

# Knowledge, attitudes, and practices regarding cervical cancer screening among physicians in the Western Region of Saudi Arabia

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## ABSTRACT

**الأهداف:** تقييم المعلومات والوعي والممارسة المتعلقة بسرطان عنق الرحم، وكيفية الكشف عنه، ومسبباته، وطرق الوقاية منه بين الطبيبات في المنطقة الغربية في المملكة العربية السعودية.

**الطريقة:** أجريت هذه الدراسة المقطعية في قسم النساء والولادة، كلية الطب، مستشفى الملك عبدالعزيز الجامعي، جدة، المملكة العربية السعودية. لقد قمنا بتوزيع استبيانات منظمة على 200 طبيبة للحصول على معلومات حول سرطان عنق الرحم، والسؤال عن الممارسة في الكشف عن سرطان عنق الرحم ووعي الطبيبات بشأن لقاح فيروس الورم الحليمي البشري في مختلف المرافق الصحية في المملكة العربية السعودية وذلك خلال الفترة من مايو إلى ديسمبر 2009م.

**النتائج:** شملت الدراسة 200 طبيبة، وقد تم تقسيمهن إلى مجموعتين: 70 (35%) طبيبة من أطباء أمراض النساء والولادة، و130 (65%) من الأطباء في مجال غير أمراض النساء والولادة. وكان متوسط العمر 36 عاماً. كانت المعلومات عن فيروس الورم الحليمي البشري كعامل مسبب لسرطان عنق الرحم معروفة عند 63 (90%) طبيبة في المجموعة الأولى، و87 (60.5%) طبيبة في المجموعة الثانية. و145 (64.3%) طبيبة في المجموعة الأولى و44 (33.8%) طبيبة في المجموعة الثانية أن سرطان عنق الرحم قابل للعلاج ( $p < 0.05$ ). ولقد اتفق 182 (91%) طبيبة في كلي المجموعتين على أن اختبار مسحة عنق الرحم يتم استخدامه كوسيلة كشف عن سرطان عنق الرحم. وقد كانت المعلومات عن لقاح فيروس الورم الحليمي معروفة عند 97 (48.5%) من الطبيبات. وقد أوصت 100 (50%) من الطبيبات بلقاح فيروس الورم الحليمي البشري وذلك بعد عرض معلومات كافية عن هذا اللقاح لهن.

**خاتمة:** أثبتت الدراسة بأن الأطباء في المملكة العربية السعودية سوف يستفيدون من مواصلة التعليم بشأن الفحص المتاح لمنع فيروس الورم الحليمي البشري وسرطان عنق الرحم.

**Objectives:** To evaluate knowledge and practice of the Pap test, the role of HPV in the etiology of cervical cancer, and attitudes regarding the HPV vaccine

of female physicians in the Western Region of Saudi Arabia.

**Methods:** A cross-sectional descriptive study using an interview with a structured questionnaire to obtain information regarding cervical cancer, practice in screening for cervical cancer, and attitudes of female physicians regarding the HPV vaccine in different health facilities in Saudi Arabia. The study was performed in the Department of Obstetrics & Gynecology, Faculty of Medicine, King Abdulaziz University Hospital, Jeddah, Kingdom of Saudi Arabia, between May and December 2009.

**Results:** Of the 200 respondents, 70 (35%) physicians comprised gynecological doctors (GDs) group I, and 130 (65%) physicians comprised the non-gynecological doctors (NGDs) group II. The mean age was 36 years. A total of 63 (90%) in group I, and 87 (60.5%) in group II knew that HPV is a cause for cervical cancer. Forty-five (64.3%) in group I, and 44 (33.8%) in group II believed that cervical cancer was curable ( $p < 0.05$ ). A total of 182 (91%) physicians in the GDs and NGDs group knew that the Pap smear test is used as a screening method for cervical cancer. A total of 97 (48.5%) physicians knew about the HPV vaccine. When the physicians were provided with information regarding the HPV vaccine, 100 (50%) physicians stated they would recommend the vaccine to their patients.

**Conclusion:** Physicians in Saudi Arabia would benefit from further education regarding the available screening, prevention for HPV, and cervical cancer.

