



# Knowledge, attitudes, and perception towards human papillomavirus among university students in Pakistan



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## ABSTRACT

This cross-sectional study comprises a questionnaire-based survey regarding knowledge about human papillomavirus and its vaccine among students in different educational fields at public and private universities in the city of Lahore in Pakistan. A 26-item questionnaire was used to attain the objective of this study. The reliability of this tool was assessed using Cronbach's alpha (0.79) and the Kaiser-Meyer-Olkin value was 0.827. The response rate to the survey was 78.0%, of whom the majority (74.9%) were females and 308 (79%) were single (median age=23 years). While assessing the respondents' knowledge about HPV, 223(57%) students reported that they had already heard of HPV (human papillomavirus) and nearly 215 (55%) reported that HPV causes cervical cancer and can infect both men and women. Gender and field of study were two main factors found influencing the respondents' knowledge about HPV. Moreover, students' understanding about the mode of transmission of HPV was cursory: 40.51% said they did not know how HPV is transmitted, 133 (34.10%) stated that HPV spreads through the exchange of bodily fluids, and 22 (5.64%) selected cough/sneezing. In terms of prevention, 175 (44.87%) students stated that HPV can be prevented by vaccination, 30.0% reported sexual abstinence, 21.54% using condoms, and nearly 5.38% disclosed use of antibiotics. Addressing the knowledge of students regarding HPV vaccine, nearly 53% stated there is no vaccine against HPV and almost 64% rejected the statement that HPV vaccine prevents cervical cancer. In addition, students reported that they will be more than willing to get vaccinated for HPV if their physician recommend them (RII=0.74) followed by parents (RII=0.69). The results of this study revealed a poor understanding among respondents about the health problems associated with HPV, its prevention, modes of transmission and arability of HPV vaccine in Pakistan.

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## 1. Introduction

Human papillomavirus (HPV) is the most common viral infection of the reproductive tract [1]. Human papillomavirus is a renowned cause of cervical cancer but also other cancers including the vulva, anus, vagina, penis, head and neck [2–4]. Most sexually active women and men will be infected at some point in their lives and some may be repeatedly infected. The peak time for acquiring infection for both women and men is shortly after becoming sexually active. Skin-to-skin genital contact is a well-recognized mode of transmission for HPV [1].

In 2006, the human papillomavirus vaccine got its first approval from the US Food and Drug Administration [5]. Worldwide, two vaccines for HPV are available, and a few new vaccines are in the developmental stage [6]. The WHO has endorsed the HPV

vaccine as the prime approach for the prevention of cervical cancer, to be administered prior to first sexual contact. Certain countries have also initiated vaccination against HPV in males, as the vaccines available are found to be effective for the prevention of anal pre-cancers and genital warts in both sexes [7]. In 2008, the HPV-associated infection incidence was very high, with about 14 million cases globally [4]. According to a WHO report from 2013, globally about 0.27 million deaths occur due to cervical cancer every year, which the leading cause of deaths and 85% of the deaths are in middle or low income countries due to poor and inadequate access to screening and treatment [7]. In 2008, nearly 27,000 new cases of vulva cancer and 13,200 cases of vaginal cancer were reported worldwide. It has been estimated that almost 60% of vulva cancer cases and 68% of vaginal cancer cases occur in developed countries [3].

Most developed countries like Australia, Hungary and the United Kingdom have incorporated the HPV vaccination into their national vaccination program [6]. As the HPV epidemic spread in 2014, the HPV vaccination became part of the national

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vaccination and immunization program of 84 countries [8]. According to the Human Papillomavirus and Related Diseases Report in Pakistan (2015), there is no HPV vaccination and immunization program in Pakistan, as a result of which a major epidemic of HPV has been reported, and many people have fallen victim to this deadly virus [9].

As Pakistan is a developing country, the human papillomavirus is a major threat to public health. To date, HPV screening is generally not implemented in Pakistan. A major hurdle to exact statistical assessment and evaluation of HPV epidemic are social restrictions [10]. In Pakistan, to date it is a taboo to discuss about sexually transmitted diseases and sexual education, due to which, a majority of young female population, mainly from the rural areas have poor understanding about the sexually transmitted disease (STDs) and gender-specific cancers. Perhaps due to which the cervical cancer caused by HPV is ranked the 3rd major contributing source of deaths among women in Pakistan. In Pakistan more than 60 million female population aged 15 or over are at risk of cervical cancer, with a crude incidence rate of 5.9 [11]. Back in 2013, nearly 5233 cervical cancer cases were reported, and nearly 2876 deaths occurred in the country [11].

