

Knowledge of Human Papillomavirus and Acceptability to Vaccinate in Adolescents and Young Adults of the Moroccan Population



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ABSTRACT

Study Objective: Human papillomavirus (HPV) infection is estimated to play an etiologic role in 99.7% of cervical cancer. Vaccines can prevent up to 70% of the cervical cancer caused by HPV 16 and 18. The present study was designed to define the knowledge of HPV and HPV vaccine acceptability among Moroccan youth.

Design, Setting, Participants, Interventions, and Main Outcome Measures: A nationwide anonymous questionnaire with a sample of 688 adolescents (12-17 years) and 356 young adults (18-30 years) was organized, that asked about HPV, origin of cervical cancer, Papanicolaou (Pap) test, and acceptability of HPV vaccine. Data were analyzed using univariate and multivariate logistic regression methods.

Results: Overall, a low frequency (213/1044 = 20%) of HPV knowledge was observed among the studied population. A multivariate model analysis showed that age, educational level, and knowledge of the Pap test remained significantly associated factors with HPV knowledge. Additionally, only 27% (282/1044) of participants were willing to accept HPV vaccination. Highest acceptability was observed among young adults compared with adolescents (166/356 = 46.6% vs 116/688 = 16.9%). Sixty-two percent (103/165) of male participants accepted the HPV vaccine compared with only 20.4% (179/879) of female participants. Educational level, type of school, and knowledge of the Pap test were associated factors with HPV vaccine acceptability in a multivariate model analysis.

Conclusion: The present study showed a low level of HPV knowledge and HPV vaccine acceptability among Moroccan youth. Promotion of activities and sensitization are required to maximize public awareness in the future. This objective can be achieved with the use of media, active efforts by health care providers, and introduction of sexual education in school programs.

Key Words: Human papillomavirus vaccine, Adolescents, Knowledge, Acceptability

Introduction

Cervical cancer (CxCa) rates third as the most common cause of cancer among women worldwide. With an annual incidence of more than 527,000 new cases (age-standardized incidence rate [ASR], 14 per 100,000) and an annual mortality rate of 265,653 (ASR, 6.8).¹ Human papillomavirus (HPV) is estimated to play an etiologic role in 99.7% of CxCa worldwide. Approximately 5.2% of all cancers worldwide are attributed to HPV infection.^{2,3} More than 70% of these cancers are caused by HPV 16 and HPV 18 genotypes.⁴

In contrast to other developing countries in the world, the region of North Africa shows a general low incidence of CxCa (ASR, 6.6). The availability and quality of the data are very different from one country to another. Available data indicated that in Algeria, CxCa incidence ranks second after breast cancer and third after breast and colorectal cancer in Tunisia, no data from Libya were obtained. However, in Egypt, CxCa incidence and/or mortality data have been mostly

extrapolated from limited registries and could provide a false impression that CxCa is not a major health issue.^{1,3}

In Morocco, CxCa is considered a major public health problem and it is the second most common cancer among women after breast cancer with approximately 2258 new cases and 1076 deaths each year.¹ The incidence of CxCa could be much higher than reported, because published data are limited to a number of cases registered in some oncology centers in the absence of a national cancer registry.⁵ The initiation of a National Cancer Control Plan was implemented in 2010, to start organized screening programs for CxCa detection.⁶ Two published studies that focused on 2 different regions of Morocco found a high HPV prevalence in women with normal cytology. The first one was conducted in Ibn Sina Hospital, Rabat, and showed an HPV prevalence of 15.8% in 2010. In the second study carried out at University Hospital of Fes in 2012, the HPV prevalence was 42.5%.^{7,8} None of the countries of this region at present have a national organized CxCa screening program; Morocco and Tunisia are in the process of creating such an organization, which can explain the highest HPV prevalence in Morocco.

