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Community knowledge and attitude towards human papillomavirus and its vaccine in Al-Jouf Province, Saudi Arabia

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ABSTRACT

Background: Human papillomavirus (HPV) is the most common sexually transmitted infection (STI) with a global prevalence of 11.7%. HPV infection usually resolves without symptoms, however, 10% of cases suffer from cutaneous and mucocutaneous lesions such as warts or cervical cancer. In Saudi Arabia, cervical cancer ranks as the eighth most common cancer among Saudi women of all ages with marked fluctuations in the different regions. However, data from Al-Jouf Province remains uncertain. The current study aimed to assess the knowledge, attitude, and practices of the community towards HPV infection and its vaccine in Al-Jouf Provinces, Saudi Arabia. **Methods:** 300 participants enrolled in the study by answering a questionnaire on HPV and its vaccine. **Results:** most of the participants were females (86%), their ages ranged between 18 and 60 years old, and 50% of them were married. Regarding their awareness about HPV, only 29.2% of participants know that HPV is a sexually transmitted disease; more than 50% of them did not know that HPV infection can remain asymptomatic, 60.8% did not know the health problems associated with HPV, and 54.2% did not know how to prevent HPV infection. Concerning their attitude, > 40% of participants are willing to take the vaccine and encourage their families, and friends to be vaccinated. However, most of them are worried about the safety, and efficacy of the vaccine **Conclusion:** A large percentage of the youth do not have enough knowledge about HPV, mode of transmission, complications, and ways of protection from infection.

Introduction

Human papillomaviruses (HPVs) are small, non-enveloped, double-stranded DNA viruses. It has many genotypes; low-risk ones are associated with benign lesions as warts, whereas

high-risk genotypes are usually accompanied with malignancies as cervical cancer (CC) [1].

HPV is the most common sexually transmitted infection (STI) with a global prevalence of 11.7%. HPV infection usually resolves without symptoms, however, 10% of cases suffer from

cutaneous and mucocutaneous lesions such as warts or cancer [2].

HPV infection is the most widespread viral reproductive tract infection [3]. It causes cancer of the oropharynx including the base of the tongue and tonsils [4]. HPV prevalence, insufficient preventive services, inadequate treatment access, socioeconomic conditions, certain cultural causes and values are considered as contributing factor to cervical cancer in various parts of the world including Saudi Arabia [5].

In Saudi Arabia, cervical cancer ranks the eighth most common cancer among Saudi women of all ages [6]. In addition, the prevalence of HPV shows great variability in the different regions of Saudi Arabia ranging between 5.6% and 31.6% [1, 7, 8]. In a survey conducted in Saudi Arabia, 2.3% of women in the general population were infected with high-risk HPV16/18 genotype [9].

The US Food and Drug Administration (FDA) approved the HPV vaccine in 2006 and there are two available types. World Health Organization (WHO) has recommended taking the HPV vaccine before the first sexual encounter as the best way to avoid cervical cancer [5]. HPV vaccines could hinder this infection and its potentially carcinogenic outcomes [2]. Farsi et al. [2] have evaluated the acceptability of male medical students to the HPV vaccine in Jeddah, Saudi Arabia. They reported that 74% of participants heard of HPV while only 42% knew about the HPV vaccine. Interestingly, 48.9% of them were interested in receiving the HPV vaccine. They concluded that improving knowledge about HPV vaccines is crucial for achieving effective disease prevention.

There are marked fluctuations in HPV infection in the different regions of Saudi Arabia. However, data from Al-Jouf Province remains uncertain, and appropriate coherent prevention and control strategies depend mainly on the real community awareness of HPV vaccine. Thus, the current study aimed to assess the level of community knowledge, and attitude, in Al-Jouf Province, Saudi Arabia, toward HPV risk factors, manifestations, treatment, and ways of prevention. Also, to determine the level of awareness about HPV vaccine, its efficacy and safety.

Methodology

Study design

A questionnaire-based cross-sectional study.

Ethical approval

The Local Committee of Bioethics (LCBE), Jouf University (No. 3- 07-44, on 27 Feb 2023), approved the research proposal.

