CERVICAL CANCER SCREENING, HPV VACCINE: KNOWLEDGE AND ATTITUDES OF FEMALE ADOLESCENTS SEEKING CONSULT AT PHILIPPINE CHILDREN'S MEDICAL CENTER

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ABSTRACT

OBJECTIVE: This study aims to assess the knowledge and attitudes of female adolescents aged 14-19 years old seeking consult at Philippine Children's Medical Center regarding cervical cancer screening and HPV vaccine.

DESIGN: Cross-sectional survey of mid to late adolescents.

METHODOLOGY: The survey questionnaire consists of 18 items in the domain of knowledge, attitudes, practice behaviors, barriers and demographic information. Survey forms in a sealed envelope were given to adolescents 14 to 19 years old after obtaining their assent and parents/guardians' consent.

RESULTS: There were a total of 107 respondents; majority belonged to the mid adolescents (14-16 years old), high school level and non sexually active 57%, 64% and 62% respectively. Most of the respondents (60%) were in a relationship or had a boyfriend, 61% engaged in a monogamous sexual relationship with their partners, 10% had 2 partners and 15% had more than 3 partners. There were significantly more late adolescents who are sexually active compared to mid adolescents (67.4% and 14.8%). Awareness of cervical cancer screening is only 23% of the surveyed adolescents (mean age 16.36). Majority of the sexually active respondents knew that HPV infection is through vaginal intercourse, and that pap smear is necessary even if no history of cancer in the family. More respondents with high education knew that avoidance of sexual intercourse, using condom and vaccination are all effective methods of HPV infection prevention. 53% of the respondents heard about HPV vaccine. Sources of information were mostly from the mass media. Majority were willing to receive the vaccine especially if given for free.

CONCLUSION: Knowledge on HPV and Cervical cancer prevention especially through pap smear is poor. Health education and improvement of personal practices should be emphasized as necessary factors for preventing HPV infection acquisition.

Keywords: adolescents, cervical cancer screening, Pap smear, HPV vaccination

INTRODUCTION

Human Papilloma Virus (HPV) is a group of more than 150 related viruses, of which more than 40 types can be sexually transmitted. This DNA-containing viruses causes conditions that range from the common benign genital warts to malignancy such as cervical cancer. At least 25 different subtypes have been involved in the genital region. The most common

subtypes, HPV 16 and 18, causes premalignant or malignant lesions of the female genital tract. While types 6 and 11, are more commonly associated with benign lesions. Sexual intercourse is the easiest way to spread HPV infection or HPV-related conditions, which are not easily prevented with condoms, since any skin to skin contact can spread the virus. As with other STD, peak incidence occurs between the ages of 15 and 25 years. [1] Persistent infection with the high risk or oncogenic types of HPV causes cervical, vulvar, vaginal and anal cancer.

The incidence of cervical cancer remained stable from 1980 to 2005 according to the Filipino cancer registry annual report, with an annual age-standardized incidence rate of 22.5 cases per 100,000 women. The overall 5-year survival rate was 44% and mortality rate was 1 per 10,000 women. [2] The recorded incidence has increased from an annual average of 4,536 new cases in 1998 to 7,277 new cases in 2005. The specific reason behind this rise is unclear; it may simply be due to improved reporting, or to increasingly unhealthy lifestyle, or to the rise in carcinogens in an industrializing environment, or to an increase in the sexually transmitted spread of carcinogenic types of HPV warts.[3] Most HPV infections go away on their own without causing any type of abnormality. However, persistent infection with cancer-associated HPV types along with other factors such as smoking and having many children increases the risk that mild abnormalities will progress to cervical cancer. Early coitarche, multiple sexual partners, sexual partners who have other partners were also implicated, however the greatest risk for cervical cancer is the lack of regular Pap smear screening. [4]

Pap smear or Pap test is a way to examine cells collected from the cervix (the lower, narrow end of the uterus). The main purpose is to detect cancer or abnormal cells that may lead to cancer. It can also find non cancerous conditions, such as infection and inflammation. Pap tests continue to be essential to detect cervical cancers and precancerous changes, even in women who have been vaccinated against HPVs, because current HPV vaccines do not protect against all HPV types that cause cervical cancer. Therefore, it is important for vaccinated women to continue to undergo cervical cancer screening in accord with recommendations for women who have not been vaccinated.[5]

The American College of Obstetricians and Gynecologists announced on November 20, 2009 that women should have their first cancer screening at age 21 and can be rescreened every two years, instead of annually as previously recommended. Moving the baseline cervical screening to age 21 is a conservative approach to avoid unnecessary treatment of adolescents which can have economic, emotional, and future childbearing implications. Although the rate of HPV infection is high among sexually active adolescents, invasive cervical cancer is very rare in women under age 21; but because of the immaturity of the adolescent cervix, there is a higher incidence of HPV-related precancerous lesions (called dysplasia) in this age group.[6] The surest way to eliminate risk for genital HPV infection is to refrain from any genital contact with another individual. For those who are sexually active, a long-term, mutually monogamous relationship with an uninfected partner is the strategy most likely to prevent HPV infection. However, it is difficult to determine whether a partner who has been sexually active in the past is currently infected.

