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Original Research Article

Knowledge, practice and awareness of adolescent girls on human papillomavirus vaccine

Nusur Akhter[1]*, Sonia Nasrin[2]

[1]Department of Obstetrics and Gynaecology, Anwer Khan Modern Medical College and Hospital, Dhaka, Bangladesh
[2]Department of Obstetrics and Gynaecology, Enam Medical College and Hospital, Dhaka, Bangladesh

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***Correspondence:**
Dr. Nusur Akhter,
E-mail: drnusurakhter9@gmail.com

ABSTRACT

Background: Human papillomavirus (HPV) is a significant public health concern, particularly among adolescents, as it is a leading cause of cervical cancer and other HPV-related diseases. Despite the availability of an effective vaccine, knowledge and awareness about HPV and its prevention remain limited, especially among young girls. This study aims to assess the knowledge, practice, and awareness of adolescent girls regarding the HPV vaccine.
Methods: The study was conducted at department of obstetrics and gynaecology, Anwer Khan modern medical college and hospital, Dhaka, Bangladesh from July, 2023 to June, 2024. A cross-sectional descriptive study design was employed, targeting adolescent girls aged 13 to 19 years. The study population consisted of students from five secondary schools within the urban and peri-urban areas of the district. A total of 300 participants were included in the study.
Results: The study of 300 participants reveals that the majority are aged 15-16 years (40%), followed by 17-18 years (30%). Most participants are in senior secondary (1-2) (50%), and 60% are aware of HPV, with school programs being the most common source of awareness. Knowledge of HPV transmission and the HPV vaccine is limited, with 40% having correct knowledge about transmission and 30% possessing adequate vaccine knowledge. Vaccination rates are low, with only 40% vaccinated, primarily due to a lack of awareness. Most participants recommend increasing awareness campaigns (50%) and reducing vaccine costs (25%).
Conclusions: This study concludes that a majority (60%) of the participants were aware of HPV, only 40% demonstrated correct knowledge of its transmission, and an even smaller proportion (30%) had adequate knowledge about the HPV vaccine itself. The low vaccination rate of 40% reflects the challenges in increasing uptake, with the primary barrier being a lack of awareness.

Keywords: Knowledge, Practice, Awareness, Adolescent girls, HPV vaccine

INTRODUCTION

Human papillomavirus (HPV) is a group of more than 200 related viruses, some of which are classified as high-risk and are responsible for causing various cancers, including cervical cancer, the fourth most common cancer in women globally. The vast majority of HPV infections are asymptomatic and are cleared by the immune system. However, persistent infections with high-risk HPV types can lead to pre-cancerous lesions and, eventually, invasive cancers. Vaccination against HPV, primarily the HPV-16 and HPV-18 strains, which are responsible for around 70% of cervical cancers, offers a preventive measure to protect against these infections.[1,2] In recent years, global recommendations advocate for routine vaccination of girls aged 9 to 14 years, with catch-up programs for older adolescents. Yet, challenges related to awareness, knowledge, and acceptance of the vaccine persist in many regions.[3,4] Adolescent girls are at a critical juncture in terms of health education and intervention. Knowledge, practice, and awareness about HPV and its vaccine are pivotal factors in determining whether these girls will

participate in vaccination programs. Understanding the factors influencing knowledge, awareness, and subsequent vaccination behavior in this demographic is crucial for designing more effective public health interventions. In many regions, particularly in LMICs, HPV-related awareness and knowledge among adolescents remain limited, which negatively impacts vaccination rates.[5,6] The level of knowledge regarding HPV and its vaccine varies considerably across different populations. Research has consistently shown that while a significant proportion of adolescents may have heard of HPV, the depth of their understanding is often superficial or inaccurate. Many are unaware of the connection between HPV and cervical cancer, and misconceptions about the HPV vaccine are common.[7] For example, some adolescents and their families may not understand that the vaccine is intended for the prevention of HPV infection and that it can be administered even before sexual activity begins.[8] In countries where HPV vaccination programs have been implemented, knowledge about the vaccine is often correlated with higher vaccination rates. In a study conducted in the United States, girls who had received information about HPV through school-based programs were significantly more likely to receive the vaccine.[9] However, gaps in knowledge remain in many regions, particularly in rural areas where educational resources may be limited.[10] This lack of awareness has been identified as one of the primary barriers to HPV vaccination.[11] While healthcare professionals are a crucial source of information, not all adolescents have access to medical advice on HPV. In some low-resource settings, healthcare professionals themselves may not be fully informed about the vaccine's benefits or may have limited time to provide thorough counseling.[12] Awareness of the HPV vaccine is often low in countries with no routine vaccination programs or where the vaccine is newly introduced. A study conducted in India found that only 27% of adolescent girls had heard of the HPV vaccine, and just 4% were aware of its connection to cancer prevention.[13] Cultural factors also play a significant role in shaping attitudes toward the vaccine. In some communities, there is resistance to vaccination due to beliefs that the vaccine promotes promiscuity or early sexual activity, further hindering efforts to increase uptake.[14] This study aimed to assess the knowledge, practice, and awareness of adolescent girls on the HPV vaccine.

