Editorial

Pre-exposure prophylaxis (PrEP) means more exposure?

During the last Conference for the Prevention of Sexually Transmitted Diseases of the Centers for Disease Control and Prevention (CDC-USA), in 2018, the advent of a new era in the fight against HIV infection was very clear[1].

The Pre-exposure prophylaxis (PrEP) through prophylactic prescription of emtricitabine and tenofovir disoproxil fumarate is clearly established and administered (adopted in 2012 in the United States), and the discussion about it is already in the stage of evaluating results and adjusting protocols.

Many professionals are still reticent about standardizing the use of PrEP even though its effectiveness has already been proved.

One of the criticisms is the worry about a great increase in the incidence of other Sexually Transmitted Infections (STI), as users could no longer use condoms.

In the United States, the protocol that establishes the criteria for PrEP prescription according to the risk for HIV infection also recommends other control of STI, such as screening every six months (every three months in case of a previous diagnosis of syphilis, gonorrhea or *Chlamydia*)[2].

However, data from several studies point to follow-up rates below 50% after six months of prescription, which would make this control through screening impractical[3,4].

Most patients lose contact with the health service before four months of prescription, not attending the first return.

Without this guarantee of a long-term monitoring, there is an international concern about the real impact on the increase of these diseases, and if the user's education alone (as recommended in the Brazilian Protocol), associated with the laboratory screening, would be enough to stop the increase of STI with the popularization of the use of PrEP.

The increase in risk behavior after prescription was described in several works during the CDC Conference in August 2018.

In Washington State, men who have sex with men (MSM) have declared an increase in some risky behaviors, such as: sex without condom, sex with discordant or unknown HIV status, anonymous sex, increase in the number of sexual partners, increase in the number of anal sex episodes and receptive anal sex[5].

These data reported at the CDC Conference are in line with those presented in the literature, showing the expansion of risk behavior associated with the increased incidence of STI in PrEP users[6].

The Canadian study of Nguyen et al.[7] showed the increase of the diagnosis of gonorrhea, *Chlamydia* and syphilis along the monitoring, as well as the incidence of three or more STI in the same patient.

Another noticeable fact is that there was a great frequency of contact with new partners via internet, which is an action that seems to facilitate other risk behaviors, such as the acquaintance with a greater number of anonymous sex partners, among others. This finding agrees with data from other studies that also show a greater behavioral change among users of dating Apps (geosocial networking)[8].

Even though the group that searches for STI clinics declare more exposure behaviors and previous STI diagnoses at the time of PrEP prescription, there are still the so-called reward behavior, which is the strengthening of risk habits when using HIV prophylaxis[9].

The Montaño group[10] have studied the incidence of STI in users of a clinic in Seattle and noted that 35% of the users were diagnosed with at least one STI (*Chlamydia*, gonorrhea and/or syphilis) in the year prior to PrEP prescription, and this number rose to 49.2% in 12 months, confirming the influence of this behavioral change.

This finding seems to be already creating a stigma, especially among MSM, where those who declare to be in use of PrEP are now considered promiscuous, especially in online communities and dating Apps.

The behavior change would not solely explain the large increase in the incidence of syphilis, when compared to other STI expansion in users of antiretroviral drugs. There are studies showing changes in the immune response to *Treponema pallidum*, mostly causing imperfection in the inflammatory response, in the mitochondrial function, and in the activation of macrophages[11,12].

This alert has already been reported by the editorial of this very journal — Passos et al.[11] —, given the impact that any aggravation of syphilis epidemic may have in the increase of congenital syphilis' incidence and the consequent delay in its banishment.

The solution to this problem, clearly multifactorial, is linked with the education of health system professionals and users, in addition to more research to produce guiding data to break down barriers that prevent a long-term follow-up and provide a correct STI tracing[13-15].

This editorial by no means wants to discourage PrEP prescription, as prevention is already available and it's not necessary that people at risk get infected with HIV because of the potential threat of acquiring other STI.

We want, in fact, to stimulate the construction of evidence-based protocols and policies of education and control of STI in times of PrEP, PEP (post-exposure prophylaxis) and HAART (antiretroviral therapy) which are therapies that have changed the status of HIV infection in the world and require us to adapt our vision and actions.

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Congenital syphilis in a philanthropic maternity of the state of Sergipe: still a challenge

Sífilis congênita em maternidade filantrópica do estado de Sergipe: ainda um desafio

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ABSTRACT

Introduction: Syphilis is a bacterial disease whose main means of contamination are the transplacental and sexual pathways. Its high prevalence in pregnancy in Brazil makes it a national public health issue. **Objective:** To evaluate the positivity of the mandatory testing recommended by the Brazilian Ministry of Health (MoH) in children of VDRL-positive mothers, using data from a congenital syphilis clinic in a Philanthropic Maternity of Aracaju, Sergipe (SE). **Methods:** Observational, longitudinal and descriptive design, following the MoH' congenital syphilis elimination program protocol (2006). Live births of VDRL-positive mothers were included from January 2010 to December 2014. Data analysis was performed using SPSS v21.0. **Results:** A total of 428 newborns (NB) were evaluated; 395 long-bone r-rays were carried out, of which, 7.3% had radiological alterations. VDRL positivity was found in cerebrospinal fluid (2.7%) and in peripheral blood (70.3%). The ear testing was altered in 3.0% and the examination of the eye fundus altered in 2.5%. The chance of having bone changes was greater in those who were born weighing from 1 to 2.5 kg and in those who presented with syphilis symptoms. Cerebrospinal fluid positivity was higher in those who had bone changes, were symptomatic, and whose partners were not treated. Maternal treatment decreased the chance of bone changes in infants. **Conclusion:** The non-treponemal test, VDRL, in peripheral blood was the most significant in the identification of the vertical transmission, corresponding to 70.3% of the identified samples, suggesting that its use had a greater diagnostic sensitivity, being the long bones radiography, ear test, and eye fundus test complementary in screening children of VDRL-positive mothers. In addition, the outpatient follow-up was statistically significant ($p<0.01$) in reducing the patients' morbidity and mortality. This reinforces the importance of updating the guidelines for Congenital Syphilis management by the Ministry of Health, used in the institution at the time of the study, aiming to eradicate this disease that still persists despite almost seven decades of penicillin usage.
Keywords: syphilis, congenital; infant, newborn; mandatory testing.

RESUMO

Introdução: A sífilis é uma doença bacteriana que tem como principais meios de contaminação a via transplacentária e a sexual. Sua alta prevalência na gestação no Brasil a torna um problema de saúde pública. **Objetivo:** Avaliar a positividade dos exames preconizados pelo Ministério da Saúde (MS) em filhos de mães *Venereal Disease Research Laboratory* (VDRL) positivo, mediante dados do ambulatório de sífilis congênita numa maternidade filantrópica de Aracaju (SE). **Métodos:** *Design* observacional, longitudinal e descritivo, seguindo o protocolo do programa de eliminação de sífilis congênita do MS de 2006. Foram incluídos nascidos vivos de mães VDRL positivo, no período de janeiro de 2010 a dezembro de 2014. Na análise de dados, utilizou-se o *software* SPSS® versão 21.0. **Resultados:** Foram avaliados 428 recém-nascidos (RN); 395 realizaram radiografia de ossos longos, dos quais 7,3% tinham alterações radiológicas. O VDRL foi positivo no liquor em 2,7% e no sangue periférico em 70,3% deles. O teste da orelhinha e o exame de fundo de olho foram alterados em 3,0 e 2,5%, respectivamente. A chance de ter alterações ósseas foi maior naqueles que nasceram com peso entre 1 e 2,5 kg e naqueles que apresentaram sintomas de sífilis. A positividade do liquor foi maior naqueles que tinham alterações ósseas, eram sintomáticos e cujos parceiros não foram tratados. O tratamento materno diminuiu a chance de alterações ósseas nos bebês. **Conclusão:** O teste não treponêmico, o VDRL, em sangue periférico foi o mais significativo na identificação da transmissão vertical, correspondendo a 70,3% das amostras identificadas, sugerindo-se que sua utilização teve maior sensibilidade diagnóstica, tendo a radiografia de ossos longos, o teste da orelhinha e o exame de fundo de olho um papel complementar no rastreio dos filhos de mães VDRL positivo. Além disso, o acompanhamento ambulatorial dos pacientes foi estatisticamente significativo ($p<0,01$) para redução de morbimortalidade dos pacientes avaliados. Isso reforça a importância da manutenção das *guidelines* para manejo de sífilis congênita do MS, utilizadas na instituição na época do estudo, objetivando erradicar essa doença que ainda persiste apesar de quase sete décadas do uso da penicilina.
Palavras-chave: sífilis congênita; recém-nascido; exames obrigatórios.

INTRODUCTION

The Ministry of Health (MoH) defines as a carrier of congenital syphilis every newborn (NB) with a Veneral Disease Research Laboratory (VDRL) positive mother, untreated or with inadequate treatment in pregnancy, even without confirmatory test for *Treponema pallidum*. This is a bacterial disease, transmitted from the mother to the baby, at any time of pregnancy, by hematogenous dissemination, birth canal, amniotic fluid and breastfeeding if there are lesions in the areola of the breast[1].

The elimination of congenital syphilis is a commitment of the Pan American Health Organization (PAHO) and the United Nations Children's Fund (UNICEF) — the goal is to reach the rate of 0.5 cases or less per thousand live births. To this end, VDRL was established in the first and third trimesters of pregnancy and in childbirth, aiming for 95% or more of the pregnant women to be treated[2].

The *Rede Cegonha* was launched by the Federal Government in 2011 to ensure the right of women and children to humanized care during prenatal care, delivery and birth in all services of the Unified Health System (*Sistema Único de Saúde* – SUS). Through this strategy, the rapid test for the diagnosis of syphilis during pregnancy was implemented, showing an increase in the detection rate of the disease in pregnant women due to improved diagnosis and epidemiological surveillance. The MoH increased the distribution of rapid syphilis tests by 5.5 times — evolution was observed from 1,126,235 to 6,169,145 tests[3].

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When the pregnant woman is properly treated in pregnancy, the risk of contaminating the fetus and the newborn with congenital syphilis reduces to less than 1%. In the current protocol at the time of the study[1], the pregnant woman would be considered adequately treated if she had used benzathine penicillin according to the clinical phase of the disease, concomitant with the partner's treatment and condom use during the treatment period, completed 30 days before the delivery — it was also necessary to present a document that proves her and her partner's treatment and the VDRL performed monthly from its positivity[4-6].

Today, newer protocols consider treatments as "inadequate therapy" when performed with a non-penicillin antimicrobial agent for less than four weeks before delivery or at a dose inappropriate to the disease stage. It may also be called "inadequate documentation of maternal treatment" when there is no good performance of serial titers of non-treponemal tests or no documentation of therapy. In addition, there is an "inadequate response to therapy" when titers of non-treponemal tests have a drop less than four times the previous value (two dilutions) after treatment or when treponemal titers suggest reinfection or reactivation and titer rise above four times the value of the previous non-treponemal test titer.

Transmission occurs for 70 to 100% of pregnant women not treated or inadequately treated if they are in the primary or secondary stage of the disease. Because of its high transmissibility, its difficult diagnosis — 70% are asymptomatic at birth —, the impossibility to grow *Treponema pallidum* and the presence of maternal antibodies in the child until 18 months of age, it is difficult to confirm the diagnosis of congenital syphilis. For the management of infants born to VDRL-positive mothers, laboratory tests are performed, such as VDRL in peripheral blood and cerebrospinal fluid (CSF), long-bone radiography and blood count, in order to reduce the probability of not diagnosing congenital syphilis[1].

After discharge from the maternity ward, these NB, the offspring of a positive VDRL mother, should be followed monthly in the first semester of life, bi-monthly in the second and twice in the second year of life. The VDRL must be requested at 1, 3, 6, 12 and 18 months of life, and stop being performed after two consecutive negative VDRLs[3].

Risk factors are related to the vulnerability of health systems, the demographic situation of some municipalities, as well as the socioeconomic and behavioral conditions of the population[4]. The quality of prenatal care, low schooling, being young, being of reproductive age, low income, being licit and illicit drug users, being sexually promiscuous, having untreated partners, among others are factors related to the increase of congenital syphilis[7,8].

Despite all the measures being undertaken, the incidence of congenital syphilis has increased globally, especially in developing countries. Although Sergipe is the smallest state in the federation, with good accessibility among municipalities, it is in third place in incidence of the disease[3].

OBJECTIVE

In view of the above, an observational, longitudinal and descriptive study of the positivity of the VDRL peripheral and CSF examinations, long-bone radiography, the ear test and background examination of the children of VDRL positive mothers was carried out.

METHODS

This is a longitudinal and descriptive observational study carried out in a philanthropic maternity clinic associated to SUS. It attends to maternal risk and neonatal high risk, with an average of 800 monthly deliveries, of pregnant women from all municipalities in the state of Sergipe, where a third of the population is born, as well as patients from other states. Data from the records of the congenital syphilis outpatient clinic were used with inclusion criteria for all live births of positive VDRL mothers in the years 2010 to 2014. These were included in the 2006 MoH Congenital Syphilis Elimination Program[1]. The research was approved by the Committee of Ethics in Research with Human Beings under number 525.002.

For data collection, pregnant women with positive VDRL were interviewed and classified as adequately or inadequately treated. They are considered to be adequately treated in pregnancy when they use benzathine penicillin according to the clinical stage of the disease, concomitant to the partner, and a condom during the treatment period, completed 30 days before delivery, and present a document proving her treatment, as well as her partner's, and the VDRL performed monthly, from their positivity, with record of results on the pregnant woman's card. The NB of mothers with VDRL positivity were treated as recommended by the MoH[1]. Radiographs of the long bones, VDRL in peripheral blood and CSF, the ear test and the fundus examination were evaluated. The NB were discharged from the program when they had two consecutive negative peripheral blood VDRLs, did not present the signs and symptoms of the disease, the CSF had turned out to be negative and the radiological alterations had disappeared.

Student's *t*-test for independent samples — for the mean between two groups —, the χ^2 test for frequency data — used to detect statistical significance of the difference between two independent groups — and the *odds ratio* (OR) as the ratio between two possibilities: the probability that congenital syphilis does not occur divided by the number of individuals who did not develop the disease. A significance level of 5% was considered for all tests. The statistical program used was the IBM SPSS® (Statistical Package for Social Sciences), version 21.0.

RESULTS

We evaluated 428 NB from mothers with positive VDRL. Of these, 33 (7.7%) did not perform the X-ray of the long bones and 32 (8.1%) presented bone alterations in this examination. They had positive VDRL in the peripheral blood at birth (70.3%) and in the CSF (2.7%). In the ear test, 3.0% of the NB did not respond to otoacoustic emissions and in the fundus examination, 2.5% presented keratitis. NB showed symptoms at birth in 19.6% of the cases (**Table 1**).

There was significance when bone changes were related to the weight of the NB and the number of abortions. CSF VDRL was also significant when related to the number of children with congenital syphilis (**Table 2**).

Symptomatic babies, weighing between 1.0 and 2.5 kg, and normal births were more likely to have bone changes. Symptomatic NB were also more likely to have VDRL positivity in the CSF (**Table 3**).

The increase in maternal and neonatal VDRL levels was statistically significant with the appearance of radiographic changes (p<0.001). Puerperas with VDRL≥1:8 are 7,11 times more likely that their NB will have bone radiographic alterations compared to VDRL≤1:4. Similarly, NB with VDRL≥1:8 are 11.1 times more likely to have bone changes compared to those with VDRL≤1:4.

Table 1 – Clinical, serological and radiographic variables of Venereal Disease Research Laboratory newborns positive at delivery, in a philanthropic maternity from Aracaju, SE, from 2010 to 2014.

Variables of the newborn	Tests performed	% (n)	95%CI
Symptomatic newborns	428	19.6 (84)	15.7–23.1
Radiography of long bones	360		
Periostitis		1.5 (6)	0.3–2.5
Metaphyseal osteochondritis		6.6 (26)	3.9–8.9
Positive VDRL in cerebrospinal fluid at birth	360	2.7 (10)	1.1–4.2
Positive VDRL in peripheral blood at birth	428	70.3 (301)	65.9–73.8
Altered eye fundus (interstitial keratitis)	161	2.5 (4)	0.6–3.7
Altered ear test (no response to otoacoustic emissions)	168	3.0 (5)	0.6–5.4

95%CI: 95% confidence interval; VDRL: Venereal Disease Research Laboratory.

Table 2 – Characteristics of the sample, bone alterations and neurosyphilis of Venereal Disease Research Laboratory newborn at the time of delivery, in a philanthropic maternity of Aracaju, SE, from 2010 to 2014.

	Altered X-ray	Normal X-ray	p-value
Age of the mother	25.42±6.958	24.96±6.273	0.722
Peso do RN	2,746.38±801.19	3,133.37±578.31	0.016
Number of children	2.57±1.399	2.33±1.548	0.451
Number of children with syphilis	0.95±0.498	0.82±0.55	0.257
Number of abortions/ miscarriages	0.14±0.359	0.37±0.724	0.013
Number of consultations	4.10±2.791	5.20±2.667	0.067
	VDRL (+) cerebrospinal fluid	**VDRL (-) cerebrospinal fluid**	**p-value**
Age of the mother	22.00±5.398	25.01±6.324	0.182
Weight of the NB*	2,824.44±508.751	3,116.03±604.988	0.152
Number of children	2.43±1.397	2.32±1.523	0.853
Number of children with syphilis	1.00±0.000	0.82±0.549	<0.001*
Number of abortions/ miscarriages*	0.14±0.378	0.37±0.718	0.413
Number of consultations	4.14±3.338	5.18±2.627	0.304

NB: newborn; VDRL: Venereal Disease Research Laboratory; *significant difference at 5%; Student's *t*-test for independent samples — values expressed as mean ± standard deviation.

