ISSN: 2318-8413 DOI: 10.18554/refacs.v9i4.5026

REFACS

Low adherence to the anti-HPV vaccine schedule by children and adolescentes

Baixa adesão ao esquema vacinal anti-HPV por crianças e adolescentes

Baja adherencia a la vacunación contra el VPH entre niños y adolescentes

Received: 13/10/2020
Approved: 06/03/2021
Published: 14/10/2021

Jaqueline Fernandes Oliveira Pereira[1]
Qeren Hapuk Rodrigues Ferreira Fernandes[2]
Rita Terezinha de Oliveira Carneiro[3]

Descriptive and quantitative study carried out in 2018 in the city of Sapeaçu, in the state Bahia, Brazil. It aimed to identify factors associated with low adherence to the anti-HPV vaccine regimen by children and adolescents. A questionnaire was applied in 3 schools. Data were analyzed using the chi-square and backward tests. 119 students participated: 53% female, 55% mixed-raced, 42% Catholic, 46% family income of up to one minimum wage and 61% received anti-HPV vaccine. The independent variables were: age group (p=0.89), race/color (p=0.32), religion (p=0.93), family income (p=0.60), student's understanding of HPV (p=0.16) and on the anti-HPV vaccine scheme (p=0.976), actions of the church they attend (p=0.66), school actions (p=0.657) and affiliation to the teaching network of school attended (p=0.07), gender of students (p=0.002) and parents' understanding of HPV (p=0.012). Gender of the participants and their parents' knowledge about HPV were the main factors for low adherence to the vaccine schedule. There was a need to develop awareness campaigns on the importance of anti-HPV vaccination aimed at parents and guardians, given that they are the ones who act decisively in the decision to adhere to the anti-HPV vaccine schedule for their children.
Descriptors: Vaccination; Sexually transmitted diseases; Uterine neoplasms.

Estudo descritivo e quantitativo realizado em 2018 na cidade de Sapeaçu, Bahia, com objetivo de identificar fatores associados à baixa adesão ao esquema vacinal anti-HPV por crianças e adolescentes. Foi aplicado questionário em 3 escolas. Os dados foram analisados pelos testes do qui-quadrado e *backward*. Participaram 119 estudantes: 53% sexo feminino, 55% pardos, 42% católicos, 46% renda de até um salário-mínimo e 61% receberam vacina anti-HPV. As variáveis independentes foram: faixa etária (p=0,89), raça/cor (p=0,32), religião (p=0,93), renda familiar (p=0,60), entendimento do aluno sobre HPV (p=0,16) e sobre o esquema vacinal anti-HPV (p=0,976), ações da igreja que frequentam (p=0,66), ações da escola (p=0,657) e a filiação à rede de ensino da escola frequentada (p=0,07), sexo dos estudantes (p=0,002) e entendimento dos pais sobre o HPV (p=0,012). Sexo dos participantes e o conhecimento dos seus pais sobre HPV foram fatores principais para baixa adesão ao esquema vacinal. Verificou-se a necessidade da elaboração de campanhas de sensibilização sobre a importância da vacinação anti-HPV voltadas para os pais e responsáveis, haja vista que são eles que atuam incisivamente na decisão de aderir ao esquema vacinal anti-HPV dos filhos.
Descritores: Vacinação; Doenças sexualmente transmissíveis; Neoplasias uterinas.

