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Knowledge, attitudes and practices among medical students of Bangladesh regarding cervical cancer and the human papilloma virus vaccine

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Abstract

Background: Human papilloma virus (HPV) is the major cause of cervical cancer that is considered as the second most common cancer in women worldwide. The HPV vaccine can prevent HPV infection and most cases of cervical cancers. Medical students should be aware of cervical cancer, HPV and its vaccine. The aim of this study was to assess knowledge of HPV infection and HPV vaccine and to assess attitude toward these vaccines among the medical students of Bangladesh.

Methods: It is a cross-sectional study. A total of 117 (44 males and 73 females) M.B.B.S. students participated. Data regarding HPV and its vaccine were collected using questionnaire-based survey. The questionnaire sought student's responses pertaining to the knowledge of cervical cancer, HPV and its vaccine. The data were analyzed using Microsoft Access and Excel software.

Results: Most of the participants revealed good knowledge regarding etiology of cervical cancer and its preventive measures but poor awareness about target group and schedule of the vaccination.

Conclusion: Lack of knowledge among medical students can be detrimental to the health of the society. So, there is a need to create awareness among the future health educators against various aspects of HPV, cervical cancers and its prevention.

Keywords: human papilloma virus, HPV vaccine, knowledge, attitude, awareness

Introduction

HPV is a sexually transmitted infection (STI) in both sexes and now is a global concern [1]. HPV is a group of over 200 related viruses [2]. There are 13 types of oncogenic HPV; types 16 and 18 are the most important causes of cervical cancer [3] and the non–oncogenic types of HPV 6 and 11 are identified as the major causes of genital warts [4].

Among women, HPV is associated with 74% of cancer cases, 70% of which are cervical cancer [5]. In 2012, the number of cervical cancer cases was estimated to be around 530000 globally, all of which were attributed to HPV [6]. According to a study in 2014, the prevalence of HPV infection was 7.7% in Bangladesh [7]. Globally, cervical cancer is the fourth leading female cancer and the second most common cancer among women aged 15 to 44 years [5].

HPV is also involved in a range of anogenital malignancies in both genders. It accounts for 88% of anal, 15%–48% of vulvar, 78% of vaginal and 51% of penile carcinomas [2]. In addition, there is growing evidence of HPV being a relevant factor in head and neck cancers[5], with a prevalence rate of 13%–60% for HPV-relate oropharyngeal cancers [2].

HPV vaccines are now available and have the potential to reduce the incidence of cervical and other anogenital cancers [5]. There are three types of vaccine against HPV (Cervarix, Gardasil, and Gardasil 9). The quadrivalent (Gardasil) and bivalent (Cervarix) prophylactic vaccines have been approved by Food and Drug Administration (FDA) in June 2006 and October 2009 respectively for use in humans [8].

In Bangladesh, HPV vaccine was introduced in 2016 through the implementation of a demonstration project in Gazipur district, which is located close to the capital city of Dhaka. This demonstration project is governed by the Ministry of Health and Family Welfare of Bangladesh through the Expanded Program on Immunization (EPI), with financial support from the Global Alliance for Vaccines and Immunization. Achieving a 70% coverage, HPV vaccine can prevent > 4 million deaths in women in low-income to middle-income countries over the next decade [9].

The vaccine may be given as early as 9 years of age through 26 years of age [10]. They are highly effective for the prevention of HPV [11], particularly when they are administered before the beginning of any sexual activity [12].

Hence, by the end of 2017, 80 countries were recommending its administration [13]. A two-dose schedule are recommended for age <15 years and a three-dose schedule are recommended for age >15 years [2].
Knowledge and attitude have been shown as important determinants for future vaccine acceptance [14]. An educational initiative targeting the medical students has a great value. Because in future, these students will be the first line information resources and will be having a major role in spreading awareness among a wide range of population. Therefore, this research was conducted to assess the current knowledge, attitude and HPV vaccination practice among the medical students of Bangladesh.

Materials and Methods

Design: An observational cross-sectional descriptive study was carried out.

Target population: The study was conducted on 117 medical students of Dhaka city, Bangladesh from September 2021 to December 2021.

Procedure: A standardized pre-test questionnaire was used in this research. Data was then collected via a Google link through email, in English. Participants were sent reminder emails to complete the questionnaire as well as contact was made over phone to ensure participation.
The questionnaire was divided into four main domains, which were demographic data, general knowledge regarding cervical cancer, HPV and HPV vaccines, practice/behavior concerning the HPV vaccine, and attitude toward HPV vaccines. The questionnaire took approximately 10 minutes to complete. The questions were mainly closed-ended, with additional elaborations or responses being possible, based on a Likert scale ranging from 'agree', 'disagree' and 'don't know'. Some of the questions were borrowed from previous publications measuring knowledge, practice, and behavior of cervical cancer and HPV vaccines [15]. To ensure the content and face validity of the questionnaire, a pilot study was conducted on 20 medical students, and no modifications were required. The data obtained were analyzed with frequencies analysis.