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Cervical cancer is the second most common cancer in women, with an estimated 500,000 new cases and 231,000 deaths annually worldwide.<sup>1,2</sup> Cervical cancer in Saudi Arabia is the thirteenth most frequent cancer in Saudi women, and the fifth most frequent cancer in women between 30-44 years of age. The incidence rate in Saudi Arabia is one of the lowest in the world at 1.9 per 100,000 women.<sup>3</sup> Systemic screening can reduce the death rate from cervical cancer by at least 70%.<sup>4</sup> The current screening method is the Pap smear test, which is also highly cost-effective.<sup>5</sup> Since the mid-1990s, clinical evidence has established that the human papillomavirus (HPV) causes cervical cancer.<sup>6</sup> The identification of the potentially cancer-provoking virus has raised hopes for the development of a vaccine to protect against cervical cancer. Clinical trials have demonstrated that the vaccine is effective against HPV infection. The HPV vaccines are also expected to protect against cervical cancer, precancerous cervical lesions, persistent infections, and HPV-related conditions such as genital warts.<sup>7</sup> There are 2 different types of vaccines available in Saudi Arabia. Cervarix (GlaxoSmithKline Biologicals, Rixensart, Belgium) is a bivalent vaccine against HPV-16/18 types, and Gardasil (Merck and Co., Inc. West Point, PA, USA) is the quadrivalent vaccine against HPV-16/18/11/6. The knowledge of HPV and cervical cancer association has spurred research on HPV-based strategies for cervical cancer prevention, including the primary prevention of HPV, HPV vaccines, and the use of HPV testing for the follow-up of women with abnormal Pap results or after the treatment for severe lesions or microinvasive cancer. To maximize the benefit of these clinical advances, medical providers and the public require appropriate education. Physicians must remain current with the research on HPV and the diagnostic and treatment technologies for cervical cancer. The appropriate information must be relayed to women in a way that encourages healthy sexual practices and healthcare-seeking behavior. Designing effective educational messages is not straightforward. Most HPV infections regress without treatment and are undetectable within 6-24 months.<sup>8</sup> Over 100 HPV strains exist however, only certain types are oncogenic. In the rare case that these strains progress to cancer, the process can take between 5 and 30 years.<sup>9</sup> Furthermore, given that HPV is transmitted through skin-to-skin contact, the traditional barrier methods are unreliable in preventing transmission.<sup>10</sup> Despite the role that physicians have in cervical cancer prevention and education, research on these topics is limited with regard to the current Saudi Arabian healthcare providers. The present survey sought to explore the knowledge, attitudes, and practices of medical providers regarding cervical cancer in Saudi Arabia (Makkah region), and to identify their opinions

on patient education regarding the HPV vaccination. Given their different professional profiles and training backgrounds, we compared specialists (obstetricians and gynecologists [Ob-Gyns]) with non-specialists to determine how the 2 groups differed using the variables described herein.

**Methods.** We performed a cross-sectional descriptive study between May and December 2009 in the western region of Saudi Arabia. The study was performed in the Department of Obstetrics & Gynecology, Faculty of Medicine, King Abdulaziz University Hospital, Jeddah, Kingdom of Saudi Arabia. The study included different types of health facilities, including a hospital, a primary health care center, and a private clinic. We included married, or previously married, female physicians. Single female physicians were excluded. All participants were randomly selected, and they voluntarily agreed to participate in the study and divided into gynecology doctors (GDs; group I) and non-gynecology doctors (NGDs; group II). The sample size was calculated to involve a minimum of 10 participants per question. The questionnaire was in English, with short, clear, open-ended questions. Its content validity was confirmed through an extensive literature review and experts specialized in gynecology, community medicine, and medical education. The first 7 questions on the questionnaire gathered background information on the participant. The next 9 questions were divided into those assessing the participant's knowledge, practice, and attitude regarding cervical cancer and screening, including their understanding of its underlying etiology and preventive measures (Appendix 1). Two interviewers who worked in a gynecology residency-training program and managed by a supervisor administered the questionnaires. The interviewer was available to answer any query raised by the participants based on their ability to find the necessary information.

An individual approach was made, where the participants received the necessary information about the objective and potential benefits of the study. All participants were given the opportunity to ask further questions, after verbal consent was obtained. Written consent was not a requirement of the local ethical committee to conduct such study. All participants were fully informed by the interviewers that the information obtained was confidential and their participation was voluntary, and that they have the right to withdraw from the study at any time. The study received ethical approval from the Unit of Biomedical Ethics at the Faculty of Medicine, King Abdulaziz University, Jeddah, Saudi Arabia.

