

# Comparison of Knowledge Regarding Human Papillomavirus (HPV) and Cervical Cancer in Students with or without Sexual Intercourse

F. Bakiri, T. Rexha, A. Mitre

**Abstract**—The aim of our study was to compare knowledge of regarding HPV and cervical cancer in female student of 18 to 26 years old, with or without sexual intercourse. We conducted a questionnaire survey of the students (N=568), in Faculty of Natural Sciences, Tirana, Albania. Sexually experienced students were more likely to have heard of risk factors such as multiple sex partners, sexual intercourse before age 18, having contracted any sexually transmitted diseases, having genital warts, smoking cigarettes, use of oral contraceptive, poor diet or nutrition and using tampons. No significant sexually experience differences were observed in knowledge of the way of transmission of the virus associated with cervical cancer knowledge, the virus associated with cervical cancer knowledge, the prevention of cervical cancer knowledge. On the other hand strong significant sexually experience differences were observed in knowledge of the diagnostic way of cervical cancer and what HPV can cause knowledge.

**Keywords**—Risk factors, HPV, Cervical cancer, Albanian students.

## I. INTRODUCTION

**H**UMAN papillomavirus (HPV) is a family of viruses that are etiologically linked to number of disease conditions: cancers as well as benign conditions such as warts and condylomas. The highest risk of HPV contraction is experienced during first five years after the initiation of sexual activity [15]. In the natural course of HPV infection, virus clears by itself through protective immunologic processes within two years of HPV contraction in 90% of cases [11]. However, like majority of the viral infections, HPV infection cannot be cured. Medical treatments for HPV infection, similar to other viral infections, are symptomatic and based on relief of warts outbreaks and removal of lesions [5], [3], [11]. Recent advances demonstrate that HPV, spread primarily through skin-to-skin contact during sexual activity, is the etiologic agent of genital warts and can be isolated in 99.7% of cervical cancer cases [13], [14], [18]. HPV related cancer is the second leading cause of cancer deaths in women worldwide [4], [19].

Fjoralda Bakiri PhD student, Faculty of Natural Science, University of Tirana, Blv "Zogu I", Tirana, Albania (phone: +355-67-40-59-579, e-mail: fjoralda.bakiri@fshn.edu.al).

Tefta Rexha, Professor (Head of the Department of Biology) Faculty of Natural Science, University of Tirana, Blv "Zogu I", Tirana, Albania (phone: +355-67-20-82-751, e-mail: tefta.rexha@fshn.edu.al).

Anila Mitre, Associate Professor, Department of Biology, Faculty of Natural Science, University of Tirana, Blv "Zogu I", Tirana, Albania (phone: +355-67-20-58-973, e-mail: anila.mitre@fshn.edu.al).

Albania has a population of 1.17 million women ages 15 years and older who are at risk of developing cervical cancer. Current estimates indicate that every year 124 women are diagnosed with cervical cancer and 49 die from the disease. Cervical cancer ranks as the 11th most frequent cancer among women in Albania, and the 2nd most frequent cancer among women between 15 and 44 years of age [20]. High risk HPV types are responsible for about 70% of all cervical cancers, in Albanian women. The most common HPV types associated with cervical cancer in Albania are types 16, 18, 31, 53, [1], [7].

Most college students are sexually-active, they are a group at risk for HPV and cervical cancer because they are at greater risk of contracting sexually transmitted infections than the general population because of the high-risk sexual behaviors in which they engage [17], [9]. Studies report rates as high as 81% of college students engaging in casual sex at least once during their college experience [6]. For high-risk HPV types prevalence rates are around 8–12% in women aged 18–24 and decline to 2–5% in women over the age of 35 [2]. Although previous studies have demonstrated a decline in HPV prevalence as women age, research instead suggests that a bimodal HPV prevalence distribution is present showing a first peak around the age of 20 years and a second peak around age 40 - 50 years [8], [10], [12], [13].

A new method of HPV-attributed cancer prevention was introduced with the development and application of the HPV vaccine. There are two HPV vaccines available currently, *Gardasil*® and *Cervarix*®, which prevent HPV infection and consequently HPV associated diseases. *Gardasil*® is a quadrivalent HPV (types 6, 11, 16, 18) recombinant inactivated vaccine. *Cervarix*® is a bivalent HPV (types 16, 18) recombinant inactivated vaccine.

