

## Research Article

# Effect of an Alternative Educational Strategy in the Knowledge of Human Papilloma Virus in Adolescents

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## Abstract

**Background:** Cervical cancer is one of the main threats to the lives of women in the world, although it is easy to prevent and limit its progression once detected. The main problem of this disease is the damage it causes in the families of women who suffer and die, since most are in reproductive and working age, leaving children at young ages or affecting the workforce of developing countries. The Human Papilloma Virus (HPV), is considered the most frequent etiologic agent of cervical cancer in the world.

**Aim:** The purpose of this study is to determine the effectiveness of an educational intervention on the knowledge of Human Papilloma Virus in Adolescents.

**Design and Setting:** Uncontrolled clinical trial, educational intervention before and after.

**Methods:** In 92 patients in the Family Medicine Unit #27, Tijuana, Baja California, an educational intervention was carried out. Six educational sessions were given to adolescents between 14-19 years, each educational intervention lasted 90 minutes; relevant topics for cervical cancer and HPV were addressed. Two measurements of knowledge about cervical cancer and HPV were made, one before and the other after the intervention; the knowledge questionnaire on Human Papillomavirus in Spanish was used to assess knowledge. To determine differences between the knowledge before and after, the Wilcoxon test was used for statistical significance with 95% interval confidence ( $p < 0.05$ ).

**Results:** We analyzed 92 participants who attended all the educational sessions. An increase in knowledge about cervical cancer and HPV after receiving the intervention was found in the global knowledge and in all the categories of the questionnaire.

**Conclusion:** The educational strategy was effective to increase the knowledge of cervical cancer and HPV. Health education is the critical point of primary prevention, the action with the best cost-benefit ratio towards a change in lifestyle that can modify the risks in health.

**Keywords:** Human Papillomavirus; Cervical cancer; Adolescents; Educational Strategy

## Introduction

Cervical cancer is one of the main threats to the lives of women in the world, although it is easy to prevent and limit its progression once detected. The main problem of this disease is the damage it causes in the families of women who suffer and die, since most are in reproductive and working age, leaving children at young ages or affecting the workforce of developing countries [1]. The Human Papilloma Virus (HPV), belonging to the Papillomaviridae family, is considered the most frequent etiologic agent of Sexually Transmitted Infection (STI) in the world; this is a non-enveloped virus with an icosahedral capsid formed by 72 capsomeres with double-stranded circular genome DNA, it is very easy to spread not only sexually, also vertical at the time of birth [2], the common methods of protection for STIs such as the male condom, do not protect beyond the area where they cover [1].

HPV affects epithelial cells in a high rate of replication, the main area of damage is the transitional epithelium of the cervix, affecting the basal cells of the squamous epithelium [2]. Of the more than 100 types of HPV that are known, there are few that are directly related to the development of cervical cancer [1], which are classified as high risk (HR) and low risk (LR) [2]. Among the HR types are types 16 and 18, these two serotypes cause 70% of cervical cancer cases worldwide [1]. LR serotypes are not associated with lesions that develop cancer, but they are related to genital warts and condylomas [2]. HPV, in most cases, is an asymptomatic and transient infection but clinical manifestations include (in addition to cervical cancer) genital warts, condylomas, malignant neoplastic lesions in other areas such as anal cancer, penile cancer, vaginal cancer, cancer of the pharynx and oral cavity [3].

In statistical data, cervical cancer is considered a global disease [4], a common denominator is the scarce economic resource and poor

**Table 1:** Educational intervention sessions.

Session	Topic	Key points
1	Introduction and Diagnostic evaluation	The work team, educational strategy and main objective will be presented. Diagnostic evaluation before the strategy with the "Knowledge Questionnaire on Human Papillomavirus"
2	What is cervical cancer?	Definition of cervical cancer, risk factors and symptoms. Human Papilloma Virus and its relationship with Cervical Cancer, preventive measures
3	The Human Papilloma Virus	Definition of HPV, preventive measures and immunizations
4	Tests for Early Detection of Cervical Cancer	Early detection tests, recommendations and interpretation, premalignant lesions
5	Treatments of the Cervical Cancer	Cervical cancer treatment options, monitoring and prognosis
6	Final evaluation	Final evaluation of the strategy with the "Knowledge Questionnaire on Human Papillomavirus"

education [1]. According to statistical data from the Pan American Health Organization, the regions of Central and South America, East Africa, South and Southeast Asia and the Western Pacific are the main areas of incidence, the common denominator is the lack of economic resources and poor educational level. In 2012 there were 528,000 new cases and 266,000 secondary deaths from this disease, most of them in countries of the regions mentioned above [4]. One of the main risk factors for HPV infection is the age of onset of active sexual life, the younger initiation of sexual life means a high risk of contracting the infection and increases when having several sexual partners, increasing the probability of being infected by multiple serotypes, including those known as HR. It has been previously reported that in populations under 30 years of age, there is a higher prevalence of infection by HR serotypes compared to those older than 30 years [5].

