A Sociological Study of Social Factors Related to Girls' Awareness and Attitude toward Human Papillomavirus (HPV) in Shiraz

Halimeh Enayat[1*], PhD;   Majid Movahed Majd[1], PhD; Marzieh Fazeli[1], MA

[1]Department of Sociology and Social Planning, Shiraz University, Shiraz, Iran

*Corresponding author: Halimeh Enayat, PhD; Department of Sociology and Social Planning, Head of the Center of Women's Studies, Shiraz University, Shiraz, Iran. Tel/Fax: +98 9177161517; Email: henayat@rose.shirazu.ac.ir

Abstract

Background: Human Papillomavirus (HPV) is one of the most prevalent sexually transmitted diseases that could lead to cervical cancer. The current study aimed to assess the awareness of young girls about HPV and the relevant current sources of information about HPV. The present work also investigated the social factors related to young girls' awareness of HPV.

Method: Methodologically, this was a cross-sectional study. The sample population was 303 single girls living in Shiraz, Iran. We used quota sampling. The data collection was carried out during October to November 2018. Data gathering tool included a two-part questionnaire: demographic information and HPV awareness measurement questionnaire. The validity of HPV awareness measurement questionnaire was confirmed by experts and its reliability was also assessed with Cronbach's alpha coefficient of 0.942. We analyzed the data via descriptive and inferential statistics in SPSS version 21.

Results: The findings of the present research showed that the participants' mean awareness of HPV was 5.84 out of 23. A total of 48.5% of the respondents had information about HPV prior to this study, among which the awareness score was 10.12. There was a significant relationship between education level (P<0.001), monthly income, type of occupation (P<0.001), and field of study (P<0.001) with HPV awareness.

Conclusion: Considering low awareness of girls about HPV, cultural, health, and governmental institutions, as well as non-profit organizations, need to make efforts to educate and inform the public about HPV and its transmission routes, which may result in the reduction of HPV-related diseases, including cervical cancer.

Keywords: Alphapapillomavirus (HPV), Uterine cervical neoplasms, Awareness, Women, Sexual Transmitted Disease (STD)

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1. Introduction

Health is believed to be one of the most important pillars in individual and social life, whose absence could lead to individual, socioeconomic, and family damages. From the World Health Organization's point of view, health is defined as "a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity" (1). Social factors and contexts play an important role in health and disease. Health and well-being are influenced by social processes even before birth until death. The social status of parents affects life opportunities regarding health and well-being. Social conditions not only affect the risk of disease and disability, but also affect the prospects of disease prevention and health protection (2).

As defined by WHO, health impairment is not only associated with physically disability, but it has also physical, mental, social, sexual, and spiritual dimensions.

It seems that health aspects are closely related with the absence of one aspect causing changes in other aspects. Sexually transmitted diseases (STDs) affect one's sexual health, which can adversely affect family's health. As one of the dimensions of health, sexual health encompasses a very extensive area. There are certain issues regarding sexual health, such as sexual pleasure, sexual desire,

sexual satisfaction, all kinds of sexually transmitted diseases, violence, female circumcision, sexual dysfunction, and mental health associated (3). It is affected by a complex set of biological and social factors (3). Sexual and reproductive health consists of a diverse set of women's issues, including social, psychological, behavioral, environmental, and biological determinism (4).

The global prevalence of sexually transmitted diseases (STDs) is on an increasing trend, according to the data reported by the WHO. This increase may be due to certain factors, such as an increase in the sexually active young population or a change in the style of prevention and treatment. The sexually transmitted infections (STIs) affect 357 million people aged 15 to 49 years worldwide annually. Additionally, it has been estimated that one million people are added daily to the patients with STIs (5).

HPV is one of the most common STDs worldwide. There are 100 types of HPV (6). Approximately, 30 types of the virus affect the genital area (penis, vagina, anus, and cervix) (7). The types of HPV, which cause genital warts are called low-risk and the types causing cervical cancer and other cancers, which comprises 13 types of viruses are called high-risk (8). Two types of high-risk types of the virus account for 70% of cervical cancers and precancerous cervical lesions. There is also evidence that HPV is associated with anal, vaginal, and penile cancer(6). HPV is a virus that affects only the mucous cells, skin, and skin membrane (9).The virus is transmitted to the genital area during sexual activity once the skin membrane of the carrier is in contact with the penis and vagina, cervix, and anus (7). Sex at a younger age, having multiple sex partners, smoking, and immune system deficiencies increases the risk of HPV and consequently cervical cancer (6).There is no treatment for HPV. Like other STDs, transmission of HPV could be prevented by avoiding having sex and limiting sex to one person. Condom use can reduce the risk of HPV, yet it does not endure the prevention of the infection since it does not cover all genital areas (6). Another preventive measure is vaccination. The first vaccine to be developed against HPV will only target women, but new vaccines also target men and it is more effective before the first sex (10). Further research on HPV is essential on account of the transmission route and the risk of cancer.

