

Prevalence and evolution of cases of sexually transmitted infections in adolescents in Brazil



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ABSTRACT

In Brazil, more and more, adolescents are affected by STIs. Therefore, the objective of this research is to present the prevalence and evolution of cases of sexually transmitted infections in adolescents in Brazil. This is an observational epidemiological study with a quantitative approach and descriptive analysis on data related to the prevalence of STI in adolescents aged 10 to 19 years between 2010 and

2021 in Brazil. Data were extracted from DATASUS electronic databases. In this period, there were 86,601 cases of syphilis, mainly between 15 and 19 years old, with a higher prevalence in incomplete high school and brown race, and 56.17% were female, with the most affected region being the southeast (50.53%). Regarding hepatitis B, there was a prevalence in females with 56.17%, with the most affected region in the north with 39.58%, especially between 15 and 19 years with 92.17%, and higher prevalence in incomplete high school (19.53%) and in the race *ver parda* (51.26%). There were 10,129 cases of AIDS, mainly in the age group of 15 to 19 years with 89.81% and in the brown race with 31.53%, 59.98% were male, with the most affected region being the southeast with 36.2%, among them 25.52% with incomplete elementary education. The study concluded that measures are needed that tend to decrease the prevalence of STIs in adolescents in Brazil. Therefore, it is important to carry out campaigns, especially in schools, in order to spread this information to reach our target audience, which are adolescents from 10 to 19 years old.

Keywords: Sexually transmitted infection, Adolescent, Prevalence, Sexual education, Evolution.

1 INTRODUCTION

The incidence of sexually transmitted infections (STIs) among adolescents has been increasing over time. It is known that adolescence is a period of physical and organic transformations, associated with the perception of sexual and occupational identity and comprises the age group of 10 to 19 years (MINISTÉRIO DA SAÚDE, 2018). This phase involves intense biopsychosocial changes, especially those linked to sexual maturation, the search for adult identity and autonomy from parents. In this same perspective, according to Foucault, 2010, **the disciplinary restraint** on sexuality would occur through the stimulus to the discourse about it, which would lead to a construction of knowledge about sexuality and not exclusively through negative mechanisms of sex. This knowledge was formed through the mechanism of confession, developing a categorical and normative order, initially in



religious institutions and followed by scientific institutions such as medicine (CHEQUER, et al., 1998).

In relation to the main STIs, AIDS stands out, whose epidemiological character presents a propensity to juvenilization (CHEQUER et al., 1998). Of the total number of AIDS cases reported to the Ministry of Health (MH) until February 1998, 43% were between 20 and 34 years old. As the latency time of the infection is long and can remain up to 11 years, probably many of these patients became infected in adolescence. And, based on supremacy data from 2009 to 2016, the World Health Organization (WHO, 2016) has terminated a total of 376.4 million incident cases of STIs, considered remediable. Of this total, 127.2 million were estimated cases of chlamydia, 86.9 million of gonorrhea, 156.0 million of trichomoniasis and 6.3 million of syphilis. The estimated overall prevalence of syphilis in men and women was 0.5%, with regional values ranging from 0.1 to 1.6%.

In 2012, the global incidence was estimated at 357.4 million new cases of curable STI worldwide, in the age group of 15 to 49 years, most of them in developing countries. In these countries, STIs are among the 10 most frequent causes of demand for health services, with health, social and economic consequences. Thus, the STIs that are part of the national list of compulsory notification include cases of acquired immunodeficiency syndrome (AIDS), HIV, HIV in pregnant women, viral hepatitis, syphilis in pregnant women, acquired syphilis and male urethral discharge syndrome, Human Papillomavirus (HPV) infection, genital herpes, gonorrhea, trichomoniasis (PINTO et al., 2012).

It is known that the risk behavior of adolescents is a notorious fact, but it is necessary to better understand the causes that lead to the practice of such behaviors that result in increased incidence rates of STIs. In this same conception, the main factors that affect this target population are: resistance to condom use, early initiation of sexual life and the use of licit or illicit drugs (MOREIRA, et al, 2021).