When VDRL was non-reactive, 13.8% presented bone alterations. Neurosyphilis was present in 88.8% of NB when associated with titration of maternal VDRL greater than or equal to 1:8 (**Table 4**).

Among the puerperal women who returned for the first month's consultation with the baby, 73.6% received the correct treatment. This was a statistically significant protective factor for bone changes and for neurosyphilis (OR 0.30 / p<0.01).

There was no statistically significant association between alterations in the fundus examination and in the ear test with the bone alterations found in NB with congenital syphilis. The treatment was performed with crystalline penicillin in 89.7% of those who presented bone alterations, and 10.3% of them received treatment with procaine penicillin (**Table 5**).

DISCUSSION

Congenital syphilis is a marker of a country's development and its high incidence shows that there is a serious public health problem. In 2015, in Brazil, 18,938 cases of this disease were diagnosed, being 98.1% in NB; 96.4% in the first week of life. The World Health Organization (WHO) recommends reducing the incidence of this disease to 0.5 or fewer cases per thousand live births. In the year 2015, the national average was 6.5 cases/thousand live births. The state with the highest incidence was Rio de Janeiro, with 12.4 cases/thousand live births, followed by Rio Grande do Sul, with 11.5 cases/thousand live births, and in the third place, Sergipe, with 10.9 cases/thousand live births[3].

To define the diagnosis of congenital syphilis, in addition to the maternal epidemiological data, signs and symptoms of the disease in the NB, peripheral blood VDRL, blood count, hepatic profile and electrolytes, CSF puncture, long bone radiography and ophthalmologic and audiological evaluation should be analyzed[3].

In the present study, the infants of VDRL positive mothers were symptomatic at birth in 19.6%. Of these, 15.2% had prematurity or low birth weight and those without a risk factor for syphilis were 4.1%. These symptoms are the most prevalent in early congenital syphilis and their preponderance was three times higher, in the four years of the study, in those babies of VDRL-positive mothers in relation to all pregnant women without seropositivity for *Treponema pallidum*. Holanda et al.[9], in Natal, found 15.2% of the babies with prematurity or low birth weight; Campos et al.[6], in Fortaleza, 36.2%; and Magalhães et al.[10], in the Federal District, 6% — data showing the importance of adequate treatment of these mothers in prenatal care, with the intention of reducing prematurity and low birth weight of newborns of VDRL positive mothers .

The VDRL positivity of 2.7% in the babies' CSF was similar to the findings described by Holanda et al.[9], who found a value of 2.2%, and lower than that reported by Vanegas-Castillo et al.[11], 8.2%. When this test is positive in the CSF, babies are diagnosed as having neurosyphilis. Although they receive equal treatment for those babies who presented negative VDRL in the CSF during follow-up, they should undergo another CSF collection at six months of age. If this new collection remains positive, the baby should be hospitalized for a second treatment with crystalline penicillin for ten days. This examination is repeated every six months until it comes out negative[1].

In the present study, the CSF was collected in 84.1% of the NB, differing from the data from the National System of Notifiable Diseases (*Sistema Nacional de Agravos de Notificação* – SINAN), such as that of Holanda et al.[9], in which this collection was performed in 6.7% of them, and that of Magalhães et al.[10], in which this percentage was 42%. It is relevant that CSF collection should be performed on all babies born to VDRL-positive mothers when not treated properly in pregnancy, for diagnosis and treatment of NB at birth. In the work performed, the chance of presenting positivity in the CSF was increased in those who had bone lesions and when the partners of the pregnant women were not treated during pregnancy.

The ear test was performed in 39.2% of the sample and there was absence of otoacoustic emissions in only 3.0%. Research performed in São Paulo by Boscatto and Machado[12] estimated hearing loss in NB between 1 and 3 for every one thousand births of healthy babies and increases to 20 to 50 per thousand live births in NB with

Table 3 – Association of the sociodemographic characteristics and positivity of the Venereal Disease Research Laboratory with the radiographic changes and neurosyphilis of Venereal Disease Research Laboratory positive newborns at the time of delivery, in a philanthropic maternity of Aracaju, SE, from 2010 to 2014.

	Altered X-ray n=29*	Normal X-ray n=366*	Total n=395*	p-value	OR (95%CI)
Symptomatic NB	17 (58.6)	65 (17.8)	82	<0.001**	6.56 (2.99–14.4)
No	12 (41.4)	301 (82.2)	313		
Weight of the NB					
1 to 1.5 kg	3 (10.3)	3 (0.8)	6 (1.5)		
>1.5 to 2.5 kg	8 (27.6)	49 (13.4)	57 (14.4)	<0.001**	3.69 (1.65–8.26)
>2.5 kg	18 (62.1)	314 (85.8)	332 (84.1)		
Type of birth					
Normal	16 (55.2)	272 (74.3)	288 (72.9)	0.026**	0.42 (0.20–0.92)
Cesarean	13 (44.8)	94 (25.7)	107 (27.1)		
	VDRL (+)cerebrospinal fluid n=9*	**VDRL (-)cerebrospinal fluid n=393***	**Total n=402***	**p-value**	**OR (95%CI)**
RN***					
Symptomatic	6 (66.7)	74 (18.8)	80 (19.9)	<0.001**	8.62 (2.11–35.3)
No	3 (33.3)	319 (81.2)	322 (80.1)		
Weight of the NB***					
Very low	0 (10.3)	6 (1.5)	6 (1.5)		
Low	2 (22.2)	54 (13.7)	56 (13.9)	0.661	3.69 (1.65–8.26)
Appropriate	7 (77.8)	333 (84.7)	340 (84.6)		
Area					
Urban	6 (66.7)	349 (88.8)	355 (88.3)	0.041**	0.25 (0.06–1.04)
Countryside	3 (33.3)	44 (11.2)	47 (11.7)		
Education of the mother	n=7	n=335	n=342		
<8 years	3 (42.9)	201 (6.0)	204 (59.6)	0.446	0.50 (0.11–2.27)
>8 years	4 (57.1)	134 (40.0)	138 (40.4)		

OR: *odds ratio*; 95%CI: 95% confidence interval; NB: newborn; VDRL: Venereal Disease Research Laboratory; *standard n for most variables; **significant association at 5%; ***risk or protection factor; χ^2 test — values expressed by n (%).

Table 4 – Association of rates of Venereal Disease Research Laboratory with radiography and neurosyphilis of Venereal Disease Research Laboratory positive newborns at delivery, in a philanthropic maternity of Aracaju, SE, from 2010 to 2014.

	Altered X-ray n=29*	Normal X-ray n=366*	Total n=395*	p-value	OR (95%CI)
VDRL of the mother					
≥1:8	26 (89.7)	201 (54.9)	227 (57.5)	<0.001	7.11 (2.12–23.9)
≤1:4	3 (10.3)	165 (45.1)	168 (42.5)		
VDRL of the NB					
≥1:8	21 (72.4)	70 (19.1)	91 (23.0)	< 0.001**	11.1 (4.72–26.1)
≤1:4	4 (13.8)	188 (51.8)	192 (49.0)		
*NR	4 (13.8)	105 (28.9)	109 (27.8)		
	VDRL (+)cerebrospinal fluid n=9*	**VDRL (-)cerebrospinal fluid n=393***	**Total n=402***	**p-value**	**OR (95%CI)**
VDRL of the mother					
≤1:4	1 (11.1)	172 (43.8)	173.3 (44.0)	0.03**	
≥1:8	8 (88.8)	221 (56.3)	229 (56.8)		

OR: *odds ratio*; 95%CI: 95% confidence interval; VDRL: Venereal Disease Research Laboratory; NB: newborn; *standard n for most variables; **significant association at 5%; ***risk or protection factor; χ^2 test — values expressed by n (%).

risk factor for hearing disorders. When comparing these data with the present study, which has as risk factor the babies being children of VDRL-positive mothers, the alterations could have been found between 11.9 and 29.7%. However, in this study, the percentage was 3.0% of auditory changes, which is within the values observed in healthy babies.

The fundus examination was performed in 37.6% of the babies and the positivity was 2.5%. In a study conducted in Minas Gerais with examinations of 6,560 eyes — in which, when the red reflex was absent or altered, they were referred to the fundus of the eye —, there was a prevalence of 7% of changes in the retina and in the vitreous[13]. In the present study, this test also had the percentage below that found when there is a risk factor for retinal diseases probably due to the low adhesion of the mothers in getting this examination.

In the study, bone lesions, prematurity and/or low birth weight, hepatosplenomegaly, *pemphigus palmoplantaris* and jaundice were the signs found associated with early congenital syphilis and were present in 19.6% of NB. The radiographic changes in those symptomatic occur in 70 to 100% of the cases, and in 2 to 20% when they are asymptomatic[1].

These are symmetrical lesions, especially in long bones such as the radius, ulna, humerus, tibia, femur and fibula. The periostitis presents radiologically with cortical thickening of the diaphysis, being extensive, bilateral and symmetrical. Metaepiphysial osteochondritis is radiologically visible in the extremities, especially in the femur and humerus. There is the appearance of a shade of greater density, which is the calcified matrix, with a "cup" formation of the epiphysis. When the lesion is more severe, the function of the cartilage channel is impaired and, on the radiograph, a zone of rarefaction of the epiphysis line appears. A characteristic image is the Wimberg's sign, which consists of metaphyseitis of the upper lip of the tibia (inner border)[14,15].

Kucinskiene et al.[16] showed the presence of osteochondritis in all long bones and periostitis in the left humerus and forearm. Stephens et al.[17] described, in the United States, a child with destruction of the medial metaphysis of both tibias (Wimberger's sign) and diffuse periosteal reaction in tibia. Onesimo et al.[18], in Italy, presented an epiphyseal detachment in the left humerus as one of the main manifestations of congenital syphilis.

Moreira-Silva et al.[15] analyzed ten children with congenital syphilis with bone involvement and showed that periostitis is the most

Table 5 – Association of characteristics of treatment with CSF positivity and X-ray of Venereal Disease Research Laboratory positive newborns at delivery, in a philanthropic maternity of Aracaju, SE, from 2010 to 2014.

	VDRL (+)cerebrospinal fluid n=9*	VDRL (-)cerebrospinal fluid n=393*	Total n=402*	p-value	OR (95%CI)
X-ray***	n=9	n=378	n=387		
Altered	6 (66.7)	23 (6.1)	29 (7.5)	<0.001**	30.9 (7.2–131.4)
Normal	3 (33.3)	355 (93.9)	358 (92.5)		
Medication of the NB					
BP	0 (0.0)	118 (30.0)	118 (29.4)		
CP	9 (100.0)	269 (68.4)	278 (69.1)	0.181	
Follow-up	0 (0.0)	6 (1.6)	6 (1.5)		
Treatment of the mother	n=9	n=389	n=398		
Complete	5 (55.6)	289 (74.3)	294 (73.9)	<0.206	0.43 (0.11–1.64)
Incomplete	4 (44.4)	88 (25.7)	104 (26.1)		
Treatment of the partner	n=9	n=389	n=398		
Complete	0 (0.0)	112 (28.8)	112 (28.1)	0.058	
Incomplete	9 (100.0)	277 (71.2)	286 (71.9)		
Fundoscopy					
Altered	0 (0.0)	4 (1.0)	4 (1.0)		
Normal	5 (55.6)	151 (38.4)	156 (38.8)	0.534	
Not performed	4 (44.4)	238 (60.6)	242 (60.2)		
Ear test***					
Altered	0 (0.0)	4 (1.0)	4 (1.0)		
Normal	6 (66.7)	162 (41.2)	168 (41.8)	0.244	
Not performed	3 (33.3)	227 (57.8)	230 (57.2)		
	Altered X-ray n=29*	**Normal X-ray n=366***	**Total n=395***	**p-value**	**OR (95%CI)**
Medication of the NB					
BP	3 (10.3)	113 (30.9)	116 (29.4)		
CP	26 (89.7)	247 (67.5)	273 (69.1)	0.044**	
Follow-up	0 (0.0)	6 (1.6)	6 (1.5)		
Treatment of the mother***	n=29	n=362	n=391		
Complete	14 (48.3)	274 (75.7)	288 (73.7)	<0.01**	0.30 (0.14–0.64)
Incomplete	15 (51.7)	88 (24.3)	103 (26.3)		

VDRL: Venereal Disease Research Laboratory; OR: *odds ratio*; 95%CI: 95% confidence interval; NB: newborn; BP: benzathine penicillin; CP: crystalline penicillin; *standard n for most variables; **significant association at 5%; ***risk or protection factor; χ^2 test — values expressed by n (%).

frequent manifestation in these children, followed by osteomyelitis. This study showed that the most affected bone was the tibia, followed by the femur, the humerus, the radius and the ulna[15]. The present study corroborated the findings of Moreira-Silva et al.[15], since the most frequent manifestation was periostitis.

Fernandes et al.[19], whose study, in Brazil, analyzed 20 children born with congenital syphilis, found only 10% of bone changes on the radiographs, a frequency similar to that found in the present study, which was 8.1% — and when the mothers were adequately treated, this was a protective factor for the non-occurrence of bone changes in the NB.

CONCLUSION

The nontreponemal test, VDRL, in peripheral blood was the most significant in the identification of vertical transmission, corresponding to 70.3% of the identified samples, suggesting that its use had a greater diagnostic sensitivity, with long bone radiography, test of the ear and examination of eye fundus complementary roles in the screening of children of VDRL-positive mothers. In addition, outpatient follow-up of the patients was statistically significant ($p<0.01$) to reduce their morbidity and mortality. This reinforces the importance of maintaining guidelines for the management of congenital syphilis of MoH, used in the institution at the time of the study, aiming to eradicate this disease that still persists despite almost seven decades of penicillin use.

Conflict of interests

The authors declare no conflict of interests.

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Sexual risk behaviors in Brazilian adolescents and young women: a community-based study

Comportamento sexual de risco entre mulheres adolescentes e jovens brasileiras: um estudo de base comunitária

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ABSTRACT

Introduction: Risky sexual behaviors among adolescents can result in high rates of sexually transmitted infections and unwanted pregnancies. **Objective**: To estimate the prevalence and to identify sociodemographic factors associated with early start of sexual activity and inconsistent condom use among adolescents and young women. **Methods**: This cross-sectional, community-based study enrolled 1,072 women from 2007 to 2009. The participants were between 15 and 24 years old and were residents of three different mid-sized cities in the state of Goiás, Central-Western region of Brazil. Sociodemographic and behavioral data were collected in a structured questionnaire, following ethics committee approval. Logistic regression analysis was performed, with odds ratio and adjusted odds ratio calculation, with confidence interval of 95% (95%CI) and statistical significance of 5% ($p<0.05$). **Results**: Of the 1,072 interviewees, 64.9% were sexually active, of which 46.4% reported sexual initiation at the age of 15 or younger, and 73.2% reported inconsistent condom use. The factors associated with the early start of sexual activity were to be under 20, to have less than eight years of education, and to report no religion with odds ratio of 3.13 (95%CI 2.22–4.40), 6.21 (95%CI 4.41–9.32) and 2.05 (95%CI 1.17–3.58) respectively. The factor associated with inconsistent condom use was being married or in a stable relationship, with odds ratio of 4.63 (95%CI 2.86–7.50). **Conclusion**: The high prevalence of risky sexual behaviors among Brazilian adolescents and young women is due to socioeconomic and cultural factors.

Keywords: sexual behavior; adolescents; young adults; condom.

RESUMO

Introdução: Comportamento sexual de risco entre adolescentes resulta em altas taxas de infecções sexualmente transmissíveis e gravidez indesejada. **Objetivo**: Estimar a prevalência e identificar os fatores sociodemográficos associados ao início precoce da atividade sexual e ao uso inconsistente do preservativo masculino entre mulheres adolescentes e jovens. **Métodos**: Estudo transversal, de base comunitária, com 1.072 mulheres realizado entre 2007 e 2009. As participantes tinham entre 15 e 24 anos, residentes em três cidades de médio porte do estado de Goiás, Região Centro-Oeste do Brasil. Dados sociodemográficos e comportamentais foram coletados por meio de questionário estruturado. Análises de regressão logística com cálculo de *odds ratio* e *odds ratio* ajustado foram realizadas com intervalo de confiança de 95% (IC95%) e significância estatística de 5% ($p<0,05$). O estudo foi aprovado pelo Comitê de Ética. **Resultados**: Das 1.072 entrevistadas, 64,9% eram sexualmente ativas, entre as quais 46,4% reportaram iniciação sexual aos 15 anos ou menos, e 73,2% reportaram uso inconsistente do preservativo masculino. Os fatores associados com a iniciação sexual precoce foram idade menor que 20 anos, ter menos que oito anos de escolaridade e não possuir religião, com *odds ratio* de 3,13 (IC95% 2,22–4,40), 6,21 (IC95% 4,41 –9,32) e 2,05 (IC95% 1,17–3,58), respectivamente. O fator associado ao uso inconsistente do preservativo foi o estado civil casada ou união estável, com *odds ratio* de 4,63 (IC95% 2,86–7,50). **Conclusão**: A prevalência de comportamento sexual de risco entre mulheres adolescentes e jovens brasileiras é elevada em consequência de fatores socioeconômicos e culturais.

Palavras-chave: comportamento sexual; adolescentes; adultos jovens; preservativo masculino.

