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Willingness Towards HPV Vaccination among Parents of Early Adolescent Girls

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ABSTRACT

Background: HPV infection is a prevalent sexually transmitted infection, with high-risk genotypes potentially leading to cancer, while low-risk genotypes cause warts and respiratory papilloma. Human Papillomavirus (HPV) infection is the leading cause of cervical cancer, which is the fourth most prevalent cancer among women globally. HPV vaccination is an important primary prevention strategy for cervical cancer and other HPV-related diseases and cancers. This study has been done to assess the willingness towards HPV vaccination among parents of early adolescent girls.

Methodology: A cross-sectional descriptive research design was used for this study. A non-probability purposive sampling technique was used to select the respondents for the study. Two hundred and fifteen parents having early adolescent girls were chosen as a sample. A structured face-to-face interview was used to collect data.

Results: More than half (62.3%) of the respondents were willing to vaccinate their early adolescent girls with HPV vaccination whereas 37.7% of them were unwilling to vaccinate their early adolescent girls with HPV vaccination. Moreover, utilization of HPV vaccination was very few (1.9%).

Conclusion: The findings of the current research study concluded that half of the respondents had a poor level of knowledge regarding cervical cancer prevention, while more than half of the respondent showed willingness towards HPV vaccination for their early adolescent daughter. Similarly, the utilization of HPV vaccination was extremely low. Monthly family income and knowledge regarding cervical cancer prevention were the factors associated with willingness to vaccinate.

Keywords: *Early Adolescent Girls, HPV vaccination, Knowledge, Parents, Willingness, Utilization*

INTRODUCTION

According to WHO, Human papillomavirus (HPV) is a small, non-enveloped deoxyribonucleic acid (DNA) virus that infects skin or mucosal cells.[1] HPV is one of the most commonly transmitted sexual infections seen at least once in most people engaged in sexual activity.[2] HPV is commonly classified into two types, low-risk HPV and high-risk HPV.[1] Globally, infection with high-risk HPV is acknowledged as a primary cause of infection-related malignancy.[3]

In 2019, an estimated 620, 000 cancer incidences in women and 70 000 cancer cases in males were caused by HPV.[4] The most prevalent disease associated with HPV is cervical cancer in females and oropharyngeal cancers among men.[5] According to WHO, in 2022, approximately 666,000 new cases of cervical cancer were reported worldwide, resulting in 350,000 deaths, making it the fourth most prevalent

cancer among women globally.[2] Sub-Saharan Africa has the highest rate of cervical HPV prevalence among women (24%), followed by Latin America and the Caribbean (16%) , South-East Asia (14%) and Eastern Europe (14%).[6]

According to the statistics given by ICO/IARC Information Centre on HPV and Cancer, in Nepal, cervical cancer has a higher incidence rate (14.2%) than other HPV-related cancers and is the first leading cause of cancers among women and 2nd most common female cancers in women aged 15-44 years where 2244 women are diagnosed each year while 1493 women lose their lives.[7] Vaccination between the ages of 9 and 14, before indulgence in sexual activity, is a highly effective method for providing protection against HPV infection, cervical cancer, and other cancers associated with HPV.[2] The first Human Papillomavirus (HPV) vaccine was approved in 2006 in the USA, playing a key role in eliminating cervical cancer.[8]

In 2020, The Global Strategy for Cervical Cancer Elimination was adopted by the World Health Assembly with the aim of expediting the eradication of cervical cancer as a public health issue setting out three targets for 2030 (90-70-90) in which one of the targets included 90% HPV vaccination coverage for girls by age of 15 years.[9] Although HPV vaccination is still the top priority for cervical cancer prevention, Global coverage of the HPV vaccine in 2022 is only 10% which increased from 7% in 2019.[10] By June 2020, HPV vaccination had been implemented by 107 out of 194 WHO Member States with America and Europe leading.[11] In Nepal, the Human Papillomavirus (HPV) vaccination (Bi-valent) was introduced ten years later than in other developed countries as a demonstration program in Kaski on February 26 and in Chitwan on February 28, 2016.[12] In 2023, Nepal purchased 20,000 doses of HPV vaccine, which were given to approximately 9,000 girls aged 14 to 15 across all seven provinces.[13] The objective of this study is to assess the willingness towards HPV vaccination among parents of early adolescent girls. As to previous studies conducted in different parts of the world, the willingness towards HPV vaccination among parents varies greatly. As the vaccine is presently accessible for girls under 14 years old, parental consent is required for their vaccination

MATERIALS AND METHODS

A community-based descriptive cross-sectional study design was employed to assess the willingness towards HPV vaccination among 215 parents of early adolescent girls. The study was conducted in ward number 14 of Pokhara Metropolitan City. The study population were parents of early adolescent girls of age 9-14 years. Non-probability purposive sampling technique was used to collect the information from the respondents.

