Epidemiological Features of Papillomatosis Caused by the Human Papillomavirus in Women Attending the Basic Healthcare Clinic in Nova Iguaçu County, State of Rio de Janeiro

Aspectos Epidemiológicos da Papilomatose Causada pelo Papilomavírus Humano em Mulheres Atendidas na Atenção Básica em Saúde do Município de Nova Iguaçu, Rio de Janeiro

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ABSTRACT

Introduction: viral diseases have affected humans for thousands of years; however, viruses were only recently determined to be associated with human malignant neoplasias. The discovery of the relationship between cervical cancer and the human papillomavirus (HPV) has significant implications in the health care of women. **Objective**: the aim of this study was to use an epidemiological survey to investigate the variables that composed the profile of female patients with suspicion of cervical HPV infection who attended Nova Iguaçu General Hospital (Hospital Geral de Nova Iguaçu – HGNI) in the state of Rio de Janeiro. **Methods**: the patients attended Nova Iguaçu General Hospital from March 2009 to February 2010 and were interviewed using a pre-established questionnaire. **Results**: in total, 117 patients were interviewed. Based on the data that were supplied by the attending physicians, the average patient age was 34.5 years. The patients resided in different municipalities in the state of Rio de Janeiro, and 53 (44%) of the patients resided in Nova Iguaçu county. Overall, 60 patients (51%) reported four or more sexual partners, and 17 patients (15%) reported only one partner. A total of 105 women (90%) reported that they did not use condoms with their stable partners, and 9 women (10%) reported that they always used condoms with their partners. **Conclusion**: women with a mean age of 34.5 years who had four or more sexual partners may be at high risk for invasive carcinoma when persistent HPV infection, especially HPV type 16, is detected in them. We conclude that cervical cancer screening is essential in women aged 25 to 59 years.

Keywords: epidemiology, diagnosis, HPV, STD

RESUMO

Introdução: as doenças virais têm afetado o homem há milhares de anos; porém, o conhecimento de vírus que promovem o desenvolvimento de neoplasias malignas humanas é bem recente. Foi de suma importância, para a saúde das mulheres, a descoberta da relação entre o câncer de colo uterino e o papilomavírus humano (HPV). **Objetivo:** o objetivo deste trabalho foi pesquisar, através de inquérito epidemiológico, as variáveis relacionadas ao perfil das pacientes com suspeitas de HPV de colo de útero atendidas no Hospital Geral de Nova Iguaçu, no estado do Rio de Janeiro. **Métodos:** as pacientes atendidas no Hospital Geral de Nova Iguaçu (HGNI) no período de março/2009 a fevereiro/2010 foram entrevistadas através de questionário preestabelecido. **Resultados:** ao todo, 117 pacientes foram entrevistadas. Baseando-se nos dados fornecidos pelo médico responsável, pode-se observar que a média de idade era de 34,5 anos, e que as pacientes eram originárias de diversos municípios do estado do Rio de Janeiro, sendo 53 (44%) do município de Nova Iguaçu. Quanto ao número de parceiros sexuais, 60 mulheres (51%) apresentaram quatro ou mais parceiros e 17 mulheres (15%) relataram relações com apenas um parceiro. 105 mulheres (90%) relataram não usar preservativo com o parceiro permanente e nove mulheres (10%) descreveram o uso contínuo do preservativo com seus respectivos parceiros. **Conclusão:** mulheres com idade média de 34,5 anos que tiveram quatro ou mais parceiros sexuais estão no grupo de risco para carcinoma invasivo caso o HPV, principalmente do tipo 16, seja detectado como persistente. O rastreamento do câncer de colo de útero é imprescindível nas mulheres entre 25 e 59 anos.

Palavras-chave: epidemiologia, diagnóstico, HPV, DST

INTRODUCTION

Cervical cancer remains a public health problem. Despite the proven efficacy of cytology screening, this type of cancer exhibits the second highest incidence of all cancers, and it is the second most frequent type of cancer in women between 15 and 44 years of age[1]. The incidence and mortality rates of cervical cancer vary across regions in Brazil and across states that belong to the same region, equally affecting urban and rural populations[2].

The human papillomavirus (HPV) is a DNA virus that belongs to the *Papillomaviridae* family and the *Papillomavirus* genus. Among the types of this virus that have been identified, more than 80 have been characterized, and 40 types are able to infect the anogenital area[3]. The identification of HPV types is currently being applied in clinical practice as a prognostic predictor of cervical cancer in infected women[4].

A large number of studies support the hypothesis that HPV infection is associated with the development of malignant and premalignant alterations in the lower genital tract[5].

Many factors have been associated with HPV infection in female populations of different age ranges[6], including premature menarche, early onset of sexual activity, a high number of sexual partners[7], tobacco smoking, level of education, number of child births, use of oral contraception, the sexual habits of partners, and a large age difference between partners.