There are currently vaccines that help in the prevention of infection by some of the HR genotypes and it is an incomplete protection, because there are only 2 or 4 of the HR serotypes included in the vaccine [5]. HPV infection also affects pregnancy and has been proposed as a risk factor for spontaneous abortion in some studies [6]. The main risk factors for HPV infection are the early onset of sexual life and low knowledge about its infection and prevention. The Mexican guidelines on HPV recommend primary care physicians to provide health education on the prevention of HPV infection to the population at risk from adolescence [7-8]. In the alternative models on health education there is the "Dialogue of Knowledge", which proposes that the human being is an unfinished individual, in constant training and change. It also establishes that reasoning should be the main tool for knowledge and that bilateral communication is necessary to solve health and social problems. This alternative model mentions that the human being is free, autonomous and responsible for his existence [9-11]. Based on the above, the main objective of this research is to determine the effect of an alternative educational strategy on the knowledge of Human Papillomavirus in adolescents.

## Materials and Methods

An educational intervention study before and after was carried out in the Family Medicine Unit #27, of the Instituto Mexicano del Seguro Social (IMSS), located in Tijuana, Mexico; in patients which were selected by a consecutive sampling techniques; that met the following inclusion criteria: age between 14-19 years, any sex, that accepted and signed an informed consent; patients who did not complete the educational intervention or those with incomplete information were eliminated. The following data were obtained directly from the patients or medical records: age, sex, sexual activity, city of birth, number of sexual partners and level of knowledge about

HPV. The procedure for the data collection was as follows: age was calculated in years according to the year of birth, sex was determined by the phenotype characteristics of each individual, sexual activity, number of sexual partners and city of birth were expressed by each patient in a personal and confidential survey.

The level of knowledge about HPV was evaluated according to the Knowledge questionnaire on Human Papillomavirus in Spanish, which has 16 questions with polytomic answers. This test is validated in Spanish with a Kuder-Richardson Reliability Coefficient of 0.76 [12]. The test has 16 questions divided into two categories: "knowledge about definition, transmission and consequences of HPV infection" and "knowledge about the diagnosis and treatment of HPV infection", 10 and 6 questions respectively; to determine the level of knowledge, the global score is used, which is divided into low knowledge (0-5 points), medium knowledge (6-10 points) and high knowledge (11-16 points). In the category "knowledge about definition, transmission and consequences of HPV infection" the score is as follows: low (0-3 points), medium (4-7 points) and high (8-10 points). In the category "knowledge about the diagnosis and treatment of HPV infection" the score is divided into low (0 points), medium (1-5 points) and high (6 points).

The educational strategy applied in the participants was based on pedagogical aspects alternative to the traditional model, based on the humanistic model "Dialogue of Knowledge". The strategy was composed of seven sessions of approximately 90 minutes each one (Table 1). The educational material is based on the information provided by the Pan American Health Organization on Human Papilloma Virus and Cervical Cancer. The level of knowledge about the topic was evaluated at the beginning and at the end of the sessions.

The recollected data was integrated into data collection sheets and analyzed using the SPSS program version 20 in Spanish, where we applied descriptive statistics; for qualitative variables, frequencies and percentages were used and for quantitative variables, mean and standard deviation were used. For the bivariate analysis, the Wilcoxon test was used to determinate statistically significant differences between the groups before and after the educational intervention. The Kolmogorov-Smirnoff test was used to establish the normality of the data. It was considered a  $p < 0.05$  as statistically significant, with a 95% confidence interval. The Protocol was authorized by the Local Committee of Research and Ethics in Health Research from the Family Medicine Unit #27, where this study took place.

## Results

Of the 92 participants, 56 were men and 36 women (60.9% vs

**Table 2:** Comparison of groups before and after the educational intervention by score and sex.

Variable	High knowledge		Medium knowledge		Low knowledge	
	Women	Men	Women	Men	Women	Men
"Human Papillomavirus Knowledge Questionnaire" Pre-Intervention	22.2%	42.8%	66.6%	50.0%	11.1%	7.1%
"Human Papillomavirus Knowledge Questionnaire" Post-Intervention	100.0%	92.8%	0.0%	7.1%	0.0%	0.0%
"Knowledge on definition, transmission and consequences of HPV infection" Pre-Intervention	22.2%	42.8%	55.5%	50.0%	22.2%	7.1%
"Knowledge on definition, transmission and consequences of HPV infection" Post-Intervention	88.8%	85.7%	11.1%	14.2%	0.0%	0.0%
"Knowledge on the diagnosis and treatment of HPV infection" Pre-Intervention	11.1%	28.5%	88.8%	64.2%	0.0%	7.1%
"Knowledge on the diagnosis and treatment of HPV infection" Post-Intervention	66.6%	35.7%	33.3%	57.1%	0.0%	7.1%