INTRODUCTION

Adolescents and young adults are more frequently involved in risky sexual behaviors, resulting in high levels of sexually transmitted infections (STI) and unwanted pregnancies[1-3]. Worldwide, 2.5 million women give birth before the age of 16, and obstetric complications are the second leading cause of premature death among women aged between 15 and 19[2,4]. Every day, almost one million new cases of STI are detected around the world[3], with large increase in cases among young adults aged between 15 and 24 years[5]. The prevalence of human papillomavirus infection (HPV) in this age group ranges from 28.0 to 47.1%[6,7].

This scenario results in an increased economic and social impact on obstetric complications, such as prematurity and congenital infections[4]. Perinatal transmission of human immunodeficiency virus (HIV) makes acquired immunodeficiency syndrome (AIDS) the third leading cause of premature death among young adults in the world[2]. In addition, the exposure to chlamydia increases the costs of infertility and pelvic inflammatory disease treatments[8]. HPV-induced cervical cancer is the fourth in number of deaths among all types of cancer in women, the second in developing countries[9].

The limited impact of sexual health interventions as described in the literature contributes to this reality[10]. There is also no consensus on which factors affect sexual behavior in each culture and population[11,12]. This research aims to fill this knowledge gap.

OBJECTIVE

To identify the demographic, social, and behavioral factors associated with the early start of sexual activity and inconsistent condom use, as well as the reasons cited for not using condoms, among adolescents and young women in the urban centers of Midwestern Brazil.

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METHODS

Study design and sample

This is a cross-sectional community-based study, carried out in three medium-sized cities of the state of Goiás (located in the Midwestern region of Brazil), between 2007 and 2009. The cities were randomly selected to represent the urban population outside the capital Goiânia. All 4,500 women aged 15 to 24 years included in the Family Health Program (FHP) were randomized and potentially eligible[13]. The FHP is a multidisciplinary public health program responsible for primary health care in municipalities according to their individual needs. It is also a significant data source.

The sample's size of 570 sexually active women was calculated using Open Source Epidemiologic Statistic for Public Health (OpenEpi 2.3.1). A previous research performed in the same state found a percentage of sexually active adolescents and young women of 60%[14]. After adding an additional 10% margin for dropout, a sample size of 1050 participants was obtained, and 1072 participants responded to the survey.

Data collection

The structured questionnaire contains two steps. The first, given to all respondents, collected individual and sociodemographic data, such as age, marital status, religion, education, family income, mother's education level, number of people living in their home, concern about their health, menstrual problems, satisfaction with their relationships with the parents, vaccination status against hepatitis B, and the age they started sexual activity. The second, given only to sexually active respondents, collected data about sexual behavior, such as age and partner at first sexual intercourse, number of lifetime sexual partners, number of sexual partners in the last three months, perception of STI risk of their partners, having an exclusive sexual relationship, perception on their partner's fidelity, frequency of condom use, use of condom in the last time they had sex, reasons they gave for not using condoms, type of sexual intercourse, sexual activity in risky situations (in exchange for money, drugs, or when one or both partners is under the influence of drugs), history of pregnancy, and age at first pregnancy.

Criteria definition

For the purposes of this study, early start of sexual activity is defined as sexual initiation at the age of 15 years or younger, as in other studies[15,16], being 14 the age of consent in Brazil[17]. Inconsistent condom use is defined as the use of a condom in less than 100% of sexual encounters, as in other studies[18,19].

Data analysis

A descriptive and frequency analysis of sociodemographic and behavioral characteristics was performed. For the categorical variables, the percentage distributions with the respective confidence intervals (CI), 95% was calculated. Logistic regression was performed to evaluate the sociodemographic and behavioral differences between sexually active participants and those who had never had sex, as well as to evaluate the association of these factors with early sexual initiation and inconsistent condom use. Odds ratios (OR) and the adjusted OR with 95%CI and statistical significance level of 5% ($p<0.05$) were calculated. All variables that presented the value of $p<0.20$ were subjected in the multivariate model.

Ethical aspects

The present study was approved by the Committee of Ethics in Human and Animal Medical Research of the Hospital das Clínicas of the Federal University of Goiás, under the protocol 83763518.6.0000.5078. All participants signed the Free and Informed Consent form, and all interviews were conducted so as to protect the interviewee's privacy. To ensure the reliability of the information given by participants under 18 years old, exemption from parental involvement was obtained by court order.

The project received financial support from the National STD / AIDS Program of the Ministry of Health and UNESCO.

RESULTS

From the 1,072 women interviewed, 64.9% (696) were sexually active. The prevalence of early start of sexual activity was 46.4% (95%CI 42.7–50.1). The prevalence of inconsistent condom use was 73.2% (95%CI 63.9–82.6). Most participants had their first sexual intercourse with their boyfriend or partner in a stable relationship (94.6%). More than half of all participants had more than one partner in their lifetimes (50.7%). Anal sex was reported by 13.7% of women, and sex in exchange for money, drugs or sex with drugged partner was related by 3.2%. Previous pregnancy was reported by 39.4% of participants, of which 26.2% were younger than 15 (**Table 1**).

The characteristics that distinguished sexually active participants from those who had never had sex were age and education. After multivariate analysis, the sexually active women were 6.3 times more likely to be over 20 years (95%CI 3.98–9.96), and 2.04 times more likely to have less than eight years of education (95%CI 1.19–3.49) compared to those who had never had sex (**Table 2**).

The factors associated with early start of sexual activity were: to be under 20 years, to have less than eight years of education and to have no religion with an OR of 3.13 (95%CI 2.22–4.40), 6.21 (95%CI 4.41–9.32) and 2.05 (95%CI 1.17–3.58) respectively (**Table 3**).

The factor that remained associated with inconsistent condom use after multivariate analysis was being married or in a stable relationship, with OR of 4.63 (95%CI 2.86–7.50) (**Table 4**).

The most cited reasons for not using condoms were "confidence in partner" by 49.8%, "partner dislikes it" by 43.7% and "less pleasure" by 35.4% of the participants. The less cited reason for not using condoms was "they're expensive" (**Table 5**).

DISCUSSION

This study investigated the prevalence of risky sexual behaviors, defined as: the start of sexual activity at the age of 15 or younger, inconsistent condom use and the socioeconomic and behavioral factors associated with these. The sample was composed by adolescents and young women, living in urban centers in Midwestern Brazil.

Table 1 – Characteristics of sexually active participants (n=696).

Variable	n	%	95%CI
Age (years) (n=695)			
15 to 19	345	49.6	45.9–53.4
20 to 24	350	50.4	46.6–54.1
Age at first sexual activity (years) (n=692)			
Up to 15	321	46.4	42.7–50.1
Over 15	371	53.6	49.9–57.3
First sexual intercourse (n=691)			
Friend. stranger. or recently met	37	5.4	3.7–7.0
Boyfriend. spouse. or housemate	654	94.6	92.9–96.3
Number of lifetime partners (n=686)			
1	338	49.3	45.5–53.0
2 to 3	207	30.2	26.7–33.6
4 or more	141	20.6	17.5–23.6
Number of partners in the last three months (n=692)			
0	69	10.0	7.7–12.2
1	589	85.1	82.5–87.8
2	25	3.6	2.2–5.0
3 or more	9	1.3	0.5–2.1
Perception of STI risk with partner (n=685)			
Yes	36	5.3	0.46–2.17
No	649	94.7	93.1–96.4
Stable relationship (n=686)			
Yes	585	85.3	82.6–87.9
No	101	14.7	12.1–17.4
Unfaithful to partner (n=588)			
Yes	15	2.6	1.3–3.8
No	573	97.4	96.2–98.7
Condom use (n=691)			
Always	185	26.8	23.5–30.1
Sometimes (more than half the time)	237	34.3	30.8–37.8
Rarely (less than half the time)	171	24.7	21.5–28.0
Never	98	14.2	11.6–16.8
Use of condom in last intercourse (n=672)			
Yes	277	41.2	37.5–44.9
No	395	58.8	55.1–62.5
Type of relations			
Oral (n=635)	257	40.5	36.7–44.3
Vaginal (n=688)	688	100.0	-
Anal (n=633)	87	13.7	11.1–16.4
Risk situations			
Sex for money (n= 685)	15	2.2	1.1–3.3
Sex for drugs (n= 684)	3	0.4	0.0–0.9
Sex with an injection drug user or sex worker (n= 685)	4	0.6	0.0–1.2
Perception of unfaithfulness in relationship (n=578)			
Yes	73	12.6	9.9–15.3
No	505	87.4	84.7–90.1
Previous pregnancy (n=687)			
Yes	271	39.4	35.8–43.1
No	416	60.6	56.9–64.2
Age at first pregnancy (n=267)			
< 15 years	70	26.2	20.9–31.5
15-19 years	149	55.8	49.8–61.8
>19 years	48	18.0	13.4–22.6
Previously been tested for STI (n=671)			
Yes	33	4.9	3.3–6.6
No	638	95.1	93.4–96.7

*The difference between the total of each variable and the overall total are due to questions left blank.

There is no consensus in the literature on which factors are associated with these behaviors[11,12], hence the importance of the present study. Social attitudes against sexual activity in adolescence blocks to addressing this issue and are a limiting factor in the effectiveness of intervention strategies[20].

Sexually active participants, when compared to those who had not previously had sex, were older and had fewer years of education. According to data, 51.3% of participants were sexually active at the age of 19, increasing to 87.7% at the age of 24. In fact, the prevalence of sexual activity increases over the years in adolescence and youth. These results are in accordance with a previously published study that reported the percentage of sexually active individuals is, on average, 60% at the age of 18, and 90% at the age of 24[21].

The prevalence of early start of sexual activity was high. Indeed, 46.4% of the participants reported sexual initiation at the age of 15 or younger, a higher number than that found in other studies. In Brazil, a population-based survey on adolescent students in 2016 found that 35.9% of them were sexually active by the age of 15[22]. In the United States of America (USA), a longitudinal, decade-long study found that 13 to 35% of adolescents started having sex up until 15 years old[23]. In a national sample of African adolescents, in 2012, this number was around 25%[24]. Therefore, adolescents and young women living in Midwestern Brazil should be considered a high-risk population for the consequences of early sexual behavior.

The factors associated with early start of sexual activity were to be under 20 years of age, having a low level of education and no religion. Regarding age, data showed that 57.6% of participants between 15 and 19 years old reported to have begun their sexual activity early, significantly higher than those between 20 and 24 (34.5%). These data suggest a decrease in the age of first sexual intercourse over the years, as supported by the literature[21,25,26]. This information suggests the need for studies that assess sexual behavior before 15 years to guide more effective sexual education programs and prevent the negative consequences of early sexual activity.

Along with age, low education level was associated with early start of sexual activity. According to the available evidence, a higher level of education correlates with starting sexual activity later in life, particularly when the individual intends to pursue higher education. In fact, staying in school and having a good performance are associated with the adoption of healthy behaviors overall, including being mindful of sexually healthy[27,28]. Conversely, dropping out of school is associated with teenage pregnancy and early marriage[29], which can lead to future issues, such as maintaining these women's social vulnerability. These results suggest that in addition to health policies, education policies are needed to improve sexual health.

Another factor associated with early sexual debut was to have no religion. Indeed, evidence from literature shows that religiosity in adolescence is associated with healthier attitudes and it protects against various risk behaviors, including early start of sexual activity[30,31]. However, the norms and attitudes internalized by religion do not ultimately affect the motivations of teenagers to have sex, which ends up happening[32,33]. For this reason, adolescents should not be exempted from sexual education for religious reasons. There is evidence that programs based on the religious prerogative of sexual abstinence are ineffective and can even harm prevention actions[34].

In addition to age, educational level and religion, other studies suggest the association between the early start of sexual activity, the mother's education level and the low socioeconomic level[35], as well as the lack of satisfaction with the relationship with their parents[36]. After multivariate analysis, however, this study did not support these associations.

The prevalence of inconsistent condom use was also high. Data showed that 73.2% of adolescents and young women did not use condoms in all sexual encounters, a higher number than in other populations. In Chinese adolescents, this was 69.3%, African Americans reported 68.2% and in Africa this figure ranged from 30.1 to 59.5%, depending on the country[37-39]. Data from this study points to a high risk of STI in Brazil and suggests the need of health programs that promote condom use.

Being married or in a stable relationship were associated with inconsistent condom use. In fact, according to evidence, condom use in casual sex is greater than in sex with steady partners[19]. This is due to a perceived lower risk and a higher confidence in stable partners[40]. However, evidence showed high rates of unfaithfulness in these relationships, where about one-third of individuals with stable partners reported a second sexual encounter in the previous three months[19]. This demonstrates that false monogamy can perpetuate STI risk[41].

The main reasons cited by participants for not using condoms were trust in their partners and negative attitudes related to condoms. These data agree with evidence that shows a direct relationship between these kinds of resistant attitudes and low rates of condom use[42,43]. In cultures dominated by the male gender, women find greater resistance when negotiating condom use[44]. This situation increases the vulnerability of women and suggests the discussion of gender norms in sex education programs.

STI rates in the same sample were performed by other studies, in which the prevalence of Chlamydia trachomatis infection was 9.5% (95%CI 7.4–12.4)[7], and for HPV infection, the prevalence was 47.1% (95%CI 41.0–53.2)[13]. Despite agreeing with literature data, the infection by these agents was high and deserves attention[13].

Table 2 – Factors associated with sexually active adolescents and young women.

Variable	Sexually active		Virgin		p-value	OR (95%CI)	p-value	OR[a] (95%CI)
	n	%	n	%				
Age (years)								
15 to 19	345	51.3	327	48.7	<0.001	6.77 (4.84–9.46)	<0.001	6.30 (3.98–9.96)
20 to 24	350	87.7	49	12.3				
Civil status								
Single	431	53.4	376	46.6	0.993	-	-	-
Married/Living together	262	100.0	-	0.0				
Religion								
Yes	619	64.4	342	35.6	0.301	1.25 (0.82–1.91)	-	-
No	77	69.4	34	30.6				
Education (years)								
Up to 8	186	79.1	49	20.9	<0.001	2.45 (1.74–3.46)	0.009	2.04 (1.19–3.49)
Over 8	506	60.7	327	39.3				
Good experience in school								
Yes	352	52.0	325	48.0	0.046	1.61 (1.01–2.57)	0.202	1.46 (0.82–2.59)
No	54	63.5	31	36.5				
Mother's education (years)								
Up to 8	437	65.9	226	34.1	0.013	1.44 (1.08–1.91)	0.689	1.07 (0.75–1.53)
Over 8	160	57.3	119	42.7				
Family income (multiples of minimum wage)*								
Up to 2x	238	70.2	101	29.8	0.048	1.33 (1.00–1.76)	0.629	0.91 (0.62–1.34
Over 2x	433	64.0	244	36.0				
Number of people in home								
Up to 4	488	66.8	242	33.2	0.073	1.27 (0.98–1.67)	0.186	1.27 (0.89–1.82)
Over 5	205	61.2	130	38.8				
Preoccupied with health								
Yes	332	68.0	156	32.0	0.055	1.28 (0.99–1.65)	0.150	0.78 (0.55–1.09)
No	362	62.4	218	37.6				
Menstrual problems								
Yes	33	82.5	7	17.5	0.022	2.62 (1.15–5.99)	0.402	1.56 (0.55–4.49)
No	663	64.2	369	35.8				
Satisfied with parental relationships								
Yes	603	64.1	337	35.9	0.253	1.27 (0.84–1.93)	-	-
No	82	69.5	36	30.5				
Vaccinated for hepatite B								
Yes	467	65.8	243	34.2	0.743	0.94 (0.67–1.33)	-	-
No	118	64.5	65	35.5				

OR: odds ratio; OR[a]: Adjusted odds ratio; *Minimum wage in Brazil at the time of this survey was BRL R$ 380 / USD $ 100.

In addition, pregnancy rates were also high. Almost 40% of adolescents and young women in this study reported having previously become pregnant, more than a quarter before the age of 15. This is an alarming reality since it is associated with dropping out of school and other social problems[45].

Despite cultural advances on the role of sex in society today, the acceptance of sexual activity during adolescence is still low[20]. In the last decade, authors have discussed the normalization of sex in adolescence as a way to increase access to sexual education[46,47]. In societies where this already happens, as in the Netherlands, dual use of condoms and contraceptive pills was the largest among the 24 surveyed countries[48]. Adolescents have many questions about topics related to contraception and STI risk; there is also a low correlation between knowledge and sexual behavior[49]. Therefore, the most effective sex education strategies are those that begin early in young people between 10 and 14 years old, before they start having sex[50].

The main strength of the study is its large random sample size of adolescents and young women. Another force is the exemption from parental participation obtained by court order that secured the reliability of the responses given by those participants under the age of majority. The limitations of this study are related to the period of data collection and the memory bias on the part of study participants. Studies of sexuality in the last decades use the Sexual Revolution as the marker for significant changes in sexual behavior[51]. After that, a research shows that over the years in the 21st century, changes in sexual behavior are tenuous and slow[52]. As a result, the authors of this study believe that the data used in this work can be extrapolated to the present day.

CONCLUSION

Adolescents and young women living in urban centers in Brazil continue to engage in risky sexual behaviors, with high rates of

Table 3 – Factors associated with early start of sexual activity (≤15 years of age).