Inclusion Criteria

The inclusion criteria included: Parent, either father or mother of early adolescent (9-14 years) girls, Parents who reside in ward no 14 of Pokhara Metropolitan City including those who were staying there on rent. Parents who were available at the time of data collection. Parents who were willing to participate in the study.

Data Collection

A validated structured interview schedule was used to collect the data. The total number of questionnaires had 41 items. Data was collected through face-to-face interviews. Before collecting the data, formal permission was taken from the concerned authorities through the written authorized letter. The purpose of the study was explained to the respondents, and informed consent was obtained from all respondents. The interviewer asked the questions to the respondents one by one and ticked the answers given by the respondents. Data was collected in separate places, and the privacy and confidentiality of the information were maintained.

Statistical Analysis

Data was edited, coded, and entered in Epi-data version 3.1 with a validated command. All the entered data was transferred to the Statistical Package for Social Sciences (SPSS) version 16 program for further analysis. Data was analyzed by using descriptive statistics (as frequency, percentage, mean, and standard deviation), and an inferential statistical test was applied according to the nature of the data. The findings of the study are presented in tables. The chi-square test was used to find out the association between dependent and independent variables.

RESULT

The data depicted in Table 1 shows that out of 215 respondents, majority (86.5%) of the respondents were mothers, and very few (13.5%) of the respondents were fathers. The minimum age of the mother was 26 years, while the maximum age was 52 years, with a mean and SD of 35.60±5.681 years. More than half (61.9%) of the mothers belonged to the age group 31-40 years. The minimum age of the father was 25 years, while the maximum age was 60 years, with mean and SD of 40.05±6.748 years. More than half (57.2%) of fathers belonged to the age group 31-40 years. In regard to religion, more than three-fourth (78.6%) of the respondents were Hindu. Similarly, maximum (39.1%) of the respondents was Janajati. Majority, (96.3%) of the respondents were married and living together. Likewise, more than two third (72.6%) of the respondents were from nuclear family.

Table 2 shows that the maximum (44.2%) of mothers had completed secondary education. Similarly, 46.5% of fathers had completed secondary education. Regarding the occupation, half (50.7%) of the mothers were housemakers. Likewise, a maximum (29.8%) of the fathers were engaged in foreign employment. The minimum monthly family income was 10,000, while the maximum monthly family income was 150000, with median and SD of 43000± 26186.89. Moreover, half (50.2%) of the respondents had a family income of 43000 or more than 43000.

Table 3 illustrates that more than half (60%) of the respondents had one daughter. Similarly, none of the respondents had any self-history of STD. Regarding the family history of cervical cancer, the majority (99.5%) of the respondents didn't have a family history of cervical cancer.

The data depicted in Table 4 suggests that highest knowledge was in the clinical manifestation domain, where the mean percentage was 73.95 with mean and SD of 4.44±1.47. The lowest knowledge was in the screening domain, where the mean percentage was 43.72% with mean and SD of 3.06±1.36. Similarly, the mean percentage in prevention domain, was 69.95% with mean and SD of 3.50±1.11. Likewise, mean percentage of causes and risk factor domain was 67.06% with mean and SD of 3.35±1.26. In Vaccination domain, the mean percentage was 59.21% with mean and SD of 7.70±.24.

