

Gynecology & Reproductive Health

Awareness and Perception of Human Papilloma Virus Vaccine Among Women Attending Gynaecological Out Patient Clinic in A Rural Tertiary Hospital in Edo State Nigeria

Hilary Ngwu, Joseph Okoeguale*, Emmanuel Friday Osagiede, Joseph O. Ikheloa, Peter Isabu, Anthonia Inibokun Njoku, Reuben Agbons Eifediyi, and Ese Tracy Osagiede

¹Department of Obstetrics and Gynaecology, Irrua Specialist Teaching Hospital, Irrua, Nigeria.

²Department of Community Medicine, Irrua Specialist Teaching Hospital, Irrua, Nigeria.

³Accident and Emergency Unit, Irrua Specialist Teaching Hospital, Irrua, Nigeria.

***Correspondence:**

Joseph Okoeguale, Department of Obstetrics and Gynaecology, Irrua Specialist Teaching Hospital, Irrua, Nigeria.

Received: 16 October 2019; **Accepted:** 05 November 2019

Citation: Hilary Ngwu, Joseph Okoeguale, Emmanuel Friday Osagiede, et al. Awareness and Perception of Human Papilloma Virus Vaccine Among Women Attending Gynaecological Out Patient Clinic in A Rural Tertiary Hospital in Edo State Nigeria. *Gynecol Reprod Health*. 2019; 3(6): 1-6.

ABSTRACT

Background: Cervical cancer is the leading cause of death from gynaecologic malignancies in developing countries. Epidemiologic evidence clearly indicates that oncogenic Human Papilloma Viral (HPV) infection is the principal cause of cervical cancer. Vaccines against HPV have been developed, which provide effective protection against oncogenic HPV subtypes and have been available since 2006, however have been low uptake of this vaccine in Nigeria and many other developing countries.

Objective: The aim of this study was to ascertain the level of awareness of cervical cancer and its prevention, perception and wiliness to accept HPV vaccine among women attending gynaecologic clinic in a rural tertiary health care facility.

Materials and Methods: This was a cross-sectional descriptive study of 180 consecutive women attending Gynaecologic clinic at Irrua Specialist Teaching Hospital (ISTH), Irrua, Edo State Nigeria. They were given interviewer-administered questionnaire containing both closed and open-ended questions. Information recorded includes socio-demographic variables, knowledge of cervical cancer, and knowledge of HPV/HPV vaccines and acceptance of these vaccines for their adolescent girls.

Results: The study showed that only 18 (10.0%) out of the total respondents had heard about human papilloma virus (HPV) infection while 17 (9.44%) were knowledgeable about HPV vaccine. The mean age of the respondents was 32 years. Over 77.22% had at least secondary education. A total of 117 (65%) had the knowledge of cancer of the cervix while 63 (35%) had never heard about it. Among the respondents, only 11.51% and 10.79% of the respondent who have at least secondary level of education had knowledge of HPV and HPV vaccine respectively against 4.87 and 4.87 percent of those who had primary education and less. Overall, 135 (75%) accepted that the vaccines could be administered to their teenage girls.

Conclusion: Awareness of cervical cancer, HPV infections, and HPV vaccines is low among women attending gynaecologic clinic in ISTH, Irrua. However, majority of them would want their girls vaccinated against HPV infections. As acceptance does not mean awareness, there is a need for all stakeholders to step up awareness creation for improved HPV vaccination project in Nigeria.

Keywords

HPV Vaccine, Cervical cancer, Prevention, Gynaecologic clinic, Rural tertiary facility.

