



# Does the Modern Lifestyle Favor the Development of Cervical Cancer?

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## Abstract

Persistent infection with a high-risk human papillomavirus (HRHPV) is generally accepted as a necessary cause of cervical cancer. Modern lifestyle may represent the most influential factor considering persistent genital human papillomavirus (HPV) infection in women. Due to the contemporary clothing and use of toilet bowl, the female micturition is usually performed in sitting position with fully adducted thighs. The resistance to the urine flow due to clenched *Labia maiora* and *Labia minora* and capillary pressure among the folded walls of the vagina may cause an abnormal ascension of the urine into the vagina. Urine is an excellent cultivating medium for many microorganisms, including HPV. Education to adequate way of micturition in young girls might be a simple way to significantly reduce the likelihood for a persistent HRHPV infection, by eliminating conditions suitable for growth of virus.

## Keywords

Modern Lifestyle, Human Papillomavirus, Cervical Cancer

**Subject Area:** Gynecology & Obstetrics

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## 1. Introduction

Cervical cancer is the second most common cancer in women worldwide. There are about 60,000 newly detected cases and 30,000 deaths annually in Europe [1]. About 50% are diagnosed in women between 35 and 55 years of age. Cervical cancer is one of few malignancies with identified etiological factor and known way of development. Sex at a young age, multiple sexual partners, promiscuous male partners, and history of sexually transmitted diseases are major risk factors. Persistent infection with a HRHPV is generally accepted as a necessary cause of cervical cancer [2]. This virus is present in more than 99.7% of cases of squamous-cell carcinoma of the cervix, and the remaining 0.3% may be associated with unknown type of HPV [3] [4]. Population-based cervical screening programmes have been shown to be effective in reducing morbidity and mortality from cer-

vical cancer [5]. High parity increases the risk of squamous-cell carcinoma of the cervix among HPV-positive women. A general decline in parity might therefore partly explain the reduction in cervical cancer recently seen in most countries [6]. Chronic genital infections, hormonal and immunological alterations, other sexually transmitted diseases, contraceptives and smoking are other important factors for the development of this neoplasm [7]. It was estimated that the 2004 direct medical costs associated with HPV infection and treatment approached \$ 4 billion in the United States [8]. Attempts of primary prevention of cervical cancer through reduction of HPV infections by propagation of proper sexual behaviour and use of condoms have limited efficacy. At present the most effective forms of cervical cancer primary prevention are prophylactic vaccines [9].

The question is whether modern habits as a result of the modern lifestyle can favor a persistent HPV infection and lead to an overt cervical carcinoma.

## 2. Hypothesis

My hypothesis is that modern lifestyle may represent the most influential factor considering persistent genital HPV infection in women. For many thousand years women have been urinating in a crouched position with their thighs spread. In this position the external urethral orifice was free and the urine flow was unobstructed. On the modern toilet bowl woman take their pants and under wear down to the knees and urinate in sitting position, with fully adducted thighs. It is the worst possible voiding position in women. Depending on body mass index the distance from the urethral orifice to the free space is in this position about 2 - 8 cm. There is not only the resistance of the clenched *Labia maiora* and *Labia minora* to the urine outflow that causes urine leakage into the vagina, but the capillary pressure between the folded walls of the vagina also favors the ascent of urine in the vagina. In seldom extreme cases, as in a 12-year-old female patient with urinary pseudo incontinence due to an urocolpos, shown in **Figure 1**, the vagina can be totally filled with urine. Following the advice to widely spread the thighs during voiding the girl became dry.

Urine is an excellent cultivating medium for microorganisms, including HPV. Asymptomatic bacteriuria in women is mostly the consequence of a secondary contamination of urine with vaginal bacteria. Modern women are usually careful in proper genital hygiene, most of them generally taking a shower and only rarely bathe in a tub.



**Figure 1.** Mictionscystourethrography of a 12-year-old girl with urocolpos and urinary pseudo incontinence.

Most common factors associated with the presence of highrisk HPV in men include lack of circumcision, younger age, more lifetime sex partners, higher frequency of intercourse (especially with prostitutes), and history of intercourse without condoms. These men place their current female sex partners at greater risk for cervical carcinoma caused by transmission of HPV infection. The degree of genital hygiene, level of education, and smoking status in both male and female partners may also have a role in HPV transmission and survival [10]. Lack of circumcision means the presence of awetchamberunder theforeskin that favors HPV growth. Most commonly isolated in men are HPV types 6 and 11, to which are related approximately 90% of condyloma acuminata. In resistant or repeated condyloma acuminata a circumcision is performed with the goal to achieve a dry condition of the glans penis toeliminate conditions suitable for growth of HPV.

Some authors think that the incidence of cervial cancer in Arab countries is lower than that in the Western countries due to the fact that muslim men are all circumcised, but it will be more likely that it is due to the widespread use of the squat toilet where the women is forced to spread the thighs.

### 3. Conclusions

Most doctors are fixed on evidence based medicine, often forgetting to take into consideration some very simple and logical solutions to the problems. The aim of this paper is to encourage the colleagues to start research about it, because until today no one mentions this specific female modern life style problem. It is well known that some physical, chemical and biological agents have carcinogenic effects. The exposure to these agents can be intentional, like in smoking cigarettes, or unintentional, like the exposure to color solvents in dye workers. The exposure to HRHPV infection is obviously difficult to avoid, but there can be a simple way to significantly reduce the likelihood for a persistent HRHPV infection, by eliminating conditions suitable for growth of the virus.

Based upon the foregoing, the conclusion might be that an appropriate behavioral change in women could reduce the risk for cervix cancer. It means that young girls should be educated for correct micturition, with their thighs spread and take more often a bath in tube, or perform a flush of the vaginawith a mild disinfectant solution, *i.e.* an neutral intimate shampoo. This could be an important step forwards in cervical cancer prevention.

### Conflicts of Interest Statement

None declared.

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