

Awareness of Female Patients Towards HPV Vaccine and Pap Smear at Maternity and Children Hospital in the City of Makkah, Saudi Arabia

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ABSTRACT

Cervical cancer is one of the leading life-threatening cancers around the globe. In fact, it is the fourth most common reported cancer in women with an estimate of 530,000 cases every year. In Saudi Arabia, a recent report from the Human papilloma virus (HPV) information centre has indicated annual cases of 358 diagnosed cervical cancer, placing it as the eighth most frequent cancer in the country. Such disease has been found to have a strong association with HPV infection as the primary risk factor. HPV is one of the most common sexually transmitted diseases (STDs) around the world, where certain oncogenic types of the infection can result in serious consequences in the female above 15 years of age, mainly cervical cancer. Nevertheless, there is an obvious limitation in data from Saudi Arabia regarding such infection and its complications. In Saudi Arabia, HPV vaccine has been available since 2010 for all women upon request or if prescribed by their physicians. However, despite its availability to public, statistics showed low rates of vaccine endorsement as well as Pap smear test among Saudi women. This study aimed to assess the knowledge gap and attitude of women in Makkah city towards HPV vaccine along with Pap smear screen test. Our results have shown a remarkable lack of awareness from the participants in regards to the HPV vaccine and Pap smear, although their awareness about the cervical cancer was high. The data also pointed out a possible malpractice of some physicians toward the recommendation of Pap smear test to their patients. In conclusion, there is still a clear gap in the knowledge and attitude from our participants towards the prevention measures of HPV infection and cervical cancer, which would possibly affect the roll out of HPV vaccine program. Therefore, more health promotion programs and campaign are needed to ensure success of the vaccine roll out and help avoid further complication of such disease.

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INTRODUCTION

Cervical cancer is one of the leading life-threatening cancers around the globe. In fact, it is the fourth most common reported cancer in women with an estimate of 530,000 cases every year.^{1,2} In Saudi Arabia, a recent report from the Human papilloma virus (HPV) information centre has indicated an annual cases of 358 diagnosed cervical cancer, placing it as the eighth most frequent cancer in the country.³ This number of cases is expected to raise 100% by 2025 if no proper intervention is introduced.⁴ Unfortunately, due to the late diagnosis of most of the cases when its management become already difficult, annual death incidence have reached nearly half of the diagnosed cases.^{3, 5} Such disease has been found to have a strong association with the HPV infection as the primary risk factor.⁶ HPV is one of the most common sexually transmitted diseases (STDs) around the world, where certain oncogenic types of the infection can result in serious consequences among the female above 15 years of age, mainly cervical cancer.^{3,7} Most of which attributed to HPV 16 and 18 genotypes.⁸ Nevertheless, There is an obvious limitation of data from Saudi Arabia regarding such infection and its complications, though, the burden of cervical HPV infection amongst Saudi women is 76%, according to HPV information centre.³ Indeed, the concerns about the real situation of HPV and cervical cancer incidence in Saudi Arabia still exist.

KEYWORDS:

HPV, Pap smear, HPV vaccine, Cervical cancer, awareness

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HPV & cervical cancer complications are preventable if proper interventions were administered at the right time. This includes early recognition of any cytological abnormalities or precancerous cells on the cervix via a screen test known as Pap smear.⁹ In addition, administration of HPV vaccine to girls aged 9-14 years would ensure a high level of protection against such infection and, eventually, avoid further complications.¹⁰ Both interventions were shown to have a promising outcome in many countries towards the prospect of eliminating HPV and cervical cancer.¹

HPV vaccination program was introduced publicly for the first time in 2006.⁷ Interestingly, since the implementation of the programs in many countries, reports have confirmed a significant decline in HPV cases along with its further complications in the participated countries.¹¹ In Saudi Arabia, HPV vaccine has been available since 2010 for all women upon request or if prescribed by their physicians.¹² In fact, according to the Saudi Ministry of Health (MOH) website, it has been integrated since 2013 as one of the basic vaccines of the National Immunization Schedule, to be taken at the age of 12 years old.¹³ However, despite its availability to public, statistics showed low rates of vaccine endorsement as well as Pap smear test among Saudi women.^{4, 14} This may be attributed to multiple factors including the lack of knowledge about HPV and its complications, lack of awareness about the existence of an effective vaccine, or even due to the conservative nature of the Saudi society about such topics.^{15, 16} Perhaps all of these factors related to the absence of an effective national awareness programs and campaigns about HPV.^{17, 18} Therefore, there is a necessity to evaluate the current status of HPV vaccination acceptance and awareness of its complications among women in Saudi Arabia. In addition, since the data about the prevalence of HPV in Saudi Arabia are still limited, it is important to report the updated prevalence of this infection along with related complications.

