

SEXUALLY TRANSMITTED INFECTIONS IN INDIGENOUS COMMUNITIES OF THE ALTO RIO SOLIMÕES

INFECÇÕES SEXUALMENTE TRANSMISSÍVEIS EM COMUNIDADES INDÍGENAS DO ALTO RIO SOLIMÕES

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ABSTRACT

Introduction: The prevalence of sexually transmitted infections (STI) among indigenous communities is an appalling issue related to Brazilian public health, as there is an increasing underreporting and neglect related to the study and care of these people. **Objective:** To determine the prevalence of STI in the indigenous population of the Alto Rio Solimões. **Methods:** STI diagnostic records from the database of the Indigenous Health Care Information System - SIASI, of the indigenous communities of the Alto Rio Solimões, belonging to the Nova Itália base, in Amazonas, were evaluated during the period from January 2010 to August 2020. Sociodemographic data were also evaluated to determine the profile of the diagnosed indigenous population and the geographical and temporal distribution of cases. **Results:** The overall prevalence rate of STIs was 3.91% (113 notifications of STI in the population of 2890 indigenous people). The largest number of diagnosed cases was in Nova Itália (60.17%). The ethnic group with the highest number of cases was Tikuna (92.03%). Among the STI studied, gonorrhea / chlamydia had the highest prevalence (68.14%), followed by Hepatitis B (13.27%) and Syphilis (10.61%). Most cases were found among women (71.7%), aged 30–34 years. **Conclusion:** A higher prevalence of STIs was observed in indigenous women, mainly from the Nova Itália town and the Tikuna ethnic group. **Keywords:** health of Indigenous peoples; sexually transmitted diseases; urologic diseases.

RESUMO

Introdução: A prevalência das infecções sexualmente transmissíveis (IST) entre comunidades indígenas é um tema consternador relacionado à saúde pública brasileira, pois há crescente subnotificação e negligência relacionada ao estudo e ao cuidado desses povos. **Objetivo:** Determinar a prevalência de IST na população indígena do Alto Rio Solimões. **Métodos:** Foram avaliados os registros diagnósticos de IST da base de dados do Sistema de Informação da Atenção à Saúde Indígena (SIASI), das comunidades indígenas do Alto Rio Solimões, pertencentes ao polo-base de Nova Itália, no Amazonas, durante o período de janeiro de 2010 a agosto de 2020. Também foram avaliados dados sociodemográficos para determinação do perfil da população indígena diagnosticada e a distribuição geográfica e temporal dos casos. **Resultados:** A taxa de prevalência geral de IST foi de 3,91% (113 notificações de IST na população de 2.890 indígenas). O maior número de casos diagnosticados foi em Nova Itália (60,17%). A etnia com maiores números de casos foi a Tikuna (92,03%). Entre as IST estudadas, gonorréia/clamídia tiveram a maior prevalência (68,14%), seguidas por hepatite B (13,27%) e sífilis (10,61%). A maioria dos casos ocorreu entre mulheres (71,7%) e na faixa de 30–34 anos. **Conclusão:** Observou-se maior prevalência de IST em mulheres indígenas, principalmente do município de Nova Itália e da etnia Tikuna. **Palavras-chave:** saúde de populações indígenas; doenças sexualmente transmissíveis; doenças urológicas.

INTRODUCTION

Sexually transmitted infections (STIs) are among the most common public health issues and difficult to control amid worldwide. Some of them can evolve into serious complications and death⁽¹⁾, in addition to being the main facilitator of the transmission of the human immunodeficiency virus.

The approach of these pathologies in indigenous populations is even more worrying. Despite being reported, they are rarely disclosed in public reports or bulletins, hindering adequate and effective treatment⁽²⁾. Occasioned by the lack of research due to the difficulties related to the extension of the national geographic area, hindering displacement and evidencing an important information gap about Indigenous communities⁽²⁾. Vulnerability to STIs among Indigenous

peoples can be understood by the intersection of social inequalities, cultural oppression and interethnic friction in a complex mosaic in their socio-political environment⁽³⁾.

Through specific studies carried out by the Departamento de Saúde Indígena (DESAI) (Department of Indigenous Health), of Fundação Nacional de Saúde (FUNASA) (National Health Foundation) in some villages, a panoramic view of what may be occurring in these communities was obtained⁽⁴⁾. The notoriety of the indigenous peoples of the Brazilian Amazon must be highlighted, since they have great ethnic diversity, population and, above all, it is the peoples who present relative cultural preservation⁽²⁾. However, information on the epidemiology of these infections and on which areas or groups should be targeted by prevention efforts is scarce⁽³⁾. Regarding this, there are concerns about the vulnerability of these populations to STIs⁽⁵⁾.

STIs have a close relationship with ethnic conceptions about sex and sexuality⁽¹⁾. The tendency of increase the number of cases of Acquired Immunodeficiency Syndrome (AIDS) among Indigenous people directly related to the occurrence of interactions between distinct ethnic groups; rituals and/or events involving the handling of shared sharp objects without adequate disinfection (scarification and tattooing, among others); sexual practices of polygamy; polyandry and polygyny; practices of shared breastfeeding; alcoholism;

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prevalence of STIs and other risk factors associated with infection with human immunodeficiency⁽²⁾.

According to data from projects developed by the National Coordination of Sexually Transmitted Diseases (STD)/AIDS in partnership with states, towns and other institutions, the prevalence of STIs in indigenous populations is about 60%⁽²⁾. On account of the seriousness situation and the underreporting of STIs, an epidemiological investigation and an understanding of how Indigenous people relate to safe sexual practices becomes necessary.