Estudo descritivo e quantitativo realizado em 2018 na cidade de Sapeaçu, Bahia, Brasil, com objetivo de identificar fatores associados à baixa adesão ao esquema vacinal anti-HPV por crianças e adolescentes. Foi aplicado questionário em 3 escolas. Os dados foram analisados pelos testes do qui-quadrado e *backward*. Participaram 119 estudantes: 53% sexo feminino, 55% pardos, 42% católicos, 46% renda de até um salário-mínimo e 61% receberam vacina anti-HPV. As variáveis independentes foram: faixa etária (p=0,89), raça/cor (p=0,32), religião (p=0,93), renda familiar (p=0,60), entendimento do aluno sobre HPV (p=0,16) e sobre o esquema vacinal anti-HPV (p=0,976), ações da igreja que frequentam (p=0,66), ações da escola (p=0,657) e a filiação à rede de ensino da escola frequentada (p=0,07), sexo dos estudantes (p=0,002) e entendimento dos pais sobre o HPV (p=0,012). Sexo dos participantes e o conhecimento dos seus pais sobre HPV foram fatores principais para baixa adesão ao esquema vacinal. Verificou-se a necessidade da elaboração de campanhas de sensibilização sobre a importância da vacinação anti-HPV voltadas para os pais e responsáveis, haja vista que são eles que atuam incisivamente na decisão de aderir ao esquema vacinal anti-HPV dos filhos.
Descriptores: Vacunación; Enfermedades de transmisión sexual; Neoplasias uterinas.

1. Pharmacist. Governador Mangabeira, BA, Brazil. ORCID: 0000-0003-0966-4121 E-mail: jakfop@outlook.com
2. Biotechnologist. Master in Biosciences. PhD student in Biotechnology in Health and Investigative Medicine at Instituto Gonçalo Moniz – Fiocruz, BA, Brazil.ORCID: 0000-0002-3172-9684 E-mail: qerenferreira@gmail.com
3. Biologist. Specialist in Molecular Biology. Master in Biotechnology. PhD student in Biotechnology in Health and Investigative Medicine at Instituto Gonçalo Moniz – Fiocruz. Professor of undergraduate courses in Biomedicine and Pharmacy at Faculdade Maria Milza, Governador Mangabeira, BA, Brazil. ORCID: 0000-0002-7568-6487 E-mail: ritaterezinha@gmail.com

INTRODUCTION

Vaccination consists of administering an inactivated solution of antigenic material to people, aiming at the development of their immune response against a specific pathogen[1]. Vaccinating a large number of people in a given population was encouraged from the 20th century onwards and resulted in the eradication of several infectious diseases, which shows its effectiveness. The World Health Organization (WHO) encourages the practice of vaccination and warns about the world's lack of preparation in dealing with outbreaks and re-emergence of infectious diseases, due to non-adherence to vaccine schemes[2].

HPV is a sexually transmitted infection (STI) caused by the Papilloma virus (Human papillomavirus) that presents tropism in the basal layer of the endometrium, which proliferates and triggers the infectious process, which may evolve into lesions characteristic of cervical cancer, which in turn is one of the main causes of death in women worldwide[3].

HPV infection occurs worldwide, however, the high burden of the disease is registered in developing countries. Both sexes are susceptible, but the most affected women are those who are in conditions of greater socioeconomic vulnerability[4,5]. In Brazil, the HPV infection rate is higher in the young population[6].

In the 1990s, the Food and Drug Administration (FDA) authorized the production of a bivalent vaccine (Cervarix®) that protects individuals against infection by HPV serotypes 16 and 18, considered the most aggressive; and the quadrivalent vaccine (Gardasil®) which protects against papilloma virus serotypes 1, 6, 16 and 18. Both vaccines are distributed free of charge at Basic Health Units (*Unidades Básicas de Saúde* - UBS)[7].

The anti-HPV vaccine scheme consists of administering two doses of the vaccine with an interval of 60 days, and a booster dose 90 days after the administration of the second dose[8]. As recommended by the WHO, the anti-HPV vaccine should be offered to children (9 to 11 years old) and adolescents (12 to 17 years old) to increase prevention against infection by the virus[7].

Educational campaigns aimed at popularizing and encouraging anti-HPV vaccination were broadcast in Brazilian wide-ranging media (television, radio and internet) since 2014, when the vaccine was incorporated into the Brazilian National Immunization Program[7-9]. However, adherence to the HPV vaccine scheme in Brazil is still incipient, especially among children and adolescents. Vaccination coverage for girls aged nine to 14 years was 79.4% in the first dose and 52.9% in the second dose from 2013 to 2018. A more drastic situation is registered among boys aged 11 to 14, whose coverage it is 33% for the first dose, and only 8% for the second dose in the same period[7].