Correct and consistent condom use does not offer complete protection because there are areas not covered by a condom. The food and Drug Administration (FDA) has approved two vaccines to prevent HPV infection: Gardasil (quadrivalent) and Cervarix (bivalent), which are both effective in preventing infections with HPV types 16 and 18, two oncogenic HPVs that causes 70% of cervical cancers. Ideally, girls should be vaccinated before the onset of sexual activity and together with screening program (Pap smear) can reduce the lifetime risk of acquiring cervical cancer by up to 94%. [7]

To date, there is no known local study focusing on the adolescents and young adult's knowledge and beliefs on cervical cancer and attitude towards HPV vaccination. This study will provide the baseline local data; aid health practitioners to develop effective strategies to communicate with the adolescents; give relevant information on HPV, cervical cancer, and its prevention; and recommend HPV vaccination to lower if not completely eradicate cervical cancer cases. This will also determine the content of lectures to be given to this age group for recommendation to school programs for proper information dissemination thus lower incidence of HPV morbidity and mortality.

Cervical cancer remains the number one cause of reproductive tract mortality among females worldwide; and HPV being the major risk factor. There is a need for women and young girls to understand the link between HPV infection and development of cervical cancer and the need for regular Pap smear.

GENERAL OBJECTIVE:

To determine the knowledge and attitudes on cervical cancer screening and HPV vaccination among female adolescents ages 14-19 years.

SPECIFIC OBJECTIVES:

1. To determine the profile of Adolescents in terms of age, education and sexual activity.

2. To determine the number of adolescents who are aware of cervical cancer screening and HPV vaccination

3. To identify the sources of information among female adolescents who have heard of HPV vaccine

4. To compare the knowledge and attitude on cervical cancer screening and HPV vaccination based on the educational attainment and age of the adolescents.

5. To compare the knowledge and attitude towards cervical cancer screening and HPV vaccination by sexual activity.

6. To determine the proportion of adolescents who are willing to receive the HPV vaccine.

METHODOLOGY

This study is a cross sectional study. It employed a sealed envelope technique. A self administered survey questionnaires were given to all Female Adolescents (ages 14-19) upon consult at the Adolescent clinic of Philippine Children's Medical Center for any reason. Consent forms to parents/guardians, as well as assent

form by the adolescents were given prior to answering the 18- question survey form.

The questionnaire was formulated specifically for the young respondents. Survey questions as well as research proposal were reviewed by UP Population Institute Social Scientist. Questionnaire was pre-tested among 10 adolescent girls who sought consult at Philippine Children's Medical Center - Adolescent Clinic, after explaining to the parents and subjects the purpose and content of the questionnaire. Parental consent as well as adolescents' assent was obtained. There were no problems encountered and all respondents answered all the questions leaving no blanks. It was validated and croonbachs alpha yielded a value of 0.81 denoting that the questionnaire was reliable.

The survey included questions regarding knowledge of cervical cancer, role of HPV infection in cervical cancer, HPV vaccination, the purpose of Pap smears, and demographics. Female adolescents were considered sexually active when they answered the questions pertaining to age of 1st sexual contact, number of sexual partners and affirmation of sexual intercourse with partner (heterosexual/homosexual) regardless of her status of sexual activity at the present.

All 107 questionnaires had an introduction that explained the purpose of the study and emphasized the anonymity and confidentiality of the results. The questionnaire elicited both quantitative and qualitative data. Non-response bias was addressed by the supervision of respondents by the researcher during the administration of the questionnaire. Upon return of an accomplished questionnaire, the researcher immediately reviewed the survey to look for any errors or non-response. In such cases, questionnaires were given back to the respondents to be completed.

Excluded from the sample were males, patients with severe reading impediment, those with serious physical or mental handicap and the early adolescents (10-13years old). Middle to late Adolescents (14-19 years old) were focused mainly because of their ability to respond to study questions pertaining to sex, sexuality and sexually transmitted infection (STI), its prevention and outcome. These age groups are also characterized as having increased involvement in partnering relations, manifested by dating activity, sexual experimentation, and intercourse. Their feeling of omnipotence and immortality leads them to risk-taking behaviour, which is a factor in the high rates of accidents, suicide, drug use, pregnancy, and sexually transmitted diseases.[8] Including younger adolescents ages 10 to 13 would be difficult given the socio-cultural context in the Philippines. Impediments to studying the younger group also include: parents' objection; service providers' bias; and communities' and churches' conservative beliefs.[9]

This choice of age group is similar to the findings of Red et al in her study in 2008, conducted on 4 public high schools in Quezon City; the mean age of coital debut among females is at 15.67±1.15. The youngest age of coital debut was 15 years old. [10] A decreased age of coital debut was significant as compared with the Young Adult Fertility and Sexuality Study 3 in 2002 (YAFS 3) in which the Mean age of first sexual experience in females is 18 years old. [11]

All information gathered from the research was held in high confidentiality. The respondent's names were not collected or appeared anywhere

on the survey and complete anonymity was guaranteed. The participants after answering the survey questions received an information sheet containing data regarding HPV, cervical cancer, its risks and mode of transmission and prevention.

The number of subjects included in the study was computed using a 95% level of confidence. With an estimated proportion of 38% of respondents having knowledge of HPV based from a previous study done at St. Lukes Medical Center, Philippines (Gratil et al, 2011; n=164)[12], at least 91 respondents is needed.

