

# Factors Predicting Mothers' Intention toward Human Papilloma Virus Vaccination of Adolescents: A Cross-sectional Study Among Iranian Families

## Abstract

**Background:** Adolescents are prone to Sexually Transmitted Diseases (STDs) such as Human Papilloma Virus (HPV). Although HPV is a preventable disease, the vaccination rate is low. As parents should vaccinate their children to prevent HPV, the goal of this study was to identify the factors related to mother's intention to vaccinate adolescents against HPV. **Materials and Methods:** This cross-sectional study was performed in Qazvin from 2019 to 2020. The participants included 126 literate mothers who had a daughter between 12 and 14 years and health system information registry. To collect the data, a questionnaire was made based on the educational model of behavioral intent. Parents were interviewed in person in health centers or via phone at home. Data were analyzed using Spearman's correlation. **Results:** The mean (SD) age of the mothers, fathers, and girls were 39.60 (6.18), 43.51 (7.58), 13 (0.82) years, respectively. They hadn't received education regarding HPV. The mean (SD) of the knowledge, attitude, and HPV vaccination intention scores were 27.77 (18.08), 67.38 (10.25), and 15.44 (18.44), respectively. The factors related to HPV vaccination intention were parents' knowledge ( $r = 0.29, p = 0.001$ ), positive attitude ( $r = 0.22, p = 0.010$ ), parents' education ( $r = 0.22, p = 0.050$ ) and family income ( $r = 0.21, p = 0.010$ ). **Conclusions:** The high cost of vaccines, economic problems, and lack of knowledge were strong limitations for HPV vaccination. Thus, health workers should have informed parents and teens of the benefits of HPV vaccination. This process should be supported by policy makers.

**Keywords:** Adolescent, human papillomavirus vaccine, parents

## Introduction

Human Papilloma Virus (HPVs) are a small group of unenveloped viruses of the Papillomaviridae family. To date, 100 types of HPV have been identified, 14 of which cause cancer.<sup>[1]</sup> HPV is mainly transmitted through sexual contact. Most people become infected shortly after starting sexual activity. Evidence suggests that HPV is associated with cancers of the vulva, cervix, anus, vagina, oropharynx, and penis. Cervical cancers (70%) are caused by infection with HPV types 16 and 18.<sup>[2]</sup>

Higher prevalence of HPV infection (ranging from 15 to 45%) is found in women in less developed countries and those who are younger than 25 years of age. The highest HPV prevalence was observed in Sub-Saharan Africa (24%), Eastern Europe (21.4%), and Latin America (16.1%), and the lowest in Northern America (4.7%) and Western Asia (1.7%).<sup>[3]</sup> For instance, in Qatar, HPV

prevalence among the general population of women with normal or abnormal cytology was recently estimated at 6.1%, and the highest HPV prevalence was observed in the age group of 25–34 years.<sup>[4]</sup> In Iran, cervical cancer is an important cause of death in women worldwide. About 99.7% of all cervical cancers have been related to HPV, especially types 16 and 18.<sup>[5]</sup> Farahmand *et al.*<sup>[6]</sup> reported HPV DNA in 24% of healthy women, 3.3% were positive for high-risk HPV and 11.6% for low-risk HPV. Another study reported 76% and 7% prevalence of HPV infection in cervical cancer patients and healthy Iranian women, respectively.<sup>[7]</sup>

Adolescence is a critical opportunity and one of the most challenging periods of life.<sup>[8,9]</sup> The world's adolescent population is about 1.2 billion individuals with a variety of interests, needs, and concerns. Adolescents may also experience sexual health problems such as Sexually Transmitted Diseases

Nezal Azh<sup>1</sup>,  
Kazem  
Hosseinzadeh<sup>2</sup>,  
Amir Javadi<sup>3</sup>,  
Samaneh Gholami-  
Toranposhti<sup>3</sup>