Considering the prevalence of the disease in young women, it is important to measure HPV awareness among young females. Although HPV affects both men and women, it is more commonly seen in women with cervical cancer due to the greater readiness of women to be affected by this infection in cervical cells (11). Moreover, the highest incidence of the virus has been seen in sexually active women who are younger than 25 years of age (8). HPV is known to cause nearly 5% of cancers worldwide. This infectious disease is associated with all the cervical cancers and has a significant relationship with genital cancers (vagina, penis, and anus) (11). The high prevalence of HPV in the world and Iran necessitates its further assessment. The incidence of HPV has been reported to be 43% in women aged 60 and older while the incidence rate is 89% in younger women (younger than 40 years) (7). There are no official statistics on the prevalence of the virus; meanwhile, a research aimed at examining the prevalence of the virus in 1387 women referred to Tehran clinics with a complaint of vaginal infection showed that 52.3% of these women tested positive for HPV (12).

Another reason necessitating the importance of research in this area is the development of cervical cancer in women, as a result of HPV and the prevalence of this cancer in the world and Iran. Cervical cancer is the fourth most common cancer in women worldwide and accounts for 7.5% of all deaths in women (13). WHO has announced that cervical cancer is the second most common cancer in women in less developed areas (13). Three-quarters of people with cervical cancer live in developing countries around the world, countries with no plans for the treatment and screening of the disease. Approximately, 270,000 women died of cervical cancer in 2012, more than 85% of whom were from low- and middle-income countries (13).

Global research has shown a link between gender inequality and the pattern of disease and mortality. Evidence has suggested that lack of sensitivity to the gender issue can have a negative impact on the health services and the health of people (14). Health inequalities in women are generally reflected in health-care facilities and women believe that the healthcare system is male-centered and ignores women's experiences and information (15). "The growing trend of women dying from cervical cancer will continue unless gender inequality is improved in women's health and women's rights are guaranteed", says Marleen Temmerman, director of WHO's Department of Health and Reproductive Research" (13).

According to WHO statistics in 2018, 9.6 million people died worldwide due to cancer and the costs were estimated to be 1.16 trillion dollars per year in 2010 according to WHO. The Cancer Department of the Ministry of Health announced in May 2018 that 50,000 people die of cancer each year in Iran and an estimated 3,000 billion Tomans is spent annually on cancer treatment in the country (16). The good point is that WHO has announced that 30% to 50% of cancers are preventable (17).

The theoretical framework of this research was based on the theory and models of health promotion and health education. Social status of individuals can lead to behaviors with a direct impact on their health (18). Theory in the social and behavioral sciences provides a framework for understanding why people are involved in health-risk behaviors and why they choose health-protection behaviors (19). Health models include Health Belief Model (HBM), transtheoretical model, theory of reasoned action, theory of planned behavior, social cognitive theory, and Precede-Proceed Model. The theoretical framework of this research was based on the Precede-Proceed model.

This model considers health behavior to be influenced by both individual and environmental factors; it consists of two distinct parts: the educational evaluation that underlies the Precede model and the environmental assessment related to the Proceed section of the model (19). This model comprises of nine stages, the first five stages make up the Precede section and the next four stages constitute the Proceed model or the evaluation and implementation stages (19). This model states that individuals learn from their environment and can change or develop the environment individually or in groups, implying the interdependence of the individual and the environment (20). An essential step in the Precede-Process model is the educational evaluation phase. According to earlier research, three potential factors influence health behavior. Predisposing factors provide the fundamental motivation for a behavior (20). In fact, predisposing factors precede behavioral change and provide motivation for behavior (21). Enabling factors, such as access to resources, rules, and skills are considered as preliminary steps for behavioral or environmental changes (21), which allow one's desires to be recognized so that they would ultimately act accordingly (22). Reinforcing factors are the factors providing rewards or punishments (22). A behavior may be the result of three predisposing, enabling, and reinforcing factors. Since this is a very broad model and a study cannot cover all the stages of this model, the first four stages of the model, which constitute the Precede model, were used as the theoretical framework and experimental model of this study. In this work, social and demographic factors, such as age, level of education, and employment status, as well as predisposing and economic factors, such as income, were the enabling factors affecting the awareness of HPV.

