

## Perception, Knowledge and Attitude About Human Papillomavirus Infection Among Adult Female in Ciranjang, West Java

Santa Maria Pangaribuan, Josephine Tahasy Barakah

Lecturer, Nursing Academy RS PGI CIKINI, Jl. Raden Saleh Raya No.40, Cikini, Menteng, Jakarta 10330, Indonesia

Email Korespondensi : santamaria@akperrscikini.ac.id

### Abstract

Cervical cancer is caused by human papillomavirus (HPV) but it can be reduced by HPV infection. The aimed of this study was to explore perception and knowledge about HPV, cervical cancer and HPV vaccine in Ciranjang West Java, Indonesia. This was a cross sectional study of 90 adult female in Ciranjang, West Java, Indonesia. A 31 item self-report questionnaire was completed in this study. The reliability of this tool was assessed using Cronbach's alpa (0.86) and the Kaiser-Meyer-Olkin value was 0.704. A total of 90 questionnaire were distributed, completed and analyzed. Only 42 (46.7%), 69 (76.7%) and 69 (76.7%) of adult female had ever heard of HPV infection, cervical cancer and HPV vaccine respectively. Only 13 (14.4%) knew that HPV can cause herpes and 28 (31.3%) knew that HPV can cause genital warts. Of the 44 adult female knew that there is a vaccine being developed to prevent HPV infection. Generally, the perception, knowledge and attitude about HPV among adult female were low. There is a need for health promotion to improve knowledge, perception and HPV vaccine.

**Keywords:** Attitude, Cervical Cancer, HPV Vaccine, Knowledge, Perception.

**Cite this as:** Pangaribuan SM & Barakah JT. Perception, Knowledge and Attitude About Human Papillomavirus Infection Among Adult Female in Ciranjang, West Java. *Dunia Keperawatan*. 2020;8(2):120-129

### BACKGROUND

Cancer is one of the causes of death in the world (1). Cervical cancer is the second cancer that most affect women after breast cancer (2). Based on the data in 2012, South Asia Region and Western Pacific Region around 94,000 and 43,000 death with cervical cancer, respectively (3). Cervical cancer is the most common female cancer with an incidence rate of 54 per 100,000 women per year, this rate showed five times higher than other cancer incidence rates among male or between both sexes combined (4). In Indonesia cervical cancer is the second ranks out of the 10 most cancers based on data from Anatomical Pathology in 2010 with an incidence of 12.7% (5). In addition, based on the *Data Riset Kesehatan Dasar* (RISKESDAS) states that cervical cancer

sufferers in Indonesia in 2013 reached 98,692 sufferers and that number is the largest number of cervical cancer sufferers after China (6, 7). Moreover, the estimated number of cervical cancer cases in West Java in 2013 was 15,365 people (8). Early detection of cervical cancer was the recommended thing to do. The Ministry of Health of the Republic of Indonesia states that the national coverage target of women who do early detection for cervical cancer is as much as 10% of the total women who are required to do early detection of cervical cancer per year. The fact that happened is the number of early detection coverage of cervical cancer nationally in 2017 reached 2.98%. This number has not yet reached the determined national target (9, 10).

The Human Papillomavirus is the common cause for cervical cancers (11, 12). The highest prevalence of HPV infection occurs mostly in women aged 20-24 years and the highest incidence around 5-10 years after first sexual intercourse (13). Previous research states in epidemiology studies, about 75% of people who have sexually active are at high risk of being infected with HPV throughout their life span (14). Cervical cancer can be overcome by early detection, treatment and HPV vaccination (15). However, previous study has been done among adult female in Malaysia states that many adult females assume that the HPV vaccine and early detection do not need to do for women who have no symptoms. They believe that it is used only for women who already have cervical cancer (16). In addition, women with initiate sexual contact early, have several sexual partner or an HPV infection, the lack of knowledge and perception about association between cervical cancer and Human Papillomavirus have showed influence women's acceptance for HPV vaccine (14). Although early detection and HPV vaccines have been introduced since 2006, women's knowledge and perceptions were still different. Previous study has conducted by showed that the knowledge about cervical cancer was poor among female in Taiwan (17). Similar study also reported that knowledge, attitude and perception related to HPV vaccination and infection were lacking among female in Lagos, Nigeria (18). However, Roger argues on a theory of cognitive behavior, protection motivation theory, a person's attitude can be influenced by the threat of judgment, one of which is the perception of the severity of an illness (9). Attitude of cervical cancer, HPV and HPV vaccination will arise due to the perception of the severity of cervical cancer. In

Indonesia, socialization efforts through education or counseling to increase knowledge, perceptions and behavior about cervical cancer, HPV infections and vaccines have not had a significant impact. This is shown by previous research showing the level of knowledge of women about cervical cancer and HPV 56% was bad (19). In addition, previous study among 392 sample of women has reported among adult women, only 68% had good knowledge and 57% had good perception about cervical cancer and HPV vaccination (20).