OBJECTIVE

The aim of this study was to survey the epidemiological aspects of cervical cancer caused by HPV) in patients who attended the Ba-

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sic Healthcare Clinic of the municipality of Nova Iguaçu County, Rio de Janeiro.

METHODS

This retrospective observational study consisted of a quantitative and descriptive investigation of female patients who attended the Basic Healthcare Clinic and whose Pap tests exhibited alterations that were compatible with HPV infection.

This study was conducted from April 2011 to April 2012 at the General Hospital of Nova Iguaçu (Hospital Geral de Nova Iguaçu – HGNI), which is in the Posse neighborhood.

The researchers who were selected to collect patient data were trained to conduct interviews with the patients included in this study. This training included topics on the humanization of care, ethics, and overcoming language barriers, such as adjusting to the language of the study participants. A questionnaire was drafted for the interviews, which contained questions on health conditions, level of education, knowledge about HPV, and the socioeconomic profile of the participants. All of the data on each participant and the results were included in a database that was generated with SPSS software and subjected to a statistical analysis that was aimed at identifying epidemiological risk factors.

This study was approved by the ethics committee of HGNI on 04/27/2011 under a Certificate of Presentation for Ethical Assessment (Certificado de Apresentação para Apreciação Ética – CAAE), number 27.04.2011.

RESULTS

Data were collected from 205 women whose HPV screening tests exhibited alterations and were analyzed.

The study population was divided into the following age ranges: 20 to 29 years of age (34.1%); 30 to 39 years of age (28.2%); and 40 to 49 years of age (20.5%). Only 6.1% of the women were older than 60 years of age.

Regarding the level of education, the qualifying factor was the number of years in school. Most of the participants had four or fewer years in school (62.9%), and the rest of the participants had five to eight years (35.1%) or more than eight years (1.8%) in school.

Regarding marital status, most of the participants reported being married or having one stable partner (89.7%), and a small fraction of participants (10.1%) reported not having a stable partner.

There was a significant correlation between the results of the most recent Pap test and age ($p = 0.030$); however, this correlation was not found for level of education ($p = 0.223$), marital status, or monthly income ($p = 0.906$).

The results regarding the occupations of the participants indicated that 49.2% were homemakers, and the rest had other professions (50.7%).

Because this study was conducted at HGNI, most of the participants (50.7%) were residents of Nova Iguaçu County, and the remaining patients resided in neighboring municipalities, such as Queimados (13.6%), the Baixada Fluminense (11.2%), and other municipalities in the state of Rio de Janeiro (24.3%).

The sociodemographic characteristics of all of the interviewed participants are described in **Table 1.**

Table 1 – Sociodemographic characterization of a sample of women who attended a specialized outpatient clinic in the municipality of Nova Iguaçu (RJ) in 2011 (n = 205).

Variables	Frequency (95% CI)
Age range	
20 to 29 years of age	34.1 (27.6/40.6)
30 to 39 years of age	28.2 (22.0/34.5)
40 to 49 years of age	20.5 (15.3/26.5)
50 to 59 years of age	10.1 (6.0/14.4)
60 or more years of age	6.1 (2.9/9.7)
Years in School	
Up to 4 years	62.9 (56.2/69.5)
5 to 8 years	35.1 (28.5/41.7)
More than 8 years	1.9 (0.0/3.8)
Relationship status	
With partner	89.7 (85.5/93.9)
Without partner	10.3 (6.0/14.4)
Monthly income	
Less than minimum wage	30.7 (24.3/37.1)
1 to 3 times the minimum wage	54.6 (47.7/61.5)
4 or more times the minimum wage	14.6 (9.7/19.5)
Occupation	
Homemaker	49.2 (42.3/56.1)
Other	50.7 (43.8/57.6)
Origin	
Nova Iguaçu	50.7 (43.8/57.6)
Queimados	13.6 (8.9/18.3)
Other municipalities in Baixada Fluminense	11.2 (6.8/15.5)
Other municipalities in the state of Rio de Janeiro	24.3 (18.4/30.3)

The sexual activity profile of the participants was assessed based on menarche, age at the onset of sexual activity, number of lifetime sexual partners, condom use, and anal sex practices.

The assessment of age at first menstruation (menarche) revealed that in most of the participants (80.9%), menarche occurred within a normal age range of 10 to 14 years of age, although a fraction of participants reported premature menarche before the age of 10 (4.9%) or late menarche after the age of 15 (14.1%).

The most common age range for the onset of sexual activity was 15 to 19 years of age (58%) followed by age ranges of more than 19 years of age (22.4%), 12 to 14 years of age (17%), and fewer than 12 years of age (2.4%).