<sup>1</sup>Department of Midwifery, School of Nursing and Midwifery, Qazvin University of Medical Sciences, Qazvin, Iran, <sup>2</sup>Department of Critical Nursing, School of Nursing and Midwifery, Qazvin University of Medical Sciences, Qazvin, Iran, <sup>3</sup>Department of Social Medicine, School of Medicine, Qazvin University of Medical Sciences, Qazvin, Iran

**Address for correspondence:**  
Samaneh Gholami-Toranposhti  
(Student Research Committee,  
School of Nursing and  
Midwifery, Qazvin University of  
Medical Sciences, Qazvin, Iran.  
E-mail: samane.gholami@  
yahoo.com

### Access this article online

**Website:** www.ijnmrjournal.net

**DOI:** 10.4103/ijnmr.IJNMR\_313\_20

### Quick Response Code:



This is an open access journal, and articles are distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 4.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

For reprints contact: WKHLRPMedknow\_reprints@wolterskluwer.com

**How to cite this article:** Azh N, Hosseinzadeh K, Javadi A, Gholami-Toranposhti S. Factors predicting mothers' intention toward Human Papilloma Virus vaccination of adolescents: A cross-sectional study among Iranian families. Iran J Nurs Midwifery Res 2021;26:495-9.

**Submitted:** 23-Nov-2020. **Revised:** 22-Dec-2020.

**Accepted:** 03-Aug-2021. **Published:** 22-Oct-2021.

(STDs).<sup>[8,9]</sup> Based on the available evidence, the rates of sexually transmitted infections are higher in adolescents because they are vulnerable to STDs, including HPV and HIV, because of their immature physical organs such as the cervix. For these reasons, HIV mortality rates do not decrease in adolescents.<sup>[10,11]</sup> Based on a survey in high schools in Iran, 74% of male and female students had a sexual partner and high-risk sexually behaviors.<sup>[8]</sup> Therefore, the World Health Organization (WHO) recommended the vaccination of girls between 9 and 14 years. HPV vaccination has high effectiveness and immunogenicity, and causes acceptable safety. According to Mofrad *et al.*<sup>[12]</sup>, the Gardasil vaccine can provide 90% protection against cervical cancer, whereas the new nine-valent vaccine provides up to 90% protection against high degree malignant cervical and vaginal vulvar cancers.

In spite of the fact that HPV is a preventable STD, studies have indicated a low rate of vaccination in adolescents.<sup>[11,13]</sup> Although the United States has implemented HPV vaccination as a part of their national programs, Kester *et al.*<sup>[5]</sup> have reported HPV vaccination rates to be 51.1%, and only 38.3% of them have completed all 3 doses. Since 2006, prophylactic HPV vaccines have been increasingly introduced worldwide. As of early 2019, a total of 115 countries or territories have implemented HPV vaccination as a part of their national programs.<sup>[14]</sup> Bruni *et al.*<sup>[15]</sup> reported that 118 million women had been targeted through these programs, but only 1% of them were from low-income or lower-middle-income countries. In more developed regions, 33.6% of women aged 10–20 years received the full course of vaccine, compared with only 2.7% (1.8–3.6) of women in less developed regions. In Iran, the national guideline for cervical screening was revised by checking of HPV, but there is no national program for HPV vaccination. However, a qualitative study did not recommend vaccination because of the high cost of the vaccine.<sup>[16]</sup>

The lack of vaccination is due to socioeconomic and demographic factors and parents' concerns about vaccine safety and their daughter's safety, and lack of recommendation by the provider.<sup>[5]</sup> Most studies have focused on the increasing incidence of STDs, including HPV, among young adults. However, very few studies have been conducted regarding the parents' attitudes and knowledge.

As mothers (as a homemaker) should vaccinate their children and should pay the cost of the vaccine, it is important to explore some factors in society that influence mothers' decision to vaccinate their children. Accordingly, this study was conducted based on the behavioral intention model to identify the factors related to parents' intention to vaccinate adolescents against HPV.