Variables	Sexual activity up to the age of 15	Total	%	OR (95%CI)	p-value	OR[a] (95%CI)	p-value
Age (years)							
From 15 to 19	199	342	58.2	2.62 (1.93–3.57)	<0.001	3.13 (2.22–4.40)	<0.001
From 20 to 24	121	349	34.7				
Civil Status							
Single	188	429	43.8	0.77 (0.57–1.05)	0.768	-	-
Married/living together	131	260	50.4				
Religion							
No	51	76	67.1	2.61 (1.58–4.33)	<0.001	2.05 (1.17–3.58)	0.012
Yes	270	616	43.8				
Education (years)							
Up to 8	138	183	75.4	5.49 (3.74–8.05)	<0.001	6.21 (4.14–9.32)	<0.001
Over 8	181	505	35.8				
Good experience in school							
Yes	151	349	43.3	1.05 (0.59–1.69)	0.871	-	-
No	24	54	44.4				
Mother's education (years)							
Up to 8	212	435	48.7	1.75 (1.20–2.55)	<0.004	1.14 (0.71–1.83)	0.592
Over 8	56	159	35.2				
Family income (multiples of minimum wage)*							
Up to 2x	126	236	53.4	1.59 (1.15–2.19)	0.005	1.13 (0.78–1.64)	0.532
Over 2x	181	432	41.9				
Number of people in home							
Up to 4	218	486	44.9	1.24 (0.89–1.72)	0.196	1.23 (0.84–1.79)	0.281
Over 5	102	203	50.2				
Preoccupied with health							
Yes	140	330	42.4	1.37 (1.02–1.85)	0.039	1.18 (0.78–1.79)	0.430
No	181	360	50.3				
Menstrual problems							
Yes	16	33	48.5	1.09 (0.54–2.20)	0.804	-	-
No	305	659	46.3				
Satisfied with parental relationships							
Yes	268	600	44.7	1.71 (1.07–2.74)	0.025	1.31 (0.68–2.54)	0.416
No	47	81	58.0				
Vaccinated for hepatite B							
Yes	207	465	44.5	1.31 (0.87–1.97)	0.190	1.19 (0.70–2.01)	0.522
No	60	117	51.3				

OR: odds ratio; OR[a]: Adjusted odds ratio; *Minimum wage in Brazil at the time of this survey was BRL R$ 380 / USD $ 100.

teenage pregnancy and STI. The factors associated with these behaviors were to be under 20 years old, to have low education level, and to have no religion. The low rates of consistent condom use were associated with confidence in their steady partner and negative social norms. Social, economic, and cultural changes are therefore necessary, with a focus on a high-quality education and gender equality.

A broader perspective in studies on sexuality can help work toward a normalization of sex in adolescence to promote sexual education before the start of sexual activity. More research into sexual activity in early adolescence is necessary to better understand risk factors and to create more effective approaches.

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Table 5 – Reasons for not using a condom according to adolescents and young adults.

Reasons given	n	%
Confidence in partner	252	49.8
Partner dislikes	221	43.7
Reduces pleasure	179	35.4
Ruins the mood	112	22.1
No need for it	90	17.8
None	80	15.8
Fear of partner getting the wrong idea	37	7.3
Too self-conscious to ask partner to use one	36	7.1
It's difficult or embarrassing to use	32	6.3
Too self-conscious to buy	25	4.9
Don't know how to use one	4	0.8
Religion prevents it	2	0.4
Don't know where to buy / Don't have a place to buy	2	0.4
It is Expensive	-	0.0

Table 4 – Factors associated with inconsistent condom use by male partner.

Variables	Inconsistent condom use	Total	%	OR (95%CI)	p-value	OR[a] (CI95%)	p-value
Age (years)							
From 15 to 19	229	341	67.2	1.89 (1.33–2.65)	<0.001	1.24 (0.84–1.82)	0.278
From 20 to 24	277	349	79.4				
Civil Status							
Single	269	427	63.0	5.31 (3.38–8.33)	<0.001	4.63 (2.86–7.50)	<0.001
Married/living together	235	261	90.0				
Religion							
No	54	76	71.1	0.88 (0.52–1.50)	0.650	-	-
Yes	452	615	73.5				
Education (years)							
Up to 8	139	183	76.0	1.19 (0.80–1.76)	0.381	-	-
Over 8	366	504	72.6				
Good experience in school							
Yes	235	348	67.5	1.52 (0.78–2.94)	0.218	-	-
No	41	54	75.9				
Mother's education (years)							
Up to 8	320	434	73.7	1.26 (0.85–1.88)	0.253	-	-
Over 8	109	158	69.0				
Family income (multiples of minimum wage)*							
Up to 2x	184	236	78.0	1.48 (1.02–2.14)	0.039	1.13 (0.76–170)	0.548
Over 2x	304	431	70.5				
Number of people in home							
Up to 4	367	485	75.7	1.50 (1.05–2.15)	0.028	1.12 (0.76–1.65)	0.582
Over 5	137	203	67.5				
Preoccupied with health							
Yes	251	331	75.8	1.29 (0.91–1.80)	0.148	1.26 (0.87–1.83)	0.224
No	254	358	70.9				
Menstrual problems							
Yes	27	33	81.8	1.68 (0.68–4.14)	0.258	-	-
No	479	658	72.8				
Satisfied with parental relationships							
Yes	438	599	73.1	0.93 (0.55–1.55)	0.773	-	-
No	58	81	71.6				
Vaccinated for hepatite B							
Yes	338	464	72.8	0.96 (0.61–1.51)	0.860	-	-
No	85	118	72.0				

OR: Odds ratio; OR[a]: Adjusted odds ratio; *Minimum wage in Brazil at the time of this survey was BRL R$ 380 / USD $ 100.

Conflict of interests

The authors declare no conflict of interests.

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Analysis of database about vaccination against human papillomavirus in Sergipe in 2014

Análise do banco de dados referente à vacinação contra papilomavírus humano no estado de Sergipe no ano de 2014

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ABSTRACT

Introduction: The development of the Human papillomavirus vaccine has created the possibility of action at the primary level for the prevention of cervical cancer and precancerous lesions. **Objective**: To analyze the data obtained by the introduction of the vaccine against papillomavirus in the state of Sergipe, quantifying the sampling population of girls met in 2014 and quantify the hit target by each micro-region of the state. **Methods**: Cross-sectional analysis, descriptive with retrospective component, using only secondary data from the Health State Department - Sergipe, concerning the vaccination coverage of vaccine against human papillomavirus from March 2014 to December 2014 in 11 to 13-year-old girls. Wilcoxon test was used for mean differences in the paired regions, ages and both. **Results**: In the analysis of the study period, a total population of 11 to 13-year-old girls, 61785 received the first dose of the vaccine (D1), reaching a 103.25% coverage and, 30,561 of these received the second dose of vaccine, resulting in a 56.26% coverage. In all analyzed regions decreasing doses applied between the first (D1) and the second dose (D2) were found. In this analysis, the confidence interval to 95% were all small and all data were analyzed statistically significant at $p<0.001$. **Conclusion**: All micro-regions reached the vaccination goal of the State Departament of Health in the application of the first doses and two of them were above the national average. However, none reached the target in the second dose, four micro-regions were below the national average and tree above. The age group of 12 years was the only one to not reach the goal neither in the first nor in the second dose.

Keywords: public health; papillomaviridae; vaccine.

RESUMO

Introdução: O desenvolvimento da vacina contra o Papilomavírus humano criou a possibilidade de agir a nível primário na prevenção de câncer cervical e lesões pré-cancerosas. **Objetivo**: Analisar os dados obtidos através da instituição da vacina contra o Papilomavirus no estado de Sergipe, quantificando amostralmente a população de meninas atendidas no ano de 2014 e quantificar a meta atingida por cada microrregião do estado. **Métodos**: Análise de corte transversal, descritiva, com componente retrospectivo, utilizando-se exclusivamente dados secundários provenientes da Secretaria Estadual de Saúde - Sergipe, referentes à cobertura vacinal contra o papilomavirus humano no ano de 2014 em meninas de 11 a 13 anos de idade. Foi utilizado o teste de Wilcoxon para diferenças de médias pareadas nas regiões, nas idades e em ambos. **Resultados**: No período de análise do estudo, de uma população total de meninas na faixa etária de 11 a 13 anos, 61.785 receberam a primeira dose da vacina (D1), atingindo uma cobertura de 103,25% e destas, 30.561 receberam a segunda dose da vacina gerando uma cobertura de 56,26%. Em todas as regiões analisadas foram encontradas diminuição de doses aplicada entre a primeira (D1) e a segunda dose (D2). Nesta análise, o intervalo de confiança para 95% foram todos pequenos e todos os dados analisados foram estatisticamente significantes com $p<0,001$. **Conclusão**: Todas as microrregiões atingiram a meta de vacinação da Secretaria Estadual de Saúde na aplicação das primeiras doses, duas delas ficaram acima da média nacional. No entanto, nenhuma atingiu a meta na segunda dose, quatro microrregiões ficaram abaixo da média nacional e três acima. A faixa etária de de 12 anos foi a única que não alcançou a meta vacinal nem na primeira, nem na segunda dose.

Palavras-chave: saúde pública; papillomaviridae; vacina.

INTRODUCTION

Cervical cancer has caused thousands of premature deaths in women, especially in those of lower socioeconomic status, being considered the most common sexually transmitted disease (STD) around the world[1].

The discovery of the human papillomavirus (HPV) vaccine has created the possibility of action at primary level for the prevention of cervical cancer and precancerous lesions. The two available HPV vaccines have markedly reduced the incidence of cervical intraepithelial neoplasias, genital warts and cervical cancer throughout the world[2,3].

The Human Papillomavirus (HPV) has more than 100 subtypes and about 20 of these can infect the genital tract. HPV includes a family of DNA viruses that infect basal epithelial cells, causing benign and malignant lesions of the skin and mucosae of the anogenital and upper aero-digestive tract. They are divided into two groups. In the first one are the subtypes that, when associated with other risk factors, are related to the development of intraepithelial neoplasia of the cervix, vulva, penis, vagina and anal area. In the other group are low oncogenic potential subtypes, which are associated with the appearance of benign infections considered as condyloma acuminata[4-6].

Besides cervical cancer, HPV infection is also associated with 90% of anal cancers, over 60% of some types of oropharyngeal cancers and 40% of cancers of the vagina, vulva and penis cancer[7,8].

The recognition of HPV as the primary etiological factor of cervical neoplasia began in the 70s by the German scientist Harald zur Halsen, and this finding was considered one of the most important scientific discoveries, but it was from the 20's that was observed the association of cutaneous warty lesions or mucous membranes with an infectious agent[9].

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Prophylactic HPV vaccines have been developed since 1993, aiming to reduce infection and incidence of cervical cancer. After its approval, a great debate was raised in relation to the risks and benefits of this new way of preventing both the scientific community and the media[10,11].

Three types of vaccine have already been approved: In 2009, the bivalent (HPV 16/18); the quadrivalent (HPV 6/11/16/18) in 2006 and most recently in 2014, in the United States, the ninevalent (HPV 6/11/16/18/31/33/45/52/58), with aproximately 90% of cervical and other HPV-related cancers and precancers potentially being avoided. All are composed by particles similar to the viruses known in English as "like particles viruses" (NPV), which produce copies of the virus' structural protein and are capable of inducing the production of antibodies[12,13].

The Brazilian Ministry of Health adopted, in 2014, the quadrivalent HPV vaccine as a preventive measure, but not therapeutic. The main objective is not the eradication of screening cervical cancer, because the vaccine does not provide protection against all oncogenic HPV subtypes or against other STDs[14]. Initially, the vaccine was applied on teenage girls between 9 and 14 years. However, from January 2017 this scenario changed; the Brazilian Ministry of Health started to offer the vaccine for boys aged between 12 and 13 years, fulfilling the recommendation given by several respected scientific societies such as the Brazilian Societies of Pediatrics, Immunology and Of Obstetrics and Gynecology, among others, in order to protect against penile cancers, throat and anus, also related to HPV[15,16].

OBJECTIVE

To Analyze the data obtained by the introduction of the vaccine against papillomavirus in the state of Sergipe, quantifying the sampling population of girls met in 2014 and to quantify the hit target by each micro-region of the state.

METHODS

This study is a cross-sectional analysis, descriptive with retrospective component, using only secondary data from the Health State Department - Sergipe.

The used data refer to the immunization coverage with the HPV vaccine in the state of Sergipe in the period from March 2014 to December 2014 in 11 to 13-year-old girls. These data were collected in State Management of Vaccine-Preventable Diseases and Immunization of the State Health Departament, through the request of required variables for analysis. Procedures for analysis have been approved by the Research Ethics Committee.

The coverage (dose / population) was stratified by region (Aracaju, Estância, Itabaiana, Lagarto, Nossa Senhora da Glória, Nossa Senhora do Socorro and Propriá), by dose (1 and 2 doses, respectively D1 and D2) and by age (11, 12 and 13 years). Coverage was described by average, confidence interval (95%), stratified by dose, age and both.

Wilcoxon test was used for differences in average pairwise (D1 and D2) in regions, in ages and both. The software used was R Core Team (2015) and the significance level was 5%.

RESULTS

In the analysis of the study period, a total population of 61.785 girls aged 11 to 13 years received the first dose of the vaccine (D1), reaching a 103.25% coverage of the expected target; among these, 30.561 received the second dose of the vaccine against HPV, generating a 56.26% of the expected coverage. When the comparison is made by dividing the areas of the state into seven regions (Aracaju, Lagarto, Estância, Itabaiana, Nossa Senhora da Glória, Nossa senhora do Socorro and Propriá), one realizes that all municipalities have achieved the target for D1, but, when looking at D2, it's noticed that in none the target set for vaccination coverage in statistically significant analysis with $p<0.001$ was achieved (**Table 1**).

Considering all seven regions and the first dose of the vaccine (D1), Nossa Senhora do Socorro was the micro-region that presented the greatest coverage with 115% (95%CI 1.05–1.24). On the second dose (D2), the average coverage of all micro-regions was below the target, being Lagarto the micro-region with the worse average coverage of 56% (95%CI 41–71). Comparing to national data, it was observed that two micro-regions (Estância and Nossa Senhora do Socorro) presented coverage above the national average (108.35%) on first dose (D1), and other regions, despite reaching the target, were below average. On the seond dose (D2), four micro-regions (Aracaju, Estância, Itabaiana e Lagarto) were below the national average (70.68%) and tree of them (Nossa Senhora da Glória, Nossa Senhora do Socorro e Propriá) were above the average, of which Propriá presented greater coverage 76% (95%CI 0.69–0.84); however, as well as the others, it did not reach the target for the second dose (D2).

Through the **Figure 1**, the regions of Aracaju, Estância, Itabaiana, Lagarto, Nossa Senhora da Glória and Nossa Senhora do Socorro had in some places a goal above the expected but failed to raise the average in the region. In the municipalities of Itabaiana and Lagarto region we found Health Centers where the average was much lower than the expected. In the municipalities of the Estância region and Nossa Senhora do Socorro it was observed that in Health Centers the average was well above expectations (**Graphic 1**).

When the variable analyzed is the age range of 11 to 13 years among girls served by the National Program of the Ministry of Health

Table 1 – Average HPV vaccine coverage among girls aged 11 to 13 years, distributed per dose between the municipalities of Sergipe.

	Coverage		p-value
	D1 Average (95%CI)	D2 Average (95%CI)	
Aracaju	1.04 (0.94–1.14)	0.62 (0.46–0.78)	<0.001
Estancia	1.09 (0.98–1.19)	0.65 (0.53–0.77)	<0.001
Itabaiana	1.05 (0.94–1.16)	0.64 (0.49–0.78)	<0.001
Lagarto	1.08 (0.96–1.19)	0.56 (0.41–0.71)	<0.001
Nossa Senhora da Glória	1.00 (0.93–1.07)	0.74 (0.58–0.89)	0.001
Nossa Senhora do Socorro	1.15 (1.05–1.24)	0.73 (0.61–0.84)	<0.001
Propriá	1.00 (0.94–1.07)	0.76 (0.69–0.84)	<0.001

95%CI: confidence interval to 95%; Wilcoxon's test; HPV: human papillomavirus; D1: vaccine's first dose applied; D2: second dose applied. Source: State Health Secretariat of Sergipe.

Immunization, crossing with the average of the applications of the first and second dose, it is found that the average of the second dose, 0.72 (11 years), 0.59 (12 years) and 0.74 (13 years), are lower than the average of the first dose, with values of p<0.001. The age of 12 was the only one to not reach the goal neither in the first norn in the second dose, with 0.93 and 0.59, respectively (**Table 2**).

For a better visualization of the data, from the construction of Epimaps that demonstrated vaccine coverage in the first and second doses in each municipality where the covers are shown in color (the color red represents those municipalities that were far below the target, the orange municipalities that have reached between 50 and 100% of the target, the lighter green municipalities that have reached between 100 and 150% of the average, and the dark green ones that reached from 150 and 200% of the expected coverage target for the city), it can be noticed the significance of the decline in application rates between D1 and D2 (**Figure 2**).

DISCUSSION

In this study, vaccine coverage against human papillomavirus (HPV) was evaluated in 11 to 13-year-old girls in the state of Sergipe, located in the northeastern region of Brazil. A total of 61.785 girls received the first dose of the vaccine (D1) and of these, 30.561 received the second dose against the human Papillomavirus. Thus, in the application of the first dose after the vaccine's launch in the National Immunization Program of the Ministry of Health, the state of Sergipe reached a coverage of 103.25% compared to the target. However, in the second dose, no region of the state reached the established goal, and the mean state was 56.26%, that is, only about half of the girls who took the first dose returned to their health units to take the second (Source: State Health Secretariat of Sergipe).