Awareness and education are important prerequisites for efforts aimed at preventing the spread of HPV. Education about sexually transmitted diseases might be an effective primary prevention strategy for HPV infection and cervical cancer. It has been suggested that HPV-focused education could be more effective than other education focused on sexually transmitted diseases, because more people have experience with the complications of HPV (i.e. cervical dysplasia) than with other sexually transmitted diseases [16]. Thus, this population would be more likely to retain information from an HPV-focused intervention and have a stronger motivation to improve their safe-sex practices.

This study was designed to compare knowledge of regarding HPV and cervical cancer in female student of 18 to 26 years old, with or without sexual intercourse.

## II. MATERIALS AND METHOD

Our study has included 568 female student aged 18 to 26 years, from which 153 resulted with current or previous sexual activity and were classified as sexually experienced, of Faculty of Natural Sciences, Tirana, Albania during December 2012-January 2013. First, permission to include the students was obtained from the lecturer in each class after explaining the aims and objectives of the study and from students if they won't to fill the questionnaire. No information on HPV or on cervical cancer was provided for the study subjects before the filling in of the questionnaire.

The questionnaires were distributed in the lecture hall and 10–15 minutes were needed to fill them in. According to the analysis the data were stratified into two groups, student with current or previous sexual activity and were classified as sexually experienced and students who had never been involved in a sexual intercourse and subsequent comparisons were carried out using cross tabulated data. Differences between groups were evaluated by chi-square test, and the estimates were carried out using odds ratio (we accept as significant result for  $p$ -value  $< 0.05$ ).

The first part of the questionnaire was to collect information on age, place of permanent residence, marital status, smoking history, contraceptive use and the second part was to evaluated knowledge of HPV, cervical cancer, vaccine and risk factors.

## III. RESULTS AND DISCUSSIONS

Among the 568 students who responded, 153 (26.9%) had had a sexually experience and 83.66% of them never have done a pap smear. 49.6% of sexually experienced students thought that sexual activity is associated with cervical cancer. Only 39.87% of them correctly identified HPV as the leading factor of cervical cancer and the detection of cervical cancer with 'Pap test' had been heard by 69.93% of them.

30.7% of the sexually experienced students had heard about protective vaccination and 73.2% of them desired to have the vaccine. In comparison 30.60% of no sexually experienced students had heard about protective vaccination and 60.72% of them desired to have the vaccine.

49.67% of the students who has ever had a sexually experience don't use a contraceptive method, 43.14% use condoms, 3.27% use birth control pills and 3.92% use other contraceptive methods.

Odds ratios were used to compare the degree of the knowledge for risk factors between the groups. The estimates show that compared with no sexually experienced students, sexually experienced students were more likely to have heard of risk factors such as multiple sex partners, sexual intercourse before age 18, having contracted any sexually transmitted diseases, having genital warts, smoking cigarettes, use of oral contraceptive, poor diet or nutrition and using tampons with (OR=0.8; 95%CI=0.57–1.24), (OR=0.9; 95%CI=0.60–1.26), (OR=0.9; 95%CI=0.62–1.43), (OR=0.2; 95%CI=0.12–0.26), (OR=0.1; 95%CI=0.07–0.17), (OR=0.8; 95%CI=0.48–1.18), (OR=0.5; 95%CI=0.30–0.71), (OR=0.8; 95%CI=0.55–1.27), respectively(mentioned in Table I).

TABLE I  
ANALYSIS OF KNOWLEDGE ABOUT RISK FACTORS FOR CERVICAL CANCER

Risk factors	Group I (has ever had sexual experience) n = 153	Group II (no sexual experience) n = 415	Total
Multiple sex partners	103 (67.32%)	263 (63.37%)	366 (64.44%)
Sexual intercourse before age 18	78 (50.98%)	197 (47.47%)	257 (48.42%)
Having contracted any sexually transmitted diseases	112 (73.20%)	299 (72.05%)	411 (72.36%)
Having genital warts	107 (69.93%)	120 (28.92%)	227 (39.96%)
Smoking cigarettes	120 (78.43%)	119 (28.63%)	239 (42.08%)
Use of oral contraceptive	36 (23.53%)	78 (18.80%)	114 (20.07%)
Poor diet or nutrition	45 (29.41%)	67 (16.14%)	112 (19.72%)
Using tampons	41 (26.80%)	97 (23.37%)	138 (24.30%)

There were no significant correlations between sexually experience and the way of transmission of the virus associated with cervical cancer knowledge ( $p=0.354$ ); between sexually experience and the virus associated with cervical cancer knowledge ( $p=0.547$ ); between sexually experience and the prevention of cervical cancer knowledge ( $p=0.524$ ). On the other hand between sexually experience and the diagnostic way of cervical cancer knowledge; between sexually experience what HPV can cause knowledge we found a strong correlation showing that students who has ever had sexual experience had heard much more for pap smear test as the way of diagnose cervical cancer and for genital warts caused from

HPV than students with no sexual experience ( $p=0$ ) and ( $p=0.002$ ), respectively. (Table II)

Consistent with previous research, HPV vaccine interest was relatively high; greater vaccine interest was observed among sexually active students [21], [22].