All data were encoded using Excel spreadsheet and SPSS analysis. Data were analyzed using SPSS version 10 for windows. Descriptive statistics were generated for all variables. For nominal data, frequencies and percentages were computed. For numerical data, mean ± SD were generated. Analysis of the different variables under study was done using the following test statistics: Chi- square test and Fisher Exact test when necessary used to compare/associate nominal data.

To test the significant relationship between the respondents' age, educational attainment and sexual status to the level of knowledge on HPV, cervical cancer, HPV Vaccine and Pap smear, the chi square test was used.

A high level of knowledge is evident if 75% of the total respondents answered the questions correctly; moderate knowledge if 50 to 74% answered correctly; and poor knowledge if less than 50% answered correctly.

RESULTS

There were a total of 107 respondents of the study distributed to 61 (57%) mid adolescents and 46 (43%) late adolescents; 15 (14%) elementary level, 68 (64%) high school level and 24 (22%) college level; 40 (37%) are sexually active (of which 42.5% belonged to ages 13-16 years old and 57.5% were aged 17-19 years old) while 67 (63%) were non sexually active. Majority of the respondents (mean age of 16.36) 80% have heard about sexually transmitted diseases.

TABLE 1. Distribution of Respondents According to demographic profile

	Frequency n=107	(%)
Age distribution		
14-16yo	61	57
17-19yo	46	43
Mean ± SD = 16.36 ± 1.71		
Level of Education		
Elementary level	15	14
High school level	68	64
College level	24	22
Heard of the Sexually Transmitted Disease		
Yes		
No	86	80
	21	20

Table 2 shows the practices of respondents regarding sexual relationship. 40 (37%) engaged in sexual intercourse. Of this 40 with sexual intercourse, 39 (98%) had it with their boyfriend and there was 1 without a boyfriend but had sexual intercourse. Among these sexually active

adolescents, there were 10 (25%) who had >1 sexual partners; the age at first sex started at 13 years with an average of 16.35 years.

TABLE 2. Practice of Respondents regarding Sexual Relationship

Parameter	**Freq**	**%**
Relationship status		
With boyfriend	64	*60*
Without boyfriend	43	*40*
Total	107	*100*
Sexual intercourse activity		
With boyfriend:		
With sexual intercourse	39	*61*
Without sexual intercourse	25	*39*
Total	64	*100*
Without boyfriend:		
With sexual intercourse	1	*2*
Without sexual intercourse	42	*98*
Total	43	*100*
Sex partners frequency & age at first sex		
Number of sex partners		
1	30	*75*
2	4	*10*
3 and more	6	*15*
Total	40	*100*
Mean ± SD = 1.45 ± 0.90		
Age at first sex		
13 - 16	17	*42.5*
17 - 19	23	*57.5*
Total Mean ± SD = 16.35 ± 1.46	40	*100*

Table 3 shows the comparison of sexually active and non sexually active adolescents according to age. The results showed that there were more late adolescents that were sexually active than the mid adolescents with 67.4% and 14.8% respectively.

TABLE 3. Proportion of Sexually active versus Non Sexually active Adolescents according to Age

	Sexually Active		Non Sexually Active		Total
	Frequency	(%)	Frequency	(%)	
Mid Adolescents 14-16yo	9	(14.8%)	52	(85.2%)	61
Late Adolescents 17-19yo	31	(67.4%)	15	(32.6%)	46
Total	**40**		**67**		**107**

P<0.00001 (S)

Table 4 shows the comparison of the distribution of respondents with correct responses to questions related to knowledge of HPV, cervical cancer, HPV vaccine and papsmear according to age, and level of education. The results showed that according to age, there was no significant difference in the responses of mid adolescents' and late adolescents' respondents except when asked on which part of the body HPV affects. When asked, whether or not the uterus is the one affected, majority of late adolescents believed it was the one affected by the Human Papilloma virus compared to the mid adolescents who believed differently. Overall 47% were knowledgeable that it is the cervix which is affected by HPV. When asked whether pap smear is necessary even if there is no family history of cancer there was a significant difference noted between the knowledge of mid and late adolescents. There were significantly more late adolescent respondents who answered that it is necessary compared with mid adolescents and more than 50% of mid adolescent respondents answered that they do not know.

TABLE 4. Distribution of Respondents with correct responses to questions related to knowledge of HPV, cervical cancer, HPV vaccine and papsmear according to Age and Level of Education