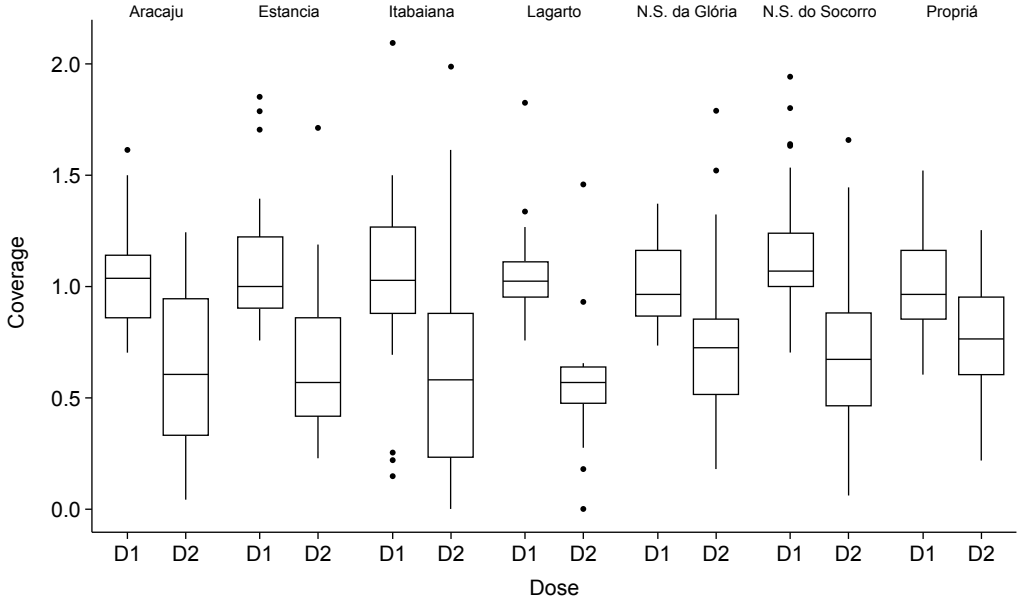
In the region encompassing the state capital, Aracaju, for example, the average coverage of HPV vaccine application in the first dose reached 104% (95%CI 0.94–1.14) and in the second dose the mean was of only 0.62% (95%CI 0.46–0.78) (**Table 1**). When the analysis correlated coverage versus dose by region, the results were not different, and once again showed that there was a decrease in the number of vaccine doses applied at D1 and D2 in all regions. Although some municipalities had a higher total dose applied than their region's average, it was not able to raise the region's average, as the case of Estância and Nossa Senhora do Socorro (**Graphic 1**).

In the analysis of D1 and D2 related to the age of the girls who received the doses, the same result was found and once again a decrease in the number of doses applied in D2. At age 11, the mean D1 was 1.11 and in D2 the mean dose applied was 0.72. At the age of 12, this mean fell from 0.93 to 0.59, and at the age of 13 years, from 1.13 at D1 to 0.74 at D2 (**Table 2**). Graph 2

Table 2 – Average of HPV vaccination coverage among girls aged 11 to 13 distributed by the age group in the state of Sergipe.

Age	Coverage		p-value
	D1 Average (95%CI)	D2 Average (95%CI)	
11	1.11 (1.05–1.17)	0.72 (0.63–0.81)	<0.001
12	0.93 (0.88–0.98)	0.59 (0.52–0.66)	<0.001
13	1.13 (1.07–1.19)	0.74 (0.66–0.83)	<0.001

95%CI: confidence interval to 95%; Wilcoxon's test; HPV: human papillomavirus; D1: vaccine's first dose applied; D2: second dose applied.
Source: State Health Secretariat of Sergipe.



HPV: human papillomavirus; D1: vaccine's first dose applied; D2: second dose of the vaccine.
Source: State Health Secretariat of Sergipe.

Figure 1 – Box Plot of the average HPV vaccine coverage among girls aged 11 to 13 years in the main cities of the state of Sergipe.

also shows the analysis of the relationship between doses one and two in a map of the state of Sergipe, showing the regions that exceeded the target, those that reached and those that were below the target. In this map it is possible to visualize well, through color differentiation, how much of it lost in dose applications from D1 to D2 (**Graph 2**).

This low demand for the second dose may have occurred due to several factors already mentioned in other studies, such as the lack of knowledge about the vaccine, the resistance of parents, especially of the mothers in getting their daughters to receive a vaccine that avoids pathologies related to early sexual life, as well as the negative influence of some communication vehicles, such as when possible side effects were reported after the vaccine was administered to girls in the south of the country[17,18].

In a recent report by Veja magazine, the national incidence of HPV vaccination was low. The magazine released data from the state of São Paulo, where a survey by the State Health Department showed that only 60% of the girls in the target audience would have received the second dose of the vaccine, while in the first dose 100% coverage was achieved. According to the magazine, experts explained that the low numbers could be explained by the following factors: lack of preparation of health professionals and schools participating in the campaign, lack of adequate information about the efficacy and safety of the vaccine for parents and adolescents, the association of HPV with the onset of sexual life and the negative view caused by possible adverse effects suffered by some girls in the coast of the state of São Paulo when receiving the second dose of the vaccine[17, 19]. Most of these facts have been proven in studies, such as Stokley et al.'s[20, 21].

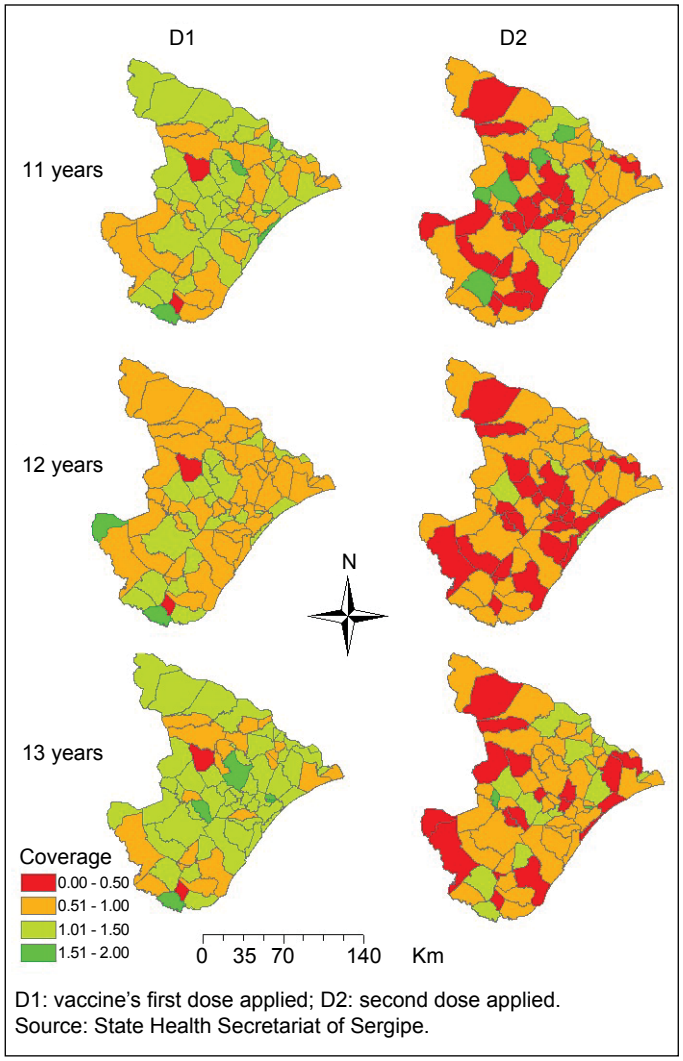


Figure 2 – Map of Vaccine coverage in the state of Sergipe in the year 2014.

Studies have shown that HPV vaccines are an effective way of preventing the pathologies associated with HPV infection[20]. However, despite this evidence and the advertisements made by the Brazilian government and other countries that have adopted the vaccine, recent studies have shown that vaccination rates have not been satisfactory[20,22].

Stokley et al. estimated HPV vaccine coverage between 2007 and 2013 in the United States. Data from this study showed that vaccine doses increased over the years, but coverage remained low in the equivalent period. Among the reasons parents pointed out to not vaccinate their daughters was the lack of knowledge about the vaccine, mainly because they did not find it necessary, due to the possible side effects, because they had not received recommendations or their daughters were not sexually active[20].

In another qualitative study conducted in the United States, Mullins et al. conducted interviews with 11 to 12-year-old girls who received the first dose of the vaccine, their mothers and their doctors. The girls answered questions about HPV and the HPV vaccine, HPV-related risk perceptions and other STIs, sexual behavior, and the influence of mothers, the media, and physicians on perceptions about HPV and vaccine. The mothers answered about the vaccine and about HPV and how it was communicating with their daughters. The doctors answered the knowledge about the vaccine and the attitude towards communicating with the girls and their mothers. Over thirty months, four interviews with the same group occurred, and the study's conclusion was that greater knowledge about HPV vaccines for both mothers and daughters was linked to more accurate perceptions among girls and that the girls' doctors could play an important role in providing education on HPV vaccines for mothers and daughters[23]. Gilkey et al. also analyzed the importance of primary care and the physician's role in discussing with their patients and their mothers, but this would take time to occur and communication strategies about the subject with this audience would still have to be developed. Doctors in this study indicated less HPV vaccine than other vaccines of adolescence[24].

Vaccines against oncogenic types of HPV offer a great potential for primary prevention of the lesions caused by these viruses[25].

Many studies have already enthusiastically pointed out the role of prophylactic vaccines in reducing cervical cancer[26,27]. The prevention of HPV lesions, such as cervical cancers and genital warts, has an impact on the morbidity and mortality associated with these diseases. It has also been shown that both HPV vaccines prevent, in addition to cervical cancer, other types of HPV-related cancers, with moderate to high efficacy[28].

Cervical cancer prevention programs can be effective in reducing the incidence of disease and its mortality when the diagnosis is early, but these measures are difficult to implement in places where resources are scarce. Therefore, HPV vaccines should gain more space because it is estimated that if there is complete vaccination of the population, cases of cervical cancer can be reduced by two-thirds[29]. Since Brazil has already good immunization experiences, it seems to be possible to implement the HPV vaccine as an efficient way to prevent HPV-associated pathologies[30].

Another point to be raised is in relation to the non-viral vaccine, which covers viral types 16/18/31/33/45/52/58 and has already shown in studies a significant increase in the impact on the prevention of HPV lesions in a four-year-old vaccine, which may lead to it being a cost-effective alternative to the quadrivalent vaccine[31].

CONCLUSION

The regions managed to reach the vaccination goal of the State health department in the application of the first doses, but the same did not occur six months after, when the second doses should be given.

The micro-regions of the State of Sergipe reached the vaccination targets at the first dose, which did not happen at the second dose of vaccination.

Girls with age range of 12 years old did not reach the vaccination target in any of the doses.

The micro-region with greater coverage on D1 was Nossa Senhora do Socorro and on D2 was Propriá.

Confiict of interests

The authors declare no conflict of interests.

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Health and sexuality: conceptions and practices of teenage students in Juiz de Fora, Minas Gerais

Concepções e práticas sobre saúde e sexualidade de estudantes adolescentes em Juiz de Fora, Minas Gerais

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ABSTRACT

Introduction: The adolescence is a process marked by vertiginous biopsychosocial changes, being related to the formation of personality and sexual manifestations. These factors, added to disinformation and the social context in which adolescents are inserted, expose them to a greater vulnerability to Sexually Transmitted Diseases (STD), a condition that deserves a special attention from public health policies. **Objective:** The objective of this study is to outline the sociocultural profile of adolescents and their relationship with STD awareness, in addition to collaborate to a healthy sexual behavior. **Methods:** The cross-sectional and descriptive observational study used a sample of 489 students from the 9th grade of 18 municipal public schools in the city of Juiz de Fora, Minas Gerais State, and applied a semistructured questionnaire with a posterior analysis of the collected data. Furthermore, educational lectures were promoted by using audiovisual resources and musical presentations performed by medicine students from Federal University of Juiz de Fora (*Universidade Federal de Juiz de Fora* – UFJF). **Results:** Results indicate insufficient knowledge and social responsibility among adolescents against the difficulties that the practice of sexuality imposes, besides factors that potentially contribute for the vulnerability of young people. In that context, although 26.2% of adolescents have already began their sexual life, the rate of 81.3% of condom use is unsatisfactory. Moreover, only 37.4% declared themselves to be entangled in the school environment and 61.5% reported full social acceptance, which suggests the necessity of chasing acceptance through sexual permissiveness behavior. Also, it is worth mentioning the use of licit drugs of 15.3%. **Conclusion:** The study shows that, despite their sexual initiation, adolescents' knowledge about STD is unsatisfactory, exposing, thus, their need to be perceived as vulnerable in the context of public health policies. Carrying out activities at school is a strategy to stimulate their well-being in the experience of sexuality.

KEYWORDS: sexually transmitted diseases; sexual education; adolescents; health promotion.

RESUMO

Introdução: A adolescência, fase de vertiginosas transformações biopsicossociais, está intrincada à formação da personalidade e às manifestações sexuais. Esses fatores, somados à desinformação e ao contexto social no qual estão inseridos, expõem os adolescentes a uma maior vulnerabilidade às doenças sexualmente transmissíveis (DST), condição que merece especial atenção das políticas públicas de saúde. **Objetivo:** O estudo visa traçar o perfil sociocultural dos adolescentes e sua relação com o conhecimento destes acerca das DST, além de incentivar práticas sexuais seguras. **Métodos:** O estudo observacional transversal e descritivo utilizou amostra de 489 estudantes do 9º ano de 18 escolas públicas municipais da cidade de Juiz de Fora, Minas Gerais, sendo realizadas aplicação de questionário semiestruturado e posterior análise dos dados obtidos. Além disso, foram efetuadas palestras educativas e apresentação musical pelos discentes do curso de Medicina da Universidade Federal de Juiz de Fora (UFJF). **Resultados:** Os resultados apontam para conhecimento e responsabilidade social insuficientes dos adolescentes diante dos desafios que o exercício da sexualidade impõe, além de fatores potencialmente contribuintes para a vulnerabilidade dos jovens. Nesse contexto, apesar de 26,2% já terem iniciado sua vida sexual, o índice de 81,3% deles usando preservativos é insatisfatório. Além disso, apenas 37,4% declararam-se enturmados no ambiente escolar e 61,5% relataram aceitação social completa, sugerindo a necessidade de busca de aceitação por comportamentos de permissividade sexual. Destaca-se ainda o uso de drogas ilícitas de 15,3%. **Conclusão:** O estudo mostra que, apesar de iniciada a vida sexual, o conhecimento dos adolescentes é insatisfatório acerca das DST, expondo, assim, a necessidade de estes serem encarados como vulneráveis no âmbito das políticas públicas de saúde, sendo a realização de atividades na escola uma estratégia estimuladora do bem-estar na vivência da sexualidade.

Palavras-chave: doenças sexualmente transmissíveis; educação sexual; adolescente; promoção da saúde.

INTRODUTION

Adolescence, defined by the World Health Organization (WHO) as the period of life between 10 and 19 years of age[1], is, more than an age group, a process marked by vertiginous biopsychosocial transformations. This phase of transition between childhood and adulthood, in the view of Critical Social Psychology, is institutionalized and reified by society as a stage of emotional instability and rebellion, factors that potentiate important public health vulnerabilities.

In the aforementioned scenario, it is noticed that the personality of the adolescent is intricate to their biological maturation and to sexual manifestations. However, we must also perceive the social scope that each person at this stage assumes during the practice of their sexuality, since this knowledge is not restricted to that of the body itself as a physical element, nor to that of the sexual act itself[2]. This understanding should be extended to the meaningful use of the information they have on the prevention of sexually transmitted diseases (STDs) and contraceptive methods and condoms.

In this context, some research denounces the ignorance mentioned above. These studies indicate that most adolescents are unaware of the possibility of STD transmission through oral sex, vertical transmission and breast milk[3]. In addition, a quantitative analysis performed among low-income adolescents in Ribeirão Preto, São Paulo,

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revealed that many were unaware of prevalent diseases, such as syphilis (35.6%) and gonorrhea (30%)[4]. In Pelotas, Rio Grande do Sul, the general knowledge about the forms of prevention is 41.4% among females and 51.4% among males. This research shows, for example, the fact that 47.5% of 8th and 9th grade girls believe that contraceptive pill use is a method of STD prevention[5].

The knowledge on STDs, however, does not guarantee the full use of condom methods since the first sexual intercourse. Analyzing chronologically, one can see how old this matter is. A comparative study[6] on Brazilian sexual behavior between 1998[7] and 2005[8] revealed an increase in the rate of condom use in the first intercourse between the different age groups, except in those who started sexually before 14 years of age. In these cases, the drop in use was 54.4% to 26.6% in the above mentioned period of seven years — mainly among young people who started their sexual life in a casual relationship, whose decline was from 51.9% to 17.6% —, justified by this age group due to the trust in their partners, the unpredictability of the relationship or, simply, due to not liking to use the condom[9].

These data point to a delay in the emergence of social responsibility, which, among other factors, is related to the precocity of the sexarch, scored by the WHO between 12 and 17 years of age[1]. In this way, an anachronism between the first sexual relation and the responsibility that it demands is evident. In addition, these factors contribute to the myriad of vulnerabilities that are clearly presented in epidemiological studies. According to the Joint United Nations Programme on HIV/AIDS (UNAIDS), half the new contaminations by human immunodeficiency virus (HIV) in the world affect young people between 15 and 24 years of age and the lowest rates of condom use occur between 15 and 19 years of age[10].

This sort of vulnerability is not only conditioned by individual risk behaviors but also by a variety of factors — social, political and economic ones. This fact expresses the multidimensional nature of this phenomenon, which is related to aspects such as knowledge gap, identity search, invulnerability sensation, poor educational system, poor quality of health services offered to this age group and the stimuli from the media. Added to these factors is the incipience in how the body functions, difficulty accessing contraceptive means, lack of perspective and hostile family environment, which are among the many considerations for such alarming data[11].

