

## Self-Efficacy to Obtain Human Papillomavirus Vaccination among Indonesian Adolescent Girls

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### Abstract

**Objective:** This study aimed to examine self-efficacy to obtain the HPV vaccination among adolescent girls in Indonesia. Furthermore, factors affecting HPV vaccination self-efficacy was investigated. **Methods:** A cross-sectional study was conducted 337 among adolescent girls in junior high school (aged 12-15 years). Participants were recruited from four junior high schools in Yogyakarta using consecutive sampling. A self-administered questionnaire requested demographic information, knowledge of HPV and HPV vaccine and self-efficacy to obtain HPV vaccine. School teachers facilitate the data collection adolescent girls using the listed questionnaires. Data analysis used Pearson correlation, chi-squared tests and logistic regression analysis. **Results:** As many as 50.1% of the adolescent girls reported high self-efficacy to obtain HPV vaccine and 57.9% reported high knowledge about HPV and HPV vaccine. There were significant correlations between self-efficacy and age, vaccination experience, recommendation from health care providers, parental support, social persuasion and anxiety. Parental support contributed to almost 18 times (95% CI:3.837 - 83.648;  $p<0.0001$ ) while social persuasion was nearly 9 times (95% CI: 3.875-20.011;  $p<0.0001$ ) more likely to predict the self-efficacy to obtain HPV vaccination. **Conclusion:** Parental support and social persuasion significantly predict self-efficacy to obtain HPV vaccination. Parental support is the main factor in the decision making of adolescent to obtain HPV vaccination.

**Keywords:** Adolescence- cervical cancer- human papillomavirus- vaccination- self-efficacy

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### Introduction

The human papillomavirus (HPV) infections are known to cause cervical cancer (Momenimovahed et al., 2017; Eliscu, 2017). The highest rate of HPV infection is found in adolescents who are sexually active and young adults under 25-years-old. Adolescent women are identified as a vulnerable group for HPV infection due to limited knowledge about HPV infection and their sexual behaviors (WHO, 2010). Data in the Ministry of Health Indonesia showed the information related to HPV and HPV transmission for adolescent women is limited and their knowledge are poor (Kemenkes, 2012). The majority of Indonesian young women receive information about sexually transmitted infections (i.e. herpes, HPV, human immunodeficiency virus (HIV), etc.) for the first time at the high school or tertiary level. It is relatively late compared to young males who obtain information at the junior high school level. Meanwhile, adolescence is the crucial age for young women in which they have

emotional instability that potentially affects their health and decisions (Hurlock, 2011).

The HPV infection is preventable by obtaining the HPV vaccination at an early age. The World Health Organization (WHO) recommends women with age between 9 and 14 years should receive the HPV vaccination as a primary prevention strategy (Perlman et al., 2014; Wicaksana, 2021). Adolescent women are encouraged to get this vaccination before becoming sexually active. The HPV vaccine is the most effective for women who have not been infected with HPV.

Current studies report an intention of obtaining the HPV vaccination is important before receiving the vaccination. Previous studies identified contributing factors as predictors of the intention for the HPV vaccination were knowledge related to HPV, health beliefs, and self-efficacy (Lee et al., 2017; Wang et al., 2017; Pot et al., 2017). Many researches were conducted to understand knowledge and health beliefs related to HPV vaccination (Donadiki et al., 2014), however, there

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is limited information about self-efficacy to get the HPV vaccination. Self-efficacy is a form of preparedness for the effort to prevent cervical cancer through HPV vaccination behavior. Self-efficacy plays a crucial role in health behaviors. Self-efficacy will influence some aspects of a person's cognition and behaviors. Self-efficacy can lead to different behaviors among individuals with the same abilities because self-efficacy affects choices of purpose in overcoming problems and persistence in trying (Gerend, 2012). Self-efficacy to obtain HPV vaccination is vital particularly among young women to prevent cervical cancer. Understanding the self-efficacy for the HPV vaccination will benefit health care providers and policy makers to improve the coverage of HPV vaccination behaviors. Research has been conducted in Indonesia but little is known about the self-efficacy to obtain the HPV vaccine in Indonesia, particularly for adolescent women. This study aimed to investigate self-efficacy to obtain the HPV vaccine and examine a predictive model of self-efficacy for HPV vaccination among adolescent women in Indonesia.

## Materials and Methods

### Study design

A cross-sectional study was conducted in October to November 2018 in junior high schools in Yogyakarta. Approval to conduct the study was obtained from the Medical and Health Research Ethics Committee of the Faculty of Medicine, Public Health and Nursing, Universitas Gadjah Mada (KE/FK/1015/EC/2018).