	all	**Mid Ado** (n=61) (%)	**Late Adol** (n=46) (%)	**P value**	**Low Educ** (n=83) (%)	**High Educ** (n=24) (%)	**P value**
HPV QUESTIONS							
HPV means							
A Bacterium *(false)*	5 (5%)	4 (7%)	1 (2%)		4 (5%)	1 (4%)	
A Virus *(true)*	39(36%)	23 (38%)	16 (35%)	0.71	29 (35%)	10 (42%)	0.94
A Cancer *(false)*	13(12%)	7 (11%)	6 (13%)	(NS)	10 (12%)	3 (12%)	(NS)
I Don't Know	50(47%)	27 (44%)	23 (50%)		40 (48%)	10 (42%)	
Part of the Body That HPV affects							
Uterus *(false)*	44(41%)	20 (33%)	24 (52%)	0.04 (S)	32 (39%)	12 (50%)	0.44
Cervix *(true)*	48(45%)	29 (47%)	19 (41%)	(uterus	38 (46%)	10 (42%)	(NS)
Breast *(false)*	7 (6%)	6 (10%)	1 (2%)	only)	7 (8%)	0	
Ovary *(false)*	8 (7%)	6 (10%)	2 (4%)		6 (7%)	2 (8%)	
Methods one can become infected with HPV*							
Vaginal intercourse *(true)*	90(84%)	49 (80%)	41 (89%)	0.21(NS)	69 (38%)	21 (88%)	0.76(NS)
Kissing *(false)*	6 (6%)	4 (7%)	2 (4%)	0.70(NS)	6 (7%)	0	0.33(NS)
Toilet seats *(false)*	21(20%)	11 (18%)	10 (22%)	0.63(NS)	15 (18%)	6 (25%)	0.56(NS)
None of the above	6 (6%)	4 (7%)	2 (4%)	0.70(NS)	5 (6%)	1 (4%)	1.00(NS)
Methods of preventing HPV *							
Avoidance of sexual intercourse	22(21%)	12 (20%)	10 (22%)	0.79(NS)	20 (24%)	2 (8%)	0.14(NS)
Using Condom *(true)*	9 (8%)	5 (8%)	4 (9%)	1.00(NS)	8 (10%)	1 (4%)	0.68(NS)
HPV vaccination *(true)*	26(24%)	15 (25%)	11 (24%)	0.94(NS)	24 (29%)	2 (8%)	0.03 (S)

All of the above I Don't Know	38(36%) 22(21%)	22 (36%) 22 (36%)	16 (35%) 10 (22%)	0.89(NS) 0.10(NS)	23 (28%) 18 (22%)	15 (62%) 4 (17%)	0.001 (S) 0.78(NS)
*multiple response							
CERVICAL CANCER QUESTIONS							
	all	**Mid Ado** (n=61) (%)	**Late Adol** (n=46) (%)	**P Value**	**Low Educ** (n=83) (%)	**High Educ** (n=24) (%)	**P Value**
Cervical Cancer occurs only in Older women True False I Don't Know	12(11%) 39(36%) 56(52%)	10 (16%) 19 (31%) 32 (53%)	2 (4%) 20 (44%) 24 (52%)	0.10 (NS)	10 (12%) 30 (36%) 43 (52%)	2 (8%) 9 (38%) 13 (54%)	0.88 (NS)
Cervical Cancer is caused by HPV virus True False I Don't Know	50(47%) 5 (5%) 52 49%)	29 (48%) 4 (6%) 28 (46%)	21 (46%) 1 (2%) 24 (52%)	0.52 (NS)	38 (46%) 4 (5%) 41 (49%)	12 (50%) 1 (4%) 11 (46%)	0.93 (NS)
Cervical Cancer caused by HPV virus can be prevented True False I Don't Know	76(71%) 3 (3%) 28(26%)	39 (64%) 3 (5%) 19 (31%)	37 (80%) 0 9 (20%)	0.09 (NS)	56 (68%) 3 (4%) 24 (28%)	20 (83%) 0 4 (17%)	0.27 (NS)
HPV VACCINE							
Did you hear about HPV vaccination? Yes, thru Media Yes, thru Doctor Yes, Teacher Friends/Classmates Not yet	32(30%) 6 (6%) 18(17%) 0 51(48%)	17 (28%) 2 (3%) 12 (20%) 0 30 (49%)	15 (33%) 4 (9%) 6 (13%) 0 21 (46%)	0.50 (NS)	20 (24%) 6 (7%) 14 (17%) 0 43 (52%)	12 (50%) 0 4 (17%) 0 8 (33%)	0.01 (S) (comparison of thru media only)
	all	**Mid Ado** (n=61) (%)	**Late Adol** (n=46) (%)	**P Value**	**Low Educ** (n=83) (%)	**High Educ** (n=24) (%)	**P Value**
PAPSMEAR							
Pap smear Means Exam to detect early signs of cancer Tests to determine if a girl is pregnant Test to know if one is with AIDS No, I don't know	25(23%) 1 (1%) 4 (4%) 77(72%)	13 (21%) 0 4 (7%) 44 (72%)	12 (26%) 1 (2%) 0 33 (72%)	0.20(NS)	14 (17%) 0 4 (5%) 65 (78%)	11 (46%) 1 (4%) 0 12 (50%)	0.003 (S)
Only Women who had many sexual partners need to have papsmear True False I Don't Know	14(13%) 43(40%) 50(48%)	8 (13%) 26 (43%) 27 (44%)	6 (13%) 17 (37%) 23 (50%)	0.82 (NS)	11 (13%) 32 (39%) 40 (48%)	3 (12%) 11 (46%) 10 (42%)	0.80 (NS)
Pap smear are necessary even if there is no family history of cancer True False I Don't Know	49(46%) 2 (2%) 56(52%)	20 (33%) 2 (3%) 39 (64%)	29 (63%) 0 17 (37%)	0.005 (S)	34 (41%) 2 (2%) 47 (57%)	15 (62%) 0 9 (38%)	0.15 (NS)

According to level of education, there was no significant difference in the responses of those with low and high education respondents. However when asked about the methods of preventing HPV, the higher the educational level of the adolescents the greater is their awareness that HPV vaccination, using condom and avoidance of sexual intercourse were all methods of preventing infection with HPV. More respondents with low education thought that HPV vaccination alone is the method of preventing HPV. There were more respondents with high education who heard about HPV vaccination mostly thru media; and knew that pap smears are exam to detect early signs of cancer. Majority (62%) of those with high education knew that even if there is no family history of cancer in the family, Pap smear needs to be done to all women.