METHODS

The study was conducted at department of obstetrics and gynaecology, Anwer Khan modern medical college and hospital, Dhaka, Bangladesh from July, 2023 to June, 2024. A cross-sectional descriptive study design was employed, targeting adolescent girls aged 13 to 19 years. The study population consisted of students from five secondary schools within the urban and peri-urban areas of the district. A stratified random sampling technique was used to ensure adequate representation across different age groups and educational levels. A total of 300 participants were included in the study. Data collection was carried out using a pre-tested, structured questionnaire which comprised sections on demographic characteristics, knowledge about HPV and its vaccine, awareness campaigns, and vaccination practices. The questionnaire was administered in person by trained interviewers to ensure clarity and completeness of responses. Ethical clearance was obtained from the institutional ethics committee, and permission was sought from school authorities. Written informed consent was secured from the participant's parents or guardians, and assent was obtained from the girls themselves. The data collection process spanned one month. Responses were coded, entered, and analyzed using statistical software. Descriptive statistics, including frequencies and percentages, were used to summarize the data.

RESULTS

The age distribution of the 300 participants shows that the majority are within the 15-16 year age group, comprising 40.0% (120 participants) of the total. This is followed by the 17-18 year age group, accounting for 30.0% (90 participants). Participants aged 13-14 years represent 25.0% (75 participants), while the smallest group is those aged 19 years, constituting only 5.0% (15 participants) (Table 1).

Table 1: Age distribution of participants (n=300).

Age (in years)	N	Percentage (%)
13-14	75	25.0
15-16	120	40.0
17-18	90	30.0
19	15	5.0

The educational level distribution of the 300 participants reveals that half (50.0%, 150 participants) are in senior secondary (1-2), representing the largest group. Those in junior secondary account for 33.3% (100 participants), while participants in senior secondary (3) form the smallest group, comprising 16.7% (50 participants) (Table 2).

Table 2: Educational level of participants, (n=300).

Educational level	N	Percentage (%)
Junior secondary	100	33.3
Senior secondary (1-2)	150	50.0
Senior secondary (3)	50	16.7

The data on awareness of HPV among the 300 participants indicates that a majority, 60.0% (180 participants), are aware of HPV, while the remaining 40.0% (120 participants) are not aware (Table 3).

Table 3: Awareness of HPV, (n=300).

Awareness level	N	Percentage (%)
Aware	180	60.0
Not aware	120	40.0

The sources of awareness about HPV among the 300 participants are varied, with school programs being the most common source, cited by 30.0% (90 participants). Family and friends, as well as healthcare professionals, each account for 25.0% (75 participants) of the sources. Social media contributes to 20.0% (60 participants) of the awareness (Table 4).

Table 4: Sources of awareness about HPV, (n=300).

Source	N	Percentage (%)
School programs	90	30.0
Social media	60	20.0
Family/friends	75	25.0
Healthcare professionals	75	25.0

The data on knowledge about HPV transmission among the 300 participants shows that only 40.0% (120 participants) have correct knowledge, while 30.0% (90 participants) hold incorrect knowledge, and an equal proportion, 30.0% (90 participants), have no knowledge at all (Table 5).

Table 5: Knowledge about HPV transmission, (n=300).

Knowledge level	N	Percentage (%)
Correct knowledge	120	40.0
Incorrect knowledge	90	30.0
No knowledge	90	30.0

The knowledge about the HPV vaccine among the 300 participants reveals that only 30.0% (90 participants) possess adequate knowledge. A larger proportion, 40.0% (120 participants), have some knowledge, while an equal 30.0% (90 participants) do not know at all (Table 6).

Table 6: Knowledge about HPV vaccine, (n=300).

Knowledge level	N	Percentage (%)
Adequate knowledge	90	30.0
Some knowledge	120	40.0
No knowledge	90	30.0

The vaccination status of the 300 participants shows that only 40.0% (120 participants) have been vaccinated, while the majority, 60.0% (180 participants), remain unvaccinated (Table 7).

Table 7: Vaccination status (n=300).

Vaccination status	N	Percentage (%)
Vaccinated	120	40.0
Not vaccinated	180	60.0

Among the 180 participants who were not vaccinated, the primary reason cited was a lack of awareness, accounting for 50.0% (90 participants). Parental refusal was the second most common reason at 25.0% (45 participants), followed by the high cost of the vaccine, which affected 16.7% (30 participants). Fear of side effects was the least common reason, reported by 8.3% (15 participants) (Table 8).

Table 8: Reasons for not being vaccinated, (n=300).