### Sample and recruitment

The researchers recruited 337 female students from four schools including two public and two private schools. Students in seventh, eighth and ninth grades who were willing to be voluntary respondents were included. All students who were absent due to any reason during the data collection period were excluded. Information about the study was distributed by teachers or researchers among all junior high school female students. Class leaders informed the number of students willing to participate. Research assistants distributed the questionnaire, informed consent form for their parents as well as the informed consent form to the subjects after class sessions.

### Research instruments

This study used three instruments to measure the research variables: 1) questionnaires of demographic characteristics including age, basic vaccination experience, parental support, health care recommendation, and social persuasion; 2) knowledge questionnaires, developed by the researchers by considering several related studies (Strohl et al., 2015; Kahn et al., 2016), and 3) self-efficacy questionnaire, modified from self-efficacy related research for pap smear screening (Majdfar et al., 2016). Eight experts in maternity nursing and/or women reproductive health and one doctoral oncology nurse assessed the content validity. The questionnaire was piloted on 27 students in different junior high school for clarity and ease of reading and with 99 students for construct validity

testing. Revisions were made based on expert content and pilot subjects' recommendations.

### Knowledge of HPV and HPV vaccine

Twenty-three multiple-choice questions were used to assess the knowledge of HPV, cervical cancer, and HPV vaccine. The responses provided multiple options with only one correct answer. All the correct responses were added up to gain the knowledge score. A higher mark indicated better knowledge, with the score ranging between 1 and 23. The score was categorized as low level when the score was  $< 13.62$  and high level if the total score was  $\geq 13.62$ . The scale-level content validity index of the questionnaire was 0.74 ( $> 0.6$ ), which is an acceptable level.

### Self-efficacy toward HPV vaccine

Students were requested to complete the self-efficacy towards HPV vaccine questionnaire, consisting of 23 items. The responses used a 5-point Likert scale from 1 "strongly disagree" to 5 "strongly agree" with scores ranging between 23 and 115. The total score was the sum of all items and was categorized into two categories: low self-efficacy when  $< 72.9$  and high self-efficacy when  $\geq 72.9$ . The scale-level content validity index of the questionnaire was 0.7 ( $> 0.6$ ), which is an acceptable level.

### Parental support, and social persuasion

The parental support was assessed by asking the question "Did you get your parents 'support for the HPV vaccination?'" The social persuasion refers to information provided by others to vaccinate HPV. Then, it was assessed by asking the question "Did you get the information that people were giving you to vaccinate HPV?" Both the parental support and social persuasion have response "yes" or "no", unless participants stated otherwise.

### Statistical analysis

Descriptive statistics were expressed as mean, standard deviation (SD), frequency and percentage. All statistical tests were conducted using two tails with significant level 0.05. The correlation was tested using Pearson correlation and chi-squared tests. Simple logistic regression analysis was performed to examine the odds ratio (OR) with 95% Confidence Interval (CI) for each of the predictors, including demographic variables, knowledge and self-efficacy. The final model was analyzed with forward stepwise logistic regression to predict self-efficacy vaccination.

## Results

### Demographic characteristics of respondents

A total of 337 female students participated in this study. The mean age of adolescent women in high schools was 13.52 (SD=0.97) years (Table 1). A majority had previous vaccinated experience (81.0%). Most respondents had not received a recommendation for HPV vaccines yet (71.8%) from the health care providers although most of them obtained support from their parents about HPV vaccination (91.1%).

Table 1. Characteristics of Adolescent Girls (n = 337)

Characteristics of Respondents	Frequency (%)	Mean ± SD
<b>Age</b>		
12 year	57 (16.9)	13.52 ± 0.97
13 year	106 (31.5)	
14 year	118 (35.0)	
15 year	54 (16.0)	
16 year	2 (0.6)	
<b>Basic vaccination experience</b>		
No	64 (19.0)	
Yes	273 (81.0)	
<b>Recommendation from health care</b>		
No	242 (71.8)	
Yes	95 (28.2)	
<b>Parental support</b>		
Not Granted	30 (8.9)	
Granted	307 (91.1)	
<b>Social Persuasion</b>		
Not Granted	63 (18.7)	
Granted	274 (81.3)	

SD, standard deviation

Table 2. Knowledge and Self-Efficacy about HPV and HPV Vaccination among Adolescent Girls

Variables	Frequency (%)
<b>Knowledge</b>	
Low	142 (42.1)
High	195 (57.9)
<b>Self-efficacy</b>	
Low	168 (49.9)
High	169 (50.1)

HPV, human papillomavirus

*Knowledge, self-efficacy about HPV and HPV vaccination, and relationship with demographic data*

The Table 2 shows that more than half of the respondents (57.9%) have high knowledge about HPV and HPV vaccines and high self-efficacy for the vaccination (50.1%). There were significant relationships between age, basic vaccination experience, parental support, social persuasion, knowledge with the self-efficacy to obtain HPV vaccination (Table 3).

