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Original Research

Human papillomavirus knowledge and vaccine acceptability among adolescents in a Greek region

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ABSTRACT

Objectives: The aim of this research was twofold: (1) develop an instrument to assess knowledge regarding human papillomavirus (HPV) and its vaccine and utilize this instrument to measure knowledge levels of Greek adolescents in Lyceum schools of Western Thessaloniki; and (2) examine the associations of the resultant knowledge measure scores with sociodemographic characteristics.

Study design: Cross-sectional survey with complex sampling design.

Methods: A total of 268 students of three Lyceum schools in Western Thessaloniki responded anonymously to a questionnaire during February–March 2013. The instrument was developed by literature review. Answers of respondents to individual questions were initially presented in terms of absolute and relative frequencies. Knowledge items were presented by gender along with appropriate chi-squared tests. Next, the development and validation of a knowledge score was pursued with Rasch analysis. Raw scores of dichotomous true/false items were converted to interval-level adjusted student scores, and the reliability and validity of the model were assessed. Finally, the effect of sociodemographic variables on the knowledge measure was explored by multivariate linear regression.

Results: Analysis of individual items documented low knowledge for both female and male students along with a limited role of doctors as information agents and little associated encouragement toward vaccination. Vaccine uptake was low with many young girls being largely unwilling to vaccinate in the future primarily due to the fear of side-effects and lack of information. Person location parameters (knowledge scores) were derived from a Rasch model with satisfactory reliability and validity. The resultant validated measure confirmed the low knowledge levels of Greek students. Nationality and birthplace seemed to affect knowledge level.

Conclusions: Further improvement and validation of the knowledge measure used in this study can assist nationwide surveys in order to examine student knowledge regarding HPV and its vaccine. Our findings also stress the exacerbated need for effective nationwide educational campaigns aiming to inform adolescents about HPV and the associated vaccine. Appropriate incentives should also be given to physicians to increase their

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involvement. Parents and students should be thoroughly informed about the value of research similar to ours, in order to increase survey participation rates.

Introduction

Cancer of the cervix was the fourth most common cancer in women worldwide in 2012, with the majority of cases being observed in developing countries.[1] A major risk factor for the development of cervical cancer is long-term infection with high-risk strains of human papillomavirus (HPV).[2] It is a sexually transmitted disease that mainly affects women under the age of 30 years, with adolescents being at higher risk due to their more liberal sexual behavior and immaturity of genital system.[3]

In recent years, a new intervention for primary prevention of cervical cancer has been the development of two types of a pluripotent virus vaccine against HPV.[4] In Greece, the vaccine against HPV was included in the 2007 vaccination program for teenage girls and young women.[5] High vaccination uptake, however, requires awareness and knowledge of HPV and its vaccine and therefore sexual health education programs aimed at influencing the relevant knowledge, risk awareness, values, attitudes, and intentions.[6]

The aim of this research was twofold: (1) develop an instrument measuring knowledge regarding HPV and its vaccine and utilize it to assess the knowledge of adolescents in a Greek secondary education setting; and (2) explore the association of the level of knowledge with various demographic factors.

Methods

Survey administration

The survey was administered between February and March 2013 in (randomly selected) 3 out of the 36 Lyceums that were in existence in the 3rd region of the Secondary Education Directorate of Western Thessaloniki. The study was approved by the Institute of Education Policy, the Ministry of Education, and written consent was obtained by both parents and adolescents. All three grades (educational levels) were represented in the sample of schools, and all students within each of these grades were asked to participate in the study. Questionnaires were anonymously completed in classrooms, while an independent researcher was present. A two-stage cluster sampling approach was employed. Power calculations were conducted with G*Power 3.0.10.[7]

Instrument description

The instrument itself resulted from two literature sources, and a Greek questionnaire devised in the 'Lysistrata' project for the prevention of cervical cancer in Greece.[5,8] Questions of interest were formally translated following the methodology described by Guillemin et al.[9] and pretested to 10 students.

Knowledge about HPV and its vaccine was evaluated by 16 questions. Most items were presented as true/false dichotomous questions. One question was a multiple choice that allowed for multiple responses and could be in fact be treated as a number of distinct true/false items with a common initial statement. Knowledge regarding the HPV vaccine was measured with two dichotomous items addressed only to female adolescents.

The source of knowledge regarding the vaccine was assessed with one separate item. Vaccine intake for female students was evaluated by asking them whether they have received at least one dose of the vaccine against cervical cancer. Two items assessed the intensity with which doctors recommended the vaccination and another two the intention of girls who have not been vaccinated so far, to do so in the future, and the reasons for adapting a negative stance.

Data analysis

Item absolute and relative frequencies were presented for individual questions with appropriate statistical tests where appropriate. This was pursued for all items mentioned above.

Knowledge measures (scores) referring to the virus and its vaccine were derived by employing Rasch analysis with Winsteps v.3.92.[10] The specific unidimensional model quantifies latent traits and has been used inter alia to construct scales that measure adolescents' attitudes toward abortion and knowledge of diabetes in patients with type-2 diabetes.[11,12] Raw dichotomous scores can be effectively transformed into log of the odds units (or logits) along a common interval continuum that measures person ability and item difficulty.[13] The Rasch model is a special form of item response theory that also provides information on its psychometric properties.

Sixteen true/false items were incorporated in the Rasch analysis in this research to estimate—on an interval scale—students' overall knowledge on HPV and its vaccine. Two of the included items were gender specific (i.e. related to the vaccine targeted to girls) and were asked only to females.

In Rasch analysis, 'fit' statistics indicate how accurately or predictably data fit the model. The outfit measure is more sensitive to outliers. An item was regarded as suitable for the Rasch measure if the infit and outfit mean square standardized residual (MNSQ) value was between 0.7 and 1.3. Values lower (greater) than that might indicate redundancy (excessive 'noise') associated with an item. Point-measure correlations were also assessed to see whether an item had the same direction with the measure (scale). Person infit and outfit MNSQ was also assessed. Persons with infit or outfit MNSQ