## Materials and Methods

The present cross-sectional study was performed from January to June 2020. Based on 56% of knowledge in a previous study,<sup>[17]</sup> 10% error, and 95% Confidence Interval (CI), estimation of about 96 eligible mothers registered in the

health service centers in Qazvin, Iran, and consideration of 25% non-respondents, the sample size was calculated to be 126 individuals. The study inclusion criteria were having at least 1 teenage daughter of 12 to 14 years of age, willingness to answer the questionnaire, and being literate. The exclusion criteria were physical and mental illness based on self-report (mothers or their children). Sampling was performed in 2 stages. In the first stage, 7 health centers were randomly selected (simple random sampling) from among 23 centers in Qazvin. In the second stage, the names of the families were listed and participants were selected through simple random sampling from each center. The participants were contacted via phone calls, after obtaining verbal consent, the questions were asked via phone call or face-to-face interviews at the center.

The data were collected using a questionnaire made based on the behavioral intention model. The questionnaire consisted of 4 sections. The first part included demographic information. In the second part, mothers' knowledge about HPV and vaccination against it were evaluated through 28 questions (yes-no questions; total score range: 0-28). In the third part, attitudes and beliefs regarding HPV and vaccination were assessed through 12 questions scored on a 4-point scale (disagree, moderate, agree, completely agree) (total score range: 12-60). In the last part of the questionnaire, HPV vaccination intention was evaluated by 4 questions (yes-no questions; total score range: 0-8). A total score of 100 was calculated in the whole questionnaire, whereas higher scores showed the better statuses.

Prior to the study, content validity was assessed qualitatively and quantitatively. In the qualitative validity, the questionnaire was reviewed by 10 experts from the School of Nursing and Midwifery and School of Public Health of Qazvin University of Medical Sciences and the University of Tehran, Iran. In quantitative validity, the Content Validity Index (CVI) and Content Validity Ratio (CVR) were used (CVR: 85%; CVI: 95%). The reliability of the questionnaire was also confirmed by test-retest (Cronbach's alpha coefficient of 0.88). After completing the questionnaire, the results were analyzed in SPSS software version 23. Demographic information and their impact on mothers' HPV vaccination intention were assessed using Spearman's correlation ( $p \leq 0.05$  were considered to be significant).

## Ethical considerations

Providing information on the research process, obtaining informed consent, and ensuring the confidentiality of information and participants' freedom to leave the study are among the ethical principles taken into consideration. This study was approved by the Research Deputy of Qazvin University of Medical Sciences with the code of research ethics of IR.QUMS.REC.1398.207 on 27/11/2019.

## Results

The study was conducted on 126 mothers who had daughters between the ages of 12 and 14 years.

The mean (SD) age of the mothers, fathers, and their daughters were 39.60 (6.18), 43.51 (7.58), and 13 (0.82) years, respectively. Most families had 2 children (54.82%) and the income of most families was more than 30 million Rials (47.14%). Half of the mothers had a diploma and 47.62% of the fathers had university education [Table 1]. The mean (SD) of knowledge, attitude, and HPV vaccination intention are presented in Table 2. Most of the mothers (69.84%) had no knowledge of the HPV vaccine. Half of the mothers who were familiar with the vaccine had concerns about its side effects [Table 3]. The majority of mothers (85.71%) believed they should delay vaccination until after their daughter's marriage [Table 4]. The important factors in HPV vaccination intention were parents' knowledge, positive attitude, and education, and family income [Table 5]. None of the mothers had been taught about HPV vaccination or received the vaccine. Most of the mothers were unaware of the existence of HPV warts in their spouses or children.