Table 5 shows the comparison of the distribution of respondents with correct responses to questions related to knowledge of HPV, cervix cancer, HPV vaccine and papsmear according to sexual activity. The results showed that , there was no significant difference in the responses of sexually active and non-sexually active respondents except when asked on which part of the body HPV affects, how one can become infected with HPV, and whether pap smears are necessary even if there is no family history of cancer . When asked which part of the body HPV affects, significantly more proportion of sexually active respondents knew that the uterus is the one affected by HPV compared to the non-sexually active respondents (p=0.02). Most sexually active respondents knew that vaginal intercourse will cause infection with HPV and also knew that pap smears are necessary even if there is no family history of cancer. Awareness on HPV by non sexually active adolescents was less than that of sexually active adolescents.

TABLE 5. Distribution of Respondents with correct responses to questions related to knowledge of HPV, cervix cancer, HPV vaccine and papsmear according to Sexual Activity

	Sexually Active (n=40) (%)		**Non-Sexually Active (n=67) (%)**		**Total**	**P value**
HPV QUESTIONS						
HPV means						
A Bacterium *(false)*	1	(2%)	4	(6%)	5	
A Virus *(true)*	12	(30%)	27	(40%)	39	0.52 (NS)
A Cancer *(false)*	6	(15%)	7	(10%)	13	
Don't Know	21	(53%)	29	(43%)	50	
Part of the Body That HPV affects						
Uterus *(false)*	22	(55%)	22	(33%)	44	
Cervix *(true)*	15	(38%)	33	(49%)	48	0.02 (S) (comparison of uterus only)
Breast (*false)*	1	(2%)	6	(9%)	7	
Ovary (*false)*	2	(5%)	6	(9%)	8	
Methods one can become infected with HPV *						
Vaginal intercourse *(true)*	38	(95%)	52	(78%)	90	0.01 (S)
Kissing (*false)*	1	(2%)	5	(7%)	6	0.40 (NS)
Toilet seats (*false)*	5	(12%)	16	(24%)	21	0.15 (NS)
None of the above	1	(2%)	5	(7%)	6	0.40 (NS)

Methods of preventing HPV *						
Avoidance of sexual intercourse *(true)*	7	(18%)	15	(22%)	22	0.54 (NS)
Using Condom *(true)*	3	(8%)	6	(9%)	9	1.00 (NS)
HPV vaccination *(true)*	9	(22%)	17	(25%)	26	0.74 (NS)
All of the above	16	(40%)	22	(33%)	38	0.45 (NS)
I Don't Know	8	(20%)	14	(21%)	22	0.91 (NS)
CERVICAL CANCER QUESTIONS						
Cervical Cancer occurs only in Older women						
True	2	(5%)	10	(15%)	12	
False	17	(43%)	22	(33%)	39	0.24 (NS)
I Don't Know	21	(52%)	35	(52%)	56	
Cervical Cancer is caused by HPV virus						
True	17	(43%)	33	(49%)	50	
False	1	(2%)	4	(6%)	5	0.48 (NS)
I Don't Know	22	(55%)	30	(45%)	52	
Cervical Cancer caused by HPV virus can be prevented						
True	30	(75%)	46	(69%)	76	
False	0		3	(4%)	3	0.37 (NS)
I Don't Know	10	(25%)	20	(27%)	28	
HPV VACCINE						
Did you hear about HPV vaccination?						
Yes, thru Media	15	(38%)	17	(25%)	32	
Yes, thru Doctor	3	(8%)	3	(5%)	6	
Yes, Teacher	4	(10%)	14	(21%)	18	
Friends/Classmates	0		0		0	0.32 (NS)
No, I Don't Know	18	(45%)	33	(49%)	51	
PAPSMEAR						
Pap smear Means						
Exam to detect early signs of cancer	10	(25%)	15	(22%)	25	
Tests to determine if a girl is pregnant	1	(2%)	0		1	0.24 (NS)
Test to know if one is with AIDS	0		4	(6%)	4	
No, I don't know	29	(73%)	48	(72%)	77	
Only Women who had many sexual partners need to have papsmear						
True	7	(18%)	7	(10%)	14	
False	13	(32%)	30	(45%)	43	0.36 (NS)
I Don't Know	20	(50%)	30	(45%)	50	
Pap smear are necessary even if there is no family history of cancer						
True	24	(60%)	25	(37%)	49	
False	0		2	(3%)	2	0.05 (S)
I Don't Know	16	(40%)	40	(60%)	56	