This study aims to assess the knowledge gap and attitude of women in Makkah city towards HPV vaccine along Pap smear screen test.

MATERIALS AND METHODS

Study design

A cross sectional study was conducted by providing an online questionnaire to the female patients attending or admitted to Maternity and Children Hospital (MCH) in Makkah city, during the period from March-May 2022. The questionnaire composed of 19 questions which was adapted partially from two previously published studies with a minor modification^{19, 20}. The questionnaire was divided into 3 sections where the first section consisted of 4 demographic questions, including nationality, age, education level, and marital status. The remaining two sections contained questions to assess the Knowledge, Attitude and Practice (KAP) of participants towards HPV and cervical cancer along with their prevention measures. One point was given for each correct answer and zero point for each incorrect answer. The total score was calculated out of 16. Accordingly, the higher the score indicates improved awareness and vice versa.

Data collection

Systematic randomized sampling technique were used, where eligibility criteria included all female patients between

18-60 years of age who are admitted or attended Maternity hospital in the city of Makkah, Saudi Arabia. We sampled all patients who consented to participate in the study. The online questionnaire was distributed to the participants in person by scanning QR code that is linked to the questionnaire. For those who have difficulties with reading or writing, questionnaire was conducted orally by trained interviewer. The survey instrument was constructed with an expected completion time of less than 5 minutes. Both English and Arabic versions of questionnaire were available for the participant preference.

Data Analysis

The data was analyzed using Statistical Package for Social Sciences (SPSS) version 21. Quantitative data was expressed as means \pm standard deviation. Frequencies and percentages were used for qualitative data demonstration. Kolmogorov Smirnov test was used to assess normality of continuous data. T-test and ANOVA were used to assess awareness difference in different demographic groups. Chi-square test was used to test for associations. Significance level was set at $p < 0.05$.

Ethical Consideration

Ethical approval to conduct the study was granted by the Biomedical Ethics Committee at Umm Al-Qura University (Approval No. HAPO-02-K-012-2022-03-1019). Informed consent was obtained prior to participation where participants were assured that all responses would remain confidential

RESULTS

Our study has included 214 participants in accordance with the study inclusion criteria, where the predominant were Saudis (91.1%). Most of the participants were above the age of 30 years old (67.2%). 146 (68.2%) of the participants were married compared to 68 (31.8%) unmarried or single. The majority of the participants revealed a completion of tertiary education (77.5%), out of which 10.7% indicated to have a postgraduate degree, compared to 22.4% who only finished secondary high school or below (Table 1).

Overall, the participants awareness about HPV was moderately low compared to their obvious lack of awareness about the vaccine (Table 2). Our data pointed out that most of the participants 183 (85.5%) have never came across any awareness seminar or information brochure about HPV or its vaccine. In fact, the majority (97.2%) has indicated that they have never taken the HPV vaccine as they never knew it actually existed.

Table 1: Socio-demographic distribution of participants (n=214)

	Criteria	Frequency (%)
Nationality	Saudi	195 (91.1%)
	Non-Saudi	19 (8.9%)
Age group	Below 30	70 (32.7%)
	Above 30	144 (67.2%)
Marital status	Married	146 (68.2%)
	Not married/single	68 (31.8%)
Education level	High school or below	48 (22.4%)
	Bachelor degree	143 (66.8%)
	Postgraduate degree	23 (10.7%)

Upon statistical analysis using ANOVA, HPV awareness was significantly associated with the education level of the participants ($p < 0.05$). The higher the education level, the more HPV awareness score the participant had. It has been found that the mean score of the awareness for high school, bachelor and postgraduate degrees was (0.77 ± 0.116 , 1.26 ± 0.082 , 1.31 ± 0.203), respectively.