**Table 1: Demographic information of the study participants**

Variables	n (%)
Fathers' education	
Primary school	6 (4.76)
High school	60 (47.62)
University education	60 (47.62)
Mothers' education	
Primary school	6 (4.76)
High school	65 (51.59)
University education	55 (43.65)
Mothers' job	
Housewife	86 (68.25)
Employee	40 (31.75)
Economic status (Rials)	
≤30.000.00	54 (42.85)
>3.000.000	72 (47.14)
Fathers' warts	
Yes	1 (0.79)
No	115 (91.27)
Unknown	10 (7.94)
Mothers' warts	
Yes	4 (3.17)
No	115 (91.27)
Unknown	7 (5.56)

**Table 2: Descriptive indexes of knowledge, attitude, and decision scores of mothers about the human papillomavirus vaccination**

Variable	Mean (SD)	Median	Minimum	Maximum
Knowledge Score	27.77 (18.08)	28.57	00	71.43
Attitude Score	67.38 (10.25)	67.50	40	100
Decision Score	15.44 (18.44)	00	00	75

## Discussion

The present study was performed to determine factors related to mothers' HPV vaccination intention based on the behavioral intention module. The results of the current study showed that the mothers' knowledge and intention regarding HPV were insufficient, which was in line with the findings of Gammel *et al.*<sup>[18]</sup> and Blumenthal *et al.*<sup>[19]</sup> They emphasized that despite the existence of a vaccine for this disease, vaccine acceptance was low because of low knowledge level of parents and the adolescents.

Another study in India showed that healthcare providers had insufficient knowledge that highlights the importance of Continuing Medical Education (CME).<sup>[17]</sup> The results of the current study indicated the limited knowledge, but positive attitude of mothers toward the vaccine, perhaps because of their positive attitude to other vaccines for children. Other studies have shown that despite their low knowledge level, adolescents, parents, and teachers have a positive attitude toward the vaccine. Thus, training people about this disease and its complications, as well as the benefits of vaccination should be taken into consideration. Although the generally attitude is positive, lack of sufficient knowledge may lead to misconceptions that in turn will prevent HPV vaccination.<sup>[20,21]</sup>

In this study, 30.21% of the participants knew the vaccine, 29% of them were concerned about its side effects, and 55% thought it was too expensive. This finding is not in line with the findings of Kester *et al.*<sup>[5]</sup> Kester *et al.*<sup>[5]</sup> in U/N found that socioeconomic factors were not important, but parents had concerns about vaccine safety, their daughter's health, and lack of recommendation by the provider. They believed that to promote vaccination intention it is necessary to educate mothers. Some studies have reported parents' concerns about the sexual consequences of the vaccine. This will reduce the effectiveness of the vaccination program. Other barriers to vaccination are its high cost and insurance coverage that have been mentioned in some studies.<sup>[20,22]</sup> Topazian *et al.*<sup>[23]</sup> reported that to decrease parents and health care providers' concerns, new information should be given on the safety and efficacy of the vaccine. Unfortunately, poverty has influenced the issue of health in this regard. A qualitative study in Iran did not recommend vaccination because of its high cost.<sup>[16]</sup> Moreover, a study in Vietnam found that 86% of the respondents were willing to pay for the HPV vaccine.<sup>[24]</sup>

In the present study, HPV vaccination intention was very low. This was in line with the results of other studies.<sup>[19,20,23]</sup> Bruni *et al.*<sup>[15]</sup> reported that from June 2006 to October 2014, 64 countries nationally, 4 countries sub nationally, and 12 overseas territories had implemented HPV immunization programs, and 33.6% of women aged 10–20 years in more developed regions received the full course of vaccine, compared with only 2.7% of women in less developed regions. It should be noted that people whose priority was their health and who were attentive to their health problems were more likely to be vaccinated on time and receive the full dose.<sup>[25]</sup>

**Table 3: Mothers attitude toward side effects and availability of the human papillomavirus vaccination in the study**

	Strongly disagree [n (%)]	Disagree [n (%)]	Neutral [n (%)]	Agree [n (%)]	Strongly agree [n (%)]
Concurrent side effects of the vaccine	4 (10.52)	7 (18.43)	7 (18.43)	12 (31.57)	8 (21.05)
Cost and availability	8 (21.05)	13 (34.21)	10 (26.32)	6 (15.79)	1 (2.63)