Sampling technique

After obtaining ethical approval, the questionnaire (Arabic version) was distributed online to all community sectors in Al-Jouf. The sample is convenient.

Inclusion criterion

Any person in Al-Jouf Province can be included in this study.

Exclusion criterion

Individuals below 18 years old are excluded from this study.

Sample size

300 participants enrolled in the current study

Data collection tool

The study involved an open-source and validated questionnaire on HPV and its vaccine [5]. The questionnaire involves 6 sections: Section 1 includes a short brief on the research aim and approval to participate in the study. Section 2 involves the participants' sociodemographic data as age, gender, education level, marital status, and occupation. Section 3 includes general questions about human papillomavirus (HPV), section 4 includes questions about cervical cancer, section 5 inquires about attitude towards HPV vaccine and section 6 includes questions about the recommendation of HPV vaccine.

Data analysis procedure

Data analyzed using SPSS version 21. Data are presented as numbers and percentages.

Results

Participants' demographic data

The current study enrolled 300 participants (86% females, 14% males), their ages ranged between 18 and 60 years old, 50% of them were married, 78% were educated in university, 42% were employees, and 35% were university students (Table 1).

Regarding the answers regarding HPV, its mode of transmission, manifestations, and complications, only 30% of participants know that HPV is a sexually transmitted disease, 63% or more have no idea about HPV prevalence in Saudi Arabia, risk age, manifestations, or complications such as genital warts, ulcers and cervical cancer. More than 50% of them did not know that HPV infection can remain asymptomatic, 60.8% did not know the health problems associated with HPV, and 54.2%

did not know how to prevent HPV infection (**Table 2**).

Answers concerning the HPV vaccine and their attitude towards it revealed that more than half of the participants do not know about the availability of HPV vaccine, its efficiency, and the age for vaccination. More than 40% are willing to take the vaccine and encourage their families, and friends to take the vaccine but most of them are worried about the safety, and efficacy of the vaccine (**Table 3**).

Table 1. Participants' demographic data

| Demographic data | | Number | Percent |
|-------------------|--------------|--------|---------|
| Gender | Female | 260 | 86.0 |
| | Male | 40 | 14.0 |
| Age (years) | 18-30 | 154 | 52.0 |
| | 31-40 | 51 | 16.0 |
| | 41-50 | 60 | 20.0 |
| | more than 50 | 35 | 12.0 |
| Educational level | Intermediate | 5 | 1.0 |
| | Secondary | 64 | 21.0 |
| | University | 231 | 78.0 |
| Marital status | Divorced | 13 | 4.0 |
| | Married | 151 | 50.0 |
| | Single | 132 | 45.0 |
| | Widow | 4 | 1.0 |
| Employee status | Employee | 128 | 42.0 |
| | Retired | 11 | 3.0 |
| | Student | 104 | 35.0 |
| | Not employee | 57 | 20.0 |

Table 2. Knowledge about HPV and cervical cancer

| Questions about HPV | Answers | Number | Percent |
|--|-------------|--------|---------|
| 1. Had you ever heard of HPV (human papillomavirus)? | Yes | 141 | 46.0 |
| | No | 131 | 43.0 |
| | Do not know | 28 | 9.0 |
| 2. Does HPV transmit sexually? | Yes | 90 | 30.0 |
| | No | 39 | 13.0 |
| | Do not know | 171 | 57.0 |
| 3. Are HPV infections rare in Saudi Arabia? | Yes | 68 | 22.0 |
| | No | 46 | 15.0 |
| | Do not know | 186 | 63.0 |
| 4. Does HPV cause cervical cancer? | Yes | 92 | 30.0 |
| | No | 21 | 7.0 |
| | Do not know | 187 | 63.0 |
| 5. Can HPV infect both men and women? | Yes | 112 | 37.0 |
| | No | 41 | 13.0 |
| | Do not know | 147 | 48.0 |
| 6. Is the incidence of HPV highest among women in their 20s and 30s? | Yes | 85 | 28.0 |
| | No | 25 | 8.0 |
| | Do not know | 190 | 64.0 |
| 7. Can a HPV infection occur without symptoms? | Yes | 69 | 22.5 |
| | No | 44 | 14.5 |
| | Do not know | 187 | 63.0 |