Table 1: Characteristics of the study participants.

Variables	N (%)
Gender	
Male	44 (37.60)
Female	73 (62.39)
Place of staying	
Home	86(73.50)
Hostel	31(26.49)

Table 2: Student's knowledge about cervical cancer and the Human papilloma virus vaccine

Variables	N (%)
Knowledge of the existence of cervical cancer	
Agree	105 (89.74)
Don't know	11(09.40)
Disagree	01(0.85)
Cervical cancer can be fatal	
Agree	108 (92.31)
Don't know	06 (05.13)
Disagree	03 (02.56)
Cervical cancer is normally caused by an infectious agent	
Agree	93 (79.49)
Don't know	19 (16.24)
Disagree	05 (04.27)
Cervical cancer is a common type of cancer in Bangladesh	
Agree	95 (81.19)
Don't know	14 (11.97)
Disagree	08 (06.84)
Knowledge of the existence of Human Papilloma Virus	
Agree	105 (89.74)
Don't know	16 (13.68)
Disagree	00
HPV can cause cervical cancer	
Agree	94 (80.34)
Don't know	22 (18.80)
Disagree	01(0.85)
Did you know the Human Papilloma Virus can be transmitted through sexual intercourse?	
Agree	91(77.78)

Don't know	21(17.9)
Disagree	05 (04.27)
HPV subtypes 6 and 11 are associated with cervical cancer	
Agree	28 (23.93)
Don't know	54 (46.15)
Disagree	35 (29.91)
HPV subtypes 16 and 18 are associated with cervical cancer	
Agree	62 (52.99)
Don't know	53 (45.30)
Disagree	02 (01.71)
In most cases, HPV-infected women do not show symptoms	
Agree	69 (58.96)
Don't know	40 (34.19)
Disagree	08 (06.84)
HPV-positive pregnant women can pass the virus to their babies	
Agree	75 (64.10)
Don't know	29 (24.79)
Disagree	13 (11.11)
There is no current cure or therapy for HPV infection	
Agree	31(26.50)
Don't know	43 (36.75)
Disagree	43 (36.75)
Have you ever heard of HPV vaccination?	
Agree	86 (73.50)
Don't know	28 (23.93)
Disagree	03 (2.56)
Did you know it is a vaccination which protects women against cervical cancer?	
Agree	92 (78.63)
Don't know	25 (21.37)
Disagree	00
Did you know a lot of women have already acquired one or more HPV type(s) covered by the vaccine?	
Agree	56 (47.86)
Don't know	55 (47.00)
Disagree	06 (05.13)
HPV vaccines have the same effect whether the female takes it before or after being infected with HPV	
Agree	18 (15.38)
Don't know	58 (49.57)
Disagree	41(35.04)
HPV vaccine is best taken before starting to have sexual activities	
Agree	77 (65.81)
Don't know	39 (33.33)
Disagree	01 (0.85)
HPV vaccine can guarantee 100% protection from cervical cancer	
Agree	24 (20.51)
Don't know	47 (40.17)
Disagree	46 (39.32)
There is an effective screening method of reducing the risk of cervical cancer	
Agree	84 (71.79)
Don't know	29 (24.79)
Disagree	04 (03.42)
Pap smear testing is not required following HPV vaccination	
Agree	26 (22.22)
Don't know	55 (47.00)
Disagree	36 (30.77)

Table 3: Student's attitude towards cervical cancer and the Human papilloma virus vaccine

Variables	**N (%)**
I have concern of being infected with HPV	
Agree	74 (63.25)
Don't know	28 (23.93)
Disagree	15 (12.82)

Most woman are at risk of HPV infection	
Agree	95 (81.20)
Don't know	15 (12.82)
Disagree	07 (05.98)
HPV infected woman are at risk of cervical cancer	
Agree	105 (89.74)
Don't know	12 (10.26)
Disagree	00
I have confidence in the safety of HPV vaccine	
Agree	76 (64.96)
Don't know	32 (27.35)
Disagree	09 (07.69)
It is important for every woman to receive the HPV vaccine	
Agree	99 (84.62)
Don't know	17 (14.53)
Disagree	01 (0.85)
Boys as well as girls should receive HPV vaccine	
Agree	62 (53.00)
Don't know	41 (35.00)
Disagree	14 (12.00)
Could vaccination against a sexually transmitted disease encourage the early initiation of sexual activity?	
Agree	43 (36.75)
Don't know	38 (32.48)
Disagree	36 (30.80)