**Table 4: Mothers' view toward the association between cervical and penile cancer and time of vaccination in the study**

Variable	Yes [n (%)]	No [n (%)]	Unknown [n (%)]	Total [n (%)]
Is there association between HPV* and cancer of the cervix?	32 (25.40)	22 (17.46)	72 (57.14)	126 (100)
Is there association between HPV and cancer of the penis?	12 (9.52)	30 (23.81)	84 (66.67)	126 (100)
Do adolescents delay vaccination until after marriage?	108 (85.71)	18 (14.29)	0 (0.0)	126 (100)

\*Human Papilloma Virus

**Table 5: Correlations between demographic indexes and knowledge, attitude, and decision of mothers participating in the study**

	Knowledge	Attitude	Decision	Father's job	Mother's job	Father's education	Mother's education	Economic status	Having a child
Knowledge	1								
Attitude	0.34* (0.001)**	1							
Decision	0.29 (0.001)	0.22 (0.010)	1						
Father's job	0.05 (0.580)	0.01 (0.860)	0.09 (0.300)	1					
Mother's job	0.20 (0.020)	0.16 (0.060)	0.32 (0.001)	-0.14 (0.110)	1				
Father's education	0.25 (0.004)	0.08 (0.320)	0.017 (0.050)	-0.14 (0.100)	0.30 (0.001)	1			
Mother's education	0.25 (0.004)	0.08 (0.320)	0.22 (0.010)	-0.14 (0.100)	0.53 (0.001)	0.60 (0.001)	1		
Economic status	0.35 (0.010)	0.10 (0.230)	0.21 (0.010)	0.01 (0.870)	0.26 (0.002)	0.51 (0.001)	0.46 (0.001)	1	
Having a child	0.01 (0.880)	0.05 (0.540)	-0.01 (0.880)	0.22 (0.010)	-0.08 (0.350)	-0.04 (0.610)	-0.17 (0.050)	0.09 (0.270)	1

\*Spearman's correlation. \*\*Significant (p)

In this study, knowledge, mother's job, and parents' education and economic status correlated with vaccination intention. Logically, maternal financial independence related to mothers' job, and parents' education can increase the knowledge. All of these factors can increase mothers' HPV vaccination intention. As the mothers reported in the questionnaire, due to the novelty and cost of the vaccine, they needed to obtain more information from creditable sources in order to make a decision, so the best time to start HPV training is when parents go to health centers for the compulsory vaccination of their children. To be more successful, health care providers should respect the cultural, religious, and moral views of parents as they anticipate the possibility of accepting or rejecting the HPV vaccine.<sup>[26]</sup> However, health workers should be trained and supported by policymakers in this respect.<sup>[27,28]</sup> As recommended by the WHO, in order to reduce cervical cancer, 90% of girls should be vaccinated by 2021.

Education is the key to improving community health. Mothers and women make up the highest proportion of the population of the community, so improving their knowledge guaranties the health of the whole population. In the current study, 25% of women were aware of the association between HPV and cervical cancer and 9.50% of them knew its relation with penile cancer [Table 4]. A study related to this topic showed that a high level of knowledge

about HPV and its complications such as cervical cancer is significantly associated with receiving the vaccine. It seems that parents and adolescents are more likely to be vaccinated because of the fear of cervical cancer.<sup>[28]</sup>

In line with the findings of Thomas *et al.*<sup>[26]</sup> and Hansen *et al.*,<sup>[29]</sup> the current study results showed that some parents believe that adolescents should be vaccinated at the beginning of sexual activity (marriage) and prefer to wait for their children to grow up. This idea will lead to a delay in the use of the vaccine. These observations indicated the need for age-centered prevention interventions.<sup>[26,29]</sup>

This study was performed during the Covid-19 pandemic, so we had some limitations in terms of sampling methods, data collection via phone, and high samples drop rate. Another limitation was moral restrictions in making the questionnaire; thus, we had to omit or modify some questions.