The data depicted in Table 5 shows the willingness towards HPV vaccination among parents of early adolescent girls of positive and negative statements. More than half (61.4%) of the respondents agreed with the statement, willing to vaccinate if it protects against cervical cancer and HPV-related diseases. Maximum (61.9%) respondents disagreed with the statement not willing to vaccinate because of lack of information. Similarly, more than two-third (69.8%) of the respondents disagreed with the statement not willing to vaccinate because of fear of life-threatening side effects of the vaccine. More than three-fourth (78.1) of the respondents agreed with the statement willing to vaccinate if it is freely available. Maximum (63.7%) respondents disagreed with the statement not willing to vaccinate because it is expensive. Similarly, 61.4% of the respondents agreed with the statement willing to vaccinate even by paying for it. More than half (60.5%) of the respondents disagreed with the statement not willing to

vaccinate because of fear that it might make their daughter sexually active. Likewise, more than two-third (74%) of the respondents agreed with the statement willing to vaccinate if health care provider recommends it. Maximum (79.5%) of the respondents agreed with the statement willing to vaccinate if friends and family recommend it. Furthermore, 77.2% of the respondents disagreed with the statement not willing to vaccinate because there is no risk of developing HPV infection in future

The data depicted in Table 6 reveals that more than half (62.3%) of the parents were willing to vaccinate their early adolescent girls with HPV vaccination whereas only (37.7%) of them were unwilling to vaccinate their early adolescent girls with HPV vaccination.

The data depicted in Table 7 shows that very few (1.9%) of the parents had their daughters vaccinated and majority (98.1%) of the parents had not vaccinated their daughters. Among the parents who had their daughters vaccinated against HPV, seventy-five percent vaccinated their daughter because of media exposure. Among the vaccinated, all of them (100%) were vaccinated with two doses in the hospital. Similarly, of the non-vaccinated, maximum (48.3%) had not vaccinated their daughter because of lack of enough information regarding the vaccine while very few (2.8%) had not vaccinated their daughter against HPV because of high cost of vaccine.

Data presented in table 8 reveals that there was a statistically significant association of willingness towards HPV vaccination with selected variables; monthly family income and knowledge level of parents as its *p-value* <0.05. There was no association with other variables like information obtained from, religion, ethnicity, marital status, type of family, educational status of mother, educational status of father, occupation of mother, occupation of father, number of daughters and family history of cervical cancer as its *p-value* is >0.05.

Table 1: Socio-demographic characteristics of the respondents. n=215

Variables	**Frequency (f)**	**Percent (%)**
Information obtained from		
Mother	186	86.5
Father	29	13.5
Age of mother		
≤ 30	43	20.0
31-40	133	61.9
41-50	37	17.2
≥ 51	02	0.9
Mean ±SD (Min-Max) 35.60±5.681 (26-52)		
Age of father		
≤ 30	11	5.1
31-40	123	57.2
41-50	64	29.8
≥ 51	17	7.9

Mean ± SD (Min-Max) 40.05±-6.748 (25-60)		
Religion		
Hindu	169	78.6
Buddhist	27	12.6
Christian	17	7.9
Islam	02	0.9
Ethnicity		
Dalit	58	26.9
Janajati	84	39.1
Madhesi	01	0.5
Muslim	02	0.9
Brahmin/Chhetri	70	32.6
Marital status of parents		
Married and living together	207	96.2
Divorced	07	3.3
Separated	01	0.5
Type of family		
Nuclear family	156	72.6
Joint family	59	27.4

Table 2: Socioeconomic characteristics of the respondents. n=215

Variables	**Frequency (f)**	**Percent (%)**
Educational status of mother		
Can read or write	50	23.3
Basic education	42	19.5
Secondary education	95	44.2
More than secondary education	28	13.0
Educational status of father		
Can read or write	44	20.5
Basic education	46	21.4
Secondary education	100	46.5
More than secondary education	25	11.6

Occupation of mother		
Housemaker	109	50.7
Self-employed	35	16.3
Private-service	27	12.6
Agriculture	22	10.2
Government service	13	6.0
Foreign employment	07	3.3
Health workers	02	0.9
Occupation of father		
Foreign employment	64	29.8
Self-employed	56	26.0
Private service	44	20.5
Agriculture	34	15.8
Government service	15	7.0
Health workers	02	0.9
Monthly family income (NRs)		
< 43,000	107	49.8
≥ 43,000	108	50.2
Median± SD (Min-Max) 43000± 26186.89 (10000-150000)		

Table 3: Reproductive health related characteristics of the respondents. n=215

Variables	**Frequency (f)**	**Percent (%)**
Number of daughters		
One daughter	129	60
More than one daughter	86	40
Self-history of STD		
No	215	100
Family history of cervical cancer		
Yes	01	0.5
No	214	99.5

Table 4: Knowledge domains regarding cervical cancer prevention.