Table 6 shows the comparison of the respondent's willingness to use HPV vaccine according to age and sexual activity. The results showed that according to age, there was no significant difference in the willingness of the mid adolescents and late adolescents. Also, there was was no significant difference in the willingness of the sexually and non-sexually active adolescents and same for those with low and high level of education (p=0.28). 71% of the surveyed adolescents were willing to receive the vaccine if given for free. More than 20% of the respondents cannot give a concrete answer whether they want to use the vaccine or not

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TABLE 6. Distribution of Respondents Willingness to use HPV vaccine according to Age

	All	**Mid Adol**	**Late Adol**	**P value**	**Sexually Active**	**Non Sexually Active**	**P value**	**Low Ed**	**High Ed**	**P Value**
Use the vaccine if free										
Yes	76	40 (66%)	36 (78%)	0.30	32 (80%)	44 (66%)	0.12	60 (72%)	16 (67%)	0.28
No	5	4 (7%)	1 (2%)	(NS)	0	5 (8%)	(NS)	5 (6%)	0	(NS)
Maybe	26	17 (28%)	9 (20%)		8 (20%)	18 (27%)		18 (22%)	8 (33%)	

Table 7 shows the reasons for not using HPV vaccine of sexually and non-sexually active adolescent. Significantly more proportion of those not sexually active answered that they do not need the vaccine because they are currently not sexually active. For those sexually active, they answered that they think they do not need the HPV vaccine because they have sex only with their boyfriend. There is no significant difference with the reasons provided based on educational level and age bracket.

TABLE 7. Reasons for not Using HPV Vaccine

	N	**Sexually Active (n=40)** (%)	**Non Sexually Active (n=67)** (%)	**P value**
I Dont need the vaccine	13	3 (8%)	10 (15%)	0.36 (NS)
Currently not sexually active	13	1 (2%)	12 (18%)	0.02 (S)
Having sex only with Boyfriend	5	5 (13%)	0	0.006 (S)
Always use condom	0	0	0	---

DISCUSSION

The result of this study indicates that female adolescent's knowledge with regards to meaning of HPV and part of the body affected is poor, only 36% identified HPV as a virus and 45% identified cervix as the one affected. However, with regards to mode of transmission and method of prevention, level of knowledge was high at 84% and 89% consequetively. Sexually active adolescents were significantly more knowledgeable than the non sexually

active regarding mode of transmission. Meaning as a woman engaged in sexual contact she becomes more knowledgeable that HPV infection is through vaginal intercourse. Out of the 89% who were aware of preventing HPV infection, the study shows that the higher the educational attainment the higher is their knowledge that avoidance of sexual intercourse, using condom and HPV vaccination were all methods of prevention; more low educational attainment group thought it was only HPV vaccination.

This finding is slightly higher than those observed in earlier surveys among 1348 adolescents and young women aged 14-24 years in Italy where 30% have heard about HPV infection. [13] and significantly higher compared to study in 2010 at Kolkota India where 15% of 630 students have heard about HPV. [14] Low knowledge was also depicted in the study by Hoover et al of 60 women (15 to 28 years old) in southern New Jersey Shore, only 23.3% had heard of HPV; 34.5% of women 18 years or older had heard of HPV versus 8.3% of those 17 years and under ($P<0.01$). Most of those who heard of HPV , 14.8% had done so at school; 9% had heard from a doctor and 9% from television.[15] Poor knowledge can be attributed to their low level of understanding with regards to importance and implication of Human papilloma virus infection which can be due to lack of public health education or inadequacy of existing campaigns. However, the slight increase in this study compared to previous ones may be due to the heightened interest growing in the youths of today, brought about by exposure to media (television, magazines) and internet regarding HPV vaccination and the need for self protection.

There is a strong association between HPV and cervical cancer. In the Philippines the reported prevalence of all HPV types is 93.8% in squamous cell carcinoma and 90.9% in adenocarcinoma/ adenosquamous carcinoma. [16]

Cervical cancer is not a disease of old age. For patients with squamous cell carcinoma the mean age was 47.2 years; for those with adenocarcinoma/adenosquamous carcinoma it was 48.4 years. [16] These women are at the peak of their biologically and economically productive ages. Therefore when a woman dies of this cancer, a life is not simply lost; rather, a husband loses a wife, the children lose a mother, and the family is destabilized psychologically, financially and socially. The economy loses a productive pair of hands but more than a pair of productive hands is lost to the state, which inevitably pays a big part of the cost of treating this disease. [3] Depending on the stage of the disease, the cost of treatment per patient ranges from P35 thousand to more than P703 thousand. These amounts are prohibitive even to those with income, considering that the national annual average savings per family is only P24 thousand. One way or another, the government subsidizes a considerable portion of the cost for these families. But for a big part of the population who lives below the poverty level, and who must be treated as charity patients, the government must shoulder all these costs.[3] The cost of preventing cervical cancer can be as low as P400 through a conventional Pap smear test which detects pre malignant condition, thus prevents progression to frank cervical cancer by early treatment or as high as P 21 thousand through HPV vaccination.