Thus, it is evident that, when premature and uninformed, the sexual life of young people is a concern for parents, teachers and health professionals, as well as a public health issue. In this context, a good alternative is the extension of the health service to the educational environment with the intention of providing a consistent knowledge capable of providing safer and healthier sexual behavior. The importance of this action is evident when we consider that a great part of the adolescents, despite knowing the methods, do not understand their importance, according to a research conducted in 2015 with pregnant women under 19 years of age enrolled in a Family Clinic of Rio de Janeiro[12].

It should be noted, therefore, that the school should be considered a privileged place to approach the theme, since, besides the potential access to a large number of young people, it allows greater proximity to the adolescent environment[13,14]. At school level, the health demands of young people tend to be even more pronounced than in health services[15]. In addition, sex education and STD/HIV programs for school-based youth have been effective in a number of countries, including Brazil[13].

Faced with the realities exposed, the demand for projects to promote adolescent sex education becomes unquestionable. Thus, the importance of measures such as that proposed by the *Saber Viver* project is evident.

OBJECTIVE

To draw up an epidemiological profile, collecting information about young people's knowledge on STD prevention, to guide sex education strategies in the field of public health promotion in Juiz de Fora. In addition, it aims to assist local public policies by outlining the profile of young people of Juiz de Fora regarding sexual health behaviors and knowledge.

METHODS

The present study was developed jointly with the university extension project *Saber Viver*, Federal University of Juiz de Fora (*Universidade Federal de Juiz de Fora* – UFJF), which promotes educational lectures in municipal schools in Juiz de Fora, Minas Gerais. The population of the city estimated by the Brazilian Institute of Geography and Statistics (IBGE), in 2017, is 563,769 inhabitants, with 62,160 (11%) between 10 and 19 years old; and it has 102 municipal schools, where 1,528 students are enrolled in Elementary School[16].

18 municipal schools were visited and 489 students between 13 and 18 years old were approached, from March 2013 to October 2017. The target audience were students of the 9th year of elementary school, a phase that concentrates the age group of 14 to 16 years in which, for the most part, the sexual life of Brazilians begins[17].

The 30-45 minute events utilized impactful audio-visual resources and provided students with information on major STDs, family planning and prevention methods.

Considering that the effectiveness of the action depends on the commmitment and motivation of young people[15], a presentation of musical parodies developed by the academics accompanies each lecture, approaching the related theme in a playful and engaging way. In this sense, the effectiveness of the *Saber Viver* project is expressed in the researches by Kirby *et al*., which shows that most effective interventions in sexual education around the world include interactive activities[13].

At the occasion of the educational events, a structured questionnaire was applied for the collection of information, including demographic and socio-cultural characterization, psycho-affective behavior and qualitative evaluation of the lectures.

The present study was approved by the Human Research Ethics Committee of UFJF (opinion 188.819; Presentation Certificate for Ethical Appreciation (CAAE) 07929912.3.0000.5133).

RESULTS

The partial results of the ongoing research allowed us to outline a biopsychosocial profile of adolescent students with a focus on sexual health. Data related to this profile are expressed in **Tables 1, 2** and **3**.

Table 1 presents factors whose variables influence the sexual behavior of young people, such as drug use and smoking — which are present in 42.9% of the interviewees. This prevalence is also related to school

interaction rates, extracurricular activities and social acceptance. In the study population, only 37.4% of the respondents report being completely entangled in their environment, corroborated by the 39.5% who declared complete social acceptance. Another relevant fact, in this sense, is that 40.2% of respondents reportedly do not practice any extracurricular activities, whether related to studies, sports, language or music.

Table 2, on the other hand, shows how the psychoactive behavior can influence the epidemiological data of young people affected by STD, since it presents the sexual conduct of the interviewees. In relation to the onset of the appearance of male and female reproductive traits (ejaculation and menstruation), we can observe the average age of 12.1 and 11.5 years, respectively. This factor is directly related to the percentage of young people who have started sexual activity (26.2%), and the mean age at onset is 14 years.

Another relevant data regarding **Table 2** is the unsatisfactory average rate of contraceptive use, especially in men (64%), of 75%. Of these, 81.3% reported having used condoms. None of the interviewees contracted any type of STD. In addition, 4.7% have reported getting someone pregnant or getting pregnant, and of these, 16.7% have already performed abortions.

Analyzing **Table 3**, we can observe the considerable percentage (72.6%) of students who stated that they only know in a reasonable way the subjects presented, since it emphasizes the relevance of the lectures. The importance of these can also be observed in the 2.5% who claimed to know nothing about the subject under discussion. About the sources of knowledge on the subject, most (65%) stated multiplicity — a combination of information coming from family, school, colleagues and even independent searches.

This table also shows the positive evaluation received by the presentation, as can be observed in the 95.3% who evaluated the meeting with a score higher than seven — with 80.6% of scores 9 or 10.

Table 1 – Demographic characterization.

Demographic characterization	n	%
	n=489	
AGE	**14.7±1.3**	
Gender		
Male	217	44.4
Female	272	55.6
Use of drugs		
Smoking	27	5.5
Medicine without prescription	128	26.2
Marijuana	62	12.7
Other illicit drugs	8	1.6
None	279	57.1
Declared race		
White/Caucasian	195	39.9
Brown	187	38.2
Black	89	18.2
Other	12	2.5
Not declared	6	1.2
Physical activity		
Yes	279	57.1
No	167	34.2
Not declared	43	8.8
Financial provider		
Mother	101	20.7
Father	63	12.9
Both	291	59.5
Grandparents	11	2.2
Not declared	23	4.7
School interaction		
Entangled	183	37.4
Some friends	227	46.4
Outcast	17	3.5
Not declared	62	12.7
Extracurricular activities		
Study	114	23.3
Sport	121	24.7
Language	47	9.6
Music	47	9.6
None	197	40.3
Not declared	20	4.1
Social acceptance		
Always	301	61.6
Sometimes	124	25.4
Never	12	2.5
Not declared	52	10.6

DISCUSSION

The vulnerability of adolescents to sexual experience is clearly demonstrated in national and international epidemiological studies, and it is also observed in the municipal schools of Juiz de Fora. Despite the fact that most of the students reported prior knowledge about a large part of the lectures (92.6%), there were some worrisome results regarding sexual health, which reinforces the need and importance of educational activities directed to this age group .

In the present study, of the 489 interviewees, 128 young people (26.2% of those surveyed) reported having started sexual activity. The data presented a relative discrepancy between the genders, which is in line with recent researches[17]: 15.3% of the boys versus 10.8% of the girls have already started their sexual life. For men, this can be explained by several factors, especially cultural ones, such as the requirement of proof of their virility with several partners, since this stage promotes the rise to an adult social status[18]. Of women, however, the opposite is demanded: a monogamous life and sexual abstinence before marriage[18,19].

Although none of these reported STD contamination and condom use increased between 1998 and 2005[6-8], there was an unsatisfactory condom use rate (81.3%), especially of condoms, mainly among males (78.7%), which is in line with the regularity observed in previous studies[20]. It is also important to point out that, according to Juarez et al., there is a discrepancy in the use of condom between private and public schools, with less use among the latter[21].

In developing countries, such as Brazil, accelerated demographic transitions, growing backwardness in marriage age, increasing propensity for prenuptial sexual relations, and a steady decline in the age of sexual initiation are factors that contribute to the unplanned pregnancy rates[17]. In the sample studied, the mean age of sexual initiation was 14 years, which corroborates data on the Brazilian population, in which sexual life starts between 14 and 16 years old[1]. This statistic exposes these adolescents to the risk of not using condoms, once their reduced use is observed in adolescents who started sexually before age 15, according to Narring et al.[22]. Early pregnancy, in turn,

was reported by 4.7% of respondents, given that it is comparatively lower than that of the United Nations Population Fund (UNFPA), which indicates a rate of 6.5% of pregnancy in adolescence (15 to 19 years) among Brazilian women — the largest in South America, tied with Suriname and Peru[23].

In the sociocultural characterization of the interviewees, some factors considered as contributing to the vulnerability of young people to sexual health were observed[18]. Only 35.4% declared themselves to be entangled in the school environment and 61.3% reported complete social acceptance, which may suggest the need to seek acceptance through risky behaviors and sexual permissiveness. In addition, low rates of extracurricular activities (38.1% do not perform any) and physical exercises (only 26.4% declared out-of-school sports practice), while the declared use of illicit drugs reached 15.3%. These absences of occupation and accompaniment greatly contribute to early, disoriented and unprotected sexual initiation.

Adolescence, therefore, requires a greater focus on the development of health promotion actions, besides the integrated attention of the school, the family and health professionals, especially in the context of STDs and early pregnancy. As it is submitted to the greater exposure to situations of risk, as it happens today, the adolescent must be seen as vulnerable in the scope of public health policies[14].

According to the Ministry of Education, conducting activities at school with health professionals is a broad strategy for disseminating information about sex education[14]. In this sense, educational actions have attracted attention to the importance of sexual health through an innovative approach that arouses students' attention and essential interest in knowledge, with their active participation, which evaluated the lecture with excellence — 80.6% of the young viewers attributed scores 9 or 10. Thus, it is noted that the *Saber Viver* project promotes the sensitization of the young person, besides stimulating security and well-being in the experience of sexuality.

Regarding the location of the topic, the school is considered privileged, since, in addition to the potential access to a large number of young people, it allows greater proximity to the adolescent environment[13,14]. In this sense, according to a 2015 research published by Constantine et al., it is indicated that an intervention based on integrated theories of human rights, gender equality and healthy sexual development can affect precursors of healthy sexual behavior in this age group present in the school environment[24].

In addition to the aforementioned factors, there is an increase in the number of STDs contaminated ones recently. The recent Syphilis Data Bulletin, for example, indicates the sudden increase of this disease in Brazil, with a growth of 28% in 2017, especially in the Southeast Region[25]. This number can be reduced with the education and awareness of young people. In this way, we can highlight how learning in the school environment should be complementary to that of the family environment, in which a large number of children can be brought up by only their mothers (20.7%), parents (12.9%) or grandparents (2.2%) — another factor that may indicate vulnerability.

It is concluded, therefore, that, in view of the data obtained by the *Saber Viver* extension project, it is necessary to redirect public health

Table 3 – Evaluation of the event.

Evaluation of the event	n=489	
	n	%
Score for the presentation		
10 or 9	394	80.6
8 or 7	72	14.7
6 or 5	12	2.5
4 or 3	5	1.0
Not declared	6	1.2
How much did you know about the subject?		
Almost everything	98	20.0
Some of it	355	72.6
Nothing	12	2.5
Not declared	24	4.9
You learned what you already knew:		
At home	68	13.9
At school	47	9.6
With friends	15	3.1
Alone	25	5.1
Many of the above	319	65.2
Not declared	15	3.1

Table 2 – Psychoaffective behavior.

Psychoaffective behavior	♂	%	♀	%	n= 489	
					Total	%
Have you ever liked someone?	175	35.8	243	49.7	418	85.5
Have you ever dated someone?	112	22.9	143	29.2	255	52.1
Age of first ejaculation or menstruation (years)	11.5±1.16		12.1±1.41		11.8±1.35	
Have you engaged on sexual activity yet?	75	15.3	53	10.8	128	26.2
Age you started	13.7±0.99		14.3±0.43		14±0.86	
How did you feel?						
Well	59	78.7	41	77.4	100	78.1
Bad	2	2.7	9	17.0	11	8.6
Not declared	14	18.7	4	7.5	18	14.1
Did you use any contraceptive method?	48	64.0	48	90.6	96	75.0
Have you ever used a condom?	59	78.7	45	84.9	104	81.3
Number of partners	2.97±3.01		1.59±0.92		2.28±1.94	
Have you ever been contaminated by an STD?	0	0.0	0	0.0	0	0.0
Have you ever gotten pregnant or gotten someone pregnant?	2	1.6	4	3.1	6	4.7
Have you ever had an abortion?	0	0.0	1	25.0	1	16.7

STD: sexually transmitted diseases.

policies with regard to STD prevention. After all, as already shown, the supply and demand for knowledge about sexuality are out of date, since the onset of sexual life occurs before schooling on the subject, being essential the activity of the project to bring health to the educational scope, expanding instruction and responsibility in student health practices.

Conflict of interests

The authors declare no conflict of interests.

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Marked on the skin: dermatological lesions in HIV/AIDS patients: an integrative review

Marcados na pele: lesões dermatológicas em pacientes HIV/AIDS: uma revisão integrativa

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ABSTRACT

Introduction: Knowledge of professional practice is relevant to provide studies concerning the integral assistance to persons living with HIV/AIDS. This knowledge aims at a differential care that meet the needs of each patient and confidence in procedures, elucidating doubts on the drug treatment and appropriate care of each type of skin lesion that may arise during their lives, allowing greater awareness of their health, mainly concerning the stigmatization of the scars marked on their skin. **Objective**: To know the skin lesions described in scientific articles affecting the HIV/AIDS patients. **Methods**: Integrative review with research into MEDLINE, *Biblioteca Virtual em Saúde* and Scientific Eletronic Library Online databases' articles between 2010 and 2016. **Results**: Nine articles were selected, and three categories emerged from the Thematic Content Analysis: dermatological lesions in HIV/AIDS patients; benefits of antiretroviral therapy and possible dermatological reactions; dermatological lesions care. **Conclusion**: The main dermatological lesions in HIV/AIDS patients described in the scientific articles were the following: pruritic papular eruptions; Kaposi's Sarcoma lesions; mucocutaneous eruptions and ulcerations; Molluscum Contagiosum lesions; Psoriasis lesions; rashes due to drug interactions; maculopapular eruptions, urticarias and hyperpigmentation of cutaneous attachments as adverse reactions to antiretrovirals; and erythematous papules.

Keywords: skin manifestations; HIV; nursing care.

RESUMO

Introdução: A produção do conhecimento relacionada à prática profissional torna-se relevante para a elaboração de estudos direcionados à assistência integral à pessoa vivendo com HIV/AIDS, visando a um cuidado diferenciado para responder às necessidades de cada pessoa e segurança nos procedimentos, orientando os pacientes quanto a suas dúvidas sobre o tratamento medicamentoso e quais os cuidados para cada tipo de lesão de pele que pode surgir ao longo de sua vida, possibilitando maior consciência de sua saúde, no que concerne a estigmatização das próprias cicatrizes marcadas na pele pelas lesões. **Objetivo**: Conhecer as lesões dermatológicas que acometem os pacientes HIV/AIDS descritas nos artigos científicos. **Métodos**: Revisão integrativa com busca na MEDLINE, na Biblioteca Virtual em Saúde e na *Scientific Electronic Library Online*, selecionando artigos entre 2010 e 2016. **Resultados**: Nove artigos foram incluídos, e na Análise de Conteúdo Temática emergiram três categorias: lesões dermatológicas nos pacientes HIV/AIDS; benefícios da terapia antirretroviral e possíveis reações dermatológicas; cuidado às lesões dermatológicas. **Conclusão**: As principais lesões dermatológicas em pacientes HIV/AIDS descritas nos artigos científicos foram: erupções papulares pruriginosas; lesões de Sarcoma de Kaposi; erupções e ulcerações mucocutâneas; lesões de Molusco Contagioso; lesões de psoríase; erupções cutâneas por interações medicamentosas; erupções maculopapulares, urticárias e hiperpigmentação de anexos cutâneos como reações adversas aos antirretrovirais; e pápulas eritematosas.

Palavras-chave: manifestações cutâneas; HIV; cuidados de enfermagem.

INTRODUCTION

The Acquired Immunodeficiency Syndrome (AIDS) is a disease of the immune system caused by the Human Immunodeficiency Virus (HIV), considered a pandemic and associated with social vulnerability, including safe access to health services and actions. The abbreviations SIDA and VIH are used in Portuguese-speaking countries, but in Brazil the English terms AIDS and HIV were made popular[1].

The HIV virus is acquired through contact with mucous membranes, sperm, vaginal fluid, blood during unprotected intercourse with the virus carrier, contaminated blood transfusion, and mother-to-child transmission during pregnancy or breastfeeding. The disease is still involved in stigma, associated with misinformation about ways of contagion, moral judgments and prejudice[2].

In the case of mothers living with HIV, a way to prevent transmission of the virus to newborns is the immediate breastfeeding interruption; the family shall receive the necessary support from health professionals and the necessary means provided by the State to obtain artificial feeding with appropriate formulas up to the second year of the child's life. Human milk processed and distributed by the milk banks systems are still insufficient to supply this demand, as it is primarily destined to children at risk and hospitalized in intensive care units[2].

In Brazil, the first AIDS cases were confirmed in 1982, in the State of São Paulo, and since the beginning of its epidemic until June 2015, 798,366 cases were registered[3].

AIDS is a contagious disease that debilitates the immune system and can reach the skin, whether as an aggravating factor of pre-existing diseases, facilitating the emergence of opportunistic infections, or even causing characteristic skin lesions[4]. In this case, it is visible the importance of the ability to provide care for people with skin lesions in the various services that are part of the health network available to the general population, as well as the development of the capacity to care for this condition in health professionals training.

According to the Ministry of Health Epidemiological Bulletin, from 2007 to June 2017, 194,217 cases of HIV infection in Brazil were reported to the *Sistema de Informação de Agravos de Notificação*—SINAN (Information and Notification System), 96,439 of which

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(49.7%) in the Southeast, 40,275 (20.7%) in the South, 30,297 (15.6%) in the Northeast, 12,931 (6.7%) in the Midwest, and 14,275 (7.4%) in the North. In 2016, the Federation units showing the highest rates of AIDS detection were the states of Rio Grande do Sul and Roraima, with 31.8 and 33.4 cases per 100 thousand inhabitants, respectively. The capital of Rio Grande do Sul, Porto Alegre, reached 65.9 cases per 100,000 inhabitants, which is twice the state's rate[3]. The notifications indicate both the transmission of the virus and the diagnosis and registration, allowing the recognition of the problem's magnitude and the action planning to its approach.