For the analysis of the data on knowledge, practices, and attitudes of physicians regarding the role of HPV

in the etiology of cervical cancer; the importance of the Pap test in disease screening; and the use of the HPV vaccine as a prophylactic resource in preventing HPV infection HPV and injury, we used the following criteria: (i) Adequate knowledge: when the participants said that there was a direct association between HPV and cervical cancer; that the Pap test is a useful tool in the prevention of disease; and correctly answered the interval within which this exam should be performed. (ii) Adequate practice: when the participants answered that referred their patients to do the Pap test and that they themselves get examined. (iii) Adequate attitude: when the participants answered that they had heard of the HPV vaccine, had been vaccinated, and had recommended the vaccine for their patients and their daughters.

Data were entered and analyzed using the Statistical Package for Social Sciences (SPSS) version 17.0. We used  $\chi^2$  tests to compare the outcome variables between the 2 groups.

**Results.** We contact 250 doctors, 200 of which agreed to participate, with a response rate of 80%. Of the respondents, 70 (35%) were physicians classified in group I (GDs), and 130 (65%) in group II (NGDs). The analysis of general characteristics of the participants showed that the mean age was 36 years (range, 22-59 years), and most were of Saudi Arabian descent. A total of 177 (88.5%) participants were married, 16 (8%) were divorced, 7 (3.5%) were widowed at the time of the study, and 156 (78%) of the participants had about 1-4 children before the study began (Table 1). A summary of the knowledge of physicians' regarding cervical cancer and screening is shown in Table 2. We observed a

significantly higher proportion of adequate knowledge on the role of HPV in the etiology of cervical cancer, the possibility of curing the disease, the value of the Pap test as a screening method aimed at the prevention of cervical cancer, and how often it should be carried out among gynecological physicians, when compared with those of other specialties.

Table 3 summarizes the practice of physicians regarding cervical cancer screening, and we observed significant differences between the 2 groups with regard to ever had Pap smear and referral of patients to the program for cervical cancer screening. The gynecological physicians presented a higher proportion of subjects with adequate practice compared with other medical specialties.

Table 4 illustrates the attitudes of physicians to the HPV vaccine. A total of 97 (48.5%) participants knew of the HPV vaccine with significant differences observed between the 2 studied groups. When they were provided with information regarding the vaccine, 50% of participants said they would recommend the vaccine to their patients, 47% would administer it to their daughters, and 42.5% of the participants would take it themselves, with no significant difference between the studied groups.

**Discussion.** Cervical cancer is a preventable disease, and one of the most important tools of prevention is increasing awareness among the public and ensuring that the health care provider has adequate correct information on different methods of prevention and screening. The participating physicians in our survey had generally accurate knowledge of the association between HPV and cervical cancer. Nearly 44.5% of the

**Table 1** - Demographic characteristics of 200 participants.

Variable	Medical specialties of participants		
	Group I n=70	Group II n=130	Total n=200
Mean age (years)	36.31	35.45	35.75
<b>Nationality</b>			
Saudi	42 (60.0)	80 (61.5)	122 (61.0)
Expatriate	28 (40.0)	50 (38.5)	78 (39.0)
<b>Smoker</b>			
Yes	3 (4.3)	7 (5.4)	10 (5.0)
No	67 (95.7)	123 (94.6)	190 (95.5)
<b>Previous medical illness</b>			
Yes	3 (4.3)	13 (10.0)	16 (8.0)
No	67 (95.7)	117 (90.0)	184 (92.0)
<b>Marital status</b>			
Married	62 (88.6)	115 (88.5)	177 (88.5)
Divorced	4 (5.7)	12 (9.2)	16 (8.0)
Widow	4 (5.7)	3 (2.3)	7 (3.5)

Data are expressed as number and percentage (%)

**Table 2** - Knowledge of physicians on cervical cancer and screening in the Western Region of Saudi Arabia (N=200).

Variables	Medical specialties of participants			P-value (95% CI)
	Group I (n=70) n (%)	Group II (n=130) n (%)	Total (n=200) n (%)	
HPV is associated with cervical cancer	63 (90.0)	89 (68.5)	152 (76.0)	0.003* (10.9-32.1)
Cervical cancer is curable disease	45 (64.3)	44 (33.8)	89 (44.5)	0.001* (16.6-44.4)
Pap smear test prevents cervical cancer	68 (97.1)	144 (87.7)	182 (91.0)	0.044* (2.52-16.3)
Pap smear test eligibility interval	48 (68.6)	30 (23.1)	78 (39.0)	0.001* (32.4-58.6)