However, to date there is little research that explores public knowledge and understanding of HPV in Pakistan. Various screening studies have reported high risk HPV 16 and 18 strains among the samples collected from Punjab province [10,12]. Moreover, there are a lack of public health initiatives to improve education among the young adults about HPV symptoms, causes and prevention. Internet and some online blogs might have served as the main source of information about HPV among young Pakistani women. However, to date there is a lack of provincial or nationwide campaigns to raise awareness among Pakistani women about STDs and HPV. Therefore this study explores university students' knowledge, attitudes, and perception towards HPV. The results from the present study are expected to provide the baseline knowledge and understanding of young adults, who might be at risk of HPV, and will assist the public health department to intervene accordingly.

## 2. Methodology

A cross-sectional study was conducted among students enrolled at public and private universities in the city of Lahore in Pakistan. The study lasted from 1st Dec 2015 till 28th Feb 2016. A convenience sample method was adapted and self-administered (paper-and-pencil) twenty-six-item questionnaire was used to assess the university students' knowledge about human papillomavirus and its vaccine.

### 2.1. Study tool

A questionnaire for the survey was first designed with 32 questions, which were believed to be important on the basis of the literature review. A panel of four academic experts was approached to validate the contents of the study tool. Upon completion of content validity, a 26-item questionnaire was finalized and piloted among 20 respondents to meet the requirements of face validity. The reliability scale was applied for these 20 respondents and the alpha value was found at 0.878, confirming that the tool is adequate to meet the objectives of this study. Internal consistencies of individual items for 390 university students are given in Appendix A. Furthermore, to address any concerns about the tool's content, its adequacy was measured using the Bartlett test of sphericity. The Kaiser-Meyer-Olkin measure of sampling adequacy is an effective technique for judging content adequacy. In this study, the Kaiser-Meyer-Olkin value was 0.827, and the

interclass correlation coefficient was found to be significant. As the Kaiser-Meyer-Olkin value was more than 0.6, it demonstrates that the contents of the instrument are satisfactory to meet the study's needs.

### 2.2. Contents of the questionnaire

The questionnaire was comprised of five sections. Section one had six items aiming to gather the demographic information of the respondents. The primary focus of section two was to assess general knowledge about human papillomavirus. A nominal scale [yes/no] was provided for the respondents' convenience to disclose their responses (Table 2). Section three was comprised of three main items, aiming to explore respondents' knowledge about symptoms, prevention and spread of human papillomavirus (Table 3). Section four was comprised of five items that were aiming to gather respondents' knowledge and understanding about HPV vaccines using a nominal scale [yes/no] (Table 4). The last section of the study tool consisted of three main items aiming to record respondents' opinion about the HPV vaccination using five items likert scale.

## 3. Data collection

The respondents who participated in this survey attended different private and public universities of Lahore, with different ages, genders, marital status and educational backgrounds. No specific criteria for inclusion and exclusion were made for this survey and the questionnaire was given to all these respondents. However, respondents who were not willing to participate were excluded for this study. Verbal consent was taken from all the respondents to participate in this study as an ethical requirement.

## 4. Data analysis

For data analysis, Statistical Package for Social Sciences (SPSS) version 20 was used. Binary and linear regression was applied to see the association among demographic and binary/ordinal responses. a relative importance index (RII) was applied (Eq. (1)) [13] to identify the main factors that may hinder respondents' opinion about the HPV vaccination. Items were ranked base on the RII values, with the item having an RII value closest to one being ranked as the main factor affecting the HPV reporting process [14].

$$RII = \frac{\sum W}{A * N} (0 \leq RII \leq 1) \quad (1)$$

where: W – is the weight given to each factor by the respondents and ranges from 1 to 5, (where “1” is “strongly disagree” and “5” is “strongly agree”); A – is the highest weight (i.e. 5 in this case) and; N – is the total number of respondents. Furthermore to identify the factors affecting the knowledge towards HPV vaccination regression analysis was applied using gender (ref male) and field of education (ref non-health science) as covariates. A significant value 0.05 was assigned for analysis of respondents' replies.

## 5. Results

A total of N=500 respondents were approached, of whom 390 responded to the survey with a response rate of 78.0%. The majority of respondents (74.9%) were females and N=308 (79%) were single. The median age of the students was 23 (range 16–65). The majority (55.1%) were undergraduates, and N=175 (44.9%) were graduate students. N=180 (46.2%) were enrolled in

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