| | | | |
|--|-------------|-----|------|
| 8. Does HPV cause genital (external organs of reproduction e.g. testes) warts? | Yes | 82 | 27.5 |
| | No | 22 | 7.0 |
| | Do not know | 196 | 65.5 |
| 9. Can HPV cause other genital cancers (penis, anus)? | Yes | 59 | 19.5 |
| | No | 22 | 7.0 |
| | Do not know | 219 | 73.5 |
| 10. Do you know about cervical cancer? | Yes | 171 | 57.0 |
| | No | 55 | 18.5 |
| | Do not know | 74 | 24.5 |
| 11. Are all women at risk of developing cervical cancer? | Yes | 94 | 31.5 |
| | No | 94 | 31.5 |
| | Do not know | 112 | 37.0 |
| 12. Is cervical cancer rare in Saudi Arabia? | Yes | 59 | 19.5 |
| | No | 79 | 26.5 |
| | Do not know | 162 | 54.0 |
| 13. Is there a vaccine against cervical cancer? | Yes | 78 | 25.5 |
| | No | 53 | 18.0 |
| | Do not know | 169 | 56.5 |
| 14. Does HPV can cause cervical cancer? | Yes | 108 | 35.5 |
| | No | 18 | 6.0 |
| | Do not know | 174 | 58.5 |

Table 3. Awareness and attitude towards HPV vaccine.

| Questions about STDs | Answers | Number | Percent |
|--|-------------------|--------|---------|
| 1. Is there is a vaccine that protects against HPV? | Yes | 118 | 39 |
| | No | 168 | 56.5 |
| | Do not know | 14 | 4.5 |
| 2. Does HPV vaccine prevent the chances of cervical cancers? | Yes | 96 | 32.0 |
| | No | 26 | 8.5 |
| | Do not know | 178 | 59.5 |
| 3. Once vaccinated, women no longer have to be screened for cervical cancer | Yes | 25 | 8.5 |
| | No | 133 | 44.0 |
| | Do not know | 142 | 47.5 |
| 4. The HPV vaccine is only for sexually active people | Yes | 24 | 8.0 |
| | No | 108 | 35.5 |
| | Do not know | 168 | 56.5 |
| 5. Should HPV vaccine be taken before marriage? | Yes | 106 | 35.5 |
| | No | 16 | 5.0 |
| | Do not know | 178 | 59.5 |
| 6. Are you willing to vaccinate yourself? | Yes | 120 | 40.0 |
| | No | 56 | 18.5 |
| | Do not know | 124 | 41.5 |
| 7. Are you willing to vaccinate your children? | Yes | 126 | 42.0 |
| | No | 39 | 13.0 |
| | Do not know | 135 | 45.0 |
| 7. If your friends knew about the HPV vaccine, they would Agree of me to take HPV vaccine. | Strongly agree | 64 | 21.5 |
| | Agree | 85 | 28.0 |
| | Neutral | 123 | 41.5 |
| | Disagree | 14 | 4.5 |
| | Strongly disagree | 14 | 4.5 |

| | | | |
|---|--|-----|------|
| 8. If your parents knew about the HPV vaccine, they would Agree to take HPV vaccine. | Strongly agree | 59 | 19.5 |
| | Agree | 94 | 31.5 |
| | Neutral | 115 | 38.0 |
| | Disagree | 16 | 5.5 |
| | Strongly disagree | 16 | 5.5 |
| 9. If your doctor knew about the HPV vaccine, he/she would Agree to take HPV vaccine. | Strongly agree | 72 | 24.5 |
| | Agree | 104 | 34.5 |
| | Neutral | 102 | 33.5 |
| | Disagree | 10 | 3.5 |
| | Strongly disagree | 12 | 4.0 |
| 10. What are your reasons for unwillingness to take the HPV vaccine? | Worry about the safety | 138 | 46.0 |
| | The HPV vaccine has not been widely agreed | 36 | 12.0 |
| | Worry about the price | 34 | 11.5 |
| | Worry about the effectiveness | 48 | 16.0 |
| | Not consider themselves at risk of cervical cancer | 9 | 3.0 |
| | The vaccine is not protective | 35 | 11.5 |
| | Other reasons | 0 | 0.0 |

Discussion

Globally, HPV is associated with many life-threatening complications such as cervical cancer and there is no cure for HPV infection. Effective educational and prevention interventions, such as health education, and screening programs, are essential to combat this serious disease [10]. Thus, it is important to know the level of community awareness and attitude towards HPV infection and complications to be able to decide the starting points for these programs. This is an essential constituent of individuals' safety and quality care.