Based on a study conducted by Costa et al., in 2013 the rate of adolescents who stated that the most effective way to avoid infection is the use of condoms in all sexual relations was 81.3%, but 18.6% highlighted sexual abstinence as a way to avoid STIs. On the other hand, several studies show the inconstancy in relation to the use of condoms in the same population due to thoughts such as "trivialization, belief in invulnerability to infections, minor pleasurable sensations, discomfort, difficulty in ejaculation during the use of condoms and non-agreement of the partner to use such a barrier method".

STIs can present through anogenital wounds, discharges and warts, among other possible symptoms, such as pelvic pain, burning when urinating, skin lesions and enlarged tongues. In addition, these signs and symptoms appear mainly in the genital organ, but can also manifest in other parts of the body, such as the palms of the hands, eyes and tongue. And, some STIs can be asymptomatic, which can lead to serious complications such as infertility and cancer if not diagnosed and treated (MINISTRY OF HEALTH, 2020).



Since there has been an increase in the incidence of STI cases in young people due to resistance to condom use, early initiation of sexual life, use of licit or illicit drugs and misinformation about ways of prevention, there is a need to conduct a research that presents the evolution of STI cases in adolescents in the regions of Brazil. In this way it will be possible to adopt health promotion and prevention measures specific to each location, in order to minimize these occurrences.

The objective of this research is to present the prevalence and evolution of cases of sexually transmitted infections in adolescents in Brazil.

2 METHODOLOGY

This is an epidemiological, cross-sectional and observational study related to cases of STIs in adolescents aged 10 to 19 years, both female and male, in Brazil. As a guiding question, the following question was used: What is the context of STI in the adolescent public?

The pathologies documented were the following: In this research we aimed to deepen the knowledge about the following STIs according to the International Classification of Diseases (ICD-10): A50 acquired syphilis, B16 Hepatitis B and B24 unspecified HIV. The variables included were: gender, age group, schooling, race and region of Brazil. The tables were formatted as follows: rows for the variables (gender, age group, education and race) and the columns as region of residence, all in the criteria from 2010 to 2021 and age group from 10 to 19 years.

The data collected covered the period from 2010 to 2021 and were extracted from the electronic databases of the Department of Health (DATASUS) of the Brazilian public health network (Sistema Único de Saúde - SUS). Afterwards, they were compiled in an Excel spreadsheet and later discussed descriptively.

The results were synthesized in a comprehensive way, seeking the compilation of scientific knowledge that guides this research model. As the use of data from the electronic department is public, they did not need to undergo evaluation by the Ethics and Research Committee (CEP).

3 FINDINGS

In Brazil, 86,601 adolescents contracted syphilis from 2010 to 2021. Among them, 56.17% were female, and the most affected region was the Southeast, with 50.53% of the cases. The age group with the highest prevalence was 15 to 19 years. The majority (19.71%) of the adolescents affected by this pathology had incomplete high school, and the ethnicity with the highest prevalence was mulatto (39.39%) (Table 1).



Table 1. Prevalence of Syphilis in adolescents aged 10 to 19 years by Brazilian regions from 2010 to 2021. Brazil, 2023.