TABLE II  
KNOWLEDGE BASE FOR CERVICAL CANCER AND HPV

Question	Group I	Group II	Total
The virus associated with cervical cancer is transmitted by sexual intercourse	76(49.67%)	188(45.3%)	264(46.68%)
HPV is the main cause of cervical cancer	61(39.87%)	154(37.11%)	215(37.85%)
Cervical cancer can be diagnosed by pap smear test	107(69.93%)	215(51.81%)	332(58.45%)
Prevention of cervical cancer may require: Delayed onset of sexual activity, annual Pap test, use of condoms.	62(40.52%)	156(37.59%)	218(38.38%)
HPV can cause genital warts.	29(18.95%)	39(9.4%)	68(11.97%)

In addition, the subjects utilized in this study were university students, which generally tend to be more knowledgeable and informed than the overall population. Nonetheless, this study demonstrates that there is a need for greater HPV prevention education. University age women rate their understanding of HPV as poor and many are unaware that there is a vaccine available. Education is needed, particularly for those who are not yet sexually active and could benefit from receiving the HPV vaccination. Further research in Albanian students is needed to explain the variations in HPV knowledge to create appropriate health education programs.

This study have several existing limitations such as given that the participants of this study are mostly residents from an urban area; consequently the findings may not be generalized to other populations and some of these students may have been unwilling to indicate some personal data.

#### IV. CONCLUSION

The present study is the first to evaluated knowledge about HPV infection and cervical cancer among sexually experienced university female student in Tirana, Albania.

Sexually experienced students were more likely to have heard of risk factors such as multiple sex partners, sexual intercourse before age 18, having contracted any sexually transmitted diseases, having genital warts, smoking cigarettes, use of oral contraceptive, poor diet or nutrition and using tampons.

No significant sexually experience differences were observed in knowledge of the way of transmission of the virus associated with cervical cancer knowledge, the virus associated with cervical cancer knowledge, the prevention of cervical cancer knowledge. On the other hand strong significant sexually experience differences were observed in knowledge of the diagnostic way of cervical cancer and what HPV can cause knowledge.

Knowledge about HPV and cervical cancer was not satisfactory for the two groups, who are exposed to HPV and cervical cancer more than the rest of population.

Recommendations for HPV prevention and the importance of routine Pap testing should be highlighted. Yet given the relatively low levels of HPV knowledge typically observed in the general public, increasing HPV education is an essential starting point.

#### ACKNOWLEDGMENT

We thank the staff of Faculty of Natural Science University, for their support during this study. We also want to thank the students who volunteered to participate in this study.