Table 4: Student's practice about cervical cancer and the Human papilloma virus vaccine

Variables	**N (%)**
Have you ever screened for HPV?	
Yes	03 (02.56)
No	114 (97.43)
Have you been vaccinated against HPV?	
Yes	06 (05.13)
No	111 (94.87)
How many doses of HPV vaccine did you receive?	
One	00
Two	01(0.85)
Three	04(03.42)
Don't remember	112(95.73)
I would recommend this vaccine to my friends and family	
Yes	106 (90.60)
No	11(09.40)
Do you discuss sexual health with your patients?	
Yes	52 (44.44)
No	65 (55.56)
Your recommendation of HPV vaccination for girls aged (years)	
09–12 years	32 (27.35)
12–15 years	24 (20.51)
16–21 years	49 (41.90)
21–26 years	12 (10.25)

Results

Data from 117 Medical students were collected and analyzed for the awareness of the students regarding the HPV and its infection. About 62.39% of the participants were female students and 37.60% participants were male students. The majority of students (73.50%) stayed at home. Participants' characteristics are presented in Table I.

Knowledge of HPV Infection and Vaccination

Table II displays reported knowledge regarding cervical cancer and HPV. Of all the participants, 89.74% were knowledgeable about cervical cancer and almost all of the participants (92.31%) were agreed about the fatality of the cervical cancer. The majority of the participants (79.49%) knew that an infectious agent primarily caused cervical cancer, and 95 students (81.19%) believed that cervical cancer is common in Bangladesh. Ninety-four

students (80.3%) implicated that HPV is a causative agent of cervical cancer. But only 23 (19.7%) students didn't know about the association. According to 78% of students, HPV infection spreads by sexual route. As for knowledge of HPV subtypes, 24% considered types 6 and 11 are oncogenic, while for subtypes 16 and 18, 53% knew they were associated with cervical cancer. Seventy-four percent of the participants had heard about HPV vaccine and only 21% believed that vaccine give 100% protection from cervical cancer. Only 62 (53%) of the students recommended vaccination in both sex and 55 (47%) students were unaware about target of vaccination. Only 36 (31%) of students agreed that Pap smear testing is still required following administration of the HPV vaccine.

Student's attitude towards HPV Vaccination

Table III summarizes participants attitudes regarding HPV vaccine and cervical cancer.

About 74 (63%) students were concern about infection with HPV by themselves and majority (81.20%) believed that most woman are at risk of HPV infection. Almost 65% of participants believed that it is important for women to receive the HPV vaccine. More than half of the students indicated their confidence in the safety of the HPV vaccine however a notable percentage (27.35%) remained neutral. Almost 44% believed that HPV vaccinations could encourage the early initiation of sexual activity.

Student's practice towards HPV Vaccination

Table IV summarizes participants attitudes regarding HPV vaccine and cervical cancer.

Only 5.13% of the students have been vaccinated against HPV and 94.86% were not vaccinated prior to this study. But 91% allowed the vaccine to their family and friends. Almost 49 (42%) participants recommended the HPV vaccine for girls between 16–21 years. Only 44% of students stated they often discussed sexual health with their patients.

Discussion

The high prevalence, mode of transmission, association with cervical cancer and availability of effective vaccines all have made HPV a significant virus and of public health importance [16]. Many populations suffer from various diseases caused by HPV, and the overall death toll due to cervical carcinoma is remarkable. The success of the HPV vaccination program is closely related to awareness by health care professionals. So, this study aims to evaluate the knowledge level about HPV and anti-HPV vaccine among the medical students of Bangladesh, and to understand the nature of their attitudes towards vaccine, and to corelate the knowledge and attitude levels to their intentions and practices.

In this survey, almost all the students (90%) have heard of cervical cancer, reflecting the outcome of a study done in Morocco, where 93% of participants reported having heard of cervical cancer [17], whereas in Malaysia, only 61% of participants had heard of cervical cancer [18]. This finding justifies the need for a public health intervention to disseminate information on cervical cancer.

In our study, majority of students (79.49%) were aware that its primary etiology is infectious that corresponds to the findings done in Kuala Lumpur (80.4%) [19], where majority of the respondents knew about the infectious agent.

Our study found that (90%) respondents have heard about the existence of HPV which corresponds the study done on Spanish girls (89.9%) [20]. In another study done in Sweden reported low level of awareness towards HPV (13.5%) [21]. This difference in awareness may be due to implementation of routine vaccination in Spain for girls aged 14 since 2008. Therefore, their students have better exposure and higher awareness. In our study, the knowledge about HPV were high because medical students have learned a lot about HPV from beginning.