	North		Northeast		Southeast		South		Midwest		Brazil	
	n	%	n	%	n	%	n	%	n	%	n	%
GENDER												
Ignored	2	3,64	8	14,55	29	52,73	4	7,27	12	21,82	55	0,06
Male	2.705	8,22	5.173	15,72	19.424	59,04	7.666	23,30	2.930	8,91	32.898	37,99
Female	2.752	5,66	6.756	13,89	24.308	49,97	11.872	24,40	2.960	6,08	48.648	56,17
AGE GROUP												
10 a 14	296	7,12	663	15,95	2.058	49,52	843	20,28	296	7,12	4.156	4,80
15 a 19	5.163	6,26	11.274	13,67	41.703	50,58	18.699	22,68	5.606	6,80	82.445	95,20
SCHOOLING												
Ign/Branco	1.496	5,02	4.395	14,75	14.830	49,77	6955	23,34	2120	7,12	29.796	34,41
Illiterate	32	12,85	42	16,87	69	27,71	91	36,55	15	6,02	249	0,29
1st to 4th incomplete grade of EF	146	7,87	444	23,95	700	37,76	451	24,33	113	6,09	1.854	2,14
Full EF 4th grade	174	9,46	351	19,09	828	45,02	368	20,01	118	6,42	1.839	2,12
Incomplete 5th to 8th grade of EF	1.002	6,98	2.547	17,73	6.429	44,75	3506	24,41	881	6,13	14.365	16,59
Completed elementary school	460	5,99	939	12,22	3.977	51,76	1735	22,58	573	7,46	7.684	8,87
Incomplete high school	1.130	6,62	1.839	10,77	9.440	55,31	3460	20,27	1199	7,02	17.068	19,71
Completed high school	853	7,32	1.178	10,11	6.479	55,58	2476	21,24	671	5,76	11.657	13,46
Incomplete higher education	133	7,59	178	10,15	829	47,29	431	24,59	182	10,38	1.753	2,02
Complete higher education	32	10,42	21	6,84	163	53,09	63	20,52	28	9,12	307	0,35
Not applicable	1	3,45	3	10,34	17	58,62	6	20,69	2	6,90	29	0,03
RACE												
Ign/White	389	3,12	2.081	16,67	6.254	50,10	2.907	23,29	851	6,82	12.482	14,41
White	541	1,81	1.218	4,08	14.019	47,00	12.572	42,15	1.480	4,96	29.830	34,45
Black	331	3,72	1.333	14,97	5.573	62,57	1.251	14,05	419	4,70	8.907	10,29
Yellow	58	8,53	105	15,44	303	44,56	125	18,38	89	13,09	680	0,79
Pardon	3.952	11,59	7.127	20,89	17.501	51,30	2.545	7,46	2.987	8,76	34.112	39,39
Indigenous	188	31,86	73	12,37	111	18,81	142	24,07	76	12,88	590	0,68
Total	5.459	0,01	11.937	13,78	43.761	50,53	19.542	22,57	5.902	6,82	86.601	100,00

During the study period, 1147 adolescents between 14 and 19 years of age contracted hepatitis B in Brazil. Among them, 72.54% were female, and the most affected region was the North, with 39.58% of the cases. The age group with the highest prevalence was 15 to 19 years with 92.07%. The majority (19.53%) of the adolescents affected by this pathology were from the 5th to 8th incomplete grade of PE, and the ethnicity with the highest prevalence was mulatto (51.26%) (Table 2).



Table 2. Prevalence of Hepatitis B in adolescents aged 10 to 19 years by Brazilian regions from 2010 to 2021. Brazil, 2023.