Regarding the number of lifetime sexual partners, 50.2% of the participants reported more than four partners, 33.6% reported two to three partners, and 16% reported one partner.

Only 9.3% of the participants reported using condoms with all of their sexual partners, which indicates low participation in this practice.

The profile of the sexual practices of this sample population is described in **Table 2**.

Of the 205 women who were included in this study, 40.5% had a Pap test performed within 12 months before the interview, and

Table 2 – Profile of the sexual practices of a sample of women who attended a specialized outpatient clinic in the municipality of Nova Iguaçu (RJ) in 2011 (n = 205).

Variables	Prevalence (95% CI)
Menarche	
<10 years of age	4.9 (1.9/7.8)
10 to 14 years of age	80.9 (75.5/86.4)
15 or more years of age	14.1 (9.3/18.9)
Age at the onset of sexual activity	
<12 years of age	2.4 (0.3/4.5)
12 to 14 years of age	17.0 (11.8/22.2)
15 to 19 years of age	58.0 (51.2/64.8)
19 or more years of age	22.4 (16.7/28.1)
Number of lifetime sexual partners	
1	16.0 (11.0/21.1)
2 to 3	33.6 (27.1/40.1)
4 or more	50.2 (43.3/57.1)
Practice of anal sex	33.4 (26.9/40.0)
Use of condoms with all partners	9.3 (5.3/13.4)

59.5% had two or more tests performed to aid in the diagnosis of infection with HPV or other pathogens.

Less than half of the participants (43.4%) had a degree of knowledge of HPV and its associated diseases, and few women (6.8%) reported having a relative with HPV infection.

In this sample population, 68.2% of the participants reported the presence of alterations in a preventive routine Pap test as the reason to suspect HPV infection, and 30.7% had clinical symptoms that led them to seek specialized medical assistance. Only 1% of the participants were referred to the gynecological department at HGNI after hospital admission to investigate the possibility of HPV infection.

Table 3 summarizes the characterization of the sample population regarding Pap tests and knowledge of HPV infection.

Regarding the history of clinical manifestations that were compatible with sexually transmitted infections (STIs), most of the women (81.4%) exhibited leucorrhea. Condylomas, genital ulcers, and vesicle-like lesions occurred in 17%, 9.2%, and 7.3% of the participants, respectively.

Table 4 shows the history of clinical manifestations that were compatible with STIs in the participants.

Table 3 – Characterization of Pap tests and knowledge of HPV infection in a sample of women who attended a specialized outpatient clinic in the municipality of Nova Iguaçu (RJ) in 2011 (*n* = 205).

Variables	Prevalence (95% CI)
Number of Pap tests in the last 12 months	
1	40.5 (33.7/47.2)
2 or more	59.5 (52.7/66.2)
Knowledge of HPV	43.4 (36.5/50.2)
Relative with HPV	6.8 (3.3/10.3)
Reason for HPV suspicion	
Routine Pap test results	68.2 (61.8/74.7)
Clinical manifestations	30.7 (24.3/37.1)
Hospitalization	1.0 (0/2.3)

Table 4 – History of clinical manifestations that were compatible with sexually transmitted infections in a sample of women who attended a specialized outpatient clinic in the municipality of Nova Iguaçu (RJ) in 2011 (*n* = 205).

Type of affection	Prevalence (95% CI)
Leucorrhea	81.4 (76.0/86.8)
Genital ulcers	9.2 (5.2/13.2)
Vesicles	7.3 (3.7/10.9)
Condylomas	17.0 (11.8/22.2)

Regarding the results of the Pap tests, 48.5% of the tests indicated high-grade lesions, mostly high-grade squamous intraepithelial lesions (HSIL) (cervical intraepithelial neoplasia – CIN III), whereas 34.5% indicated low-grade squamous intraepithelial lesions (LSIL) (CIN I or CIN II), and 17% indicated atypical squamous cells of undetermined significance (ASCUS).

Table 5 shows the correlation between the sociodemographic variables and the results of the most recent Pap tests in the sample of women in this study.

Table 5 – Correlation between the sociodemographic variables and the results of the most recent Pap tests in a sample of women who attended a specialized outpatient clinic in the municipality of Nova Iguaçu (RJ) in 2011 (*n* = 205).