Among the Brazilian regions with a high prevalence of HPV, the Northeastern region stands out, which registers the rate of 58.1% of all absolute cases reported in Brazil in recent years[9]. The Recôncavo Baiano region is an extensive territorial area belonging to the northeastern region of the country and characterized by *sertanejo* culture. In this region, there are facilities of important research and education centers, configuring the place as an economic and educational hub[10].

Due to the correlation between the infectious process by HPV and the occurrence of uterine cancer, and taking into account the possibility of preventing new cases of infection through the anti-HPV vaccine, this study is valid, thus, the objective of this work is identify factors associated with low adherence to the anti-HPV vaccine schedule by children and adolescents.

METHODS

This is a descriptive and quantitative study carried out with children aged between nine and 11 years old and adolescents aged 11 to 14 years old enrolled in elementary and high schools in the Recôncavo Baiano region. The respective parents and guardians of the students granted consent for their participation is this study.

The co-participating schools in this research in which data were collected are identified as A, a private school located in the urban area of the city of Sapeaçu, state of Bahia, Brazil; and schools B and C, both are public schools, and are located in urban and rural areas, respectively, of the same city.

A form consisting of 32 multiple choice questions was designed as a research instrument and randomly delivered to students, on days and times previously scheduled with the respective directions and faculty.

The questions were distributed along five axes: (*i*) what is HPV and how the infection occurs; (*ii*) importance of the vaccine against the infectious process by HPV and on the immunization schedule; (*iii*) source of information about the disease and its prevention; (*iv*) knowledge of parents or guardians about HPV infection and ways to prevent the disease and (*v*) socioeconomic characterization of the participants in this research. Data collection took place between September and October 2018.

Data were analyzed by comparing the responses obtained with the information available in the Practical Guide on HPV[3]. The answers were categorized on a scale from 1 to 4 for classification, namely: excellent, good, average and poor, respectively. For the questions whose answers were "yes/no", the number 1 was adopted for yes, and the number 2 for no.

The sum of correct questions was used to classify the students' knowledge profiles as: "EXCELLENT" for a sum of >50% of correct answers; "GOOD" for the sum with a percentage equal to 50% of correct answers; "AVERAGE" for the sum of ≤50%≥ of correct answers and "POOR" for a percentage of <50% of correct answers. Subsequently, the answers were tabulated in an Excel spreadsheet (Microsoft®) and submitted to the chi-square test (χ^2) for bivariate and multivariate analyses, with the progressive exclusion of variables with a significance level greater than 0.05 using the backward technique, in the STATA program (version 7.2) adopting an α value of 5%.

The term "*adherence to the vaccination schedule*" was used here to characterize two situations that do not exclude them: a) when the research participants and their parents presented a good knowledge profile about HPV infection and prevention and b) for students who received at least one dose of the anti-HPV vaccine.

This work was approved by the Research Ethics Committee of the Faculdade Maria Milza (CEP-FAMAM) and registered under No. 97827018.1.00000.5025. An official letter was issued in the name of the Coordination of the Pharmacy Course at FAMAM to the school board requesting consent for data collection.

The parents or guardians of the students became aware of the objectives, methodology and possible risks of this research through the presentation of the work proposal during semiannual "Parent-Teachers" conference, held between the months of July and August 2018. These conferences were attended by the respective directors and faculty of the co-participating schools On that occasion, the Informed Consent Form (ICF) was delivered to parents and guardians, while children and adolescents received the Consent Term.

RESULTS

During the period in which the study took place, 617 students aged between 9 and 14 years of age enrolled in the three co-participating schools participated. However, the sample consisted of 119 participants (n=617, 17%). The stratification of participants by sex revealed a predominance of girls (53%), and there was no school dropout or age-grade distortion in public and private schools.

The data revealed that, on the knowledge about infectious cycle caused by HPV and the importance of the anti-HPV vaccine, 45.3% had excellent knowledge; 3.4% had good knowledge; 27% had average knowledge; and 24.3% had poor knowledge. Also, 61% of students reported having received at least one dose of the anti-HPV vaccine.