\*statistically significant, CI - confidence interval

respondents believed that patients with cervical cancer had a good chance of being cured. The findings from a study conducted in 1998 on 520 healthcare professionals in the State of Morelos, Mexico,<sup>11</sup> demonstrated a poor knowledge of cervical cancer etiology, diagnosis, and treatment. In the cited study, 40% of Obstetricians and Gynecologists were unaware of the association between HPV and cervical cancer. A survey of Mexican physicians<sup>12</sup> observed that 80% of the respondents identified the virus as the principle cause of cervical cancer, although many lacked detailed knowledge of this association. In our study, approximately 76% of the physicians knew of the association of HPV and cervical cancer.

For departments outside gynecology, the possible reasons why physicians do not carry out screening or refer patients for screening may be attributed to their busy practice and/or lack of knowledge. This

explanation, however, does not justify the reluctance of the physicians in this study to screen themselves despite the unrestricted availability of a free service. In our survey most gynecologists (97.1%) knew that the Pap smear test is used as a screening method for cervical cancer. Around two-thirds of them, however, knew the recent guideline recommendations of the test eligibility, and only one-third of all doctors had undergone the test themselves. Our study is consistent with the findings of Mutyaba et al,<sup>13</sup> which showed that the knowledge regarding the Pap smear test was 83% and the eligibility for the screening interval was less than 40% among healthcare providers in Uganda.<sup>13</sup> Among the respondents, who included female nurses and medical students, 19% had been screened. Moreover, less than 40% of the female respondents knew the risk factors for cervical cancer. This percentage was almost half of the values found in our study. In addition, Mutyaba et

**Table 3** - Practice of physicians regarding cervical cancer screening (Pap smear test) in the Western Region of Saudi Arabia (N=200).

Variable	Medical specialties of participants			P-value 95% (CI)
	Group I: (n=70) n (%)	Group II: (n=130) n (%)	Total (n=200) n (%)	
Sent some patients for Pap smear test	43 (61.4)	27 (20.8)	70 (35.0)	0.001* (27.2 - 53.9)
Self-screening using a Pap smear test	26 (37.1)	31 (23.8)	57 (28.5)	0.041* (-18 - 26.8)

\*statistically significant, CI - Confidant interval

**Table 4** - Attitude of physicians regarding the HPV vaccine in the Western Region of Saudi Arabia (N=200).

Variable	Medical specialties of participants			P-value 95% (CI)
	Group I: (n=70) n (%)	Group II: (n=130) n (%)	Total (n=200) n (%)	
Heard about the HPV vaccine	46 (65.7)	51 (39.2)	97 (48.5)	0.006* (12.6- 40.4)
Gave the HPV vaccine to themselves	33 (47.1)	52 (40.0)	85 (42.5)	0.41 (-7.3-21.5)
Recommend the HPV vaccine to their patients	42 (60.0)	58 (44.6)	100 (50.0)	0.05 (1.09-29.7)
Recommend the HPV vaccine to their daughters	39 (55.7)	55 (42.3)	94 (47.0)	0.096 (-1.01-27.8)

\*statistically significant, CI - Confidant interval, HPV - human papillomavirus

**Table 5** - Brief summary of the studies of health care provider's knowledge on cervical cancer in the Western Region of Saudi Arabia.

Author (year)	Number of participants (response rate) n (%)	Percentage of knowledge on association of HPV and cervical cancer	Percentage knowledge on cervical cancer screening	Percentage knowledge on cervical cancer curability
Mutyaba et al <sup>13</sup> (2006)	288 (59)	29	83	81.0
Aldrich et al <sup>12</sup> (2005)	1206 (76)	80	-	-
Present study (2011)	200 (80)	76	91	44.5

HPV - human papillomavirus

al<sup>13</sup> showed that the lack of screening was perpetuated by a lack of knowledge or resources and the absence of clear screening programs, policies, and guidelines (Table 5). In our study, the alleged reasons by the participants to not perform the pap test on themselves, or recommend it to their patients were lack of time in 60% of the respondents, the belief that living in a conservative community correlated with a decreased risk of cervical cancer in 80%, a lack of knowledge in 30%, lack of resources in 5%, and having no clear guidelines applicable to the community in 25% of the respondents.