VARIABLE	North		Northeast		Southeast		On		C. West		Brazil	
	n	%	n	%	n	%	n	%	n	%	n	%
GENDER												
Male	134	42,54	30	9,52	76	24,13	55	17,46	20	6,35	315	27,46
Female	320	38,46	130	15,63	147	17,67	130	15,63	105	12,62	832	72,54
AGE GROUP												
10 a 14	49	53,85	14	15,38	14	15,38	10	10,99	4	4,40	91	7,93
15 a 19	405	38,35	146	13,83	209	19,79	175	16,57	121	11,46	1.056	92,07
SCHOOLING												
Ign/White	142	49,48	46	16,03	51	17,77	25	8,71	23	8,01	287	25,02
Illiterate	6	85,71	-	-	-	-	1	14,29	-	-	7	0,61
1st to 4th incomplete grade of EF	42	57,53	8	10,96	11	15,07	8	10,96	4	5,48	73	6,36
Full EF 4th grade	22	47,83	6	13,04	8	17,39	6	13,04	4	8,70	46	4,01
Incomplete 5th to 8th grade of EF	81	36,16	36	16,07	40	17,86	42	18,75	25	11,16	224	19,53
Completed elementary school	34	36,56	12	12,90	21	22,58	15	16,13	11	11,83	93	8,11
Incomplete high school	70	34,48	24	11,82	42	20,69	35	17,24	32	15,76	203	17,70
Completed high school	50	28,25	23	12,99	42	23,73	41	23,16	21	11,86	177	15,43
Incomplete higher education	4	16,67	4	16,67	6	25,00	9	37,50	1	4,17	24	2,09
Complete higher education	3	23,08	1	7,69	2	15,38	3	23,08	4	30,77	13	1,13
RACE												
Ign/White	42	50,00	17	20,24	17	20,24	3	3,57	5	5,95	84	7,32
White	36	12,12	15	5,05	80	26,94	141	47,47	25	8,42	297	25,89
Black	28	24,56	27	23,68	33	28,95	13	11,40	13	11,40	114	9,94
Yellow	10	52,63	2	10,53	3	15,79	1	5,26	3	15,79	19	1,66
Pardon	297	50,51	98	16,67	90	15,31	27	4,59	76	12,93	588	51,26
Indigenous	41	91,11	1	2,22	-	-	-	-	3	6,67	45	3,92
Total	454	39,58	160	13,95	223	19,44	185	16,13	125	10,90	1147	100,00

Regarding HIV/AIDS, 10,129 adolescents between 14 and 19 years old contracted the pathology in the country. Among them, 59.98% were male, and the most affected region was the Southeast, with 36.2% of the cases. The age group with the highest prevalence was 15 to 19 years, with 89.81%. The majority (25.52%) of the affected adolescents had incomplete schooling from 5th to 8th grade, and the ethnicity with the highest prevalence was mulatto (31.53%) (Table 3).



Table 3. Prevalence of HIV/AIDS in adolescents aged 10 to 19 years by Brazilian regions from 2010 to 2021. Brazil, 2023.

VARIABLE	North		Northeast		Southeast		On		Central-West		Brazil	
	n	%	n	%	n	%	n	%	n	%	n	%
GENDER												
Ignored												
male	913	15,04	1.344	22,13	2.328	38,34	973	16,02	514	8,47	6.072	59,98
female	550	13,58	958	23,65	1.337	33,00	957	23,62	249	6,15	4.051	40,02
AGE GROUP												
10 a 14	123	11,92	239	23,16	348	33,72	286	27,71	36	3,49	1.032	10,19
15 a 19	1.342	14,75	2.063	22,68	3.320	36,50	1.645	18,08	727	7,99	9.097	89,81
SCHOOLING												
illiterate	2	5,00	18	45,00	11	27,50	8	20,00	1	2,50	40	0,74
1st to 4th grade incomplete	25	10,08	96	38,71	70	28,23	47	18,95	10	4,03	248	4,59
4th full series	25	10,73	61	26,18	70	30,04	65	27,90	12	5,15	233	4,32
Incomplete 5th to 8th grade	205	14,88	326	23,66	367	26,63	393	28,52	87	6,31	1.378	25,52
Complete fundamental	52	8,20	155	24,45	252	39,75	131	20,66	44	6,94	634	11,74
incomplete medium	194	16,74	228	19,67	396	34,17	232	20,02	109	9,40	1.159	21,47
complete medium	140	11,41	220	17,93	547	44,58	218	17,77	102	8,31	1.227	22,73
Incomplete top	52	12,97	71	17,71	142	35,41	94	23,44	42	10,47	401	7,43
Complete Superior	6	7,79	13	16,88	38	49,35	9	11,69	11	14,29	77	1,43
does not apply	0	0,00	0	0,00	1	50,00	1	50,00	0	0,00	2	0,04
RACE												
Ignored	595	16,40	840	23,16	1397	38,52	528	14,56	267	7,36	3.627	35,81
white	110	4,37	214	8,50	1025	40,72	1004	39,89	164	6,52	2.517	24,85
Black	34	4,76	145	20,28	330	46,15	171	23,92	35	4,90	715	7,06
yellow	3	8,11	4	10,81	16	43,24	9	24,32	5	13,51	37	0,37
Parada	713	22,32	1095	34,28	892	27,93	211	6,61	283	8,86	3.194	31,53
indigenous	10	25,64	4	10,26	8	20,51	8	20,51	9	23,08	39	0,39
Total	1465	14,46	2302	22,73	3668	36,21	1931	19,06	793	7,83	10.129	100,00