### Conclusion

The results showed low knowledge about the vaccine and HPV disease among the parents. The study results illustrated that HPV vaccination intention was low among the participants. Factors that influenced the mothers' intention were knowledge and some socioeconomic variables which highlighted the role of midwives in educating mothers and increasing their awareness about this disease and its vaccine.



## Acknowledgments

We are grateful for the cooperation of the respected Research Deputy, the honorable personnel of the health centers, and all the parents who participated in this study.

## Financial support and sponsorship

Research Deputy of Qazvin University of Medical Sciences

## Conflicts of interest

Nothing to declare.

## References

- Wang R, Pan W, Jin L, Huang W, Li Y, Wu D, *et al.* Human papillomavirus vaccine against cervical cancer: Opportunity and challenge. *Cancer Lett* 2020;471:88-102.
- WHO. Human papillomavirus (HPV) and cervical cancer. 2019. Available from: [http://www.who.int/fact-sheets/detail/human-papillomavirus-\(hpv\)-and-cervical-cancer](http://www.who.int/fact-sheets/detail/human-papillomavirus-(hpv)-and-cervical-cancer). [Last accessed on 2019 Jan 24].
- Chan CK, Aimagambetova G, Ukybassova T, Kongrtay K, Azizan A. Human papillomavirus infection and cervical cancer: Epidemiology, screening, and vaccination-review of current perspectives. *J Oncol* 2019;2019:3257939.
- Bansal D, Elmi AA, Skariah S, Haddad P, Abu-Raddad LJ, Al Hamadi AH, *et al.* Molecular epidemiology and genotype distribution of Human Papillomavirus (HPV) among Arab women in the state of Qatar. *J Transl Med* 2014;12:300.
- Kester LM, Zimet GD, Fortenberry JD, Kahn JA, Shew ML. A national study of HPV vaccination of adolescent girls: Rates, predictors, and reasons for non-vaccination. *J Matern Child Health* 2013;17:879-85.
- Farahmand Z, Soleimanjahi H, Garshasbi M, Hasanzadeh M, Zafari E. Distribution of the most common types of HPV in Iranian women with and without cervical cancer. *J Women Health* 2021;61:73-82. (persian).
- Khorasanizadeh F, Hassanloo J, Khaksar N, Mohammad Taheri S, Marzaban M, B HR, *et al.* Epidemiology of cervical cancer and human papilloma virus infection among Iranian women - analyses of national data and systematic review of the literature. *J Gynecol Oncol* 2013;128:277-81. (persian).
- WHO. Adolescents health 'coming of age adolescent health. 2019. Available from: <https://www.who.int/health-topics/adolescents/coming-of-age-adolescent-health>. [Last accessed on 2019 Dec 13].
- Fantasia HC. Influences of social norms and context on sexual decision making among adolescent women. *J Mid Womens Health* 2011;56:48-53.
- WHO. Adolescents health 'The changing world of adolescent sexual and reproductive health and rights. 2020. Available from: <https://www.who.int/news-room/detail/03-02-2020-the-changing-world-of-adolescent-sexual-and-reproductive-health-and-rights>. [Last accessed on 2020 Feb 03].
- Michala L, Argyri E, Tsimplaki E, Tsitsika A, Bakoula C, Antsaklis A, *et al.* Human Papilloma Virus infection in sexually active adolescent girls. *J Gynecol Oncol* 2012;126:207-10.
- Mofrad M, Jedi L, Ahmadi S. The role of human papilloma virus (HPV) vaccines in prevention of cervical cancer. *Iran J Obs Gyn Infertil* 2016;19:22-9. (persian).