Educational programs must be structured to address the gaps in

knowledge between HPV infection and cervical cancer. This was the findings in this study where only 47% knew that HPV causes cervical cancer, 49% do not know if HPV can cause cervical cancer and 5% do not believe that HPV can cause cervical cancer. Same findings in a descriptive cross sectional analysis of 449 females in Colombia (age range 18-69 years old, mean of 38.7 years), 72.4% never heard of HPV, 86.2% were unaware of the role of HPV in the development of cervical cancer and 80.2% did not know that HPV is sexually transmitted.[17]

Knowledge about HPV among U.S. women ages 18 to 75 years old was relatively low (Tiro et al, 2005); 40% of women (n=1,248) reported that they had ever heard of HPV. Among those who have heard of it, less than half knew that HPV causes cervical cancer.[18] Better understanding of HPV infection and role of HPV vaccination for the prevention of cervical cancer may motivate women to participate in HPV primary prevention through vaccination.

Two vaccines (Quadrivalent, Bivalent) are available to protect females against the types of HPV that causes most cervical cancers. The Quadrivalent HPV vaccine (Gardasil, MSD) was found to have 97% efficacy at preventing HPV 16 and/ or 18 related cervical intraepithelial neoplasia (CIN) 2 or 3, adenocarcinoma in situ and cervical cancer. It was approaved for use in males and females between 9 and 26 years of age. It also protects against most genital warts (caused by HPV 6 and 11). The Bivalent vaccine (Cervarix, GSK) which also prevents cervical cancer and precancerous lesions caused by HPV types 16 and 18 was approaved for use in females between 10 and 25 years of age. [19] It is recommended that females get the same vaccine brand for all three doses, whenever possible. The best way a person can be sure to get the most benefit from HPV vaccination is to complete all three doses before beginning sexual activity.[20]

The result of this study with regards to knowledge of HPV vaccine does not differ much from the foreign researches, 53% of adolescents who sought consult at PCMC have heard about HPV vaccine, mostly from the mass media (30%), 17% from their teachers and only 6% through their doctors. Findings of Donders et al in Belgium of 381 women (mean age was 35.8 years SD 11.0) 69% were informed about the vaccine by the mass media (newspaper, television, radio). About 1.3% of all women were informed by the general practitioner, 3.8% by the Gynecologist, and 4.3% by peers.[21] Similar to the findings of Caron et al in a cross sectional study of 361 female college students in New Hampshire, where 85% of the respondents have heard of HPV vaccine, 64.9% was from television commercial, Friends (41.8%) and 31.9% from family. This only shows that adolescents of today are exposed to technologies where they get most of the informations regarding topics which they deemed too personal to ask their parents. Therefore efforts should be made with science based information dessimination, so as not to mislead viewers of TV commercials and advertisements with regards to what is scientifically correct.

In line with the guidelines on giving of HPV vaccines to girls prior to onset of sexual activity, the Italian Ministry in March 2008 started the free vaccination for 12 years old girls. A Cross sectional survey was done on 863 high school students which showed more females than males were aware that HPV could concern themselves (45% vs 26% respectively) and would undergo vaccination against HPV (68% *vs* 40% respectively) of which $p < 0.001$.[22]

Majority of the surveyed adolescents in this study (71%) were willing to receive the vaccine especially if given for free.

Recommendation for women with HPV vaccination to undergo cervical cancer screening through Pap smear Test is the same as for the general population. Pap smear screening is the gold standard method for detecting pre-invasive cervical disease. Without screening, cancer usually presents in advanced stages when cure rates are low. In Canada, half of the 1,300 women diagnosed per year with cervical cancer occur in women who have not had regular Papanicolaou (PAP) smear screening. However, knowledge levels remain low that there is cervical cancer screening that would help detect early changes in the cervix. This was shown in a study done by Diane Blake et al in which only 2.7% of the 111 Female patients (aged 14 years or older) provided an accurate definition of the term Pap smear; 68% even mistakenly believed that it is the same as a pelvic examination.[23] In this current study of 107 adolescent patients (aged 13 to 19 years old), 23% provided the correct definition of pap smear (to detect early signs of cervical cancer); 72% do not know the purpose of papsmear; and 4% mistakenly believed that it is a test to detect AIDS while 1% thought it is the same as a pregnancy test.

CONCLUSION AND RECOMMENDATIONS

This study clearly demonstrated substantial voids in knowledge- only 36-45% knew about HPV, almost nothing about cervical cancer screening at 23%. Given the limited knowledge about HPV, it is not surprising that low level of understanding exists that HPV causes cervical cancer.

Not much difference in the knowledge and attitudes of adolescents except with regards to sexual activity status, as adolescents became sexually active their knowledge that HPV is transmitted through vaginal intercourse increases as well as their awareness of the importance of pap smear.

Based on level of education: high educational attainment positively correlated to increase knowledge with regards to HPV, methods of prevention, and purpose of pap smear. This only shows that age does not contribute much to ones knowledge in contrast to educational attainment and sexual status.

Based from the foregoing findings, there is an urgent need to design school and community-based interventions programs focusing on HPV, perceived risks, mode of transmission and prevention and HPV vaccine efficiency. Moreover, as teachers can play an important role in educating these adolescents, their knowledge should also be evaluated and improved if necessary. Physicians (Pediatrician, family medicine, OB-GYN) must be encouraged to do counseling and health education teachings that will empower these adolescents in preventing unwanted pregnancy and more importantly to delay their coital debut; which would render them at greatest risk for sexually transmited infection, cervical dysplasia and later on cervical cancer. Abstinence should be emphasized as the most reliable method of HPV infection prevention, next only to HPV vaccination.