*Predictors of self-efficacy of HPV vaccination*

Results of the simple logistic regression analysis indicated that two demographic characteristics were significant determinants of self-efficacy to obtain HPV vaccination (Table 4): age (OR: 1.01-1.99, 95% CI: 0.45 – 6.98), basic vaccination experience (OR: 1.18, 95% CI: 0.57–2.47, parental support (OR: 17.9, 95% CI: 3.83–83.64), social persuasion (OR: 8.80, 95% CI: 3.87 – 20.01), and knowledge of HPV and vaccine (OR: 1.13, 95% CI: 0.67–1.90). Self-efficacy to obtain the vaccine was more likely if they received parental support and social persuasion. Parental support contributed to almost 18 times (95% CI, p<0.0001) more likely while social

Table 3. Relationship between Demographics Characteristics and Self-Efficacy

No.	Characteristic of Respondents	Self-Efficacy		p value
		Low (No, %)	High (No,%)	
1	<b>Age (years)</b>			
	12	37 (11.0)	20 (5.9)	0.000 <sup>a</sup>
	13	61 (18.1)	45 (13.4)	
	14	49 (14.5)	69 (20.5)	
	15	19 (5.6)	35 (10.4)	
16	2 (0.6)	0		
2	<b>Basic vaccination experience</b>			
	No	128 (38.0)	145 (43.0)	0.025 <sup>b</sup>
Yes	40 (11.9)	24 (7.1)		
3	<b>Recommendation from Health Care providers</b>			
	Yes	47 (13.9)	48 (14.2)	0.931 <sup>b</sup>
No	121 (35.9)	121 (35.9)		
4	<b>Parental Support</b>			
	Granted	140 (41.5)	167 (49.6)	0.000 <sup>b</sup>
Not Granted	28 (8.3)	2 (0.6)		
5	<b>Social Persuasion</b>			
	Granted	114 (33.8)	160 (47.5)	0.000 <sup>b</sup>
Not Granted	54 (16.0)	9 (2.7)		
7	<b>Knowledge</b>			
	Low	83 (24.6)	59 (17.5)	0.007 <sup>b</sup>
High	85 (25.2)	110 (32.6)		

<sup>a</sup>, Spearman Rank; <sup>b</sup>, Chi-squared test

Table 4. Independent Predictors of Self-Efficacy of HPV Vaccination

Determinant	OR	CI	p-value
<b>Knowledge</b>			
High	1.135	0.677 - 1.901	0.63
Low	Ref		
<b>Class Grades</b>			
1 <sup>st</sup>	Ref		
2 <sup>nd</sup>	1.783	0.840 - 3.785	0.132
3 <sup>rd</sup>	1.361	0.480 - 3.860	0.561
<b>Age</b>			
12 years old	Ref		
13 years old	1.014	0.452 - 2.273	0.971
14 years old	1.967	0.667 - 5.803	0.22
15 years old	1.991	0.567 - 6.985	0.282
<b>Basic Vaccination experiences</b>			
Yes	1.187	0.570 - 2.470	0.646
No	Ref		
<b>Recommendation for vaccination</b>			
Granted	0.717	0.407 - 1.264	0.25
Not Granted	Ref		
<b>Parental support</b>			
Supported	17.917	3.837 - 83.648	0.000 <sup>*</sup>
Unsupported	Ref		
<b>Social persuasion</b>			
Granted	8.806	3.875 - 20.011	0.000 <sup>*</sup>
Not Granted	Ref		

OR, odds ratio; CI, Confidence Interval

persuasion indicated nearly 9 times (95% CI,  $p < 0.0001$ ) more likely to predict the self-efficacy to obtain HPV vaccination

## Discussion

More than half of the respondents in this study had high self-efficacy for the HPV vaccine. Previous research indicated that the HPV vaccination was highly recommended among childbearing age women (Armini et al., 2016). Self-efficacy influences a person's motivation and self-confidence to prevent cervical cancer. According to Bandura, self-efficacy is influenced by gender, age, educational level, previous experience, and social persuasion (Macblain, 2018). Although the teenagers' self-efficacy is high enough, but the HPV vaccination program has not become a government program yet and the HPV vaccination coverage is still low because of vaccine costs. Prior study reported that self-efficacy among adolescents is still low because they depend on parental decision about getting the HPV vaccination (Arifah et al., 2017).