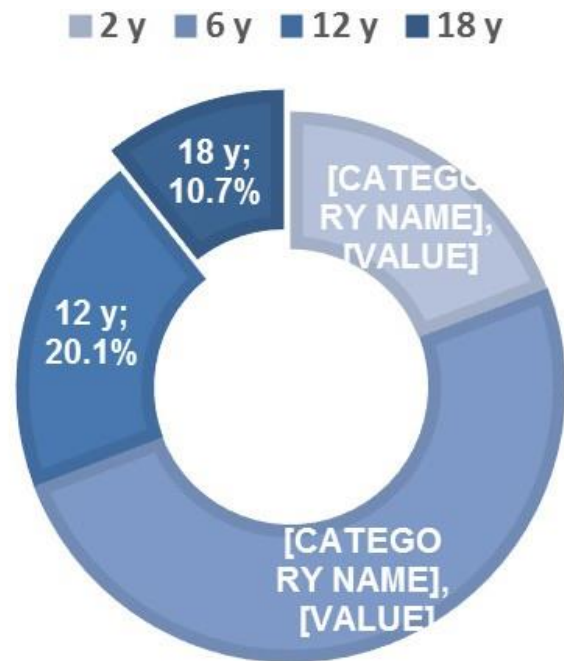


Fig. 1: Participants beliefs about the expected age for the National Immunization Schedule to be completed (n=214). Only 10.7% percent would pursue the vaccination as it is prescribed, while only 20.1% would go up to 12 years old. Majority would go up to only 6 years old (50%) and 19.2% thinks 2 years after the birth is the only required time for vaccination.

Similar results were observed for HPV vaccine awareness score among participants, where association with education level was statistically significant. The mean score of HPV vaccine awareness was (0.42 ± 0.116 , 0.57 ± 0.082 , $0.91 \pm 0.1.88$), for high school, bachelor and postgraduate degree, respectively ($p < 0.05$). Other demographics measures, i.e. age groups, marital and nationality, showed no significance.

In addition, although HPV vaccine has been integrated into the Saudi National Immunization Schedule at the age of 12 years old, more than 60% of the participants sought that the immunization schedule is completed by the age of 6 years old (Figure 1)

Interestingly, participants have demonstrated significantly high awareness towards the cervical cancer and its complications ($p < 0.05$). Nonetheless, despite that nearly 80% of them heard about the Pap smear, the majority revealed that they have never undertaken it (75.6%) nor was it recommended by their physicians (73.8%). In addition, only 20.6% expressed the knowledge that Pap smear is only recommended every 3 years., the statistical analysis showed significance association between age and Pap smear awareness ($p < 0.05$) (Table 2).

Using Pearson correlation analysis, our data demonstrated a significant direct positive correlation between HPV awareness and the vaccine awareness $r = 0.496$, $p < 0.001$. Similar correlation was also found between HPV awareness and cervical cancer awareness $r = .397$, $P < 0.001$. Indeed, cervical cancer awareness has shown significant weak direct correlation towards the Pap smear awareness $r = 0.175$, $P = 0.01$.

DISCUSSION

Multiple studies have shown the effectiveness of HPV vaccine and Pap smear test as prevention measures for the HPV infection and cervical cancer. Nevertheless, studies have also shown that embracing of these measures by the community plays a pivotal role in the process of reducing the risk of such diseases ^{6-8, 11}.

Table 2: Descriptive analysis of participants (n=214) awareness towards HPV, vaccine, cervical cancer and Pap smear

	Question	Frequency
HPV awareness	Have you ever heard about Human Papilloma Virus?	103 (48.1%)
	Have you ever attended a talk or came across a brochure about HPV?	31 (14.5%)
Vaccine awareness	Do you think HPV is one of sexually transmitted diseases (STDs) ?	124 (57.9%)
	Have you ever heard about HPV vaccine ?	70 (32.7%)
	Have you ever taken HPV vaccine?	6 (2.8%)
Cervical Cancer awareness	Have you ever attended a talk or heard about HPV vaccine program in Saudi Arabia?	46 (21.5%)
	Have you ever heard about cervical cancer?	199 (93%)
	Do you believe that cervical cancer is fatal?	168 (95.8%)
	Do you agree that cervical cancer is one of the top 10 cancers in Saudi Arabia?	205 (95.8%)
Pap smear awareness	Do you think cervical cancer can occur as a result of HPV infection?	154 (72%)
	Have you ever heard about cervix Pap smear?	170 (79.4%)
	Have you ever performed Pap smear?	52 (24.4%)
Physician practice	How frequent do you believe Pap smear should be performed?	(Once every 3 years) 44 (20.6%)
	Has the Pap smear ever been recommended to you by your doctor ?	56 (26.2%)
Patients practice	At which age do you believe the essential scheduled vaccination for children in Saudi Arabia should be completed?	18 years-old 23 (10.7%)

In the current study, our data has shown that the level of awareness among female patients of the Maternity and Children Hospital in Makkah was moderately low, as less than half of the participants indicated a good knowledge about HPV. Such results are in line with many recent reports from different cities and regions in Saudi Arabia^{17, 19, 21}. However, to the best of our knowledge, this is the first systemic report to be conducted on female patients from a specialized women hospital in Makkah province.