In view of the presented facts, the search for the diagnosis quickness and registry of positive results are the goals in AIDS control policies and fighting. Since 2011, the Municipal Health Department of Porto Alegre implemented the quick test and notification of HIV cases, and this practice came about in Brazil in 2014, according to the Ministry of Health's ordinance 77 of 2012, which determined the rapid tests in primary care for the detection of HIV and syphilis[5]. The Administrative Rule 29 of 2013 approved the creation of a technical manual to increase the access to the HIV infection diagnosis in the *Sistema Único de Saúde*—SUS[6] (Unified Health System), published in 2016, regulating the diagnosis practice[7].

Significant and gradual changes have occurred by multiplying the availability of rapid blood tests and blood samples for the detection of HIV diagnosis in the primary health care network units and at the *Centros de Testagem e Aconselhamento* - CTA (Centers for Testing and Counseling). The whole health system is involved in a more articulated way, providing elements to develop more effective policies in order to contain the disease's progress, guarantee efficient treatment and improve life quality of those affected by it[8]. In 2017 and 2018, the Ministry of Health offered workshops on the strategies to increase the use and distribution of HIV, syphilis and hepatitis B and C rapid tests in Brazil to strengthen professionals' qualification[9].

These actions have sought to speed up the diagnosis and start drug therapies early on, thus impacting on the reduction of the virus transmission, as well as maintaining patients' immunity, decreasing the co-infection with other opportunistic diseases[8].

AIDS brought up fear and panic in the social context, damaging interpersonal relationships caused by discrimination. A disease filled with prejudices and intolerance that affect the welfare of people living with HIV or are sick with AIDS. Good practice in caring for people with this disease includes not only surveillance, diagnosis and treatment, but also the discrimination and prejudice approach to face the stigma of the disease.

Erving Goffman[10] was the pioneer of thinking the stigma concept in a social perspective, standing out that society establishes a way of categorizing individuals and the total number of attributes considered as "common and natural" for people. It is worth noting that it is not just an individual attribute, but rather the consequence of a social relationship originated in the interaction between individuals, i.e., the social stigma is not related to a specific characteristic or a person; it is found in a language relationship, in perspectives created by the contingencies of social life, in which people are treated differently, based on pre-established concepts[10]. Regarding HIV/AIDS, the social stigma is related to the way the virus has become known in the society, related to injection drugs use and promiscuous sexual behavior without protection. It is important to note that some of that stigma was fostered by the knowledge available in the health services, since the chances of "risk behavior" and "risk groups" were early associated with illness and remained in the social imaginary, even when the prevalence of the disease was reaching other social segments.

Since the earliest reports of HIV infection, dermatological manifestations are considered both a source of the disease stigma and a challenge to diagnosis and treatment. Some systemic opportunistic infections, or even neoplasms, originate primarily in the skin, and their early identification as HIV-associated dermatitis is extremely important[11].

The onset of antiretroviral therapy (HAART) in patients with low CD4 cells count is a primary factor for the occurrence of the inflammatory Syndrome of Immune Reconstitution (SIR). It is a clinical diagnosis and should be considered when inflammatory signs or symptoms occur between 4 to 8 weeks after the beginning of the therapy, in the re-introduction of an interrupted scheme or in the alteration to a more effective medicinal scheme after therapeutic failure[12].

With the aid of HAART, the body reestablishes the CD4 count and promotes the increase of the immune response, decreasing the viral load. The imbalance between the levels of CD4 and viral load possibly triggers SIR's symptomatic reactions, which manifest as aggravation of the HIV/AIDS patient due to preexisting infectious diseases, commonly said opportunistic, often auto limited or even assuming serious forms, also described as inflammatory reactions related to fungal, viral and bacterial infections, autoimmune phenomena and neoplasms. The prevention of complications associated with SIR involves the identification and early handling of the symptoms of these possible opportunistic infections[12].

OBJECTIVE

To know the dermatological lesions that affect HIV/AIDS patients described in scientific articles.

METHODS

The integrative revision in databases is the methodological approach of this study, embracing articles on dermatological lesions affecting HIV/AIDS patients. The integrative review is a method of careful and systematic research, with the purpose of providing wide information on certain knowledge, seeking the published scientific literature and synthesizing the results obtained in the studies with the purpose of critically evaluate knowledge and subsequently incorporate it into care practice according to reality[13].

The construction of this integrative revision involved the elaboration of the research question, the literature research and the criteria definition for inclusion and exclusion of studies, the definition of the information to be extracted and categorization of the studies, the evaluation of the included studies, the interpretation of the results and the presentation of the review and knowledge synthesis[14].

The formulation of the guiding question was defined by the following question: What dermatological lesions in the HIV/AIDS patients were described in the scientific articles?

The data collection took place in June of 2016 with the research at MEDLINE through PubMed, *Biblioteca Virtual em Saúde*—BVS (Virtual Library on Health), and the digital library Scientific Electronic Library Online (SciELO), using the *Descritores em Ciências da Saúde*—DeCS (Descriptors in Health Sciences) "HIV", "Nursing care" and "skin manifestations", which are dermatological lesions synonymous.

Initially, the research for the articles was conducted through the intersection of three descriptors, "HIV", "Cuidados de enfermagem" and "Manifestações cutâneas" using the Boolean operator AND. In MEDLINE, the search descriptors were "HIV", "Nursing care" and "Skin manifestations".

The inclusion criteria were defined as follows: published articles that met the objective needs and the guiding question in the studies published between the period 2010–2016, in English, Portuguese and Spanish languages. Exclusion criteria were publications prior to 2010. Duplicate studies in more than one database were included only once.

In the Thematic Content Analysis[15] of the articles, three relevant categories emerged: "dermatological lesions in HIV/AIDS patients"; "benefits of antiretroviral therapy and possible dermatological reactions"; and " dermatological lesions care."

As for the ethical aspects, the bibliographical research respected the intellectual authorship of the publications consulted, taking into consideration copyright legislation[16] and knowledge production good practices.

RESULTS

No publications crossing the three descriptors were found. Thesearch crossed descriptors "skin manifestations" AND "nursing care" afterwards. Subsequently, the search crossed descriptors "cutaneous manifestations" AND "HIV", totaling 130 publications.

After the inclusion and exclusion criteria, 23 articles were indicated for complete text reading, 14 articles not describing dermatological lesions in HIV/AIDS patients were excluded, and 9 articles were selected for analysis and discussion, numbered according to research order.

The systematization of the results on dermatological lesions in HIV/AIDS patients showed which lesions affect HIV/AIDS patients, the methodological approach of the studies and the year of publication, as described in **Table 1**, and **Table 2** presents the contributions of studies on dermatological lesions in HIV / AIDS patients.

Of the 9 selected articles, seven were published in English, one in Portuguese and one in Spanish. The studies were conducted in the following countries: India[17,21], United States[18,20], Tanzania, Malawi, Ethiopia, Uganda, Kenya, Botswana, Cameroon, Swaziland, Ghana and Sierra Leone[19], Brazil[22,23,25] and Argentina[24] according to the data collection and the selection of the articles, in the period studied from 2010 to 2016. Eight articles[17-24] addressed skin lesions in HIV/AIDS patients and one article[25] validated an instrument to evaluate patients with skin lesions.

The main types of skin lesions discussed in the studies are the following: pruritic papular eruptions; Kaposi's sarcoma lesions; mucocutaneous eruptions and ulcerations; Molluscum Contagiosum lesions; psoriasis lesions; rashes due to drug interactions; maculopapular eruptions, urticarias and hyperpigmentation of cutaneous attachments as adverse reactions to antiretrovirals; erythematous papules.

DERMATOLOGICAL LESIONS IN HIV/AIDS PATIENTS

Dermatological manifestations are first signs of infection in HIV/AIDS patients[19,21,24]. These manifestations are also indicators of the disease diagnosis and efficacy of the treatment, able to represent a mirror of the immunosuppression degree of the patients affected by these lesions[17,21].

Many dermatological lesions affecting HIV/AIDS patients have different characteristics as to their presentation, and may be minimal

Table 1 – Dermatological lesions affecting HIV/AIDS patients, studies methodological approach and year of publication. Porto Alegre (RS), Brasil, 2016.

Studies	Dermatological lesions described	Methodological Approach	Year of Publication
1[17]	Pruritic papular eruptions; Molluscum Contagiosum lesions; eosinophilic follicutilis; leprosy lesions; psoriasis lesions; rash / drug interaction; Nodular lesions of non-Hodgkin's lymphoma.	Prospective quantitative study	2014
2[18]	Kaposi's sarcoma lesions.	Case study	2011
3[19]	Ectoparasite lesions; urticarias papulosas; Kaposi's sarcoma lesions; prurigo.	Literature revision	2011
4[20]	Ulcers and mucocutaneous eruptions; Maculopapular eruptions, urticarias and hyperpigmentation of cutaneous appendages as adverse reactions to antiretrovirals.	Literature revision	2010
5[21]	Dermatoses by viruses, bacteria and fungi; papular lesions; oral ulcers; exanthema; erythematous papules; friable nodules; abscess; perianal ulcerations; erythematous vesicular eruptions; pruritic papular eruptions; seborrheic dermatitis; atopic dermatitis; Molluscum Contagiosum lesions; psoriasis lesions; rash/drug interaction; Maculopapular eruptions, urticaria, hyperpigmentation of cutaneous attachments as adverse reactions to antiretrovirals; Kaposi's sarcoma lesions.	Literature revision	2010
6[22]	Skin rashes; skin ulceration; papulonodular tumor; Hemorrhagic lesions; angiomatous papules.	Case study	2011
7[23]	Lymphangiectasis Kaposi sarcoma lesions; tuberous lesions.	Case study	2013
8[24]	Hypochromic lesions; cutaneous lupus lesions; Idiopathic Guttate Hypomelanosis.	Case study	2012
9[25]	Skin lesions.	Quantitative-qualitative study	2013

when the immune system is immunocompetent with its full immunological functions, but when the decline of the immune function occurs due to a deficit of the CD4 cells, the lesions become more frequent, severe and resistant to conventional therapy[21].

Dermatological manifestations are striking and frequent characteristics that affect people who live with HIV/AIDS, and the skin is an indicator of the severity of the disease. Skin lesions are also a visible "mark" in the social relationships that patients establish with themselves and with their surroundings. In the lesions' care, the importance of diagnosis and adequate treatment is recommended to avoid the resistance of microorganisms, which may compromise healing[26]. There are various dermatological manifestations compiled in the typology: infectious origin lesions of diverse etiology; inflammatory lesions sometimes associated with antiretroviral therapy; and neoplastic lesions[17-24].

Lesions of infectious origin are of various etiologies, and may be bacterial, viral or fungal, often accompanied by diagnostic difficulties, and their manifestations may be represented by vesicles, crusts, raised papules and maculopapular rashes[17,19-22]. The inflammatory lesions associated with HAART are dermatological manifestations related to the possible adverse reactions of the antiretrovirals and may be associated with SIR due to imbalance of the immune response. The most frequent dermatoses are pruritic papular eruptions, maculopapular eruptions, urticarias and hyperpigmentation of cutaneous appendages[17,19,20]. Neoplastic lesions can be consequences of a primary cancer or metastases in the skin, and may be represented by papules, erythematous nodules, hyperpigmented and papulonodular ulcerated eruptions[17-19,21-23].

The studied articles showed that at some point in the course of the AIDS disease, 90% of HIV patients are diagnosed with some

Table 2 – Contributions of studies on dermatological lesions in HIV/AIDS patients. Porto Alegre (RS), Brasil, 2016.

Studies	Contributions of studies on dermatological lesions in HIV / AIDS patients
1[17]	The study demonstrated a relationship between CD4 count and skin lesions, and the lower the CD4 the greater the occurrence of lesions. Most of the lesions were associated with stages 3 and 4 of HIV infection, taking into consideration that skin manifestations are considered clinical indicators to predict the immune status of HIV patients in countries with no resources and infrastructure in the health care system.
2[18]	Multiple Kaposi's sarcoma skin lesions were pointed out in male HIV/AIDS patients; however, other manifestations of the sarcoma were also found, pleuropulmonary involvement occurring in approximately 20 to 25% of HIV patients in advanced stages of AIDS. The manifestations found were flat, red and purple submucosae, whose aspect is similar to hemorrhages. In this case, lesions were present in the parietal pleura, sparing the visceral pleura, an unusual presentation according to postmortem studies, which point to lesions of most visceral pleuropulmonary sarcoma. A bilateral pleural effusion was also observed, and pleural effusion can occur without skin lesions manifestations of the sarcoma in 15% of HIV/AIDS patients.
3[19]	The study reports the occurrence of numerous infections and infestations that affect the skin of patients in Africa. The increase of skin lesions occurred due to the HIV/AIDS epidemic, complicating diagnosis and treatment of these lesions. 90% of HIV/ AIDS individuals are diagnosed with some kind of cutaneous manifestation at some point during their lifetime. It was also evidenced an average increase of 40% to 60% of HIV/AIDS patients hospitalizations in health services for injury treatment in various regions of South Africa. Based on the information reported, Africa is committed to the training of health professionals, prioritizing primary care and specialized levels in the identification and treatment of skin manifestations with a focus on prevention, seeking suitable conduct to minimize treatment resistance due to unnecessary prescriptions.
4[20]	The study introduces us to antiretroviral therapy, proven beneficial to HIV/AIDS patients, although it mentions the emergence of possible skin reactions caused by this therapy. It reports the importance of the supervision of a dermatologist doctor in assisting and monitoring these patients to identify the effects early, favoring the reduction of failures in the treatment and/or discontinuation of drug adhesion. With the proper diagnosis, in many cases it is not necessary to interrupt or change the drug scheme, as these are auto limited skin manifestations and stabilize naturally.
5[21]	The study points out that children are increasingly affected by HIV infection. Given that HIV/AIDS children have greater severity in skin manifestation often resistant to treatment with high recurrence rate. The prevalence of skin manifestations in HIV patients at some point during the course of the disease is close to 90%. These demonstrations may also act as one of the first indicators of the prognosis of AIDS related to people with low CD4 rates in countries with few economic resources, where the availability of CD4 count is limited. Evaluating incidence rates and prevalence helps to predict the severity of the disease in these patients. The Immune Reconstitution Syndrome is another manifestation observed in children; its incidence is not yet well defined, however it is estimated that it is 10% to 20% of HIV/AIDS children who started with antiretroviral therapies.
6[22]	Bacillary angiomatosis, an infectious disease that most commonly affects HIV/AIDS patients when compared to other immunodeficiencies, often affects patients in the more advanced stages of AIDS, and those with a CD4 count below 200 cells/mm^3. However, the study addressed the case of a patient with a CD4 count of 440 cells/mm^3, with symptoms of bacillary angiomatosis, with poor life/hygiene conditions. In HIV/AIDS patients, bacillary angiomatosis always needs to be considered in the diagnosis of skin manifestations and fever.
7[23]	Kaposi's sarcoma lymphadenomatous variants have been associated with AIDS. These variants include forms associated with lymphatic ectasia, with the proliferation of intra and peritumoral lymphatic vessels, in this case called Kaposilin-phangiectatic sarcoma. The study reported the case of a male patient, but there was no visceral involvement. In HIV / AIDS patients, the diagnosis of Kaposi's sarcoma is an indication for the beginning of antiretroviral therapies, with a significant decrease in incidence and morbidity and mortality.
8[24]	The study shows the case of a female patient in use of antiretroviral therapy with dermatitis associated with the Primary Anatodermia (PA) in the upper and lower limbs. The literature points out that these lesions are usually located in the torso, neck and arms, asymptomatic or slightly pruritic. The patient presented mitochondrial toxicity, one of the main adverse reactions of the antiretroviral, needing to suspend the therapy and to reevaluate the therapeutic scheme. HIV and antiphospholipid antibodies shall be tested for all patients with skin manifestations of PA, and long-term follow-up is necessary as it is considered a sign of autoimmune disease.
9[25]	Validation of a protocol for the planning of integral nursing care of skin lesions through an individual-centered approach. The instrument contributes to the quality and systematization of nursing care to the patient.

dermatological manifestation, which is the main reason for the demand for care in health services[19,21].

In Africa, the major concern is the increase of dermatological lesions in HIV/AIDS patients and the shortage of dermatologists or professionals specialized in skin lesions, causing gaps in care, and these lesions are often not treated[19]. In different countries with large social inequalities, the quality of health services is affected, indirectly interfering in the injuries' care. In countries lacking infrastructure, professionals and material resources, the access to health services becomes difficult for the population. Even in countries where this access is easier, the quality of care offered in the first contact with health services is fundamental to the follow-up and to the response to people's demands.

Considering HIV/AIDS patients, health professionals need to provide monitoring, evaluate the type of injury and take into account the drug therapy used to prevent allergic reactions to the drugs. The patients' care is to be put into practice within a specific treatment plan to provide the relief of signs and symptoms, as well as to identify potential drug interactions and the evaluation of the prescribed treatment. In this context, the nurse can perform the Nursing Process, the addition to the bandage, with a view to integral and interdisciplinary care through an expanded look at the reality in the decision making within therapeutic conduct.

The sensitivity to the needs of the patient, the contact with practice, the ability to perform procedures through available technologies, the capacity to identify the resources in other services and the constant analysis of the work processes carried out are fundamental dimensions of care management, requiring permanent education on services and on local health system as well[27].

