular and humoral immunosuppression in the adolescent[3].

Our results are comparable with those reported in the study of Bannour *et al*.[18] which indicated that the proportion of menopausal women was 57 %. The increase in the proportion of postmenopausal women in our study population could be explained by the relatively late age of diagnosis of this pathology. In addition, the risk of cervical cancer is 3.43 times higher in women users of oral contraceptives for more than 5 years, accordingly, the study of Yokoyama *et al.* and Smith[19,20] have reported that women who used oral contraceptives inferior 5 years and had 4 times higher risk of invasive cervical cancer and more than 3 times higher risk of developing insitu carcinoma. This relies on histological changes occurring in the cervical epithelium and immunological changes that increased sensitivity to viral factors, and oral contraceptives induced mucus secretion that facilitated the entry of mutagens 2021.

In our socio-cultural context, smoking is still very uncommon among women (0.00 %), in our study this notion has not been found, Passive smoking has been studied more recently: cotinine is also found in the cervical mucus of women exposed to passive smoking. It is observed that women married to smokers have higher rates of cervical cancer, with a relative risk adjusted for sex life and screening in the range of 1.5 to 222. The smoking status, duration, and intensity were associated with a 2-fold increase in the risk of cervical intraepithelial neoplasia of grade 3 (CIN3)/carcinoma in situ (CIS) and invasive cervical cancer (ICC)[23].

A direct oncogenic effect of benzopyrene, a chemical carcinogen from tobacco, is enhanced HPV synthesis of cervical cells which might lead to viral persistence. Genome amplification could

result in increased copies of oncogenes E6 and E719. Smoking causes the inactivation of glutathione S-transferases, detoxifying an activated form of the carcinogen in epithelial tumor cells 33,34 % Cell-mediated immunity against HPV infection was also suppressed by smoking. 17,35 % Smoking has been correlated with a decrease in the numbers of Langerhans cells and helper/inducer T lymphocytes in the squamous epithelial transformational zone of the cervix17. Langerin, a protein found in Langerhans cells, can scavenge viruses from the surrounding environment, thereby preventing infection[24].

Feng *et al.*[25] stated that high exposure to the smoking environment was slightly associated with a higher risk of HPV infection. Passive smoker with life time exposure to more than 20 packs of cigarettes per year has 7.2 times higher risk of HPV infection. The relationship between cigarette and cancer of cervical have focused on carcinogens related to tobacco including nicotine, cotinine, benzo (a) pyrene, 4- (methylnitrosamino) -1- (3-pyridyl) -1-butanone[26].

Conclusion

This study shows that cervical cancer is an important problem of female reproductive health, especially in developing countries where it constitutes the major cause of death. Moreover, it focused on the epidemiology of cervical cancer on the one hand and its risk factors on the other. In light of this work, cervical cancer occupies the fourth place among the other types of cancer by a ratio of 33.23%. It affects women between 38 and 97 years of age, with a marked increase in frequency in women aged 45 to 50 years. OC use, multiparity, early marriage age, and smoking acted synergistically to increase the risk of cervical cancer in Algerian women. Therefore, it is important to educate women about risk factors of cervical cancer. Proper diagnosis and early treatment are imperative to stop the progression of cancer. There is a need to make the general population aware about the risk factors of cervical cancer, and proper screening should be done to prevent the development of cervical cancer. Proper campaign and programs should be organized in rural areas toward the same end.

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Conflicts of interest

The authors declare they have no conflicts of interest.

Authors' contribution

AL conceived, designed and did statistical analysis & editing of manuscript AL. RA, M O Kh, MA CH data collection and manuscript writing AL, RA, A Z M O Kh, M A CH did review and final approval of manuscript.

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