Students from school A obtained a percentage of 45% of all responses considered excellent, and students from schools B and C had respectively 34% and approximately 29% of the best levels of knowledge on the subject.

Table 1 describes the data that characterize the analyzed sample in its social and demographic aspects.

Table 1. Students regarding predominant sociodemographic data according to schools. Sapeaçu, Bahia. 2018.

Variables	School A	School B	School C
Age (years)	10 and 14	12 and 13	10
Sex	Female (52%)	Female (61%)	Male (54%)
Race/color	Brown (41,5%)	Brown (46%)	Brown (50%)
Religion	Catholic (54%)	None (50%)	Catholic (50%)
Family income	Higher than one minimum wage (48%)	Lower than one minimum wage (50%)	Up to one miminum wage (54%)

When it came to the knowledge profile of parents or guardians about the infectious process caused by HPV and the importance of the anti-HPV vaccine, 11% had excellent knowledge; 31% had good understanding; 18% had average knowledge and 33% had poor knowledge. 8.3% of the forms were returned without parental knowledge records.

Internet and television were cited as the main sources of information on contamination routes and on ways to prevent HPV. The institutions that most contribute to the dissemination of information about the disease as well as about vaccination are schools and health units.

Descriptive statistical analysis indicated that the most influential factors for low adherence to the anti-HPV vaccine regimen were: student's sex (p=0.003) and knowledge of parents or guardians about the subject (p=0.003). The other sociodemographic determinants analyzed, such as: family income, race/color, age or religion had no significant difference (Table 2).

The theoretical model of multivariate analysis adopted adherence to the vaccination schedule as the dependent variable. The independent variables were removed from the model sequentially by: age group (p=0.891), race/color (p=0.325), religion (p=0.939), family income (p=0.60), student's understanding of the infectious process caused by HPV (p=0.167), student's understanding of the HPV vaccine scheme (p=0.976), actions of the church that students attend (p=0.66), actions of the schools in which they are respectively enrolled (p=0.657) and affiliation of the school to the education system, ie: private or public (p=0.07).

Two independent variables were associated in the multivariate analysis: sex of students (OR=3.125; 95%CI: 1.5-6.49; p=0.002) and the understanding of parents or guardians about HPV infection (OR=2.81 ; 95%CI: 1.25-6.30; p=0.012), confirming the bivariate analysis.

Table 2. Students according to independent variables analyzed on the theme knowledge about HPV and vaccination. Sapeaçu, Bahia. 2018.

Variables	Adherence to the anti-HPV vaccine schedule (n=73/119)	Non-adherence to the anti-HPV vaccine schedule (n=46/119)	Total (n=119)	*p*-value (α 0.05)
	%	%	%	
Race/color				0.729
Black	30.1	36.9	32.7	
Mixed-raced	8.2	4.3	6.7	
White	15.1	17.4	15.9	
Brown	46.6	41.3	44.5	
Age				0.593
09 years	4.1	2.1	3.4	
10 years	27.4	28.2	27.7	
11 years	20.5	19.5	20.1	
12 years	9.5	21.7	14.2	
13 years	19.2	13.0	16.8	
14 years	19.2	15.2	17.6	
Gender				**0.000**
Female	65.7	32.6	52.9	
Male	34.2	67.4	47.1	
Religion				0.524
Catholic	52.0	50.0	51.3	
Protestant	15.1	10.9	13.4	
Spiritist	2.7	0.0	1.7	
African Religions	1.4	0.0	0.9	
None	28.7	39.1	32.7	
Actions taken by the school				0.259
Yes	38.4	28.3	34.4	
No	61.6	71.7	65.5	
Actions taken by the Health Unit				0.657
Yes	62.6	58.3	61.3	
No	37.4	41.7	38.7	

Table 2. Students according to independent variables analyzed on the theme knowledge about HPV and vaccination. Sapeaçu, Bahia. 2018. [Continuation]