In addition, if this issue is not treated immediately, it will have an impact on the high incidence of cervical cancer, especially in rural areas such as Ciringan, West Java and might cause the loss of the productive period of the sufferer, which in turn has an impact on the loss of productive age in Indonesia. However, a few studies have been conducted to explore knowledge, perception and attitude about HPV infection, cervical cancer and HPV vaccine among adult female in Indonesia. Thus, researcher attracted to investigate knowledge, perception and attitude about HPV infection, cervical cancer and HPV vaccine among adult female in Ciringan, West Java, Indonesia. The purpose of this study are (i) to explore demographic factor among adult female (ii) to investigate knowledge of HPV infection, Cervical Cancer, and HPV Vaccine among adult female and (iii) to describe attitude about HPV infection, Cervical Cancer, and HPV Vaccine among adult female.

## **METHOD**

This descriptive study design was conducted in Ciringan, West Java, Indonesia between August and October 2019. The setting of this study was in community. The researchers collaborate

Table 1. Demographics Characteristics of Sample of Adult Female (n=90) in Ciranjang, West Java, Indonesia

Characteristics	Mean	SD	N	%
Age	39.46	10.13		
Marital status				
Single			7	7.8
Married			77	85.6
Divorced			6	6.7
Education level				
Elementary school			47	9.4
Junior high school			209	41.8
Senior high school			230	46.0
Diploma/University			14	2.8
Number of Sexual Partner in the last 12 months				
None			12	13.3
1			69	76.7
2-3			4	4.4
4-5			3	3.3
More than 5			2	2.2
Used a condom at the last sexual				
Yes			11	12.2
No			79	87.8

with community leaders to reach adult female in Ciranjang, West Java. The current study conducted convenience sampling techniques to recruit female adult in Ciranjang, West Java, Indonesia. The sample size proportion of this study was calculate using G Power software, version 3.1. Researcher calculated that we would have 90% power at the 5% significance level with effect size 0.3 and design effect of non-probability sampling, the sample yielded was 82. Researcher expected response rates of 90% and the total sample size is 90 respondents. The target population of this study is female adult in Ciranjang, West Java, Indonesia. The sample of this study is female adult in Ciranjang, West Java who met our inclusion criteria as follow: (i) Female adult who able to read and understand the questionnaire in Bahasa, (ii) women aged 18 years and older, (iii) agree and willing to participate. Participants who refuse to participate in this study were excluded.

Instrument was used in this study is Knowledge and Perceptions Survey (KAPS). The questionnaire were adapted from previous study conducted by Chikandiwa (21) and McPartland, Weaver (22). The first part of questionnaire is to access demographic data of participants included age, marital status, educational level, number of sexual partners. The second part of questionnaire is the standardized questionnaire that consist 31 items to access susceptibility, perceived severity, knowledge of HPV, and desire to change behavior (21, 22). The reliability of this tool was assessed using Cronbach's alpa (0.86) and the Kaiser-Meyer-Olkin value was 0.704.

Participants were informed that participation in this study was voluntary. Research objectives to examine the perception, knowledge and attitude of HPV infection, Cervical Cancer, and HPV Vaccine among adult and methods are explained in detail to participants.