Introduction

Cervical cancer has claimed the lives of many women worldwide [1]. It is one of the leading cause of cancer mortality worldwide and a major public health threat in resource constrained countries. It is the second most common cancer among women worldwide and accounts for 80% of gynaecologic malignancies. Despite harbouring just 20% of global resources, the developing countries of the world contribute about 80% of cervical cancer cases [2]. About 87% of cervical cancer deaths occur in less developed regions where 80% present with advanced cervical cancer. An estimate of 528,000 new cases and 266,000 deaths occurred in 2012 worldwide [3]. The incidence rate of cervical cancer in Nigeria was reported to be 25/100,000 per year, which translates to a disease burden for an estimated 32 million women in 2005 to about 8000 cases per year [4]. Current estimates indicate that cervical cancer ranks as the second most frequent cancer among women in Nigeria [5]. Every year, 14,089 women are diagnosed with cervical cancer [5]. It is a common killer of women in the reproductive age group [1]. This hidden cancer can take away young mothers who are often at the head of the family unit causing a considerable emotional and economic upset [1]. Symptoms remain elusive until the cancer progresses to advanced stages. Thus, seemingly healthy women may be harbouring early or precancerous lesions [6]. Risk factors for cervical cancer include early age at sexual exposure, multiple sexual partner, early marriage, high risk partner, smoking, immunosuppression, multi-parity, combine oral contraceptive pills usage [2,6].

Epidemiologic evidence clearly indicates that high risk HPV is the principal cause of invasive cervical cancer and cervical intraepithelial neoplasia (CIN) [2,4-9]. Invasive cervical cancer is attributed to HPV infection. HPV infection and therefore cervical cancer is said to be sexually transmitted by skin to skin contact during intercourse and condoms appear not to be protective. Regular and consistent use is necessary to achieve a 60% protection against infection. There are about 130 HPV serotypes, about 30-40 of which affect the anogenital epithelium. Based on their malignant potential, HPV subtypes are categorized into low risk and high-risk types. Low risk HPV (types 6,11,42,43, and 44) are associated with condylomata accuminata and low grade lesions, whereas high grade HPV (types 16,18,31,33,35,39,45,51,52,56,58,59, and 68) are associated with invasive cancer in addition to high grade lesions (CIN II and CIN III) [4-9]. Ninety percent of patients with HPV infection will have spontaneous resolution over a period of 2 years and only 5% will have cytological changes detectable as CIN. About 10% will have persistent high-risk HPV infection which places them at risk of developing high grade cytological changes and cervical cancer. Development of CIN following HPV infection is not definite as vast majority do not develop the disease and co-factors like cigarette smoking, immunosuppression is important [6].

Cervical cancer has a long precancerous stage and during interval the precancerous lesions can be detected. Fortunately, these precancerous lesions are treatable and once treated would not progress to cervical cancer [10]. For this reason, cervical cancer is one of the cancers that is considered to be preventable. Thus, screening for this precancerous lesion is very effective and important. The Papanicolaou (Pap) smear has been the screening tool commonly used and it has reduced the incidence of cervical cancer in the developed countries by over 70% [2,6]. Unfortunately, limited resources in the developing world, has resulted in screening centres either not available or sparsely distributed. Thus, the screening programmes have been unsuccessful and ineffective in reducing the disease burden. This is further compounded by the fact that both the women and health-care providers in these poor-resource countries often lack information about cervical cancer as a disease entity, its causative agent, and how cost effective it is to prevent it [7]. This is principally responsible for the disparity in the disease burden and mortality resulting from it, in developed and developing countries.

The discovery of the HPV vaccine in the recent past, has led to dramatic reduction in the incidence of cervical cancer on a global scale [11,12]. Most women who become infected with HPV do so within three years of commencement of sexual activity [6]. Therefore, if the vaccine is given before the first sexual exposure, it will help develop immunity against the virus. The vaccines have been found to have remarkable efficacy, achieving more than 98% protection in randomized clinical trials against cervical intraepithelial neoplasia (CIN) grades 2 and 3 and adenocarcinoma in situ [13-19]. Two vaccines were initially available. These are the bivalent HPV vaccine (Cervarix) and the quadrivalent HPV vaccine (Gardasil). Both have been found to be nearly 100% effective in preventing cervical intraepithelial neoplasia 2 (CIN 2), CIN 3, and condylomatous vulvar disease related to the HPV genotypes covered by the vaccines. The vaccines are approved for administration to females aged 9-26 years [6]. Currently, there is a nonavalent vaccine which covers for more strains of HPV serotypes. The effectiveness of a vaccine delivery programme depends largely upon the awareness of the vaccine and the attitude in terms of acceptability of the vaccine [20].