Variables	Adherence to the anti-HPV vaccine schedule (n=73/119)	Non-adherence to the anti-HPV vaccine schedule (n=46/119)	Total (n=119)	*p*-value (α 0.05)
	%	%	%	
Actions promoted on the church they go to				0.172
Yes	19.2	10.9	15.9	
No	12.3	23.9	16.8	
Does not apply	68.5	65.2	67.2	
Knowledge of participants on HPV				0.959
Excellent	43.8	45.6	44.5	
Good	2.7	4.3	3.4	
Average	27.4	26.1	26.9	
Poor	26.0	23.9	25.2	
Knowledge of parents and guardians on the anti-HPV vaccine				**0.003**
Excellent	19.8	6.5	14.3	
Good	43.8	28.3	37.8	
Average	16.4	13.0	15.1	
Poor	20.5	52.2	32.8	
Family income				0.647
Less than one minimum wage	15.1	21.7	17.7	
Up to one minimum wage	47.9	43.5	46.2	
More than one minimum wage	37.0	34.8	36.1	
Knowledge of participants on the anti-HPV vaccine				0.278
Excellent	4.1	4.3	4.2	
Good	17.8	10.8	15.1	
Average	32.9	21.7	28.6	
Poor	45.2	63.0	52.1	

DISCUSSION

Female participants have greater knowledge and acceptability of the anti-HPV vaccine than male students. A fact that refers to historical data and indicates that women are more concerned about preventing disease[11]. In time, it should be noted that the percentages of male and female students in the schools visited are similar to each other, so the higher percentage of girls is not the result of a bias in the selection of the female audience in conducting this study.

Private school students had a better understanding of the infectious cycle and the importance of the anti-HPV vaccine compared to participants enrolled in both public schools analyzed here. This difference may be associated with the fact that students from private schools have economic conditions that provide them with better access to information, through books and the internet, which facilitates their knowledge, as reported in a previous work[12].

On the other hand, most public school students have a family income equal to a minimum wage, which indirectly reveals the low level of education of their family members in order to strongly influence important decisions about their lives[13], such as the decision not to join the HPV prevention program.

Individuals who adhere to more conservative religions generally associate anti-HPV vaccination with the initiation of sexual activity by adolescents, and, for this reason, they prefer to abstain from immunization for their children[4,14]. However, in the present study, most participants declared themselves Catholics, and the descriptive statistical analysis revealed that this factor did not have a significant influence on the low adherence to the anti-HPV vaccine scheme.

The knowledge of parents and guardians is a determining factor in adherence to the anti-HPV vaccine schedule. Data that corroborate the results of studies carried out in Brazil and other countries showed that low vaccination coverage of children and adolescents is due to non-acceptance of the vaccine by parents and guardians[15-18].

The decision of parents and guardians to guide their children or to get the vaccine themselves is influenced by means of communication used to disseminate knowledge on the subject. This context contributes to the understanding of the impact that the media have on the promotion of health campaigns[14]. The methodology used here does not include investigation of type and quality of access to information about HPV accessed by students and their parents or guardians. However, it was observed that accessing the internet via mobile phone is common, at least for students. This context reveals the importance and urgency of information campaigns aimed at children and adolescents, but also at parents and guardians[19].

Despite the contribution attributed to the media in health promotion, it is noteworthy that the information needs to be clear and reliable, otherwise, when the information is wrongly disclosed, it is capable of generating a negative impact on the adherence to control and prevention programs. diseases[14-20]. Between 2014 and 2017, there was a worldwide agitation in favor of the anti-vaccine movement, pointed out as responsible for an 87% increase in non-acceptance of vaccines for a variety of diseases in this period alone[2].

The students surveyed received at least one dose of the vaccine. However, it is important to emphasize that immunization against HPV is only effective when the vaccine schedule is completed, that is, when two doses of the vaccine and a booster dose are administered[8].