It is optimum that youth will be able to complete their development growth tasks and maintain reproductive health as well as reach a more mature age with a higher level of self-awareness. Higgins et al (2016) found that the older a person, the higher the self-efficacy. Previous study suggested that the older the age, the greater the function of the senses and the more experience on knowledge and attitude. The study contradicts the research results of Rachmani (2012) who claimed that age had nothing to do with the young women's self-efficacy to carry out the prevention of cervical cancer by obtaining the HPV vaccine. This can be due to the fact that changes in a person's attitude towards health problems are not influenced by age alone, but by other stronger factors such as knowledge, belief, family support and the availability of affordable health services.

Most of the respondents in this study had already received basic vaccinations of the government program (i.e. tuberculosis, mumps, polio, etc.). Prior studies showed that the experience of a vaccine was related to individual's self-efficacy. Self-efficacy can be obtained, modified, enhanced or reduced, through experiences, both personal and other (vicarious) experiences (William et al, 2016). Most of the respondents had not received any recommendation from health care providers for HPV vaccination yet. In Indonesia, the HPV vaccination is not a part of the basic vaccination schedule; therefore, patients should independently pay for it by themselves (Wicaksana et al., 2017). It also happens in Thailand, they were individually funded and voluntarily, and younger parents would be more inclined to seek treatment due to their ability to pay service fees (Mohd Sopian, 2019).

The results of this study indicated that parental support influenced self-efficacy on the young women. Support from the family, particularly from parents during young age, will be dominant to determine their behaviors. Parents can significantly influence adolescents' self-efficacy primarily on health behavior. Parents are the first sources

for a child to learn and guide them about knowing their reproductive health. The roles of parents have been extensively studied because the parents are the main role figures for children (Kamberi, 2019; Mohd Sopian, 2019). One study indicated that the quality of parental closeness with teenagers can evidently contribute to the lower tendency toward sexual misconduct (Hoskins, 2014).

The regression analysis found that parental support is a major factor affecting an individual's self-efficacy. Previous study identified that there was a positive and significant relationship between parental support and self-efficacy (Hasyim, 2019). Kamberi (2019) stated that the parents' role in vaccination against HPV have a strong statistical association. Parental direction can affect the coping and behavior among adolescents. Adolescents cannot escape the vital role of parents during their development. Thus, parents' role is predominant. Commonly, teenagers do not have income. When adolescents have an interest to get the HPV vaccination, they will usually ask for their parents' permission and funding.

Epstein in 1987 categorized parental involvement in school into four types, namely basic parental obligations, school-to-home communication, parental involvement in school and parental involvement in learning activities at home (Benner et al, 2016). Providing feedback is one way parents can act on that information. The role of parents in supporting student self-efficacy cannot be ignored because even though there may be different teachers in different school years, parents can provide consistent and ongoing support for student learning and self-efficacy development (Lam et al., 2017).

Social persuasion was identified as a significant factor affecting adolescents' self-efficacy. Social persuasion is one source for increasing or lowering the level of self-efficacy. A person is typically directed by positive suggestion and can increase confidence in their ability to achieve healthy behaviors. The effects of feedback on self-efficacy in student's learning and performance academics play a prominent role. Research showed that social persuasion in the form of feedback can lead to changes in students' self-efficacy in English reading comprehension. Negative feedback from the father, mother and teacher lowered self-efficacy while positive feedback from the mother led to the greatest increase in self-efficacy (Lam et al., 2017).

Prior studies showed there was a significant correlation between social support, social persuasion and self-efficacy (Guan et al., 2016; Zulfia, 2018). Social support is defined as experiences or perceptions about being cared for, valued, involved, and/or being guided by others, especially family, peers, and/or community members. Reciprocity and shared experiences are also considered aspects of this construction, and the nature of social support is described as a buffer against life stressors that promotes health and well-being (Guan et al., 2016). Research showed that social persuasion among peers had significant positive relationships with self-efficacy, besides other factors including positive thinking and long-term consistency. Social support can help someone to choose the healthy

behavior in cervical cancer prevention. Social support from peers, teachers and parents has been recognized as a protective factor for children and adolescents. Research has shown an increased risk of adolescent problems in the absence or reduction of parental support levels, and a buffering effect of parental support on student stress (Lam et al., 2017).

## Author Contribution Statement

WL contributed to the study conception and design. IP provided the research assistance. All authors contributed to enrollment, provision of study patients and collection and assembly of data. WL, AVFH and ALW contributed to analysis and interpretation of data. All authors wrote the manuscript reviewed and approved the final manuscript.

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### Scientific Approval

This study was a part of the approved umbrella research of Dr. Wiwin Lismidiati

### Ethics approval

The study was approved by the Medical and Health Research Ethics Committee of the Faculty of Medicine, Public Health and Nursing, Universitas Gadjah Mada (KE/FK/1015/EC/2018).

### Conflict of Interest

The authors declare that there is no conflict of interest regarding the publication of this article.

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