Studies assessing awareness of this vaccine have been carried out in different parts of Nigeria, but none has been carried out in ISTH. This study was therefore carried out to assess the awareness on HPV and acceptability of the cervical cancer vaccine among the general population of women in Nigeria using women attending gynaecologic clinic in ISTH as a reference point.

Materials and Methods

A descriptive cross-sectional study design was carried out among 180 consenting women, ages between 15 and 65 attending the gynaecologic clinic for a duration of 3 consecutive months (January – March 2018) at Irrua Specialist Teaching Hospital, a tertiary health facility located in Irrua, the administrative headquarters of Esan central Local Government Area in Edo Central senatorial district, Edo State, Nigeria. The hospital is located along the

Benin-Abuja express way and it serves as a referral centre to the Central and Northern Senatorial Districts of Edo state, as well as part of the Southern Senatorial district. In addition, it also receives patients from the neighbouring states, Delta, Kogi, and Ondo. Furthermore, it also serves as the teaching hospital to the College of Medicine, Ambrose Alli University, Ekpoma. It has a maternal and child complex where in the gynaecologic clinic runs as a combined antenatal and gynaecologic clinic every Tuesdays, Wednesdays and Thursdays. Routine immunizations are carried out in the complex according to the national programme on immunization. HPV vaccines are not part of this programme, they are however available for administration in the immunization clinic from Monday to Friday on request.

Data collection was with the aid of a pretested questionnaire which was designed by the researchers. Questionnaires were in English, the official language in the country. Four open and 25 close-ended questions were used to collect information on socio-demographic characteristics, knowledge, perception, and acceptability of HPV vaccine among respondents. The specifics areas covered on knowledge were on HPV, Cervical cancer, and HPV vaccine. The respondents' acceptability of HPV vaccine and their willingness to recommend same to their daughters or friends was also assessed. The questionnaire was validated after being administered to 36 respondents in a similar clinic.

The research was carried out to assess the knowledge of cervical cancer, HPV infection, HPV vaccine, and the acceptability of HPV vaccine among women attending the gynaecologic clinic in a rural tertiary hospital, South-South, Nigeria.

Results

A total of one hundred and eighty (190) questionnaires was distributed, and one hundred and eighty (94.74%) of them were collected in good form and analysed using Statistical Package for Social Sciences (SPSS) version 22. Univariate and bivariate analyses with chi square tests were conducted to detect differences in knowledge and perception as well as acceptance among women attending gynaecological clinic. Statistical significance was considered at $p < 0.05$.

Variables		Frequency (N=180)	Percentage (100%)
Age (years)	18-15	55	30.55
	26-35	76	42.00
	36-45	25	13.89
	46-55	15	8.30
	>55	9	5.00
	Mean age \pm SD =		32 \pm 4.6
Marital status	Married	104	57.78
	Single	76	42.22
Parity	0	36	20.00
	1	25	13.89
	2	20	11.11

Parity	3	64	35.56
	4	20	11.11
	>5	15	8.33
Occupation	Student	25	13.89
	Civil servant	55	30.55
	Trader	72	40.00
	House wife	15	8.33
	Others*	13	7.22
Religion	Christianity	104	57.78
	Islam	76	42.22
Level of education	None	9	5.00
	Primary	22	12.22
	Secondary	83	46.11
	Tertiary	66	36.67
Number of sexual partners	None	12	6.67
	1-2	154	85.56
	>3	9	5.00
	Declined response	5	2.70

Table 1: Sociodemographic Characteristics of Respondents.

Key: Others* farming 9 (0.05%), unemployed 4 (2.22%).