The municipality of Sapeaçu, in the state of Bahia, has eight health units equipped with a vaccine room and a qualified technician for its application. However, unpublished data provided by the Municipal Health Department (*Secretaria Municipal de Saúde* - SMS) revealed that adherence to the anti-HPV vaccine scheme was less than 35% in the city, a percentage below the national rate in the period of this study. Records of home visits carried out by Community Health Agents (CHA) were observed in order to disseminate correct information and encourage adherence to vaccination programs. In addition, the partnership between UBS and municipal schools was verified through the Health at School Program (*Programa Saúde na*

Escola - PSE), created by the Brazilian Federal Government, and directed at holding lectures and workshops aimed at promoting activities related to health and well-being of the population.

The Ministry of Health provides free brochures about HPV[2], and, between 2014 and 2016, it promoted awareness campaigns in various media with a message aimed at young people. However, there is a need to develop awareness campaigns on the importance of anti-HPV vaccination aimed at parents and guardians, given that they are the ones who decide whether to adhere or not to the anti-HPV vaccination schedule of their children and and underage wards.

CONCLUSION

The present study clarified that the sex of the participants in this study and the knowledge of their parents and guardians are factors that significantly interfere with non-adherence to the anti-HPV vaccine in the city of Sapeaçu, Bahia. It is suggested, therefore, the elaboration of campaigns and programs to encourage anti-HPV vaccination aimed at parents and guardians, as well as the strengthening of partnerships between schools, health units and churches in promoting actions of this nature with a view to encouraging adherence of male children and adolescents.

This study is limited by the fact that it could not consider a portion of the forms delivered by children and adolescents who showed interest in participating in the research, but who, on the other hand, did not have consent of their respective parents or guardians, granted by signing the consent form. This data indirectly reinforces our findings regarding the lack of understanding on the part of parents and guardians about the importance of adhering to the HPV immunization program.

The present study warns about the need to sensitize parents and guardians to a health problem that can be effectively treated, but that can evolve into aggressive cancer and high mortality.

REFERENCES

1. Kocourkova A, Honegr J, Kuca K, Danova J. Vaccine ingredientes: Components that influence vaccine eficacy. Mini Rev Med Chem. [Internet]. 2017 [cited in 05 May 2019]; 17(5):451-66. Available from: https://pubmed.ncbi.nlm.nih.gov/27488583/. DOI: 10.2174/1389557516666160801103303

2. Marshal GS. Vaccine hesitancy, history, and human nature: the 2018 Stanley A. Plotkin Lecture. J Pediatric Infect Dis Soc. [Internet]. 2019 [cited in 28 Mar 2019]; 8(1):1-8. Available from: https://pubmed.ncbi.nlm.nih.gov/33513237/. DOI: 10.1093/jpids/piy082

3. Ministério da Saúde (Brasil), Departamento de Vigilância de Doenças Transmissíveis. Guia Prático sobre HPV: perguntas e respostas [Internet]. Brasília, DF: [Ministério da Saúde]; 2017 [cited in 05 May 2019]. 45p. Available from: https://antigo.saude.gov.br/images/pdf/2017/dezembro/07/Perguntas-e-respostas-HPV-.pdf

4. Mollers M, Lubbers K, Spoelstra SK, Weijmar-Schultz WC, Daemen T, Westra TA, et al. Equity in human papilloma virus vaccination uptake?: sexual behaviour, knowledge and demographics in a cross-sectional study in (un) vaccinated girls in the Netherlands. BMC Public Health [Internet]. 2014 [cited in 28 May 2019]; 14(1):288. Available from: https://bmcpublichealth.biomedcentral.com/articles/10.1186/1471-2458-14-288. DOI: 10.1186/1471-2458-14-288

5. Von Karsa L, Suonio E, Lignini T, Ducarroz S, Anttila A, editors. Current status and future directions of breast and cervical cancer prevention and early detection in Belarus. Report of Expert Mission to Minsk, Belarus, 15-18 February 2011 [Internet]. Lyon, France: IARC/WHO; 2012 [cited in 28 Apr 2019]. 155p. Available from: http://www.iarc.fr/en/publica-tions/pdfs-online/wrk/wrk6/Belarus_Report.pdf