Two prophylactic HPV vaccines, Gardasil (Merck & Co, White House Station, NJ) and Cervarix (GlaxoSmithKline

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Biologicals, Rixensart, Belgium) were approved in the United States and Europe, respectively, and have been introduced in more than 100 countries worldwide to offer protection against HPV types 16 and 18, which are responsible for most CxCa.¹ The HPV vaccine has been licensed in Morocco since 2008 to reduce the incidence of HPV. The HPV vaccine cost approximately \$147 US (price of 3-dose) constitutes approximately half a month's income for 40% of Moroccan families. In the absence of any state-funded vaccination program, it is beyond the means of many people.⁹ The Moroccan national immunization program provides vaccines against 6 vaccine-preventable diseases, including tuberculosis, diphtheria, pertussis, tetanus, polio, and measles. Adding HPV vaccine to the current national immunization program is still a future perspective.¹⁰ The efforts provided by the Lalla Salma Association led to the introduction of the HPV vaccine, which enabled the Expanded Program on Immunization to immunize girls beginning at the age of 11. This foundation was founded and headed by Princess Lalla Salma in 2005, and is dedicated to cancer prevention and treatment. The foundation has done epidemiological research on HPV and is supporting development of a large CxCa screening program. Various plans are being introduced to prevent and control HPV infection, which is a key promotion for HPV immunization (M. Braikat, Morocco Ministry of Health: personal communication, May 2012). The US Centers for Disease Control and Prevention reported that HPV vaccination is recommended for girls aged 13–26 years and for boys aged 13–21 years, ideally before beginning sexual activity.¹¹ Regarding the safety of the HPV vaccine, many studies including tens of thousands of people worldwide showed no serious side effects, and confirmed the vaccine's efficacy. The US Centers for Disease Control and Prevention and the US Food and Drug Administration continue to control vaccine safety.^{11–14} The acceptance of the HPV vaccine by parents was recently studied in Morocco. Responses showed very low knowledge of HPV infection (4.7%) rates and the HPV vaccine (14.3%). The acceptance of the vaccine was low among mothers (32%) and fathers (45%), and none of the participants had vaccinated their daughter(s) against HPV.¹⁵ The level of HPV knowledge and of the HPV vaccine acceptance are different worldwide, with some countries that showed a low level, and others that exhibited a high level of knowledge.^{16–19} To date, there is an absence of data regarding the overall awareness of HPV and the acceptance of the HPV vaccine

among adolescents and young adults aged 12–30 years in Morocco. Despite the high prevalence of HPV infection among Moroccan women and the availability of a prophylactic HPV vaccine, we expected a low level of HPV awareness and vaccine acceptability among adolescents and young adults because of socioreligious and cultural barriers, and nonintroduction of the vaccine in the Expanded Program on Immunization. The present study was designed to outline the HPV knowledge level, the acceptance of HPV vaccine, and factors associated with them among adolescents and young adults in Morocco.

Materials and Methods

The Study Setting

The study was conducted January–June 2014 at 7 different regions across Morocco. The studied regions were selected randomly. The capital of each region was included in the study because of its developed economy and high level of its population (Table 1).

Study Design

Study Participants

In the absence of any data about HPV knowledge and acceptability of vaccine among Moroccan youth, we targeted age groups for whom vaccination is recommended. Among 1290 subjects aged 12–30 years selected randomly to participate in this study, 1044 subjects (688 adolescents and 356 young adults) accepted participation and 246 refused (Fig. 1). The adolescent and young adult groups were randomly selected from schools and work or universities, respectively. With the variability of this population we aimed to have a representative sample of different economic, cultural, and ethnic categories within the Moroccan society. Only unmarried participants were retained in the final analysis, with the average age of marriage (29.5 years) indicated by the high commission plan in 2004 in the urban area.²⁰

Study Instruments

Two methods were adopted to collect data in this study: the first was face to face interviews, the second involved completion of an electronic version of the questionnaire and forwarding it to the corresponding author. The electronic form was considered an alternative method when the

Table 1
Distribution of Participants According to Region in Morocco

Regions	Ranking According to Population	Acceptors			Nonacceptors		
		Young Adults	Adolescents	Total	Young Adults	Adolescents	Total
Grand Casablanca	First (3,786,000)	80	203	283	34	15	49
Rabat-Salé-Zemmour-Zaer	Fifth (2,599,000)	72	100	172	23	13	36
Oriental	Eighth (1,983,000)	63	88	151	11	9	20
Marrakech-Tensift-Al Haouz	Third (3,252,000)	40	60	100	22	7	29
Doukala-Abda	Seventh (2,046,000)	31	96	127	28	14	42
Fès-Boulmane	12th (1,682,000)	30	63	93	19	9	28
Tanger-Tétouan	Fourth (2,668,000)	40	78	118	21	21	42
Total		356	688	1044	158	88	246

Effective values are shown.

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