Alhamlan et al. [1] found the prevalence of HPV infection among Saudi women in Riyadh, Saudi Arabia to be 17%, particularly the high-risk genotypes 16/18 [8]. While in Jeddah, Saudi Arabia 5.9% of participants were positive for HPV DNA and only 1.7% were positive for HPV IgG antibodies [1].

In the current study, we assessed the community knowledge, and attitude toward HPV infection and its vaccine among 300 participants in Al-Jouf Province, Saudi Arabia. It is noticed that females were more willing to participate than males as their percentages were 86% and 14%, respectively. Results clarified that only 29.2% of participants know that HPV is a sexually transmitted disease, and 63% or more have no idea about HPV prevalence in Saudi Arabia, risk age, manifestations, or complications such as genital warts, ulcers, and cervical cancer. This comes in agreement with the results of Alshammari and Khan [5] who assessed

the awareness of university students in Hail, Saudi Arabia about HPV and its vaccine. They noticed that 33.7% of respondents heard of HPV, only 29.5% believed that HPV infection is transmitted sexually and 62.2% did not know there is a vaccine for HPV.

In partial agreement with our results, Akkour and his colleagues [6] have reported that 84% of Saudi women were aware of cervical cancer, however, only 17.7% of them had heard about the HPV vaccine and 78.9% of females did not know that HPV was transmitted sexually (78.9%).

Furthermore, in the current study, more than 50% of the participants did not know that HPV infection can remain asymptomatic, 60.8% did not know the health problems associated with HPV, and 54.2% did not know how to prevent HPV infection. This necessitates the availability of health education programs, particularly for the youth before marriage.

In 2022, it was reported that cervical cancer is the main cause of morbidity and mortality among females in developing countries [11]. Thus presence of a vaccine against HPV could have a role in protection against cervical cancer.

Concerning the attitude towards the HPV vaccine, results clarified that more than half of the participants do not know about the availability of the HPV vaccine, its efficiency, and the age for vaccination. At the same time, more than 40% are willing to take the vaccine and encourage their families, and friends to take the vaccine. These results are in accordance with Darraj et al. [11] who reported that in Jazan Province, Saudi Arabia, 53%

of the participants were interested in taking the vaccine while 30% opposed it due to religious reasons. Thus, they recommended the application of health promotion programs about the HPV vaccine and its role in preventing HPV and its related complications. This is also noticed in the current study because most of the participants do not know about HPV vaccine's safety, and efficacy. This is considered a major challenge for the health sector to increase community awareness about this vaccine, its importance, efficacy, and safety. The same was reported by Akkour and his colleagues [6] where 54.1% of the respondents were willing to take the vaccine after knowing about it.

According to Almazrou et al., better awareness of health professionals about the prevalence of HPV infection, its related complications, and the availability of vaccines would assist in the implementation of effective prevention and treatment programs [12].

Finally, there is remarkable lack of awareness regarding HPV, its clinical implications, the HPV vaccine, and its importance and availability. It is important to encourage the preparation of organized campaigns by the health-advocating agencies for HPV vaccination. This is to control HPV infection, transmission, and complications.

Conclusion

There is an alarming lack of knowledge about HPV, risk factors, modes of transmission, manifestations, complications, and ways of prevention among youth. Thus, educational medical campaigns are required to raise awareness about HPV infection, its complications, and the importance of the HPV vaccine.

Ethics statement

The Local Committee of Bioethics (LCBE), Jouf University (No. 7- 06-44, on 4 April 2023), provided ethical Approval for the research proposal. The participants provided their consent by checking the agreement in the first section of the questionnaire.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or

financial relationships that could be construed as a potential conflict of interest.

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