6. Ministério da Saúde (Br). Secretaria de Vigilância em Saúde. Departamento de Vigilância das Doenças Transmissíveis. Coordenação-Geral do Programa Nacional de Imunizações. Informe técnico da ampliação da oferta das vacinas papilomavírus humano 6, 11, 16 e 18 (recombinante) – vacina HPV quadrivalente e meningocócica C (conjugada) [Internet]. Brasília, DF: [Ministério da Saúde]; 2018 [cited in 05 May 2019]. 39p. Available from: https://portalarquivos2.saude.gov.br/images/pdf/2018/marco/14/Informe-T--cnico-HPV-MENINGITE.pdf

7. Lobão WM, Duarte FG, Burns JD, Santos CAST, Almeida MCC, Reingold A, et al. Low coverage of HPV vaccination in the national immunization programme in Brazil: parental vaccine refusal or barriers in healthservice based vaccine delivery? Plos One [Internet]. 2018 [cited in 28 May 2019]; 13(11):1-14. Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6231618/pdf/pone.0206726.pdf. DOI: 10.1371/journal.pone.0206726.eCollection2018

8. Zardo GP, Farah FP, Mendes FG, Franco CAG, Molina GVM, Melo GN, et al. Vacina como agente de imunização contra o HPV. Ciênc Saúde Colet. [Internet]. 2014; [cited in 28 May 2019]; 19(9):3799-808. Available from: https://www.scielo.br/j/csc/a/vhx9ghBGgKKWCL6CXJ69X7N/?lang=pt&format=pdf. DOI: 10.1590/1413-81232014199.01532013

9. Osis MJD, Duarte GA, Sousa MH. Conhecimento e atitude de usuários do SUS sobre o HPV e as vacinas disponíveis no Brasil. Rev Saúde Pública [Internet]. 2014 [cited in 28 May 2019]; 48(1):123-33. Available from: https://scielosp.org/pdf/rsp/2014.v48n1/123-133/pt. DOI: https://doi.org/10.1590/S0034-8910.2014048005026

10. Alban M. O novo enigma baiano, a questão urbana-regional e a alternativa de uma nova capital [Internet]. In: Anais do XI Encontro Nacional da Associação Nacional de Pós-Graduação e Pesquisa em Planejamento Urbano e Regional – ANPUR; 2005; Salvador. São Paulo: ANPUR; 2005 [cited in 11 Aug 2021]. Available from: http://anais.anpur.org.br/index.php/anaisenanpur/issue/archive

11. Kreuger MRO, Lizott LS, Friedrich HA. Imunização contra HPV: nível de conhecimento dos adolescentes. Adolesc Saúde [Internet]. 2017 [cited in 28 May 2019]; 14(3):38-45. Available from: http://adolescenciaesaude.com/app_offline.htm

12. Peixoto AMCL, Valença PAM, Amorim VCSA. Conhecimento, atitudes e práticas de adolescentes e pais sobre imunização na adolescência: revisão sistemática. Rev Bras Promoç Saúde [Internet]. 2018 [cited in 28 May 2019]; 31(3):1-10. Available from: https://periodicos.unifor.br/RBPS/article/view/7805. DOI: 10.5020/18061230.2018.7805

13. Dias JMG, Fontes TSMO, Araújo DM, Passos AMPR. Conhecimento sobre a vacina contra o papilomavírus humano (HPV) entre adolescentes de escolas públicas e particulares de Aracaju. Adolesc Saúde [Internet]. 2016 [cited in 28 May 2019]; 13(2):77-88. Available from: http://adolescenciaesaude.com/app_offline.htm

14. Quevedo JP, Inacio M, Wieczorkievicz AM, Invernizzi N. A política de vacinação contra o HPV no Brasil: a comunicação pública oficial e midiática face à emergência de controvérsias. Rev Tecnol Soc. [Internet] 2016 [cited in 28 May 2019]; 12(24):1-26. Available from: https://periodicos.utfpr.edu.br/rts/article/view/3206/2622. DOI: 10.3895/rts.v12n24.3206