Regarding the evolution of cases, 2 cases of death related to Syphilis were registered in the country between 2011-2021, 1 in the Southeast and another in the South, in the age group of 15 to 19 years. About hepatitis B, 17 cases, among them, 10 adolescents between 15 and 19 years. The North region had the highest prevalence (52.94%). As for the cases related to HIV/AIDS, 873 were registered. Among them, 741 cases were in the age group of 15 to 19 years. It had a higher prevalence in the Southeast region (43.76%) (Table 4).



Table 4. Evolution of cases related to the prevalence of syphilis, hepatitis B and HIV/AIDS in adolescents aged 10 to 19 years by Brazilian regions in the period from 2010 to 2021. Brazil, 2023.

HEPATITIS												
VARIABLE	North		Northeast		Southeast		South		Midwest		BRAZIL	
	n	%	n	%	n	%	n	%	n	%	n	%
Deaths	9	52,94	7	41,18	1	5,88	0	0,00	0	0,00	17	100
Age group												
10 to 14	3	42,86	3	42,86	1	14,29		0,00	0	0,00	7	41,18
15 to 19	6	60,00	4	40,00	0	0,00		0,00	0	0	10	58,82
SYPHILIS												
Deaths	0	0,00	0	0,00	1	50,00	1	50,00	0	0,00	2	100
Age group												
10 to 14	0	0,00	0	0,00	0	0,00	0	0,00	0	0,00	0	0
15 to 19	0	0,00	0	0,00	1	50,00	1	50,00	0	0,00	2	100
AIDS												
Deaths	99	11,34	215	24,63	382	43,76	135	15,46	42	4,81	873	100
Age group												
10 to 14	18	13,64	40	30,30	45	34,09	23	17,42	6	4,55	132	15,12
15 to 19	81	10,93	175	23,62	337	45,48	112	15,11	36	4,86	741	84,88

4 DISCUSSION

The incidence of sexually transmitted infections (STIs) among adolescents has been increasing over time. It is known that adolescence is a period of physical and organic transformations, associated with the perception of sexual and occupational identity (CHEQUER, et al., 1998). Thus, the objective of this research was to present the prevalence and evolution of cases of sexually transmitted infections in adolescents in Brazil.

Among the STIs analyzed, syphilis is the one that most affects adolescents in Brazil, and the most reported region in this study was the Southeast, which may be related to the fact that it is the most populous region of Brazil and also due to the greater number of notifications in relation to more precarious regions (LAFETÁ, et al., 2016; MARINHO DE SOUZA, et al., 2019; SARACENI, Valéria and FERNANDO MENDES PEREIRA, et al., 2017). In addition, during the COVID-19 pandemic, there was a deficiency in the supply of penicillin in the Unified Health System due to the lack of raw material, which may explain the inadequate or not performed treatment for syphilis (CASTRO, et al., 2020). Even though the Southeast region has a better socioeconomic condition compared to other regions of the country, the situation may have been aggravated by the higher demand for the drug.

Still in relation to the Southeast region, this research identified that it represents the second highest illiteracy rate in the country, with 27.71%. And in relation to schooling, it indicated a higher prevalence in individuals with incomplete high school education, with 19.71%. However, population studies also show that some factors (sociodemographic, incomplete schooling, low income, stable



marital status or not) are higher among Brazilian women, and the average number of sexual partners decreases with increasing schooling (MACÊDO, et al., 2017).