Indeed, the fact that most of the participants showed remarkable lack of knowledge about HPV vaccine is quite concerning, due to the fact that HPV vaccine has been available in Saudi Arabia since 2010¹². This might indicate inadequacy of HPV awareness programs, as more than 85% of the participants have never attended or came across any of such program. This has been demonstrated significantly in this study where HPV awareness showed positive correlation with the vaccine awareness. Though, it appears that education level of patients increases also the awareness about the vaccine. Interestingly, according to the Saudi MOH website, HPV vaccine has been integrated into the National Immunization Schedule since 2013, where the vaccine scheduled to be administered to children at the age of 12 years old. In fact, a recent nation-wide campaign has been launched late 2021 in order to promote HPV awareness among the community^{13, 22}. Nonetheless, our study has revealed that over 69% of the participants believe that their children vaccinations are completed by or prior to the age of 6 years old (Figure 1), while, in fact, the vaccination schedule continues up until 18 years old¹³. Such beliefs might cause trouble in rolling out the vaccine and reaching the required number of vaccinated population. Therefore, it is important to emphasize this kind of information during any vaccination campaign to avoid such misunderstanding. Furthermore, medical practice needs to be improved and physicians need to discuss the immunization status with their patients to ensure they are up to date. Unfortunately, a recent report about the medical practice toward such situations in Saudi Arabia has highlighted that one-third of the physicians are either rarely or never discuss the immunization status with their patients¹².

On the other hand, majority of our participants showed a high level of awareness about the cervical cancer. Our analysis has also shown a significant positive correlation between HPV and cervical cancer awareness. Similar correlation was noticed between cervical cancer and Pap smear awareness. However, over 70% of the participants has never performed a Pap smear screening test. In fact, most of them pointed out that it has never been prescribed or recommended by their doctor. Such low levels of Pap smear testing has been reported in previous studies which might be attributed largely to the malpractice of some physicians in promoting the importance of Pap smear as early detection tool for cervical cancer^{4, 14, 23, 24}. Indeed, other reasons and factors cannot be ignored, which has been elaborated elsewhere, but mostly they are attributed to their lack of knowledge and perception about the Pap smear test^{15, 16, 24}. This is quite alarming and calls for an effective HPV vaccine and Pap smear awareness program which were proven to have a remarkable impact on the levels HPV infection as well as cervical cancer⁹⁻¹¹.

In conclusion, our study has highlighted the levels of awareness of female patients from one of the major specialized hospitals

in maternity and children health. The results shed light on the current situation and effectiveness of the HPV awareness campaign launched recently by the Saudi MOH. There is an obvious need for a proper and accepted public health intervention program for the community in this regard, which may help narrowing the gaps in awareness that this study implies. In addition, advocacy from the physicians in promoting the prevention measures of HPV with their patients may play a key role in raising the awareness of the population.

Some limitation of the study need to be addressed as this is a cross sectional study which was conducted in one hospital in the city Makkah. Thus, further studies are needed to elaborate more on the situation in the province as well as determine the medical practice in other hospitals regarding the HPV awareness. Nevertheless, this study provides a baseline for such topic which will enlighten future research about the HPV awareness program effectiveness.

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Conflict of interests

The authors of this paper declare no competing or conflict of interest and deny the presence of any financial or external affiliations regarding this paper.

Ethical approval

Mentioned in the Material and Methods Ethical approval to conduct the study was granted by the Biomedical Ethics Committee at Umm Al-Qura University (Approval No. HAPO-02-K-012-2022-03-1019).

Authorship contributions

All authors substantially contributed to drafting and revising the article, as well as the final approval of the version to be submitted. FB, MK and SA contributed to the conception and design of the study. AAK, AAB, SHH, HMA, NAJ, and NFQ contributed in personal acquisition of the data from the participants. NFQ, MK and FB conducted the data analysis, and FB, MK, AMM and SSA were the contributors to the interpretation of the data.

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