Reason	N	Percentage (%)
Lack of awareness	90	50.0
High cost	30	16.7
Parental refusal	45	25.0
Fear of side effects	15	8.3

The practice of discussing HPV with peers or family among the 300 participants shows that only 20.0% (60 participants) engage in frequent discussions. A larger proportion, 40.0% (120 participants), discuss the topic occasionally, while an equal 40.0% (120 participants) never discuss HPV at all (Table 9).

Table 9: Practice of discussing HPV with peers/family, (n=300).

Practice level	N	Percentage (%)
Frequently	60	20.0
Occasionally	120	40.0
Never	120	40.0

The recommendations from the 300 participants highlight that half (50.0%, 150 participants) emphasize the need for increased awareness campaigns. Additionally, 25.0% (75 participants) suggest reducing vaccine costs, and another 25.0% (75 participants) recommend implementing school-based vaccination programs (Table 10).

Table 10: Recommendations from Participants (n=300).

Recommendation	N	Percentage (%)
Increase awareness campaigns	150	50.0
Reduce vaccine cost	75	25.0
School-based vaccination	75	25.0

DISCUSSION

The participants in this study were primarily adolescents, with the largest group falling within the 15-16 year age range (40.0%, 120 participants), followed by the 17-18 year group (30.0%, 90 participants). These findings align with global recommendations for vaccinating adolescent girls before the onset of sexual activity.[1,2] Early vaccination maximizes the protective benefits of the vaccine against HPV, and these age groups are ideal candidates for interventions aimed at preventing HPV-related cancers, particularly cervical cancer. Studies show that HPV vaccination is most effective when administered before exposure to the virus, making the 13-16-year age

group a critical target.[3] In terms of educational level, the largest group of participants was in senior secondary (1-2), comprising 50.0% (150 participants). These adolescents are typically in the early stages of sexual maturity and would benefit from educational programs focused on HPV prevention.[5] School-based interventions are an effective means of reaching large numbers of adolescents, providing essential information about HPV and its vaccine.[7] The study found that 60.0% of participants were aware of HPV, but a significant 40.0% (120 participants) were not. This indicates a considerable gap in awareness, which may hinder vaccine uptake. Similar findings have been reported in other studies, where awareness of HPV among adolescents is lower than expected, despite the widespread availability of information.[9] The knowledge of HPV transmission was also found to be limited, with only 40.0% (120 participants) demonstrating correct knowledge. This suggests that even among those who are aware of HPV, the understanding of its transmission mechanisms is insufficient. Inaccurate knowledge or misconceptions about how HPV is transmitted may contribute to hesitancy toward vaccination. For instance, many adolescents may not fully understand the link between HPV and cervical cancer, which is critical for motivating vaccine uptake.[15] Studies have demonstrated that increasing the knowledge of HPV and its association with cancer significantly boosts vaccine uptake.[16] Similarly, knowledge about the HPV vaccine was suboptimal, with only 30.0% (90 participants) demonstrating adequate knowledge, while 40.0% (120 participants) had only some knowledge. These findings echo results from other studies, where many adolescents and their families report a limited understanding of the HPV vaccine, its purpose, and its safety profile.[17] The study found that only 40.0% of the participants had been vaccinated, while 60.0% were unvaccinated. This is consistent with vaccination coverage rates seen in many countries, where despite the availability of the HPV vaccine, uptake remains low.[18] Among the unvaccinated group, the primary reasons cited were lack of awareness (50.0%, 90 participants), parental refusal (25.0%, 45 participants), and the high cost of the vaccine (16.7%, 30 participants). These findings align with research that has identified awareness and parental consent as major barriers to vaccination.[5,19] The lack of awareness was the most significant barrier to vaccination, affecting half of the unvaccinated participants. This suggests that many adolescents may not be fully informed about the importance of the vaccine, which could be addressed through more effective public health campaigns. School-based vaccination programs, which offer both information and access to the vaccine, have been shown to increase vaccination rates by overcoming barriers such as lack of knowledge and logistical difficulties.[20] The practice of discussing HPV with peers or family was found to be limited, with 40.0% (120 participants) reporting that they never discussed HPV at all. This is concerning, as open dialogue about sexual health and vaccination is critical for reducing stigma and misinformation about HPV. Similar studies have found that HPV is rarely discussed among adolescents, with many considering it a taboo subject.[21]

Limitations

The study was conducted in a single hospital with a small sample size. So, the results may not represent the whole community.

CONCLUSION

This study concludes that a majority (60%) of the participants were aware of HPV, only 40% demonstrated correct knowledge of its transmission, and an even smaller proportion (30%) had adequate knowledge about the HPV vaccine itself. The low vaccination rate of 40% reflects the challenges in increasing uptake, with the primary barrier being a lack of awareness.

Recommendation

It is recommended that targeted awareness campaigns be implemented to educate adolescent girls about HPV, its transmission, and the importance of vaccination. Schools should play a key role in disseminating this information, while efforts to reduce vaccine costs and address parental concerns can help improve vaccination rates. Additionally, healthcare professionals should be more actively involved in discussing HPV and vaccination with adolescents and their families to increase knowledge and uptake.

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