We conducted the current research to study the social factors related to girls' knowledge and awareness of HPV. The examined underlying and social factors included age, level of education, field of study, employment status, type of occupation, monthly income, parental education, parental occupation, social class, and place of birth.

There have been no studies in the field of social sciences, and the most related research to this topic has been conducted in medical fields. International studies have reported a varying level of HPV awareness in different countries.

2. Method

The present study was a cross-sectional survey. The study population comprised of single girls aged 18 to 30 years living in Shiraz. According to the census of 2016, the statistical population of the city is 782567 (23). The sample size calculation was performed via the structural equation modeling (SEM) (24). The sample size formula for structural equation modeling calculated the minimum sample size to detect the effect, which is 249. The study sample included 303 girls selected with random quota sampling from 11 districts of Shiraz, Iran between October to November, 2018. The sampling in each region of Shiraz was selected according to the population living in these areas and in each region, a random sample is selected. The exclusion criteria were married women and the girls below 18 or over 30 years old. The questionnaires were completed after obtaining the respondents' consent and ensuring that their responses and personal information are kept confidential.

The questionnaire consisted of open-ended and closed-ended questions with two sections: demographic information and HPV awareness questionnaire (25). Sixteen items of the awareness questionnaire were the questions targeting the already-existing information

about HPV, its transmission, HPV-related diseases, and the risk factors; seven questions targeted the HPV vaccine. The response options were true/false/do not know, "do not know" was scored as incorrect. True responses were scored 1, false and do not know responses were scored zero, and the scores ranged from zero to 23.

The validity of this questionnaire was verified by experts and Inter-correlations among item response theory (IRT) scaled scores showed strong correlations between each subset of items. The scores on the general HPV knowledge subset of the items correlated 0.502 and 0.537 with the respondents' scores on the vaccination items (25). Internal validity method evaluated the validity of the questionnaire. The correlation coefficients of 23 items with the total scale score ranged from 0.566 to 0.79. Its reliability was evaluated via Cronbach's alpha coefficient. Table 1 depicts Cronbach's alpha coefficient values. Reliability of 23 items was 0.942. Data analysis was carried out utilizing descriptive statistics, including frequency distribution, percentage, and mean and inferential statistics, including Pearson correlation coefficient, ANOVA, and mean difference.

Table 1: Cronbach's Alpha Coefficient

N of items	Cronbach's Alpha
16	0.924
7	0.847
23	0.942

3. Results

The participants in this study were 303 single girls aged 18 to 30 years living in Shiraz, Iran. Accordingly, the exclusion criteria were married women and the girls below 18 or over 30 years old. The mean age of the girls was 23.58 years. A total of 37%, 27.1%, 22.2%, and 13.3% of the respondents were 21 to 24, younger than 20, 25 to 29, and above 29 years, respectively. The most frequent educational level was Bachelor degree (43.9%) followed by diploma (22.1%), associate degree (20.1%), Master degree and the degrees above (12.5%), and below diploma (1.3%).

The field of study was divided into four major medical and paramedical, engineering and arts, humanities, and basic sciences. The most frequent field of study of the respondents were humanities, engineering and arts, medical sciences, and basic sciences with frequencies of 47.7%, 23.3%, 15%, and 14.2%, respectively.

The findings showed that 46.9% of the respondents were housewives and 53.1% were employed. The type of jobs in this study was divided into four categories: self-employed, employee or teacher, cleaner jobs, and prestigious jobs. The most frequent jobs included self-employment (57.1%), employees or teachers (18.6%), cleaner jobs (8.7%), and prestigious jobs (5%). The majority of the employed respondents (56.7%) earned a monthly income of less than one million, and the average monthly income of the employed was about ten million Rials. The minimum and maximum incomes were zero and 100 million Rials, respectively.

The birthplace of most of the respondents (72.9%) was in the center of the province and they belonged to the middle class of the society in 53.5% of cases. Most fathers and mothers had diploma (44.6% and 50.5%, respectively).