This research also identified that women are the most affected. A study also states that, in Brazil, the number of cases of acquired syphilis in women is higher compared to men (MACÊDO, et al., 2017). This is due to biological issues, such as the extensive exposure of the vaginal mucosa to semen, added to sociocultural and gender issues that establish conditions of inferiority in relation to the opposite sex, also depriving them of the power to decide on sexual activity in a protected way (MOURA, et al., 2022). In addition, females are considered vulnerable to this pathology due to their behaviors in relation to the early onset of sexual life, high number of sexual partners and non-adherence to safe sex practices, by their own choice or that of their partner (MACÊDO, et al., 2017).

This study showed that there was a higher prevalence of cases in the brown race, with 39.39%. This can be explained by the fact that, in Brazil, health indicators based on the race/color variable revealed persistent social inequalities in the country, especially the most vulnerable groups (ARAÚJO, 2009). In addition, the difficulty of access to laboratories and health units, lack of social support, especially from the partner, and unsafe sexual practices may contribute to the increase in the incidence rates of the disease in this portion of the population (LIMA, et al., 2011).

This research revealed that, in Brazil, there is a higher incidence of reported cases of Hepatitis B in females, with 72.54%. Another study conducted in the Amazon region noted that cases were also more frequent in the group of women with positive markers for the B virus (HBsAg and or anti-HBc) (SILVA FILHO, 2010). This is all due to the multiplicity of partners, the non-use of condoms and the commercial practice of sexual activity, which are known factors of association with sexually transmitted diseases. In this same perspective, low family income was also positively correlated with the presence of anti-HBC (SILVA FILHO, 2010).

This study indicated a higher prevalence of hepatitis B cases in the northern region, with 39.58%. This may be related to the fact that this region has a profile with a high incidence of the disease, and that over the years the actions taken to try to control did not reflect in positive results regarding the control of the disease with regard to vaccination and the use of condoms, making its eradication unfeasible (ALMEIDA CE, et al., 2019; ADRIANE CBS, et al., 2015). In addition, another study conducted in the Amazon region showed a high prevalence of HBV, since data point to a rapid circulation of the virus in this region, reaching young individuals in the first years of life, and due to this high prevalence and rapid circulation some areas need more studies (SILVA FILHO, 2010).

Still on hepatitis B, the greatest involvement was in the brown race, with 51.26%, which converges with other studies that also point to the predominance of the brown race, throughout the period, drawing attention to the high percentages of ignored or blank information, which may impair the analysis of this item (MINISTRY OF HEALTH, 2019). This may be related to the ethnic formation



of Brazil, because in the Amazon the presence of pardos is due to miscegenation between whites, blacks and Indians (GONÇALVES, et al., 2019).

Regarding schooling, a greater predominance was identified among the 5th to 8th incomplete grades of PE, with 19.53%. This can be explained by the conditions of socioeconomic vulnerability of the populations, which can propitiate the transmission of the disease (GONÇALVES, et al., 2019). The gender variable showed a higher predominance in males, with 59.98%. This may be related to the context that there was greater notoriety of prevention campaigns for the most relevant groups in the AIDS epidemic: homosexuals, sex workers, women and injecting drug users. Thus, because they are not perceived as a group at risk for HIV infection, heterosexual men end up not receiving prominence in policies or prevention actions. Although the National Policy of Integral Attention to Men's Health, of 2009, encompasses the prevention of HIV, this ends up being a broader theme and that ends up being neglected in practice (SILVA, et al., 2022).

In addition, our study showed that the incidence rate of HIV/AIDS prevails in the Southeast region (36.21%). Other studies confirm these data, giving a highlight to the states of Rio de Janeiro and São Paulo, having an increase between 2010 and 2014 and a decrease between 2015 and 2019, with a peak in 2017 (MARTINS RODRIGUES, et al., 2022). The greater predominance in the Southeast region can be explained by the history of the dispersion of the epidemic in Brazil, by the spread of AIDS from the river-São Paulo axis, which began in large cities and over time spread to small metropolises (BRITO, 2001). The predominance of cases in relation to schooling was in students between the 5th and 8th incomplete grade of PE, with 25.52%. However, studies indicate that a process of inversion of pauperization is occurring, with an increased incidence among people with complete high school education or even higher education. Therefore, according to data from the Ministry of Health (MINISTRY OF HEALTH, 2019), the trend is for the predominance of AIDS in individuals with higher education.