Education on HPV will inevitably become more common. Since the inception of the current study, there have been an increasing number of advertisements in public health on HPV in Saudi Arabia, showing that HPV education will inevitably become more common. However, new research and counseling of patients is needed, especially in light of new technologies related to HPV such as testing and vaccination. The results of these investigations will have important implications in this country. Currently, no study has addressed the acceptability of the HPV vaccination in the Arabic community. We found that less than 50% of physicians know of the existence of the HPV vaccine, and approximately 50% of physicians believe that the vaccine is not applicable to our community. In Turkey, the vaccine was introduced as a cervical cancer vaccine rather than one for HPV. A survey by Ilter et al<sup>14</sup> showed that the high rate of awareness of the cervical cancer vaccine (76.4%) in the public was a result of the increased education and training of healthcare professionals. They reported that, among the reasons to be vaccinated, the recommendation from health workers (67%) was the most significant influence.<sup>14</sup> A recent study in Great Britain showed that HPV information tended to cause confusion among women who did not previously know about its link to cervical cancer.<sup>15</sup>

The current study was based on a probabilistic sample obtained in health units in the western region of Saudi Arabia. Although these units were randomly selected, the subjects surveyed within each facility were chosen based on availability to accept the interview questionnaires. A potential problem with this sampling strategy is that the medical providers participating in the research may not have been representative of all doctors who worked in these places, as we focused on interviewing female doctors. The concern would be if the subjects selected had characteristics that distinguished them from other providers of medical services in relation to their level of knowledge or attitudes of HPV and cervical cancer. The other limitation of this survey is the use of the interviewer rather than using a self-administered questionnaire, which has high potential for interviewer

bias. Future survey should focus to avoid such bias and involve other doctors from different regions of Saudi Arabia. Considering the fact that Saudi Arabia consists primarily of Muslim communities where a relationship with multiple sexual partners is uncommon in such communities, discussing HPV, as a sexually transmitted disease is taboo. These issues highlight the need for clarity and consistency in the educational messages regarding HPV. The belief of many doctors that information about the HPV may cause problems in marriages is important, because this belief implies the need for more knowledge of the virus, by the health professionals. If the Pap test or the HPV vaccination is to be introduced in Saudi Arabia, the medical providers need to be prepared with accurate information to share with women and their partners. The medical providers must also have awareness and sensitivity to the implications of this information. For example, when giving a positive HPV diagnosis to a patient, medical providers might explain that such a diagnosis should not be taken as an indication of the woman's sexual behavior or of their husbands, as it is impossible to identify when or from whom the virus was acquired. Education of the health care provider is an important factor, reflecting directly on public awareness as demonstrated by the results of a recent study conducted in the Saudi general population in which 45% of the women who had undergone a previous Pap smear stated that their physician had not recommended it. Of those women who had not had a previous Pap smear, 18.3% stated that their physician had not recommended it.<sup>16</sup>

In conclusion, this report assesses the knowledge, attitudes, and practice of medical providers in relation to the Pap test, cervical cancer and HPV, at the national level in Saudi Arabia. We believe that the country is at risk of an unexpected increase in the incidence of cervical cancer, due to the lack of a structured screening program. Our results clearly show that gynecologist physicians had better knowledge of the subject in question when compared with those of other specialties, but even so, a significant number of them who did not have adequate knowledge, attitudes, or practice. These results suggest the need for improvement in medical teaching, and medical students should receive this information before the graduation. Furthermore, actions focused on continuing education of the doctors in Saudi Arabia are needed with special attention to improving access to current information in medical journals and the Internet. With the implementation of a continuing education program, the doctors of Saudi Arabia would benefit by upgrading and acquiring new knowledge of protocols available for prevention, screening, and intervention in situations involving HPV and cervical cancer.

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### Appendix 1 - Questionnaire evaluating Saudi physicians awareness of cervical cancer and screening.

Age	
Nationality	
Smoking history	
Have you had any major medical illness that required hospitalization?	
Specialty	
Marital status	
Parity	
<b>Knowledge</b>	
1) Do you know that human papillomavirus is etiological agent for cancer cervix	
2) Do you know that cancer cervix is curable	
3) Have you heard about cancer cervix screening (pap smear), if yes what is the eligibility and interval	
<b>Practice</b>	
1) Do you screen or refer patient for pap smear	(reason why not?)
2) Have you ever had pap smear your self	(reason why not?)
<b>Attitude</b>	
1) Have you heard about human papillomavirus vaccine	if yes:
2) Would you consider taking it	
3) Would you recommended to your patients	
4) Would you recommended to your daughter	