The findings concerning the type of occupation of the respondent's father revealed that mostly, they were self-employed (46.5%), followed by retired (20.1%), employees or teachers (15.8%), cleaner jobs (7.3%), unemployed (6.6), and with prestigious jobs (2.3%). In addition, the respondents' mothers were housewives (84.8%) and employed (15.2%).

The findings in Table 2 show that 51.5% of the girls had never heard of HPV prior to this study and the mean of the total awareness of the respondents about HPV was 5.84 out of 23; the mean awareness of those who had information about HPV prior to this study was 10.2.

Table 2: Distribution of the respondents in terms of heard of Human Papillomavirus (HPV) and human Papillomavirus (HPV) awareness

Heard of HPV	Frequency	Percent
No	156	51.5
Yes	147	48.5
Total	303	100
HPV Awareness	**Frequency**	**Percent**
Good	30	9.9
Medium	82	27.1
low	191	63
Total	303	100

A total of 37.6% of the subjects knew that HPV could cause genital warts and 37.3% knew that HPV could lead to cervical cancer. The subjects had poor attitude towards

the transmission routes of the virus and the risk symptoms as well as its treatment. A total of 45.2% knew that sex is one of transmission routes of the virus and 32% regarded skin-to-skin contact in the genital area as a transmission route of the disease. Half of the respondents knew that having multiple sex partners increased the risk of the disease and 31.7% were aware that the use of condom reduced the risk of HPV. A total of 20.1% of the respondents knew that having sex at an early age increases the risk of developing the disease and only 19.1% of the respondents knew that HPV is not treated with antibiotics. Common sources of information about HPV among those who heard of HPV before this study included the Internet (20.1%), social media such as Telegram and Instagram (16.1%), domestic TV channels (15.7%), friends and relatives (12%), and physicians and medical staff (10%). Pearson's correlation coefficient test was run to investigate the relationship between the variables, such as age, education level, income, and parents' level of education with the level of HPV awareness.

Table 3 represents the results. The level of significance (0.191) indicated no significant relationships between age and HPV awareness. The correlation coefficient (0.205) showed a significant relationship between the income variable and awareness level (P=0.018). There was a direct relationship between these two variables and a weak correlation coefficient; awareness of HPV increased with the increase in monthly income.

Table 3: Pearson's Correlation Coefficient test between independent variables and human

Independent Variables	Pearson Correlation	P-value
Age	0.108	0.191
Income	0.205	0.018

ANOVA allows researchers to determine if the mean scores of different groups or conditions differ. ANOVA compares the means of the dependent variables scores obtained from any number of groups (26). Herein, it was utilized to evaluate the relationship between the field of study, education level, type of occupation, place of birth, social class, and father's job with the level of HPV awareness. As could be observed in Table 4, there was a significant relationship between the field of study and HPV awareness (P<0.001) and the comparison of the mean HPV awareness level to the field of study revealed a significant difference between medical and paramedical disciplines and the humanities and basic sciences, and the engineering and arts disciplines. In other words, the HPV awareness was higher in the medical and paramedical disciplines. There was a significant correlation between the level of education and awareness of HPV (P<0.001) and the comparison of the mean HPV awareness level to the level of education showed a significant difference between the group with a Master degree and above and the other groups. In other words, HPV awareness was higher in the respondents with Master degree and above that (Table 4). The results in Table 4 show a significant relationship between the type of occupation and awareness of HPV (P<0.001). Moreover, paired difference test of the mean awareness of HPV by occupation type demonstrated a significant difference between those with prestigious jobs and those who were self-employed and had housekeeping jobs; the participants with prestigious jobs were more aware of HPV, yet it was not significantly different from other jobs.

Table 4 indicates no significant relationships between birthplace and HPV awareness (P=0.259). It also shows that the level of significance (0.384) was higher than the error level and that there were no significant relationships between social class variable and HPV awareness level. No significant relationships were found between the type of father's job and HPV awareness level (P=0.552).

There was also a significant correlation between father's level of education and HPV awareness level (P=0.005). The comparison of the mean HPV awareness level to father's education exhibited a significant difference between the group with a Bachelor degree and those with below diploma degrees (Table 4). According to Table 4, there was a significant relationship between maternal education level and awareness of HPV (P=0.004) and the comparison of the mean HPV awareness level to mother's education indicated a significant difference between the group with a Master degree and above and the two other groups, below diploma and diploma.