Further analysis of the students' knowledge on HPV infection and cervical cancer showed that the majority (80.34%) participants knew the etiology, a finding that was greater than a study done in Malaysia, where only 61.0% of respondents thought that HPV could cause cervical cancer [22]. A multi-center survey on Canadian physicians showed that their knowledge about the virus-mediated etiology of cervical cancer was 56.2% [23]. A large-scale cross-sectional study of primary care pediatricians in the US showed that almost a third were unaware about the link of HPV with cervical cancer [24].

In our study, students demonstrated high knowledge about HPV transmission (78%), compared to a study conducted in Sweden where only 30% participants knew that HPV was a common cause of STD and spread by sexual activities [21]. In a study done by Mehta *et al* [25] found that 38% participants said that it only spreads sexually and 64% of students answered, HPV has a vertical transmission.

We found that more than half of the respondents (74%) have heard about HPV vaccine which corresponds to a study conducted in Melaka which was 77.6% [26]. Knowledge about the vaccination were also noted in the studies done in 2009 (11.8%) [19] and 2008 (10%) [22]. In our study, 79% of the respondents knew that HPV vaccine prevents the development of cervical cancer. This mirrors the data among Malaysian school students (79.8%) [27]. This may be due to greater information about the HPV vaccine after the introduction of numerous campaigns by both public and private sectors.

In this study, we observed that very few people answered correctly the question about the target group for HPV vaccination. Only 53% students agree that the vaccine should be taken in both sexes. A possible explanation for this may be because the current vaccination program was focused solely on adolescent girls in order to reduce the incidence of cervical cancer [28]. More measures should be taken to improve perceptions towards HPV and

the vaccine, especially in male under 22 years. Another study also reported that female students knew more about HPV and the vaccine than male students [29]. According to a survey conducted in 2015, there was a need to improve the education of young males about HPV infection, its associated diseases and the benefits of the vaccination [30]. In addition to male adolescents, parents' intentions were significantly associated with male HPV vaccination [31].

Our study found that about 5.13% students were vaccinated against HPV infection. This vaccine uptake rate was higher than a study done in Vietnam (2.3%) [32] but lower than a study done in Hong Kong (7.2%-9.1%) [33]. In Lebanon, 16.5% of female college students were already vaccinated [34]. In Singapore, the vaccination rate among female students is only 9.8% [35]. It is essential to identify the factors that influence student vaccinations, which could help establish policies related to improving the vaccination rate.

Cervical cancer can also be prevented by early screening using Pap smear. Decrease of cervical cancer cases have been reported by 80% in developed countries due to an effective detection of pre-cancerous lesion through screening program [36]. Only 31% of the participants in our study thought that Pap smear testing is required even after HPV vaccination that is similar to the findings done in Kuala Lumpur. It is important to note that even after vaccination, women still need to undergo Pap smear screening because the HPV vaccine is not protective against all types of HPV [19].

In our study 90.60% students recommend HPV vaccination to their friends and family members as compared to 88% in the study done by Mehta *et al* [25]. A study done by Naki *et al* [37] on the awareness, knowledge and attitudes related to HPV infection and vaccine suggested that HPV related knowledge in the physicians was significantly higher and were more willing to get vaccinated as compared to non-physician staffs.

About 42% participants in our study recommended vaccinations for girls at older ages (16–26) years and only 27.35% of the participants agreed with the WHO recommendations and chose school age (9-12 years) as the most appropriate age group to receive vaccination. A study conducted in the US, reported majority of participants recommending HPV vaccines to girls aged 16–18 years but only 46% recommending them for adolescent girls aged 10–12 years [24].

Our study showed, only 10.25% students believed that vaccination is best given before marriage (21-26 years). In a study done in Iranian, 88.4% of the participants preferred administration of the vaccine just before marriage [38]. Several cultural and religious beliefs which prefer sexual activity to begin after marriage can justify these findings.

Limitation

The limitation of our study was that the study population was from one medical college which does not represent the knowledge of all medical students. Inclusion of other students from different courses like dental, nursing, physiotherapy etc. will increases the impact of this study in future.

Conclusion

To conclude, this study revealed that knowledge of HPV, its association with cervical cancer and its preventive measures among the respondents were still insufficient. Attitude towards HPV vaccination was significantly associated with knowledge about cervical cancer. The misconception about the target group in general public would be even more and acceptance also would be very poor. The existing gap between the knowledge and attitude of the students can be overcome by health education programme, seminars, group discussions, and interactive sessions among the students regarding the HPV. Introducing the HPV vaccine into the National Immunization Program could be pragmatic solutions to increase levels of HPV vaccination.

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