Table 2. Perception and Knowledge about HPV among Adult Female (n=90) in Ciranjang, West Java, Indonesia

Variable	Answering correctly	
	N	%
Awareness	Yes	
Ever heard of HPV infection	42	46.7
Ever heard of Cervical cancer	69	76.7
Ever heard of HPV vaccine	29	32.2
Source of information		
Media (TV, Radio, Newspaper, Internet)	49	54.4
Friend or family member	11	12.2
Health care providers	9	10
HPV can cause herpes	13	14.4
Genital warts are caused by HPV	28	31.1
Cervical cancer is caused by HPV infection	41	45.6
A woman with a normal pap smear means that she does not infected with HP.	10	11.1
Changes in a pap smear indicate someone is infected with HP.	28	31.1
The herpes virus can cause genital warts	17	18.9
HPV can almost always be detected by Pap smears	9	10
During birth a baby can get HPV from his mother	40	44.4
A negative test for HPV means that you do not have HPV	12	13.3
To prevent HPV there is a vaccine that has been developed	44	48.9
Many people who experience genital HPV have no noticeable signs or symptoms	32	35.6
Having one type of HPV means that you cannot obtain new types	16	17.8
I can convey HPV to my partner(s) even if I have no HPV signs	25	27.8

Participant who agreed to join in this study was filled out informed consent as an ethical requirement. Participants have the right to withdrawn during this study. Participants who finished completing the questionnaire received a small gift. Descriptive study was used to analyze the data by using Statistical Package for Social Sciences (SPSS) version 20.0.

## RESULTS AND DISCUSSION

**Table 1** showed demographics characteristics of participants. A total of 90 adult female joined in this study. The mean age of participants was 39.46 (10.13) years. Most (41.8%) of the participants achieved junior high school. Among those participants, 77 (85.6%) were married. The majority of participants

69 (76.7%) reported 1 sex partner in the last 12 months. About 87% of the participants informed do not used condom at the last sexual.

Table 2 showed general knowledge and perception of participants about HPV. About 46.7% of respondents ever heard of HPV infection, N = 69 (76.7%) participants ever heard of cervical cancer and few participants 29 (32.2%) ever heard of HPV vaccine. Among those participants, media included TV, radio, newspaper, internet were the most familiar source of information (56.7%), the second source of information was friend or family member (12,2%) and the last source of information was health care providers (10%).

Table 3. Attitude toward HPV Infection, Cervical Cancer, HPV Vaccine of Adult Female (n=90) in Ciranjang, West Java, Indonesia

Variables	Much more likely	
	N	%
How likely do you think it is that you will get infected with HPV?	12	1.3
How severe do you think it would be to have Human Papilloma Virus infection?	32	35.6
How likely do you think that being vaccinated against HPV will help reducing your chances of getting infected?	25	27.8
How likely would you get the vaccine if		
Available to you	73	81.1
It prevents warts only	20	22.2
It prevents cancer only	13	14.4
It prevents both	39	43.3
Vaccine costs IDR 1-3 million	11	12.2
Vaccine is free of charge	27	30
Recommended by doctor	14	15.6
Recommended by partner/family/friend	19	21.1
1 dose, once off	15	16.7
2 doses, three months apart	10	11.1
Do you intent to get more education on HPV and vaccine	87	96.7

Table 3 showed about attitude toward HPV infection, cervical cancer, HPV vaccine of adult female. About 12 (1.3%) participants thinking that they were at risk with HPV. Even thought, among those participants, 32 (35.6%) believing that HPV is very severe, but only 25 (27.8%) agree that being vaccinated against HPV will help reducing the chances of getting infected. The majority of participants 73 (81.1%) would get the vaccine if the vaccine was available for them.

### Demographic characteristics

Demographic factors were important to explore in our study since previous study mentioned that number of sexual partner, the age were commonly associated with HPV infections (18). In our study more than half of the participants informed do not used condom at the last sexual. However, previous study mentioned that one of the factors the chance of being infected by HPV was do not use condom (23).

### Knowledge and Perception of adult female about HPV

While exploring the knowledge of adult female about HPV, none of the participant answered all the questions correctly. Out of the 90-adult female, 13 (14.4%) knew that HPV can cause herpes and 28 (31.3%) knew that HPV can cause genital warts. Only 10 (11.1%) knew that If a woman's Pap smear is normal, she might be having HPV. Less than 50% of participants who were ever heard HPV infection knew that HPV can cause cervical cancer. Overall, 28 (31.1%) of the participants knew that changes in a Pap smear may indicate that a woman has HPV. N= 17 (18.9%) participants knew that genital warts are caused by the herpes virus. Only a few participants 9 (10%) knew that Pap smears not always detect HPV. Among those participants, 40 (44.4%) knew that HPV can be passed from the mother to their baby during birth. Moreover, few participants 12 (13.35%) knew that a negative test for HPV not

always means that do not have HPV. About 48.9% of adult female knew that there is a vaccine being developed to prevent HPV infection. Only 32 (35.6%) knew that most people with genital HPV have no visible signs or symptoms. Among the 90 participants, 16 (17.85) knew that having one type of HPV means that they can acquire new types and only 25 (27.8%) agree that they can transmit HPV to their partner even if they have no HPV symptoms.