Regarding race, there was a higher number of cases in the brown race, with 31.53%. Studies indicate a higher prevalence in the white race (46.67% in the last 10 years), but this incidence has been decreasing, giving room to the brown race. (MARTINS RODRIGUES et al., 2022). This change is due to the process of increasing cases among the most socioeconomically vulnerable populations, with a consequent increase in the brown race and a reduction in the white race, in both sexes (FRY PH, et al., 2007).

With regard to the weaknesses of the research, we may have underestimated data, since the research does not take into account the fact of having underreporting or unreported cases, both due to socioeconomic factors, which may end up leading to lack of information, and even in relation to the difficulty of access to health.



However, a research related to STI in adolescents in a country with a comprehensive territorial extension is difficult to be carried out in the field, and the data collected in DATASUS allows us to have an overview of the main variables of STIs. In relation to DATASUS, its focus is to bring statistical data from the country's indicators, from the collection, process and even dissemination of information. In addition, it aims to assist the SUS organs, provide support in informatics and in relation to systems necessary for their planning, operation and controls. Therefore, despite the great territoriality of Brazil, this mode of research allows us a better analysis of the health situation in certain territories, as well as the most appropriate action to be taken, making it possible to carry out specific projects in the health area.

To reduce the prevalence of STI in adolescents in Brazil, it is suggested the dissemination of knowledge of the form of transmission and understanding that the use of condoms is indispensable. It is important that the population is aware of what the general clinical manifestations of STIs are like so that they can identify and seek medical help for diagnosis and treatment, for early detection and prevention of complications.

Therefore, it is important to carry out campaigns, especially in schools, in order to spread this information to reach our target audience, which are adolescents from 10 to 19 years old.

In addition, the identification with regard to sex, education, race and age group helps us to identify the most affected groups, and in this way we can promote specific actions for each STI.

It was possible to observe that there is involvement of STIs and the socioeconomic part in the country, so we suggest further research for a better understanding of these variables. Thus, in the context of variables that relate STI with schooling, a field study between state and private schools, comparing them could serve as a parameter for activities to promote and prevent these diseases. In addition, differences can also be better detected between the variables sex and race versus per capita income and type of housing.

In terms of behavioral bias, we suggest further research that relates the prevalence of STI to the behavior of adolescents with an active sex life. For example, sexual orientation, contraceptive methods, condom use, number of partners, knowledge about STIs and their clinical manifestations, and drug use.

Since there has been an increase in the incidence of STI cases in the young public due to resistance to condom use, early initiation of sexual life, use of licit or illicit drugs and misinformation about forms of prevention, there is a need to conduct research related to understanding the sexual behavior of the adolescent public.



5 CONCLUSION

This research identified greater involvement of females in syphilis and hepatitis B, while in HIV there was greater involvement of males. In relation to the region, in the Southeast there was a prevalence of syphilis and HIV and in the North region hepatitis B prevailed. In the context of schooling, incomplete 5th to 8th grade represented the history of STIs hepatitis B and HIV, compared with syphilis that predominated in individuals with incomplete high school. In the scope of race, mulatto prevailed in the three STIs of the study, syphilis, hepatitis B and HIV.

Therefore, it appears that the diseases have an epidemiological profile characterized in relation to sex, in which women are more vulnerable due to the extensive exposure of the vaginal mucosa to semen, sociocultural and gender issues.

Thus, as there is a different epidemiological profile in each region, there is a need to act based on the particularities of each one. For example, in the North and Northeast regions there is a greater lack of access to health due to the high prevalence of cases. While the Southeast region has a greater gap in terms of schooling, with a high illiteracy rate in the country. In the South region, the greatest involvement in relation to STIs was in the white race.



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