The mean age of respondents was 32 ± 4.6 years. Over two-fifth of the respondents (42.22%) were between the age range of 26 and 35 years. About three-fifth (fifty-eight percent) of them are married while most of them are traders. Majority have at least secondary level of education (77.22%). Esan constitutes the major tribe of the respondents which is about 40 percent. Over 90 percent had at least 1 sexual partner and about 80 percent have had at least one birth experience. Christians constitute 57.78% of the population of the women studied. Table 1 below shows the above.

Variables		Frequency	Percentage
Ever heard of cervical cancer (N=180)	Yes	117	65.00
Reported Symptoms (n=160)	Yes	90	56.25
Ever heard of screening modality (n=170)	Yes	93	54.71
Preventable (N=180)	Yes	85	47.22
Source of information* (n=117)	Medical outreach	60	51.28
	Hospital	40	34.19
	Mass Media**	35	29.91
	Friends	15	12.82
	Others***	20	17.09

Table 2: Respondents' knowledge of Cervical Cancer. Key: *Multiple options applicable; **Television-20(17.09%), print media 15(12.82%); ***Internet-10 (8.55%), social media -10 (8.55%).

The above (Table 2) shows the knowledge of women of cervical cancer. The table shows that 65 % of the respondents have heard about cervical cancer, though 50 % were aware of the symptomatology. About same percentage are aware that it is preventable and knew that there is a screening modality. Majority

said their source of information is medical outreach.

Variables		Frequency	Percentage
Ever heard of HPV (n=170)	Yes	18	10.59
HPV as the cause of cervical cancer (n=18)	Yes	15	83.33
Route of transmission (n=18)	Sexually	9	50.00
	Airborne	5	27.78
	Genetic	3	16.67
	Don't know	1	5.56

Table 3: Knowledge of Human Papilloma Virus (HPV).

Table 3 shows the knowledge of HPV amongst respondent. Only 18(10%) of the respondents have heard of HPV infection and of these, majority (83%) of them were knowledgeable of the fact that HPV infection is the cause of cervical cancer and just 50 percent agreed that HPV is sexually transmitted.

Variables		Frequency	Percentage
Ever heard of HPV vaccine (N=180)	Yes	17	9.44
Ever heard it is cervical cancer prevention (n=17)	Yes	15	88.24

Table 4: Knowledge of Human Papilloma Virus (HPV) Vaccine.

Table 4 shows the knowledge of HPV vaccine. From the tables, only 17(9.44%) of the respondents have ever heard of HPV vaccine and majority of them (88.24%) were knowledgeable of the fact that it can be used to prevent cervical cancer.

Variables		Frequency	Percentage
Willing to recommend vaccine for others (N=180)	Yes	135	75.00
	No	35	19.44
	Don't know	10	5.56

Table 5: Acceptance of HPV vaccine.

Majority (75%) of the respondents were willing to recommend the vaccine to others.

Variable		Acceptance		χ^2	p-value
		Yes (%)	No (%)		
Age (years)	15-45	120 (76.92)	36 (23.08)	2.3077	0.129
	46-65	15 (62.50)	9 (37.50)		
Marital status	Married	80 (76.92)	24 (23.08)	0.4858	0.486
	Single	55 (73.37)	21 (27.63)		
Educational status	> secondary	119 (79.87)	30 (20.13)	10.924	<0.001
	< Secondary	16 (51.61)	15 (48.39)		

Table 6: Association between respondents' socio-demographic characteristics and acceptance of HPV vaccine.

There was a statistically significant relationship between respondents' acceptance of HPV vaccine and their level of education. Those with at least secondary level of education seems to have higher acceptance than their counterparts with maximum of primary education. On the other hand, there were no statistically

significant relationship between acceptance of HPV vaccine and the respondents' age (15-45 and 46-65) and marital status (married and unmarried).