Sociodemographic variables	Result of the most recent Pap test		
	HSIL	LSIL	ASCUS
Age range			
20 to 29 years of age	45.59	44.12	10.29
30 to 39 years of age	52.63	29.82	17.54
40 to 49 years of age	54.76	23.81	21.43
50 to 59 years of age	30.00	55.00	15.00
60 or more years of age	53.85	7.69	38.46
p value		0.030	
Years in School			
Up to 4 years	49.60	29.60	20.80
5 to 8 years	46.48	42.25	11.27
More than 8 years	50.00	50.00	-
p value		0.223	
Relationship status			
With partner	55.00	35.00	10.00
Without partner	48.04	34.64	17.32
Monthly income			
Less than minimum wage	46.77	32.26	20.97
1 to 3 times the minimum wage	48.62	34.48	15.60
4 or more times the minimum wage	51.72	34.48	13.79
p value		0.906	

DISCUSSION

Most of the women who were infected with HPV in this study were within the age range of 20 to 29 years of age. The relationship between HPV infection and age is controversial. Nielsen et al. (2008) found a higher prevalence of HPV infection in this age range, which is supported by previous studies; however, a higher incidence of HPV has been found in other age ranges, such as adolescents[8] and women over 40 years of age[9].

Most of the infected women in this study had a low level of education, and previous studies support this association[8,10]; however, there are conflicting data on the correlation between higher education levels and the risk of HPV infection.

Although most of the women (89.7%) in this study had a stable sexual partner, no significant correlation was found between relationship status and the results of the Pap tests. However, in a study that assessed the prevalence of HPV infection in populations in the Amazon, the only investigated risk factor that demonstrated a significant association with HPV was the marital status of women who resided in rural areas: a higher prevalence of infection was observed in single, separated, and widowed women[2]. Several studies suggest a correlation between marital status and HPV infection[11,12].

Our results indicate that most of the women came from families with a low monthly income, mostly less than one to three times the minimum wage, which is consistent with studies that suggest that a low family income is an important factor in HPV pathogenesis and infection[10].

Premature menarche was found in a small fraction of the sample population in this study; however, there is disagreement in the literature regarding the relationship between premature menarche and the risk of HPV infection and cervical cancer. Previous studies determined that premature menarche is not a risk factor for cervical cancer, whereas other studies did find this association.

Most of the women in this study reported having four or more lifetime sexual partners, and most of them began sexual activity at 15 to 19 years of age. The frequency data were not significantly different in the bivariate analysis of the results of the preventive Pap tests. This finding is not consistent with previous studies in which there was a significant correlation between sexual behavior and HPV infection[6,7,11,12]and infection with multiple HPV types[13].

A small number of participants reported engaging in sexual activity before 10 years of age. Previous studies indicated that early onset of sexual activity is a risk factor for cervical cancer[12,14,15].

Not using condoms is one of the risk factors that is most emphasized in the literature on STIs, including HPV infection[11,12]. In this study and in several other studies, a low number of women reported employing safe sex practices.

The data that were reported by the interviewed women indicate a high level of misinformation on HPV, its complications, paths of contagion, and prevention. Other authors have observed that the level of knowledge on HPV in the population is important in the fight against cervical cancer, and information on HPV must be disseminated to the entire population and not only women. Unsatisfactory levels of information on HPV and the feelings and expectations of women with HPV-related lesions are currently the targets of studies and educational campaigns.

Our results indicate a high prevalence of clinical manifestations that were compatible with other STIs; the presence of other STIs is a risk factor for cervical cancer[11]. Several studies reported on coinfection with STI etiological agents, such as *Chlamydia trachomatis*[16], *Gardnerella vaginalis*[17], and HPV.

None of the 205 participants in this study were immunized against HPV or were aware that an HPV vaccine existed. This finding corroborates the findings of an epidemiological study on HPV infection in women in the United States, which found a low prevalence of vaccinated women[18]. Several studies demonstrated the efficacy of the HPV vaccine in the prophylaxis and reduction of the morbidity and mortality that is associated with anogenital HPV infection[19,20]. Conversely, the authors of an editorial that was published in the Brazilian Journal of Gynecology and Obstetrics (Revista Brasileira de Gineco Obstetrícia) in 2007 stated that if a program of massive HPV vaccination was developed, the epidemiological effects may not be evident for several years, and there would be no significant effect on cervical cancer screening[21].

The results of the Pap tests of the 205 participants in this study revealed several cytological alterations that were rated as HSIL and LSIS and indicated HPV infection, despite the lack of laboratory confirmations. This finding is supported by several studies that found a strong correlation between HPV infection and cytological anomalies[12,22].

Several studies reported HPV as a biological carcinogenic agent in locations other than the anogenital area, which was the only location addressed in this study, including the upper part of the esophagus[23], the oral cavity, the oropharynx[24], and the penis[25].

Further studies need to be performed that use new, highly specific and sensitive low-cost diagnostic techniques. Additionally, health education programs should be implemented for women in lower socioeconomic levels with particular emphasis on the risks of each age group.

CONCLUSION

We observed that women with a mean age of 34.5 years who had four or more sexual partners may be at high risk for invasive carcinoma when persistent HPV infection, especially HPV type 16, is detected in these women. We conclude that cervical cancer screening is essential in women aged 25 to 59 years.

Conflicts of interest

The authors declare that they have no conflicts of interest.

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