**Table 3:** Results of the Wilcoxon test before and after the educational intervention.

Value	Human Papilloma Virus infection (Post-Pre intervention)	Definition, Transmission and Consequences of HPV Infection (Post-Pre intervention)	Diagnosis and Treatment of HPV Infection (Post-Pre intervention)
Z	-6.773	-6.158	-3.207
p	<0.001	<0.001	<0.001

39.1%); the age range was 14-19 years with an mean of 15.3 years; 65.2% (n= 60) of the participants were from the city of Tijuana; 12 adolescents had already started their active sexual life (13%); 34.8% (n= 32) participants currently have a partner; 4.3% (n= 4) adolescents reported having more than one sexual partner and 4.3% (n= 4) mentioned having high-risk sexual relations without using the family planning method.

In the "Knowledge Questionnaire on Human Papillomavirus", the evaluation before the educational intervention reported the following results in global knowledge (Table 2): low level 8.7%, medium 56.5% and high 34.8%; in the category "knowledge about definition, transmission and consequences of HPV infection" the following results: low level 13%, medium 52.2% and high 34.8%; and in the category "knowledge about the diagnosis and treatment of HPV infection" the following results: low level 4.3%, medium 73.9% and high 21.7%. After the alternative educational intervention based on the Knowledge Dialogue, the following results were reported in global knowledge: low level 0%, medium 4.3% and high 95.7%; in the category "knowledge about definition, transmission and consequences of HPV infection" the following was reported: low level 0%, medium 13% and high 87%; and in the category "knowledge about the diagnosis and treatment of HPV infection" was reported: low level 4.3%, medium 47.8% and high 47.8%.

When comparing groups before and after the educational intervention with the Wilcoxon test (Table 3), a value Z -6.773 with p 0.000 was found at the global level of knowledge; in the comparison of the category "knowledge about definition, transmission and consequences of HPV infection", a value Z -6.158, p 0.000 was reported; and in the category "knowledge about the diagnosis and treatment of HPV infection", a value of Z -3.207, p 0.001.

## Discussion

In this study we found that from the beginning there was lack of interest among adolescents. In sex, there were more men within the intervention (60.9%) but the women showed a higher level of global knowledge at the beginning and at the end of the study. In the category of "Knowledge on definition, transmission and consequences of HPV infection", men obtained a higher level of knowledge than women

(42.8% vs. 22.2%), although in the end they obtained a proportional level (85.7% 88.8%). In the category "Knowledge on the diagnosis and treatment of HPV infection", the same result is repeated (men 28.5% vs. women 11.1%), but at the end of the intervention there was an important difference (women 66.6% vs men 35.7 %), considering that the information in this category (treatment on HPV) focuses more on women.

The adolescent population that was born outside of Tijuana was 34.8%, this can influence the culture of each individual since the population of Tijuana is considered floating, in this point the family and especially the marital subsystem has an important role on the prevention of ITS. The main function of the family is protection and in this stage of life an adequate communication between the parents and the adolescent is important. The survey shows that there is little population that already started active sex life (13%) and 4.3% have had more than one sexual partner, this percentage could increase since 34.5% of adolescents have a partner and we need to consider the fear of being judged, this could be one of the reasons why the teen denies having sex.

The comparison of the results shows a important difference at the beginning and at the end of the intervention measured through the global test and its two categories; this result makes us think about the importance of an educational intervention, low cost, feasible in material and human resources, that can be implemented in a simple way in health institutions and in public education, considering that the adolescent population is at high risk for lack of information, attention and communication with his family and healthcare professionals.

## Conclusion

The intervention based on an educational strategy of alternative pedagogical methodology has an increase in knowledge about HPV in adolescents. Health education is the critical point of primary prevention, the action with the best cost-benefit ratio towards a change in lifestyle that can modify the risks in health; the real drawback is the acceptance of these measures of change due to the scarcity of knowledge of the general population and not having an education system that instructs the student to ask about their environment or to train them as a free, autonomous and responsible individual.

At the beginning of the study, most adolescents obtained levels of knowledge in the middle range, so it is important to consider that this pattern can be repeated in the general population. This study could be improved by evaluating the structure and family dynamics to define the characteristics and risk factors for the health of adolescents.

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