Variable		Reasons for Non-acceptance				Total	χ^2	p-value
		Cost	Fear (subfertility)	Adverse reaction	None			
Age (years)	15-45	11	8	9	8	36	0.5594	0.906
	46-65	2	3	2	2	9		
Marital status	Married	6	5	7	6	24	0.9939	0.816
	Single	7	6	4	4	21		
Educational status	> secondary	8	6	9	7	30	2.068	0.559
	< secondary	5	5	2	3	15		

Table 7: Association between respondents' socio-demographic characteristics and stated reasons for non-acceptance of HPV vaccine.

There was no statistically significant relationship between the socio-demographic characteristics of respondents and the various reasons they gave for not accepting HPV vaccine.

Discussion

This study assessed the awareness and perception of HPV vaccine amongst women attending Gynaecologic clinic in ISTH, Irrua. From the study, the awareness of HPV vaccine was low; however, the acceptance was high. Majority of the respondents had at least secondary level of education which was about 77.22%. This connotes a high level of literacy among respondents which is good and this is similar to profiles of respondents in similar studies in Gwagwalada, Abuja [18], Osun and Oyo state [19]. Despite high level of literacy, the awareness of cervical cancer hovers around 65%. This is comparable to the study done by Olusola et al. [16] where awareness of cervical cancer was about 64.3 percent and 67.6 percent by work done by Odetola et al. [17] in Oyo state [17]. However, Agida et al. [18] reported 40 percent awareness of cervical cancer in their study [18]. A similar study done by Ugwu et al. [19] in the south east show that 85% were aware of cervical cancer [19]. This is probably was because the study was carried out amongst health care workers.

There is gross unawareness of HPV infections amongst respondents as only one-tenth of the respondents knew what HPV was and only 8.3 percent were aware of its association with cervical cancer. Only 9.44 percent were aware of the vaccine for HPV. This is similar to findings in the study done by Agida in Gwagwalada [18]. Other studies quoted awareness of HPV of 23.9% [16], 83.8% [17] and 84.2% [19] while 27.1% [16], 39.5% [17] and 62% [19] for awareness of the HPV vaccine from the studies reported above. Significantly, more women with at least secondary education reported having heard of cervical cancer 79.87% unlike those with only primary education (31.7 percent). Also, level of education had an influence on the percentage of those who were aware of HPV and HPV vaccine though the level of awareness was grossly low for all categories. Majority reported the outreaches as their

sources of information.

Health promotion strategies to educate the public about prevention of STIs of public health importance can be effective in preventing genital HPV infection. The effect of educating the public is evident in a study conducted in Vietnam [21] and Nigeria [22] as there was increased level of knowledge of mothers and their daughters after educating them about HPV infection, cervical cancer and HPV vaccine [21,22]. Aside from public education, healthcare providers also have a role in providing information during their encounter with patients. This was demonstrated to be very effective from a study done in New York [15].

Prevention of cervical cancer can be primarily achieved through prevention and control of genital infection with oncogenic HPV types. One of the methods of preventing HPV infection is by vaccinating young girls before their first exposure to HPV infection. Vaccination of these young girls is dependent on the mother making informed decisions for their daughters. For effective coverage of these young girls, parental acceptance is needed [15,21,23]. From the result of this study and similar studies in Nigeria, the level of awareness of this vaccine is very low [1,15,16,22]. Considering the low level of awareness of this vaccine amongst Nigerian women, they may not readily recommend it for their wards. This was however at variance with the findings of this study.

Despite the low level of awareness of this vaccine the acceptance was very good in this study and other similar studies across the country [16,17,19,22] and in Uganda [24]. The reason for this high acceptance could actually be linked to the success of other vaccine related programs in the country. Cost, fear of adverse effect and fear of subfertility were the reasons quoted in this study for non-acceptance. This was not influenced by educational status from the study. Other reasons from other studies, the thought that the vaccine might cause an increase in sexual activity amongst vaccinated girls and others felt the vaccine was not necessary [18]. Education to dispel these fears has been shown to actually increase the level of uptake and acceptance of the vaccine. Making the vaccine free of charge or subsidizing the cost of the vaccine has been shown to also increase uptake.

