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## Original Research

# Female students receiving post-secondary education in Greece: the results of a collaborative human papillomavirus knowledge survey



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## ABSTRACT

**Objectives:** Contrary to the optimistic forecasts, existing until 2008 and despite the incorporation of the vaccine into the Greek National Immunization Program, six years later, the percentage of HPV vaccination coverage in Greece remains disappointingly low. The aim of this extended study was to investigate the knowledge, behaviour and attitude of a representative sample of the initial target group; young female students of Greek higher education institutions to Pap cervical screening, biology of HPV infection and principles of HPV vaccination.

**Study design:** Cross-sectional study.

**Methods:** One thousand two hundred ten (1210) questionnaires were completed by young female students aged 17–24 years. The survey questionnaire sought data relating to sociodemographic characteristics, health behaviour and knowledge about HPV, as well as vaccination status.

**Results:** 79.6% of the sample reported at least one annual gynaecologic examination and 92.6% were familiar with the rationale of cervical screening; however only 52.9% had undergone a Pap smear. 69.7% reported adequate knowledge about HPV and 89.3% were aware of the possible course of HPV infection. Despite most (95.9%) were aware of vaccine availability, vaccinated students represented only 33.1%. According to the multivariate analysis, vaccination status was associated with university studies (OR 1.96; 95% CI: 1.19–3.20), parental area of expertise (OR 2.77; 95% CI: 1.18–6.53, OR 2.03; 95% CI: 1.05–3.94), and adequate knowledge of the reasons for which women should undergo regular cervical screening (OR 4.23; 85% CI: 1.55–11.55). Fear of side-effects and equivocal information were the main reasons of non-vaccination (52.2% and 33.1% respectively). Finally, the majority of unvaccinated individuals showed a positive attitude towards prospective HPV vaccination, providing they received well-documented advising.

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*Conclusions:* Young women attending Greek higher education exhibit a good level of knowledge about HPV and its correlation with cervical cancer. These data highlight the need for further sensitization of the general population.

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## Introduction

Female lower genital tract malignancies constitute worldwide a major public health issue. Despite cervical precancer (intraepithelial neoplasias) and cancer not being associated with high mortality rates in the Western World, these diseases have a significant psychological, social, and economic impact on patients besides posing a significant burden for the healthcare system.

Epidemiological studies have conclusively demonstrated that certain strains or genotypes of human papillomavirus (HPV) are implicated in the development of cervical and related anogenital cancers.<sup>1</sup> HPV types 16 and 18 are the most prevalent worldwide among the high-risk HPV genotypes and have been strongly associated with cervical cancer (>70% of cervical cancer cases). HPV types 6 and 11 are the most common of the low-risk HPV genotypes and have been associated with benign lesions.<sup>1–4</sup> HPV prevalence is age-dependent and peaks in young sexually active females between the ages of 20 and 24.<sup>1</sup>

The HPV vaccine was launched as a primary prevention tool against cervical cancer. Two commercial HPV vaccines have been licensed in Europe: initially the quadrivalent *Gardasil*<sup>®</sup> (Merck, USA) in 2006 and subsequently the bivalent *Cervarix*<sup>®</sup> (GlaxoSmithKline, USA) in 2009. Pioneer HPV immunization schedules have been successfully implemented in Australia. By 2008, fifteen European countries, including Greece, had incorporated the prophylactic vaccination into their national health systems.<sup>5</sup>

Secondary cervical screening is opportunistic in Greece; additionally no structured programme for HPV vaccination is in place. HPV vaccination is being provided in Greece by several specialties (Gynaecologists, Paediatricians and General Practitioners); the HPV vaccine is free of charge for all females aged between 12 and 26 years, the older ones representing the catch-up target group. Sexually active female adolescents who may have already been exposed to at least one HPV type can still be vaccinated to achieve protection against other oncogenic genotypes.<sup>6</sup> The HPV vaccine is also recommended for males between the ages of 11 and 26 years old<sup>6</sup>; individuals pay the full fare as no state reimbursement is provided.

A brief statement promoting vaccination has been issued by the National Pediatric Society; this statement has been endorsed by the Ministry of Health and the Greek Colposcopic Society. However, a significant percentage of physicians, both in the private and public health sector have been hesitant in their recommendations. Rarely, few gynaecologists, most likely unacquainted with HPV or unaware of basic vaccination principles, actively averted potential vaccinations declining to prescribe the vaccine.

In brief, in Greece HPV vaccination isn't mandatory and there is no official audit, nor recall procedure. In contrast to optimistic pre-vaccination forecasts, six years following the vaccine's launch, the HPV vaccination rate in Greece remains disappointingly low (unofficially estimated at approximately 30–35% in the catch-up target group of the general population). Remarkably, the coverage rate for most other vaccinations controlled exclusively by pediatricians' (Influenza, Varicella, Tdap, MMR, Hepatitis A & B, Pneumococcal, Meningococcal, etc) has been traditionally very high for decades (~95%) before the onset of the financial crisis (2009), but has seriously declined during the previous five years as thousands of Greeks were left without social security coverage.

The aim of this extended study was to evaluate the level of knowledge and individuals' attitudes about cervical screening and HPV infection among young female students enrolled in Greek institutions of higher education. An additional goal of this study was to assess the public sensitization and acceptability of the prophylactic HPV vaccination.

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## Methods

One thousand two hundred and ten (1210) females, between 17 and 24 years of age, participated in this cross-sectional study. The participants were attending their first semester in either a Greek University, or a Greek Superior Technological Institute (ATEI). The study was conducted in collaboration with the Department of Pharmacy at the University of Patras and the Department of Economics, Management and Evaluation of Health Services at the University of Piraeus, as part of a postgraduate thesis. The study was approved by the ethics committee of Patras University Hospital.

Each participant was asked to complete a self-administered questionnaire under the supervision of the postgraduate researcher. The questionnaire data were processed anonymously. The questionnaire was structured into three sections.

The first section focused on demographic data, such as the university attended, the department of study, age, city of residence, nationality, and parental education level. The second section addressed the participant's gynaecological history and the level of knowledge about cervical screening (i.e., Pap smears), HPV infection, and facts about the HPV vaccine.

Specifically, as shown in the tables, interrogation about Pap smears was 'Do you know why a woman should have a cervical screening?', with possible answers 'Yes', 'No', or 'No answer'. If the participants answered 'Yes' to this question, then they were asked to indicate the reason. Similarly, the

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