### **Attitude toward HPV**

Overall, the attitude of HPV was low. When considering the responses of attitudes, only 12 (1.3%) participants thinking that they were at risk with HPV. Even though, among those participants, 32 (35.6%) believing that HPV is very severe, but only 25 (27.8%) agree that being vaccinated against HPV will help reducing the chances of getting infected. The majority of participants 73 (81.1%) would get the vaccine if the vaccine was available for them. Considering the whole study population, only 20 (22.2%) were willing to be vaccinated if the vaccine prevent warts, 13 (14.4%) if the vaccine prevents cancer only, 39 (43.4%) prevent both cancer and warts. Less than 50% of the participants would get vaccine if recommended by partner/family/friend, 14 (15.6%) if recommended by doctor. While the cost of the vaccine was a concern, 27 (30%) would get the vaccine if the cost IDR 1-3 million, 27 (30%) if the vaccine was free of charge. The majority of participants 87 (96.7%) intention to get more education on HPV and vaccine.

Knowledge, perception and attitude among adult female were investigated in this study. This study is the first study that performed knowledge, perception and attitude of HPV infection, cervical cancer and HPV vaccine in

Ciranjang, West Java, Indonesia. Participants had ever received information about HPV infection, HPV vaccine and cervical cancer from many sources. Overall, among those participants in this study knowledge about HPV and cervical cancer was poor. The average level of knowledge, perception and attitude among our participants were below our expectation. This condition may happens because the information has not been obtained optimally among adult female even though they revealed ever received information from some sources. This support by previous study conducted by Endarti et.al shown that even though 98% of respondent ever heard about cervical cancer, but only 68% had good knowledge among adult female in Yogyakarta. Previous study conducted among women in Western China revealed that only 28.85% of the participants ever heard of HPV and HPV infection (11). This is in contrast to a similar study conducted by among participants in Pakistan had sufficient knowledge of HPV (24). Our study showed that only a few adult females were willing to be vaccinated if the vaccine prevents cancer. Similar study showed only 16% from 400 participant in Sri Lanka knew that there is associated between HPV and Cervical cancer (25). We assume that our participants in our study had low knowledge related to effect of HPV vaccine generally. In our study, internet is the most familiar resource information for adult female. Similar study (26) had showed that internet can be the primary information sources regarding HPV and vaccination. Previous 68. Our findings supported by previous study that showed more that of the participants had poor attitude of HPV vaccination, cervical cancer and HPV infection. In addition, unlike with our study, previous research

(27) showed that 86.6% of participants would get the HPV vaccine.

The attitude about cervical cancer, HPV infection and vaccination were poor in our study. Only 12 (1.3%) participants thinking that they were at risk with HPV. It's quite different with previous study showed that 56.6% respondent focused that they were affected by HPV infection (28, 29). It may one of the reasons for participants had positive attitude toward cervical cancer and HPV infection compared to the respondents in our study. Moreover, only 27.8% of our respondent agree that being vaccinated against HPV will help reducing the chances of getting infected. Our result contrary with previous study that showed 78.2% concern that HPV infection was dangerous disease and 63.3% would get HPV vaccination (30). In our study, only a few participants would get vaccine if recommended by partner/family/friend. Similar with previous study mentioned that participant would get vaccine if recommended by health workers compare to family (31). In addition, previous studies have shown that a person's behavior for vaccines will be influenced by several factors including vaccine costs, availability, benefits, knowledge about risks and severity of disease (23). Our study confirmed that only 43.4% were willing to be vaccinated, our result almost similar with previous study conducted among female in Nigeria that 57.7% of the participants willing to receive the HPV vaccine (18).

## CONCLUSION

In summary, attitude toward HPV Infection, Cervical cancer, HPV vaccine was poor in our participants. Perception about the severity due to HPV infection is one of the factors causing poor attitude towards HPV, cervical cancer. In addition,

the high cost of vaccines is one of the obstacles to getting an HPV vaccine.