Women who are more educated and also those with higher incomes are likely to utilize cervical cancer prevention services than those with little education and income [25]. Though not part of index study, from other studies, those with higher income are in a better position to purchase the costly preventive services than those with less or no income [25]. In a Turkish study on barriers of HPV vaccine uptake, 80.5 % of medical students stated that the possibility of increase uptake of the vaccine will be enhanced if it is made free [26]. Abu Dhabi introduced HPV vaccine free of charge for girls entering grade II in Abu Dhabi State whether national or not. This has increased the uptake of vaccine by more than 95 percent [14]. Making HPV vaccine part of the routine immunization programme in the country will also go a long way in increasing coverage and acceptance. A study showed that the level of knowledge on HPV and national immunization program

had significant association with the acceptance of HPV vaccine among the respondents. The biggest barrier to the adoption of HPV vaccines into national immunization programs has been the high costs of the vaccine [27].

Effective vaccination will impact positively on the prevention of cervical cancer. According to the CDC, if health care providers increase HPV vaccination coverage to 80%, it is estimated that an additional 53000 cases of cervical cancer could be prevented during the life time of those younger than 12 years. Furthermore, for every year that coverage does not increase, an additional 4,400 women will develop cervical cancer [28,29]. These data highlight the overwhelming importance of HPV vaccination efforts, including discussions with parents of children and adolescents about the benefits of HPV immunization for cancer prevention.

Conclusion

Cervical cancer remains a preventable disease of public health importance and needs to be tackled with a determined and comprehensive approach. Health awareness is key to healthy living. From the study, there was low level of knowledge of cervical cancer prevention especially HPV vaccine. There is, thus an urgent need for pragmatic and pro-active approaches when educating women of child-bearing age as well as a need to advocate for an increase in the availability and affordability of immunization facilities across the country. It is equally important that health care workers are provided with adequate and accurate information and be encouraged to always share the information. This is expedient because cervical cancer, when unattended to, leads to more serious complications and eventually death.

Limitation

The study design was a cross-sectional thus, making generalizing statements on knowledge, perception and uptake of HPV vaccine might not be most appropriate.

References

1. Azam S. Awareness and Perspectives on cervical cancer and practices related to it: How far it has promoted? Recent Advances in cervical cancer. Avid Science. 2016.
2. Shafi M I. Premalignant and Malignant Disease of the Cervix. In Dewhurst's textbook of Obstetrics and gynaecology for postgraduate (8th ed). Edited by Edmond K D. John Wiley & Sons, Ltd. 2012; 747-759.
3. <https://publications.iarc.fr/Databases/Iarc-Cancerbases/GLOBOCAN-2012-Estimated-Cancer-Incidence-Mortality-And-Prevalence-Worldwide-In-2012-V1.0-2012>
4. Adewole IF, Benedet JL, Crai BT, et al. Evolving a strategic approach to cervical cancer control in Africa. *Gynecol Oncol.* 2005; 99: S209-S212.
5. Iyoke CA, Ugwu GO. Burden of gynaecological cancers in developing countries. *World Journal of Obstet Gynecol.* 2013; 2: 1-7.
6. Holschneider CH. Premalignant & Malignant Disorder of the Uterine cervix. In *Current Diagnosis & Treatment*, 11 Edition. 2013; 1254-1293.