HPV vaccination should be highly recommended. Parents, guardians and caregivers must also be made aware of the importance of giving HPV vaccine prior to exposure to the virus to attain its full advantage.

Dialogue with government officials and those concerned must be done for HPV vaccination to be included in the expanded program of immunization so that even the less fortunate would be protected.

Regular cervical cancer screening using Pap smear must be done to all women 3 years after sexual contact but not earlier than 21 years old.

REFERENCES:

1. Katz VL, Lentz GM, Lobo RA, Gershenson DM, Comprehensive Gynecology, 5th ed.

2. Domingo EJ, Dy Echo AV; Epidemiology, prevention and treatment of cervical cancer in the Philippines; J Gynecol Oncol Vol. 20, No. 1:11-16, March 2009 DOI:10.3802/jgo.2009.20.1.11

3. Ladines-Llave CA, MD; The Burden of Cervical Cancer in the Philippines and Efforts to Combat the Disease; http://www.ellentordesillas.com/?p=436

4. Williams Gynecology; Section 4 Gynecologic Oncology, Chapter 30. Cervical Cancer

5. National Cancer Institute; U.S. National Institutes of Health. www.cancer.gov

6. The American Congress of Obstetricians and Gynecologist; New Pap Smear and Cancer Screening Guidelines. www.acog.org

7. Waller J, Marlow LAV, and Wardle J; Mothers' Attitudes towards Preventing Cervical Cancer through Human Papillomavirus Vaccination: A Qualitative Study; Cancer Epidemiol Biomarkers Prev 2006; 15:1257-1261.

8. Radzik M, Sherer S, Neinstein LS. Adolescent Health Care: A Practical Guide 4th Ed, Chapter 2 Psychosocial Development in Normal Adolescents

9. Sexual and Reproductive Health of Adolescents and Youths in the Philippines http://www.wpro.who.int/NR/rdonlyres/C39735C6-2817-4BC0-B527-3F22FBA7F2B9/0/ASRHphilippines.pdf

10. Red D, ; Relationship of Religiosity and Sexual attitudes on the Coital debut among public high school students in Quezon City; Philippine Children's Medical Center, Philippines, 2008

11. Raymundo, C.M., Young Adult Fertility and Sexuality Study 3 (2002), University of the Philippines Population Institute, Manila, Philippines, 2002.

12. Gratil, CA, Ignacio, MJ et al; Knowledge, Attitudes, Perceptions, and Practice on Human Papilloma Virus (HPV) and HPV Vaccine, Of Female College Students of Trinity University Of Asia; St. Lukes College of Medicine; February 2011

13. Di Giuseppe G, Abbate R, Liguori G, Albano L, Angelillo IF; Human Papilloma Virus and Vaccination: Knowledge, attitudes and behaviour intention in Adolescents and Young women in Italy. British Journal of Cancer (2008) 99, 225-229

14. Saha A, Chaudhury AN, Bhowmik P, Chatterjee R ; Awareness of Cervical Cancer Among Female Students of Premier Colleges in Kolkata, India
Asian Pacific Journal of Cancer Prevention, Vol 11, 2010

15. Hoover DR, Oli BC and Moench EA; Attitudes of Adolescent/Young adult Women toward Human Papillomavirus Vaccination and clinical trials; Health Care for Women International , 21:375–391, 2000

16. Ngelangel CA, Munoz N, Bosch FX, Limson GM, Festin MR, Deacon J et al. Causes of Cervical Cancer in the Philippines: A Case-Control Study. J Natl Cancer Inst 1998; 90: 43-9.

17. Hanisch R, Gustat J, Hagenseey ME, Baena A, Salazar JE , Castro MV, Gaviria AM, & Sanchez GI; Knowledge of Pap screening and human papillomavirus among women attending clinics in Medellın, Colombia Int J Gynecol Cancer 2007

18. Tiro JA, Meissner HI, Kobrin S, and Chollette V . What Do Women in the U.S. Know about Human Papillomavirus and Cervical Cancer? Cancer Epidemiol Biomarkers Prev 2007;16(2). February 2007

19. Blumenthal J, Frey MK, Warley MJ et al. Adolescents Understanding and Acceptance of the HPV Vaccination in an Underserved Population in New York City. Journal of Oncology, Vol. 2012, 1-8

20. HPV Vaccines; http://www.cdc.gov/hpv/vaccine.html

21. Donders GG , Gabrovska M , Bellen G, Van Keirsbilck J, Van Den Bosch T, Riphagen I, Verjans M; Knowledge of cervix cancer, human papilloma virus (HPV) and HPV vaccination at the moment of introduction of the vaccine in women in Belgium; Arch Gynecol Obstet (2008) 277:291–298

22. Pelucchi C, Esposito S, Galeone C, Semino M, Sabatini C, Picciolli I, Consolo S, Milani G and Principi N ; Knowledge of human papillomavirus infection and its prevention among adolescents and parents in the greater Milan area, Northern Italy; BMC Public Health 2010, 10:378

23. Blake DR, Weber BM, Fletcher KE. Adolescent and Young Adult Women's Misunderstanding of the Term Pap Smear arch pediatr adolesc med/vol 158, oct 2004 www.archpediatrics.com