The association of the respondent's employment statuses and maternal employment status with HPV awareness was tested by investigating the differences in the means. According to the findings in Table 4, there were no significant relationships between employment status and awareness and attitude toward HPV (P=0.695); a significant difference was also observed between HPV awareness level and maternal employment status

Table 4: Comparison of the mean of Human Papillomavirus (HPV) awareness level to independent variables

Independent Variables	Type	Mean	Standard Deviation	F	P value
Field of study	Medical and Paramedical	15.54	5.215	11.613	<0.001
	Engineering and Arts	10.92	5.103		
	Humanities	9.36	5.3		
	Basic sciences	6.93	<0.001		
Education level	Below Diploma	1	--	7.247	<0.001
	Diploma & associate Diploma	8.73	5.905		
	Bachelor's degree	10.13	5.482		
	Master's degree & above	15.26	5.782		
Occupation type	Self-employed	8.46	5.531	5.603	11.613
	Employee or teacher	12.14	6.515		
	Cleaner jobs	10.67	6.532		
	Prestigious jobs	18.38	4.307		
Birth Place	Centre of Province	10.41	6.231	1.237	0.293
	City	9.68	5.667		
	Village	4	1.441		
Social class	Low	5.8	7.105	1.049	0.384
	Middle Low	8.83	4.596		
	Middle	9.92	5.618		
	Middle High	11	6.818		
	High	10.25	5.315		
Father's education	Below Diploma	7.73	4.811	4.435	0.005
	Diploma & associate Diploma	10.33	5.979		
	Bachelor's degree	13.45	5.763		
	Master's degree & above	10.56	8.932		
Mother's education	Below Diploma	8.12	4.479	4.693	0.004
	Diploma & associate Diploma	10.57	6.384		
	Bachelor's degree	10.47	6.978		
	Master's degree & above	17.17	2.787		

Maternal Employment Status	Type	Mean	Standard Deviation	t	P value
Employment Status	Housewife	9.91	5.8		-0.393	0.695
	Employee	10.31	6.321			
Mother's Employment Status	Housewife	9.42	6.214	0.57	-3.702	<0.001
	Employee	13.11	4.323	0.817		

(P<0.001). As shown, the level of awareness in those with working mothers was higher than those with housewife mothers. Regression analysis indicated a good relationship between HPV awareness and independent variables selected by literature review (27, 28) and the theoretical framework in this study. Additionally regression model demonstrated that medical and paramedical discipline, level of education, and maternal educational level have a considerable impact on HPV awareness compared to other variables.

4. Discussion

The present paper aimed to assess the HPV awareness level and its vaccine among young girls in Shiraz, Iran and to evaluate the social factors related to their awareness of HPV. In this study, 303 single 18- to 30-year-old girls from Shiraz, Iran were investigated. The obtained results implied a significant relationship between the variables of education level, field of study, type of occupation, and income of the respondents, level of maternal educational level and employment status, and paternal educational level with HPV awareness, with

31.3% of variance explained for the dependent variable. The mean awareness score in the study sample is very low, and on average, the respondents answered about one quarter of questions correctly. 48.5% of the respondents had heard of HPV before this study. On the other hand, a research on 397 female students of Shahroud University of Medical Sciences estimated this figure about three times more than present study in STDs (29), which is not consistent with the results of the present study. It could be partly explained by the field of study of the participants in studies by Aslani and Khosravi; their study population comprised medical students (29).

Obviously, medical students have higher level of awareness concerning diseases. This is also observed in studies by Farazmand and colleagues (30) and Asti and co-workers (31), whose study populations also comprised medical university students, which is not comparable to that of the present study in which different groups of girls were enrolled. Moreover, the average STDs awareness of the students of Yazd University has been reported to be about 2.4 times more than this study (32). As observed, the results of the awareness of STDs in Iran are not consistent with the results of the present study. To explain these contradictory results, all STDs have been investigated in domestic research while one STD was specifically studied herein from various aspects. In the present study, 9.9% of the girls were well aware of HPV.

Compared to foreign investigations, the results of a study on Pakistani men and women showed that 57% of the study population had information about HPV prior to the research (33). The figure was 80% in a research on adolescent girls in the UK (34). It was also estimated to be 17.7% in a research on female students at Lagos University in Nigeria (35) and 44.7% in a study on women aged 20 to 35 in China (36). The subjects' awareness was 48.5% before the study in the present study.