Benefits of antiretroviral therapy and possible dermatological reactions

Antiretroviral medications arose in the 1980s to prevent the multiplication of the HIV virus in the body. Although it does not kill the virus, it helps to prevent the weakening of the immune system, making its use fundamental to increase expectancy and quality of life of HIV/AIDS patients. In Brazil, the distribution of these drugs is free for all patients registered in the Sistema de *Controle Logístico de Medicamentos*—SICLOM (Medications Logistics Control System)[12].

In addition to the favorable clinical impact reducing the morbidity of HIV/AIDS patients, the early antiretroviral therapy is also an important tool to reduce HIV transmission[20,23]. However, adherence to drug therapy should be considered to avoid the virus multiplication in the body and the possible therapeutic failures that contribute to the emergence of new complications[22,23].

People infected with HIV may have some cutaneous involvement throughout their lives. However, after HAART's introduction, it is possible to observe changes in the presentation of the dermatoses related to the virus, with a decrease in the frequency of opportunistic diseases. HAART contributes to the treatment, but may cause SIR to appear as allergic skin reactions resulting from the beginning of treatment[11].

The skin is the organ with the greatest involvement in the possible adverse reactions to antiretroviral drugs, as it presents opportunistic infections at the beginning of the therapy, possible complications evidenced, such as SIR, and other dermatological manifestations. Therefore, it is recommended that the patients follow a rigorous follow-up and be monitored every three to six months[17,21,22].

In most situations, the monitoring of HIV/AIDS patients needs a differentiated approach in the health network, including the reception of the patient with the strengthening of the bond with the health professional, advocating adherence to the therapeutic method[28].

Antiretrovirals are divided into classes, as follows: Nucleoside Reverse Transcriptase Inhibitors; Non-Nucleoside Reverse Transcriptase Inhibitors; Protease Inhibitors; Inhibitors of fusion; and Integrase Inhibitors. Each class has its own adverse reactions, although some manifestations may be caused by the combination of more than one antiretroviral[12].

There are three most commonly used antiretrovirals classes in HIV / AIDS patients: Nucleoside Reverse Transcriptase Inhibitors, Reverse Transcriptase Non-Nucleoside Inhibitors and Protease Inhibitors and their possible dermatological reactions[20].

Among the Reverse Transcriptase Nucleoside Inhibitors and Reverse Transcriptase Non-Nucleoside Inhibitors classes, the known reaction was the mitochondrial toxicity, which resulted in systemic adverse reactions that fit the more severe effects characterized by lipodystrophy, and the use of the medication should be suspended and a new therapeutic planning reevaluated[19,23]. Other dermatological reactions were nails, palms and soles hyperpigmentation, urticarias, maculopapular eruptions, mucocutaneous ulcerations and the appearance of morbilliform exanthema associated with hypersensitivity syndrome, which recommends the immediate suspension of the medication[20].

In relation to the Protease Inhibitors class, few dermatological manifestations were present, and the lesions did not require treatment interruption. However, in cases of more severe urticaria eruptions, only desensitization was carried out, and pause of treatment was not necessary. Regarding dermatological reactions, it is possible to mention the erythematous multiform eruptions, rash and pruritus, and these reactions are self-limiting. Despite the reduction of dermatological reactions, there is still a need for a careful evaluation in order to avoid drug interactions that may decrease the medication effect[20].

Knowing the possible dermatological reactions related to the use of antiretroviral therapy, the health professional is able to make early decisions, improving the patient's life quality and welfare. In this sense, the next focus of the discussion is linked to the care as a necessary tool in the monitoring of HIV/AIDS patients affected by dermatological lesions.

Dermatological lesions care

Knowing that HIV / AIDS patients' dermatological lesions usually manifest atypically when compared to those of immunocompetent patients[21], the health professional needs to plan actions early after a previous diagnosis of some autoimmune disease, making researches with the patient, as well as locating and using laboratory resources for diagnosis and treatment[17].

The emergence of several dermatological manifestations brings to HIV / AIDS patients, besides the social stigma related to the disease, a difficulty in the acceptance of their image and their skin.

They are usually negatively affected in their life quality. However, in many cases, the awakening to the search for help and treatment happens precisely through dermatological manifestations, which can occur in services of the most diverse technological densities, which highlights the need to develop professional capacities for the care of people with skin lesions in the various services, from basic care to specialized services.

A study[25] brought the validation of a Client Evaluation Protocol in Dermatology by a service to patients with specific cutaneous conditions, aiming at valuing the patients' subjectivity, their social origin, their family relations, their values and beliefs, sharing self-care skills and using a person-centered approach. This instrument contributed to the nursing care quality to the patient with dermatological lesions, adding the focus on integral skin care.

Other studies[19-21,24] show the need for an interdisciplinary team capable of integral skin care. Care for patients affected by injuries requires specific knowledge and an approach with expanded look, establishing attention, bond and longitudinally. Dermatologists have contributed to the scientific knowledge basis in the care of dermatological lesions in HIV/AIDS patients, playing a role in educational orientation and disseminating knowledge about the most frequent dermatological manifestations.

Due to the lack of knowledge and specialized professionals in the African continent, the International Dermatology Foundation has implemented training programs in dermatology focused on the development of technical-scientific knowledge by health professionals in HIV / AIDS patients affected by skin lesions, contributing to the dissemination of educational tools for the effectiveness of this health services[19]. It's an initiative that can be an example to other countries.

The importance of early diagnosis, the evaluation of possible drug interactions, the origin of dermatological lesions due to opportunistic diseases or adverse reactions of antiretrovirals, and the low CD4 count[17,20-22,24] are pointed out in the nursing care.

The treatment should not aim at the lesions only, but at the individual as a whole, promoting interdisciplinary therapeutic interventions, enabling to plan and discuss care performance, maintaining a distinguished HIV / AIDS patients follow-up. Considering the stigma that still hampers the formation of care networks and the promotion and protection actions, aiming at collective approaches to the illness and the associated prejudice.

This study was limited by the few published researches on the subject. However, it amplified the motivation for the study precisely because of the knowledge gap experienced in professional practice, setting up an opportunity to bring up the discussion of the care of HIV / AIDS patients who live with dermatological lesions, pointing to a perspective of integration in the field of practice and research in skin care.

CONCLUSION

The dermatological lesions in HIV / AIDS patients described in the scientific literature were the following: pruritic papular eruptions; Molluscum Contagiosum lesions; eosinophilic folliculitis; Leprosy lesions; psoriasis lesions; rashes related to drug interaction; Kaposi's sarcoma lesions; lesions of kaposilinfangiectatic sarcoma; nodular lesions of non-Hodgkin's lymphoma; ectoparasite lesions; papular urticarias; prurigo; maculopapular mucocutaneae eruptions; oral ulcers; exanthema; erythematous and angiomatous papules; friable nodules; abscesses; perianal ulcerations; erythematous vesicular eruptions; seborrheic dermatitis; atopic dermatitis, papulonodular tumor, hemorrhagic lesions, cutaneous ulceration, tuberous lesions, hypochromic lesions; Idiopathic Guttate Hypomelanosis; cutaneous lupus lesions; and skin lesions.

Antiretrovirals have brought an increased expectation in survival and life quality of HIV/AIDS patients; however, drugs may cause some adverse reactions, such as the emergence of SIR, due to late onset of drug therapy and related to low CD4 count. Knowing the possible dermatological reactions related to HAART, as SIR, allows health care professionals to plan care based on scientific evidence and, therefore, analyze the work developed in the daily life, searching for technologies and care action approaches to meet the needs of patients.

In many cases, the awakening of the search for help in health services happens from the moment patients are "marked on the skin" by dermatological manifestations. Therefore, it is emphasized the importance of the interdisciplinary team's knowledge in performing care, establishing the bond of care, reducing the existing social stigma to the disease and strengthening patients' self-esteem regarding their skin image.

In addition, it is important to create service networks, planning the effective interaction among health professionals to improve access to available resources and increase the capacity of care to the population in their individual and collective needs. In the case of Brazil, with the expansion of primary health care, in particular the Family Health Teams, it is fundamental to develop the capacity for care and investment in the early identification of skin lesions, including those associated with HIV/AIDS.

Conflict of interests

The authors declare no conflict of interests.

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World day to fight against syphilis and congenital syphilis: let's eliminate them?

Dia mundial de combate à sífilis e à sífilis congênita: vamos eliminá-las?

Mauro Romero Leal Passos[1]

AN OLD PROBLEM

In his verses in the book "Syphilis Sive Morbus Gallicus" (Verona, 1530), in which the word "syphilis" appears for the first time, Hieronymi Fracastorii anticipated that this disease would persist:

"From the purple belly of the night, a slave / The strangest plague returned to devastate the world / Infecting the heart of Europe, the plague was thrown / From Lebanon to the waves of the Black Sea / When, in war, France marched to Italy / The disease has taken its name. I will dedicate my rhymes to this intruder of twenty plagues / That even if it's not welcome, it's eternal, since intends to remain here."

And even today, syphilis continues to plague many countries in the world, despite the discovery of penicillin.

In 2012, the World Health Organization estimated the existence of 17.7 million people with syphilis, and each year the occurrence is of 5,590,000 cases. The numbers by region are the following: Europe 440,000; Eastern Mediterranean 496,000; Southeast Asia 886,000; Americas 937,000; Western Pacific 993,000; Africa 1,843,000.

In several countries, especially in those of low-income population, the mother-to-child transmission of syphilis remains very high and is a common cause of death. Syphilis, after malaria, is the most frequent etiology of avoidable stillbirths in the world.

In Brazil, the Ministry of Health considers that in the last five years there has been a steady increase in the number of syphilis cases in pregnant women, as well as congenital syphilis and acquired syphilis, partially attributed to the increase in the coverage test, the expansion of serological tests use, less use of condoms, health professionals' resistance to penicillin management in primary health care and the lack of penicillin supply. The particular concern is the underreporting of cases of acquired syphilis and inappropriate treatment of partners, who are fatally associated with much of the disease during pregnancy.

The numbers of reported cases were as follows: acquired syphilis, 87,593; syphilis cases in pregnant women, 37,436; congenital syphilis cases, 20,474; and among them, 185 deaths in Brazil in 2016. There was a detection rate of 12.4 cases of syphilis in pregnant women/1,000 live births. The South and Southeast States showed higher rates (cases of syphilis in pregnant women were 16.3/1,000 live births and 14.7 cases of syphilis in pregnant women/1,000 live births, respectively).

In Brazil, congenital syphilis rates greater than syphilis in pregnant women have shown that there is still much to be done for the diagnosis and appropriate treatment in pregnancy. It is worrying that in 2016, 81.0% of mothers of children with congenital syphilis have reported prenatal care. Capital cities, such as Aracaju, Fortaleza, João Pessoa, Maceió, Natal, Recife, Teresina (Northeast) and Porto Alegre (South) presented more records of cases of congenital syphilis than the reported cases in pregnancy, which obviously demonstrates inadequate prenatal monitoring, lack of disease diagnosis in pregnant women, lack of notification at the appropriate time or all of that together. In http://indicadoressifilis.aids.gov.br/ (Accesssyphilis indicators panel here) it is possible to check the alarming figures on syphilis in Brazil.

It is a fact that the Unified Health System (SUS) in Brazil serves about 70% of the demand for health. However, there are areas like the city of Niterói (Rio de Janeiro) in which additional medicine is responsible for over 50% of health coverage. We also know that syphilis (acquired, in pregnant women, and congenital) is a notifiable disease. However, the notification of syphilis cases in this segment of the society is practically null. Therefore, there are more cases than those reported by the Ministry of Health.

The Center for Disease Control and Prevention (CDC-USA) believes that pregnant women should have access to early prenatal care and be serologically selected for syphilis during the first prenatal appointment, and again at 28 to 32 weeks of pregnancy and childbirth in high-risk areas.

To the Ministry of Health of Brazil, in order to assist and standardize immunological diagnosis of syphilis, there are three flowcharts. Two or more tests combined form a flowchart. This combination of sequential testing aims to increase the positive predictive value (PPV) of a reagent result in the initial test. The serial flowchart is logical and economical. Flowchart 1 is the conventional approach for the diagnosis of syphilis through immunological tests, in which a nontreponemal test is used as first test, followed by a treponemal test to confirm the diagnosis. Flowchart 2 consists in a reverse-conventional approach for the diagnosis of syphilis by immunological tests, in which a treponemal test (Elisa, chemiluminescence, or another equivalent) is the first test, followed by a nontreponemal test to confirm the diagnosis and the dilution/titling for further serological cure control. Flowchart 3 consists of conventional reverse approach for syphilis diagnosis by immunological tests, in which a rapid treponemal test is used as first test, followed by a nontreponemal test for confirmation of the diagnosis. However, if the nontreponemal test is nonreactive, flowchart 3 recommends the use of a third lab test of treponemal class.

Aware of the seriousness of the situation, the Brazilian Ministry of Health created the "Agenda of Action Strategies to Reduce Congenital Syphilis in Brazil", a collective construction with class associations.

Niterói, October 14, 2018
Dear Dr. Tedros Adhanom Ghebreyesus,
General Director of the World Health Organization (WHO)
Geneva, Switzerland
MD. PhD, Full professor, STD Sector, Universidade Federal Fluminense, Niterói (RJ), Brazi.

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In addition, in order to emphasize the awareness of all non-expert population and health professionals, strengthening the importance of adequate diagnosis and treatment of syphilis (especially until the 28th week of gestation, as until this period the best results for the fetus are obtained) as a sexually transmitted disease, particularly to pregnant women during prenatal period, the Brazilian government approved the law no. 13,430/2017 establishing the "National Day to Combat Syphilis and Congenital Syphilis", on the third Saturday of October. In this year, it will be on October 20, 2018. The election of the law began with our group of Brazilian Society of STD, STD sector of the Fluminense Federal University, Society of Gynecology and Obstetrics of Rio de Janeiro, of Febrasgo, of the Fluminense Medical Association and many other institutions in the city of Niterói in 2004, with a public petition and a demonstration called March against Syphilis, in Icaraí Beach.

Syphilis in pregnancy, although known and well defined, is still a challenge to the world, and even more to developing countries. Intense and well-planned actions must be taken by all agencies involved so that the incidence of the disease is drastically reduced; otherwise, we will continue to see serious complications and death of conceptus inside and outside the womb.

Worldwide, therefore in Brazil, syphilis is a neglected disease warning signs of its advance. Even so, there is a basic failure at researching for more comfortable treatments and vaccine development.

Recently, in a prestigious scientific international journal (Sex Transm Dis. 2018;45(3):139-43) an article informed that syphilis prevention and its control is a public health priority in Japan, reporting the rapid increase in primary, secondary and congenital syphilis cases, in particular in the period from 2012 to 2016. Congenital syphilis, in Japan, increased from 0.4 in 2012 to 1.4 per 100,000 live births. Tokyo showed the highest rate: 3.98 per 100,000 live births.

In Center for Disease Control and Prevention National profile — overview: syphilis 2017 [internet]. Atlanta: CDC; 2018. Available at: https://www.cdc.gov/std/stats16/syphilis.htm it is possible to observe that all types of syphilis are increasing in the United States.

During the last Conference of STD Prevention held by the Centers for Diseases Control and Prevention of the United States (CDC-USA), 27-30 August 2018, several researches on syphilis and congenital syphilis were presented. We highlight one of them, which reports that congenital syphilis cases (CS) in California have increased 500% from 2012 to 2016. CS cases should be considered public health sentinel events and examined by missed opportunities to identify interventions and prevent future cases.

In Europe, according to the Annual Epidemiological Report on Congenital Syphilis for 2016 of the European Centre for Disease Prevention and Control, the tendency to congenital syphilis cases reported has remained stable in the recent years, but some countries mentioned small increases in comparison to 2015. But it was observed that there may be underreporting of cases because seven countries contributed to the notification of congenital syphilis, and other 13 reported zero cases in 2016 (https:// ecdc.europa.eu/sites/portal/files/documents/congenital-syphilis-annual-epidemiological-report-2016.pdf).

Congenital syphilis is a shame not only to health managers, but to the entire population, particularly to health professionals, as diagnosis and treatment are well known, widely available and highly effective for more than seven decades. However, these supplies need to get to patients (and their sexual partnerships) as soon as possible in the emergency basis, since there is a risk of death (fetus) if the patient is a pregnant woman.

If there is a disease that we can eliminate (with 0.5 rate of cases per 1,000 live births) in one or two years, it is called congenital syphilis. So, we all must be efficient and responsible for all our actions. We mean a store clerk, a manicure, a health professional: the purpose is to serve the way we would like to be served.

Is it time to have a World Day to Fight Syphilis and Congenital Syphilis?

This proposal was signed by the following entities:

- Academia de Medicina do Estado do Rio de Janeiro;
- Academia Nacional de Medicina;
- Associação Médica do Estado do Rio de Janeiro (Somerj);
- Associação Médica Fluminense;
- Comissão Nacional Especializada em Doenças Infectocontagiosas da Febrasgo;
- Federação Brasileira das Associações de Ginecologia e Obstetrícia (Febrasgo);
- Santa Casa da Misericórdia do Rio de Janeiro;
- Setor de Doenças Sexualmente Transmissíveis da Universidade Federal Fluminense;
- Sociedade Brasileira de Doenças Sexualmente Transmissíveis;
- Sociedade Brasileira de Dermatologia Regional do Rio de Janeiro;
- Sociedade Brasileira de Infectologia;
- Sociedade Brasileira de Imunização
- Sociedade de Ginecologia e Obstetrícia do Estado do Rio de Janeiro (Sgorj);
- Sociedade de Infectologia do Estado do Rio de Janeiro.

Conflict of interests

The authors declare no conflict of interests.

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