7. Escobar P F, Orr JW. The human papilloma virus vaccine: Current status. *Female Patient*. 2008; 33: 18-22.
8. Thomas JO, Herrero R, Omigbodun AA, et al. Prevalence of human papilloma virus infection in women in Ibadan, Nigeria: A population-based study. *Br J Cancer*. 2004; 90: 638-645.
9. Kocken M, Helmerhorst T J, Berkhof J. Risk of recurrence high grade cervical intraepithelial neoplasia after successful treatment: a long-term multi-cohort study. *Lancet Oncol*. 2011; 12: 441-450.
10. <http://www.haad.ae/simplycheck/ar/tabid/72/Default.aspx>
11. Nnodu O, Erinsho L, Jamda M, et al. Knowledge and attitudes towards cervical cancer and human papilloma virus: A Nigerian Pilot Survey. *Afr J Reprod Health*. 2010; 14: 95-108.
12. Human Papilloma Virus vaccination coverage among adolescent girls, 2007-2012, and post licensure vaccine safety monitoring, 2006-2013, united States. Centre for Disease Control and Prevention(CDC). *MMWR Morb Mort Weekly Rep*. 2013; 62: 591-595.
13. Stanley M. Human Papilloma vaccine versus cervical cancer screening. *Clin Oncol(R Coll Radiol)*. 2008; 20: 388-394.
14. Ortashi O, Raheel H, Shalal M, et al. Awareness and knowledge about human papillomavirus infection and vaccination among women in UAE. *Asian Pacific Journal of cancer prevention*. 2013; 14: 6077-6080.
15. Blumenthal J, Frey MK, Worley MJ, et al. Adolescent understanding and acceptance of the HPV vaccination in an underserved population in New York City. *Journal of oncology*. 2012.
16. Akanbi O A, Iyanda A, Osundare F, et al. Perceptions of Nigerian Women about Human Papilloma Virus, Cervical Cancer, and HPV Vaccine. *Scientifica*. 2015.
17. Odetola TD, Ekpo K. Nigerian Women's Perceptions about Human Papilloma Virus Immunisations. *J Community Med Health Educ*. 2012; 2: 2161-2171.
18. Agida TE, Akaba GO, Ekele B. Knowledge and perception of human papilloma virus vaccine among the antenatal women in a Nigerian tertiary hospital. *Nigerian Medical Journal*. 2015; 56: 23-27.
19. Ugwu EO, Obi SN, Ezechukwu PC, et al. Acceptability of human papilloma virus vaccine and cervical cancer screening among female health-care workers in Enugu, Southeast Nigeria. *Nigerian Journal of Clinical Practice*. 2013; 16: 249-252.
20. Riedesel JM, Rosenthal SL, Zimet GD, et al. Attitudes about human papillomavirus vaccine among family physicians. *Journal of pediatric and adolescent gynecology*. 2005; 18: 391-398.
21. Paul P, LaMontagne DS, Le NT. Knowledge of cervical cancer and HPV vaccine post- vaccination among mothers and daughters in Vietnam. *Asian Pac J of Cancer Prev*. 2012; 13: 2587-2592.
22. Abiodun OA, Sotunsa JO, Olu-Abiodun OO, et al. Impact of health education intervention on knowledge and perception of cervical cancer and cervical screening uptake among adult women in rural communities in Nigeria. *BMC*. 2014; 14: 814.
23. Ezenwa B N, Balogun M R, Okafor I P. Mothers' human papilloma virus knowledge and willingness to vaccinate their adolescent daughters in Lagos, Nigeria. *Int J Women Health*. 2013; 5: 371-377.
24. Mukama T, Ndejjo R , Musabyimana A, et al. Women's knowledge and attitudes towards cervical cancer prevention: a cross sectional study in Eastern Uganda. *BMC women's health*. 2017; 17: 9.
25. Chidyaonga-Maseko F, Chirwa ML, Muula AS. Underutilization of cervical cancer prevention services in low and middle income countries: a review of contributing factors. *Pan Afr Med J*. 2015; 21: 231.
26. Onsuz MF, Topuzoglu A, Bilgi Z, et al. The evaluation of the knowledge levels and attitudes of medical students who have accomplished obstetric and gynaecological diseases internship in a medical school about human papilloma virus vaccine. *TAF preventive Medicine Bulletin*. 2011; 10: 557-564.
27. Financing HPV vaccination in developing countries. *Lancet*. 2011; 377: 1544.
28. www.hpvcentre.net
29. Human Papilloma Virus vaccination. The American College of Obstetricians and Gynaecologists Committee Opinion. *Obstet Gynecol*. 2014; 123: 712-718.