The mean awareness score was 2.7 times more than our study, in a research on women aged 19 to 26 years in the United States (37) and a poor awareness and understanding of HPV was reported in previous studies on teenage girls in Pakistan (33), Nigeria (35), China (36), and the United Kingdom (34). In this work, the mean awareness score of the respondents was 25.39%.

In our study, only 37.3% of the respondents knew that HPV was the cause of cervical cancer, compared to 55% in Pakistan (33), 50% in the United Kingdom (adolescent girls), and 11.1% in Nigeria (35).

According to our findings, age, employment status, social class, birthplace, and father's occupation were not significantly correlated with awareness of HPV. However, the results of research on students showed a significant relationship between age and awareness of STDs (29). Obviously, our results are not consistent with those of previous research in this regard.

We found a significant relationship between education level, monthly income, type of occupation, field of study, parental educational level, and maternal employment status and HPV awareness. The confirmed relationship between educational level and HPV awareness is consistent with the results of a comparative study in three countries of England, Australia, and the United States (28). This result is also in agreement with those of previous domestic research students of Yazd University(32), and female students of Shahid Beheshti University (30) regarding their awareness of STDs. The above-mentioned outcomes indicated the effect of educational level on the awareness concerning STDs in Iran and other countries. The relationship between the field of study and the level of awareness was also confirmed in the paper by Farazmand and colleagues, which is consistent with the findings of the present study (30).

According to the theoretical framework of the study, the findings confirmed that predisposing factors and the enabling factors both influence the awareness about HPV. Certain factors, such as the level of education, type of occupation, and the field of study, which are the predisposing factors, and income, which is an enabling factor, have a significant relationship with the level of awareness about HPV.

The limitations of this study included the lack of co-operation and trust of the respondents due to the sensitivity of this issue in addition to scarcity of research on STDs in Iran.

5. Conclusion

The obtained results herein shed light on the poor awareness of single girls in Shiraz, Iran regarding HPV. It could lead to cervical cancer and genital cancers, the former being linked to HPV. As mentioned, HPV is known to cause nearly 5% of cancers worldwide. This infectious disease is associated with all the cervical cancers and has a significant relationship with genital cancers (vagina, penis, and anus). Furthermore, cancer is

a hard-to-treat disease that inflicts high mortality and cost. Numerous people have died worldwide due to cancer, which costs a lot per year, and a lot of people die of cancer each year in Iran and a great deal of money is spent annually on cancer treatment in the country.

As mentioned above, 30% to 50% of cancers are preventable and cervical cancers and HPV-induced cancers are among those that are practically preventable only by training and increase in awareness.

Considering the cost of cancer in Iran and all around the world, its prevention can greatly decline the expenses and increase life expectancy. Cervical cancer and its overwhelming costs could be reduced by planning and spending little money to inform to great amount of women about human papillomavirus. Increase in education and awareness about healthcare performance could be of great help in this regard. Additionally, healthcare and educational supports from the health and cultural sectors of society would prevent the epidemic and spread of HPV. The results of the present research also revealed that factors that affect HPV awareness, such as the level of education and income, can significantly enhance the awareness about HPV.

Practical suggestions for the prevention and management of HPV include the following:

1. Access to HPV and Pap smear services to determine its high-risk type could prevent cervical cancer and determine the type of HPV, which in turn reduces the staggering costs of diseases such as cancer in the country.

2. Breaking the social and cultural taboos, and teaching sex to all the members of a society, including students, university students and high-risk individuals can be a step towards preventing STDs.

3. Plans by government agencies, cultural institutions, non-governmental organizations (NGOs), education centers, and the media could inform and educate people about HPV, its consequences and its prevention to different segments of a society, specifically young women and girls.

4- There should be free vaccination of young girls before the first sex.

The obtained results herein indicated the poor average awareness of young girls in Shiraz and that there is a poor understanding of the disease, its transmission routes, and vaccination in 18 to 30-year-old girls. Therefore, it seems necessary to educate and inform individuals regarding HPV and its routes of transmission. It could be possible by cultural, health-related and governmental institutions.

Ethical Approval

The Ethics Review Board of Shiraz University of Medical Sciences approved the present study with the code of IR.SUMS.REC.1399.1216.

Conflict of interests: None declared.

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