Knowledge Domains	Max Score	Mean	SD	Mean Percentage
Causes and risk factors	5	3.35	1.26	67.06%
Clinical manifestations	6	4.44	1.47	73.95%
Prevention	5	3.50	1.11	69.95%
Screening	7	3.06	1.36	43.72%
Vaccination	15	7.70	2.24	59.21%

Table 5: Distribution of respondents regarding willingness towards HPV vaccination of early adolescent girls. n=215

Statements	Responses				
	Strongly Agree f (%)	Agree f (%)	Neutral f (%)	Disagree f (%)	Strongly Disagree f (%)
Willing to vaccinate if it protects against cervical cancer and HPV related diseases	77 (35.8)	132 (61.4)	00	04(1.9%)	02(0.9%)
Not willing to vaccinate because of lack of information	04(1.9)	36(16.7)	18(8.4)	133(61.9)	24(11.1)
Not willing to vaccinate because of fear of life-threatening side effects of the vaccine	03(1.4)	12(5.6)	30(14.0)	150(69.7)	20(9.3)
Willing to vaccinate if it is freely available	28(13)	168(78.1)	04(1.9)	11(5.1)	04(1.9)
Not willing to vaccinate because it is expensive	09(4.2)	40(18.6)	06(2.8)	137(63.7)	23(10.7)
Willing to vaccinate even by paying for it	34(15.8)	132(61.4)	15(7.0)	26(12.1)	08(3.7)
Not willing to vaccinate because of fear that it might make daughter sexually active	03(1.4)	11(5.1)	44(20.5)	130(60.5)	27(12.5)
Willing to vaccinate if health care provider recommends it	43(20)	159(74)	00	08(3.7)	05(2.3)
Willing to vaccinate if friends and family recommend it	17(7.8)	171(79.6)	07(3.3)	15(7.0)	05(2.3)
Not willing to vaccinate because there is no risk of developing HPV infection in future	04(1.9)	11(5.1)	07(3.3)	166(77.2)	27(12.5)

Table 6: Willingness towards HPV vaccination among parents of early adolescent girls. n=215

Willingness	**Frequency (f)**	**Percent (%)**
Willing (39-50)	134	62.3
Unwilling (0-38)	81	37.7

Table 7: HPV vaccine utilization. n=215

Utilization	**Frequency (f)**	**Percent (%)**
Yes	04	1.9
Reason for receiving vaccine		
Media exposure	03	75
Voluntary	01	25
Doses		
Two doses	04	100
Place		
Hospital	04	100
No	211	98.1
Reason for not receiving vaccine		
Doesn't have enough information regarding the vaccine	102	48.3
Doesn't know any vaccination centre	63	29.9
Worried about vaccine safety and trial	21	10.0
Vaccine not freely available	19	9.0
High cost of vaccine	06	2.8

Table 8: Association between willingness of HPV vaccination with selected variables.

Variables	**Willingness**				**Chi-square**	***p-value***
	Yes		**No**			
	f	**%**	**f**	**%**		
Information obtained from						
Mother	118	63.44	68	36.56	0.730	0.393
Father	16	55.17	13	44.83		
Religion						
Hindu	103	60.95	66	39.05	0.640	0.424
Others	31	67.39	15	32.61		

Ethnicity						
Brahmin/Chhetri	44	62.86	26	37.14	0.012	0.911
Others	90	62.07	55	37.93		
Marital status of parents						
Married	132	63.77	75	36.23		0.055 #
Others	02	25	06	75.00		
Type of family						
Nuclear family	92	58.97	64	41.03	2.719	0.099
Joint family	42	71.19	17	28.81		
Educational status of mother						
Informal	27	54	23	46	1.923	0.165
Formal	107	64.85	58	35.15		
Educational status of father						
Informal	24	54.55	20	45.45	1.426	0.232
Formal	110	64.33	61	35.67		
Occupation of mother						
Housemaker	65	59.63	44	40.37	0.683	0.409
Others	69	65.09	37	34.91		
Occupation of father						
Foreign employment	45	70.31	19	29.69	2.476	0.116
Others	89	58.94	62	41.06		
Monthly family Income						
< 43,000	51	47.66	56	52.34	19.502	<0.001*
≥ 43,000	83	76.85	25	23.15		
Number of daughters						
One daughter	85	65.89	44	34.11	1.746	0.186
More than one daughter	49	56.98	37	43.02		
Knowledge level						
Good (≥ 23)	74	69.16	33	30.84	4.236	0.040*
Poor (< 23)	60	55.56	48	44.44		