- Staples JN, Wong MS, Rimel BJ. An educational intervention to improve human papilloma virus (HPV) and cervical cancer knowledge among African American college students. *J Gynecol Oncol* 2018;149:101-5.
- Šterbenc A, Triglav T, Poljak M. An update on prophylactic human papillomavirus (HPV) vaccines: A review of key literature published between September 2018 and September 2019. *J Acta Dermatovenerol Alp Pannonica Adriat* 2019;28:159-67.
- Bruni L, Diaz M, Barrionuevo-Rosas L, Herrero R, Bray F, Bosch FX, *et al.* Global estimates of human papillomavirus vaccination coverage by region and income level: A pooled analysis. *J Lancet Glob Health* 2016;4:e453-63.
- Majidi A, Ghiasvand R, Hadji M, Nahvijou A, Mousavi A-S, Pakgozar M, *et al.* Priority setting for improvement of cervical cancer prevention in Iran. *Int J Health Policy Manag* 2016;5:225-32. (persian).
- Chawla PC, Chawla A, Chaudhary S. Knowledge, attitude and practice on human papillomavirus vaccination: A cross-sectional study among healthcare providers. *Indian J Med Res* 2016;144:741-9.
- Gammel H, Klosky J, Parra G, Randolph M. Factors influencing familial decision-making regarding human papillomavirus vaccination. *J Pediatr Psychol* 2009;35:704-15.
- Blumenthal J, Trocola R, Heyman K, Soren K, Slomovitz BM, Ipp L, *et al.* Adolescent understanding of human papilloma virus (HPV) and acceptance of the HPV vaccination. *J Pediatr Adolesc Gyn* 2009;22:e26-7.
- Cipriano JJ, Scoloveno R, Kelly A. Increasing parental knowledge related to the human papillomavirus (HPV) vaccine. *J Pediatr Health Care* 2018;32:29-35.
- Abdullahi LH, Kagina BM, Cassidy T, Adebayo EF, Wiysonge CS, Hussey GD. Knowledge, attitudes and practices on adolescent vaccination among adolescents, parents and teachers in Africa: A systematic review. *J Vaccine* 2016;34:3950-60.
- Loke AY, Kwan ML, Wong Y-T, Wong AKY. The uptake of human papillomavirus vaccination and its associated factors among adolescents: A systematic review. *J Prim Care Community Health* 2017;8:349-62.
- Topazian HM, Kundu D, Peebles K, Ramos S, Morgan K, Kim CJ, *et al.* HPV vaccination recommendation practices among adolescent health care providers in 5 countries. *J Pediatr Adolesc Gynecol* 2018;31:575-82.e2.
- Tran BX, Than PTQ, Doan TTN, Nguyen HLT, Thi Mai H, Nguyen THT, *et al.* Knowledge, attitude, and practice on and willingness to pay for human papillomavirus vaccine: A cross-sectional study in Hanoi, Vietnam. *J Patient Prefer Adherence* 2018;12:945-54.
- Kang HS, De Gagne JC, Son YD, Chae S-M. Completeness of human papilloma virus vaccination: A systematic review. *J Pediatr Nurs* 2018;39:7-14.
- Thomas TL, Strickland O, Diclemente R, Higgins M. An opportunity for cancer prevention during preadolescence and adolescence: Stopping human papillomavirus (HPV)-related cancer through HPV vaccination. *J Adolesc Health* 2013;52(5 Suppl):S60-8.
- Azh N, Nahidi F, Ozgoli G, Ardalan G. Adolescents confusion in receiving health services: A qualitative study. *J Clin Diagn Res* 2017;11:LC01-6. (persian).
- Read DS, Joseph MA, Polishchuk V, Suss AL. Attitudes and perceptions of the HPV vaccine in Caribbean and African-American adolescent girls and their parents. *J Pediatr Adolesc Gynecol* 2010;23:242-5.
- Hansen CE, Credle M, Shapiro ED, Niccolai LM. "It All Depends": A qualitative study of parents' views of human papillomavirus vaccine for their adolescents at ages 11-12 years. *J Cancer Educ* 2016;31:147-52.