The adult female in our study are had poor knowledge, perception and attitude about cervical cancer, HPV infections, and HPV vaccine and need more attention for further intervention. Based on findings from our study, we propose healthcare professional should focus to improve knowledge, perception and attitude about Human Papilloma Virus through appropriate and routine health information, counseling and ongoing evaluation among adult female in Ciranjang, West Java, Indonesia.

## LIMITATION

It is important to mark limitations in this study. The results of the study were difficult to generalize for female adult populations in urban areas. Data collected in this study were more applicable to female adult populations in rural areas with low levels of education.

## ETHICAL CONSIDERATION

The informed consent form described the purpose of the study, screening criteria of participants, inconvenience and solutions during the procedure, expected benefits, confidentiality, subsidy and damage compensation, withdraw or suspension and rights of subjects. After the study, the filled questionnaires were kept safely and locked in private room by the first author. Data will be destroyed 10-15 years after data retention.

## CONFLICT OF INTEREST

The authors declare that they have no conflict of interest

## SOURCE OF FUNDING

The authors declare that this study received no funding.

## ACKNOWLEDGMENT

Special thanks to Akademi Perawatan RS PGI Cikini for valuable support.

## REFERENCES

1. Torre LA, Islami F, Siegel RL, Ward EM, Jemal A. Global cancer in women: burden and trends. *AACR*; 2017.
2. Hussain S, Nasare V, Kumari M, Sharma S, Khan MA, Das BC, et al. Perception of human papillomavirus infection, cervical cancer and HPV vaccination in North Indian population. *PLoS One*. 2014;9(11):e112861.
3. Santhanes D, Yong CP, Yap YY, San Saw P, Chaiyakunapruk N, Khan TM. Factors influencing intention to obtain the HPV vaccine in South East Asian and Western Pacific regions: A systematic review and meta-analysis. *Sci Rep*. 2018;8(1):3640.
4. Cunningham MS, Skrastins E, Fitzpatrick R, Jindal P, Onoko O, Yeates K, et al. Cervical cancer screening and HPV vaccine acceptability among rural and urban women in Kilimanjaro Region, Tanzania. 2015;5(3):e005828.
5. Indonesia KKR. Panduan Penatalaksanaan Kanker Serviks In: Nasional KPK, editor. Jakarta: Kementerian Kesehatan Republik Indonesia; 2016. p. 1.
6. Kesehatan BPdP. Riset Kesehatan Dasar (RISKESDAS) 2013: Laporan Nasional 2013. Kementerian Kesehatan RI 2013.
7. Savitri A. *Kupas Tuntas Kanker Payudara dan Kanker Leher Rahim*. Yogyakarta. Pustaka Baru Press; 2015.
8. Herlana F, Nur IM, Purbaningsih W, editors. *Karakteristik Pasien Kanker Serviks berdasar atas Usia, Paritas, dan Gambaran Histopatologi di RSUD Al-Ihsan Bandung*. Bandung Meeting on Global Medicine & Health (BaMGMH); 2017.
9. Maurida N, Sukartini T, Indarwati RJJPKSF. Persepsi Keparahan Kanker Serviks dan Keteraturan Melakukan Deteksi Dini Kanker Serviks. 2019;10(3):215-8.
10. Indonesia KKR. *Pedoman Nasional Pelayanan Kedokteran*. Jakarta: Kementerian Kesehatan RI; 2017.
11. He J, He L. Knowledge of HPV and acceptability of HPV vaccine among women in western China: a cross-sectional survey. *BMC Womens Health*. 2018;18(1):130.
12. Poole DN, Tracy JK, Levitz L, Rochas M, Sangare K, Yekta S, et al. A cross-sectional study to assess HPV knowledge and HPV vaccine acceptability in Mali. *PLoS One*. 2013;8(2):e56402-e.
13. Makwe CC, Anorlu RI, Odeyemi KA. Human papillomavirus (HPV) infection and vaccines: knowledge, attitude and perception among female students at the University of Lagos, Lagos, Nigeria. *Journal of epidemiology and global health*. 2012;2(4):199-206.
14. Cheung T, Lau JT, Wang JZ, Mo P, Siu C, Chan RT, et al. The Acceptability of HPV Vaccines and Perceptions of Vaccination against HPV among Physicians and Nurses in Hong Kong. *Int J Environ Res Public Health*. 2019;16(10):1700.