***= significant,** *p*-value<0.05 is considered statistically significant. # = Fisher's exact, d.f=1

DISCUSSION

This study was conducted with the aim of assessing willingness towards HPV vaccination among parents of early adolescent girls.

In this study, half (50.2%) of the respondents had poor level of knowledge regarding cervical cancer prevention followed by moderate level of knowledge (44.7%) and remaining (5.1%) had good level of knowledge. The finding of the present study is aligned with similar study conducted in Addis Zemen Town, North West Ethiopia which showed maximum (48.2%) of the respondents had poor level of knowledge followed by moderate level of knowledge (41.5%) and only (10.1%) had good level of knowledge regarding cervical cancer.[14] The finding of current research study is also consistent with another study conducted in Gandar Town, Northwest Ethiopia, which showed that maximum (41.6%) had poor level of knowledge followed by moderate level of knowledge (37.3%) and few (21.1%) had good level of knowledge regarding cervical cancer and risk factors. [15]

In this study, based on mean score, more than half (62.3%) of the parents were willing towards HPV vaccination of early adolescent girls. The finding of the present study is similar with the another study conducted in Nepal which showed more than half (64%) of the respondents were willing to vaccinate their daughter against HPV.[16] The finding of the present study is also in line with the study conducted in Lebanon which showed that maximum (63%) of the respondents were willing to vaccinate their child against HPV.[17] Similarly, the finding of the present study contrasts with the study conducted in China which showed less than half (40.8%) of the respondents were willing to accept HPV vaccination for children.[18] The finding of the present study also contradicts with the study conducted in India which illustrated less than half (42.8%) of the respondents were willing to vaccinate the daughters against HPV.[19]

The present study revealed that very few (1.9%) of the parents had their daughters vaccinated against HPV. The finding of the present study is aligned with the similar study conducted in Western Nigeria, where only (4.1%) of the respondents had their daughter vaccinated against HPV.[20] However, the findings contradicts with the study conducted in Spain, where more than two third (71.5%) of the parents had their daughter vaccinated against HPV.[21]

In the present study, a significant association was found between willingness towards HPV vaccination and monthly family income (χ^2 = 18.909, p = <0.001) which is consistent with the previous study conducted in Lebanon which showed that monthly family income was associated with willingness to vaccinate their child against HPV (p=0.046).[17] A study conducted in China also revealed the association between level of income and willingness of parents to vaccinate their daughters with HPV vaccine.[22] Similarly, it contradicts with the study conducted in India which showed no association (p=0.43) between socio-economic status and willingness for HPV vaccine uptake among adolescent girls.[19]

The findings of the present study revealed association in between willingness towards HPV vaccination and knowledge regarding cervical cancer prevention (χ^2 =4.326, p = 0.040) which is consistent with the study conducted in Debretabor town ,Northwest Ethiopia which showed knowledge regarding HPV infection had significant association with the willingness for HPV vaccination.[23] A study conducted in Western Nigeria also showed willingness was significantly associated level of knowledge of HPV vaccination ($p < 0.001$).[24] Similarly, it contrasts with the study conducted in India which showed no association between knowledge regarding cervical cancer prevention and willingness for HPV vaccine uptake among adolescent girls (p=0.10). [19]

CONCLUSION

The findings of the current research study concluded more than half of the respondent's showed willingness towards HPV vaccination for their early adolescent girls. Similarly, utilization of HPV vaccination was extremely low mostly due to lack of awareness regarding the vaccine. A statistically significant association was found between willingness towards HPV vaccination with monthly family income and knowledge level regarding cervical cancer prevention, indicating that these variables play a crucial role in the parents' willingness and decision to vaccinate.

Limitation

The study was limited and confined to the parents of only one ward of Pokhara, Pokhara 14 which affects the generalization of the results.

Declaration by Authors

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