#### REFERENCES

- [1] F. Bakiri , T. Rexha , A. Mitre, The Seroprevalence of 35 Types of Human Papillomavirus in Albanian Women. *Journal International Environmental Application Science, Turkey*. Volume VII (Issue IV), 2012, pp. 734-737.
- [2] J. Cuzick, P. Sasieni , P. Davies , J. Adams , C. Normand , A. Frater , M. van Ballegooijen , E. van den Akker , A systematic review of the role of human papillomavirus testing within a cervical screening programme. *Health Technology Assessment*, 3, 1999, pp. 1–204.
- [3] J. Douglas, Papillomavirus. In L. Goldman & D. Ausiello (Eds.), *Cecil's Medicine*, (23<sup>rd</sup> ed.). Philadelphia, PA: Saunders Elsevier, 2008.
- [4] E. F. Dunne, E. R. Unger, M. Sternberg, G. McQuillan , D. C. Swan, S.S. Patel . L.E. Markowitz, Prevalence of HPV infection among females in the United States. *Journal of the American Medical Association*, 297(8), 2007, pp. 813-819.
- [5] L. Eckert, G. Lentz, Infections of the lower genital tract: vulva, vagina, cervix, toxicshock syndrome, HIV infections. In V. Katz, G. Lentz, R. Lobo, & D. Gershenson, (Eds.). *Comprehensive Gynecology* (5th ed.). Philadelphia, PA: Mosby, 2007.
- [6] R. Fielder, M. Carey, Predictors and consequences of sexual "hookups" among college students: A short-term prospective study. *Archives of Sexual Behavior, Online First*, 2009.
- [7] K. Filipi, A.Tedeschini, F. Paolini, S. Celicu, S. Morici, M. Kota, E. Bucaj, F. de Marco, Genital human papillomavirus infection and genotype prevalence among albanian women: a cross-sectional study. *j med virol*; 82(7), 2010, 1192-6.
- [8] R. Herrero, A. Hildesheim, C. Bratti, M. Sherman, M. Hutchinson, J. Morales, *et al.*, A population-based study of all grades of cervical neoplasia in rural Costa Rica. *Journal of the National Cancer Institute*, 92, 2000, pp. 6464–6473.
- [9] K. Ingledue , R. Cottrell, A. Bernard, College women's knowledge, perceptions and preventative behaviors regarding human papillomavirus infection and cervical cancer. *American Journal of Health Studies*, 2004, 19, pp. 28-34.
- [10] E. Lazcano-Ponce, R. Herrero , N. Munoz , A. Cruz , K. V. Shah , P. Alonso, *et al*, Epidemiology of HPV Infection among women Mexican women with normal cervical cytology. *International Journal of Cancer*, 2001, 91, pp. 412-420.
- [11] L. E. Markowitz, E. F. Dunne, M. Saraiya, H. W. Lawson, H. Chesson, E. R. Unger, Quadrivalent Human Papillomavirus Vaccine. Recommendations of the Advisory Committee on Immunization Practices. *CDC: Morbidity and Mortality Weekly Reports*, 56, 2007, pp. 1–24.
- [12] M. Molano, H. Posso, E. Weiderpass , A. J. van den Brule, M. Ronderos, S. Franceschi, *et al*, Prevalence and determinants of HPV infection among Colombian women with normal cytology. *British Journal of Cancer*, 87, 2002, 324-33.
- [13] N. Munoz, F. X. Bosch, S. de Sanjose , R. Herrero, X. Castellsague, K.V. Shah, *et al*, Epidemiologic classification of Human Papillomavirus types associated with cervical cancer. *New England Journal of Medicine*, 2003, 348(6), pp. 518-527.
- [14] D. Parkin, The global health burden of infection- associated cancers in the year 2002. *International Journal of Cancer*, 2006, 118, pp. 3030-3044.
- [15] K.S. Reisinger, S.L. Block, E. Lazcano-Ponce , R. Samakoses, M.T. Esser, J. Erick, *et al*, Safety and persistent immunogenicity of a

- quadrivalent human papillomavirus types 6, 11,16, 18 L1 virus-like particle vaccine in preadolescents and adolescents: A randomized controlled trial. *The Pediatric Infectious Disease Journal*, 2007, 26(3), pp. 201-209.
- [16] J. Shepherd, R. Weston, G. Peersman, I.Z. Napuli, Interventions for encouraging sexual lifestyles and behaviours intended to prevent cervical cancer, 2000. In: The Cochrane Library Issue 1. Oxford: Update software.
- [17] S. C. Thompson, K. Anderson, D. Freedman, J. Swan, Illusions of safety in a risky world: A study of college students' condom use. *Journal of Applied Social Psychology*, 2006, 26(3), pp. 189-210.
- [18] L. P. Wong, I.C. Sam, Ethnically diverse female university students' knowledge and attitudes toward human papillomavirus (HPV), HPV vaccination and cervical cancer. *Eur J Obstet Gynecol Reprod Biol*, 148, 2010.
- [19] World Health Organization (WHO), Human Papillomavirus and cervical cancer, 2008. Available at <http://www.who.int/immunization/topics/hpv/en/>
- [20] WHO/ICO Information Centre on HPV and Cervical Cancer (HPV Information Centre). Human Papillomavirus and Related Cancers in Albania, 2010. Available at [www.who.int/hpvcentre](http://www.who.int/hpvcentre)
- [21] M. A. Gerend, S. C. Lee, J. E. Shepherd, Predictors of human papillomavirus vaccination acceptability among underserved women. *Sex Transm Dis*, 2007; 34: 468 –71.
- [22] G. D. Zimet , Improving adolescent health: Focus on HPV vaccine acceptance. *J Adolesc Health* 2005; 37 (Suppl):S17–23.