15. Carpiano RM, Polonijo NA, Gilbert N, Cantin L, Dubé E. Socioeconomic status differences in parental immunization attitudes and child immunization in Canada: findings from the 2013 Childhood National Immunization Coverage Survey (CNICS). Prev Med. [Internet]. 2019 [cited in 28 Oct 2019]; 123(2019):278-87. Available from: https://www.sciencedirect.com/science/article/abs/pii/S0091743519301094?via%3Dihub. DOI: https://doi.org/10.1016/j.ypmed.2019.03.033

16. Kornides ML, McRee AL, Gilkey, MB. Parents who decline HPV vaccination: who later accepts and why? Acad Pediatr. [Internet]. 2018 [cited in 28 Oct 2019]; 18(2S):S37-S43. Available from:

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5859546/pdf/nihms949872.pdf. DOI: 10.1016/j.acap.2017.06.008
17. Gilbert NL, Gilmour H, Dubé E, Wilson SE, Laroche J. Estimates and determinants of HPV non-vaccination and vaccine refusal in girls 12 to 14 y of age in Canada: results from the Childhood National Immunization Coverage Survey. 2013. Hum Vaccin Immunotherapeutics [Internet]. 2016 [cited in 28 Oct 2019]; 12(6):1484-90. Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4964714/pdf/khvi-12-06-1153207.pdf. DOI: 10.1080 / 21645515.2016.1153207
18. Notejane M, Zunino C, Méndez P, García L, Pérez W. Estado vacunal y motivos de no vacunación contra el virus del papiloma humano en adolescentes admitidas en el Hospital Pediátrico del Centro Hospitalario Pereira Rossell. Rev Méd Urug. [Internet] 2018 [cited in 28 Oct 2019]; 34(2):76-81. Available from: http://www.scielo.edu.uy/pdf/rmu/v34n2/1688-0390-rmu-34-02-10.pdf
19. Restivo V, Constantino C, Fazio TF, Casuccio N, D'Angelo C, Vitale F, et al. Factors associated with HPV vaccine refusal among young adult women after ten years of vaccine implementation. Int J Environ Res Public Health [Internet]. 2018 [cited in 28 Oct 2019]; 15(4):770. Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5923812/. DOI: 10.3390/ijerph15040770
20. Silva KB, Bezerra AFB, Chaves LDP, Tanaka OY. Integralidade no cuidado ao câncer do colo do útero: avaliação do acesso. Rev Saúde Pública [Internet]. 2014 [cited in 28 Oct 2019]; 48(2):240-8. Available from: https://scielosp.org/pdf/rsp/2014.v48n2/240-248/pt. DOI: https://doi.org/10.1590/S0034-8910.2014048004852

Associated Publisher: Vania Del Arco Paschoal

CONTRIBUTIONS
Jaqueline Fernandes Oliveira Pereira contributed to data collection and analysis and writing. **Qeren Hapuk Rodrigues Ferreira Fernandes** collaborated in the data analysis. **Rita Terezinha de Oliveira Carneiro** worked in design, collection and analysis of data, writing and review.

How to cite this article (Vancouver)
Pereira, JFO, Fernandes QHRF, Carneiro RTO. Low adherence to the anti-HPV vaccine schedule by children and adolescents. RFACS [Internet]. 2021 [cited in *insert day, month and year of access*]; 9(4):870-79. Available from: *insert access link*. DOI: *insert DOI link*.

How to cite this article (ABNT)
PEREIRA, J. F. O.; FERNANDES, Q. H. R. F.; CARNEIRO, R. T. de O. Low adherence to the anti-HPV vaccine schedule by children and adolescents. **REFACS**, Uberaba, MG, v. 9, n. 4, p. 870-79, 2021. Available from: *insert access link*. Access in: *insert day, month and year of access*. DOI: *insert DOI link*.

How to cite this article (APA)
Pereira, J.F.O., Fernandes, Q.H.R.F., & Carneiro, R.T.O. (2021). Low adherence to the anti-HPV vaccine schedule by children and adolescents. *REFACS*, *9*(4), 870-79. Retrieved in *insert day, month and year of access* from *insert access link*. DOI: *insert DOI link*.