15. Cunningham MS, Skrastins E, Fitzpatrick R, Jindal P, Oneko O, Yeates K, et al. Cervical cancer screening and HPV vaccine acceptability among rural and urban women in Kilimanjaro Region, Tanzania. *BMJ open*. 2015;5(3):e005828.
16. Wong L, Wong Y, Low W, Khoo E, Shuib RJSmj. Knowledge and awareness of cervical cancer and screening among Malaysian women who have never had a Pap smear: a qualitative study. 2009;50(1):49.
17. Wang H-H, Wu S-YJAPJoCP. HPV vaccine knowledge and perceived risk of cervical cancer among female college students in Taiwan. 2013;14(12):7371-4.
18. Makwe CC, Anorlu RI, Odeyemi KAJJoe, health g. Human papillomavirus (HPV) infection and vaccines: knowledge, attitude and perception among female students at the University of Lagos, Lagos, Nigeria. 2012;2(4):199-206.
19. Kusumawati Y, Nugrahaningtyas RW, Rahmawati EN. Pengetahuan, deteksi dini dan vaksinasi HPV sebagai faktor pencegah kanker serviks di Kabupaten Sukoharjo. *Jurnal Kesehatan Masyarakat*. 2016;11(2):204-13.
20. Endarti D, Satibi SAK, Farida MA, Rahmawati Y, Andriani T. Knowledge, perception, and acceptance of HPV vaccination and screening for cervical cancer among women in Yogyakarta Province, Indonesia. *J Asian Pacific journal of cancer prevention: APJCP*. 2018;19(4):1105.
21. Chikandiwa AT. Awareness, knowledge and attitudes about human papilloma virus among female tertiary students in South Africa: University of the Western Cape; 2010.
22. McPartland TS, Weaver BA, Lee S-K, Koutsky LA. Men's perceptions and knowledge of human papillomavirus (HPV) infection and cervical cancer. *J Am Coll Health*. 2005;53(5):225-30.
23. Ratanasiripong NT, Sri-Umporn S, Kathalae D, Hanklang S, Ratanasiripong PJJHR. Human papillomavirus (HPV) vaccination and factors related to intention to obtain the vaccine among young college women in Thailand. 2018.
24. Shaikh MY, Hussaini MF, Narmeen M, Effendi R, Paryani NS, Ahmed A, et al. Knowledge, Attitude, and Barriers Towards Human Papillomavirus (HPV) Vaccination Among Youths of Karachi, Pakistan. *Cureus*. 2019;11(11).
25. Fernando N, Pathiraja R, Gunasekara C, Karunanayake I, Premathilake N, Senarathna N, et al. Women's Perceptions and Practices on Human Papillomavirus Infection and Human Papillomavirus Vaccine in Sri Lankan Community. *Journal of SAFOG*. 2019;11:65-9.
26. Keten HS, Ucer H, Dalgaci AF, Isik O, Ercan Ö, Guvenc N. Knowledge, Attitude, and Behavior of Teachers Regarding HPV (Human Papillomavirus) and Vaccination. *Journal of Cancer Education*. 2019:1-7.
27. Jalani FFM, Rani MDM, Isahak I, Aris MSM, Roslan N. Knowledge, Attitude and Practice of Human Papillomavirus (HPV) Vaccination among Secondary School Students in Rural Areas of Negeri Sembilan, Malaysia. *International journal of collaborative research on internal*

- medicine & public health. 2016;8(6):56.
28. Oh H. Knowledge about HPV, and the attitudes toward HPV vaccination among adult women in Asian countries: a literature review. *Journal of Korean Oncology Nursing*. 2011;11(3):171-8.
  29. Oh J-K, Lim MK, Yun EH, Lee E-H, Shin H-RJV. Awareness of and attitude towards human papillomavirus infection and vaccination for cervical cancer prevention among adult males and females in Korea: a nationwide interview survey. 2010;28(7):1854-60.
  30. Kwang NB, Yee CM, Shan LP, Teik CK, Chandraleaga KN, Kadir AKAJAPJCP. Knowledge, perception and attitude towards human papillomavirus among pre-university students in Malaysia. 2014;15(21):9117-23.
  31. Khan TM, Buksh MA, Rehman IU, Saleem AJPR. Knowledge, attitudes, and perception towards human papillomavirus among university students in Pakistan. 2016;2:122-7.