As the indigenous population lives closer to urban areas, the higher the STI index is, with women being the most affected⁽²⁾. The rate of chronic infectious diseases such as viral hepatitis will be increasing in relation to time and contact with urban people, and there will be a number of underreported cases, highlighting syphilis, trichomoniasis and urethral discharge syndrome, among others⁽¹⁾.

Understanding how STI dynamics occur in semi-isolated indigenous people, within their social context, and identifying which variables may be related to contagion and transmission may contribute to the planning of interventional actions that consider health education as a priority.

OBJECTIVE

To determine the prevalence of STI in the indigenous population of the Alto Rio Solimões.

Methods

This is a prevalence study, carried out from the search for cases related to STIs in communities served by the Nova Italia base, belonging to the Distrito Sanitário Especial Indígena (DSEI) (Special Indigenous Sanitary District) Alto Rio Solimões. The data were obtained through the database of the Indigenous Sistema de Informação da Atenção à Saúde Indígena (SIASI) (Health Care Information System). The results were extracted in the period between October 2020 and December 2020.

Study procedures

The research was accomplished using documentary methods. The used data were extracted from SIASI, classified by the International Statistical Classification of diseases, tenth version (ICD-10), between A50 and A64 as predominantly sexually transmitted infections and their respective diseases, catalogued from a clinical and syndromic approach following the clinical protocol and therapeutic guidelines for comprehensive care for people with STIs, epidemiological history and serology (when present), between January 2010 and August 2020. The following information of these patients was collected: date of notification, gender, age, Indigenous ethnicity, place of residence. The inclusion criteria of the study were: indigenous people of all age groups, belonging to the ethnicities Tikuna, Witoto, Kambeba, Kanamari and Kocama, which are part of the DSEI of the Alto Rio Solimões Nova Itália base. Patients whose data were not fully completed or who presented inconsistencies in the necessary information agreed with the objectives of the study, such as personal data, diagnosis or treatment, were excluded from the survey.

Ethics

Data were collected and processed only after the approval of the Research Ethics Committee of Centro Universitário Barriga Verde (approval number: 4,356,089) and the National Research Ethics Committee – Conselho Nacional de Saúde (Conep-CNS) - (approval number: 4,479,308). All measures presented were taken to protect the data collected and preserve the identity of patients, in accordance with the ethical principles contained in the Helsinki Declaration.

Statistical methods

The accounting of confirmed cases according to sociodemographic characteristics provided data to calculate prevalence rates, having as numerator the number of cases and as denominator The referring population in each category, using the constant 10,000.

The data analysis was carried out with the help of the SPSS program version 21.0. The quantitative variables were described by measures of central frequency and data dispersion, being mean±standard deviation. Qualitative variables were described as absolute frequency (n) and relative frequency (%). Differences between subgroups of the studied population, in relation to sociodemographic and clinical characteristics and the outcome presented, were evaluated by ANOVA and Tukey tests for multiple comparisons, when it came to quantitative variables, by chi-square test and for qualitative variables, by Fisher's exact test. Comparisons of incidence and mortality rates according to subgroups were made using the rate ratio, or relative risk, with a 95% confidence interval and a 5% significance level.

RESULTS

Study population

The number of notifications composing this study and extracted from the SIASI was 113 indigenous patients who were part of the DSEI of Alto Rio Solimões, Nova Itália base, belonging to the city of Amaturá (AM).

The DSEI is composed of 13 villages (Bom Pastor, Canimaru, Cordeiro de Deus, Nova Alegria, Nova Galiléia, Nova Itália, Porto Caldas, Porto Gama, Santo Inácio, São Domingos, São Pedro, Tambaqui and Vargem Grande) and four ethnic groups (Witoto, Tikuna, Kokama, Kambeba). The indigenous population studied was 2,890 people. The largest villages are Nova Itália (1,497 inhabitants), Canimaru (461 inhabitants) and Bom Pastor (361 inhabitants).

Prevalence of sexually transmitted infections

The overall prevalence rate of STI among communities was 3.91% (113 cases among 2,890 Indigenous people). The villages with the highest number of diagnosed cases were Nova Itália (68 out of 113 cases, 60.17%) and Bom Pastor (23 out of 113 cases, 20.35%), as demonstrated in **Table 1**.

However, the village with the highest prevalence rate was Nova Alegria (6 cases among 60 Indigenous people, 10.0%), followed by Bom Pastor (23 cases among 361 Indigenous people, 6.4%) and Porto Gama (6 cases among 95 Indigenous people, 6.3%). The ethnic

groups with the highest number of cases were Tikuna with 104 cases (92.03%), and Kokama with six cases (5.30%). The Kambéba and Witóto ethnicities presented low prevalence, with only two and one case, respectively.

Among the STIs studied, balanitis, chancroid, gonorrhea/chlamydia, hepatitis B, herpes, syphilis, genital warts and other unidentified STIs appear. Gonorrhea/chlamydia was the pathology with the highest prevalence (77 cases, 68.14%), followed by hepatitis B (15 cases, 13.27%), syphilis (12 cases, 10.61%), herpes (4 cases, 3.53%). The other STIs together, including the unidentified ones, totaled five cases (4.42%), being balanitis, chancroid and genital warts.

Seasonality

Over the evaluated period STI diagnoses had their peaks reported between the years of 2010 (37 of 113 cases, 32.7%), 2019 (26 of 113 cases, 23.0%) and 2013 (17 of 113 cases, 15%). The occurrence was not equal in both sexes; women followed the overall trend of the sample in 2010 (36 out of 81 cases, 44.4%), 2019 (18 out of 81 cases, 22.2%) and 2013 (12 out of 81 cases, 14.8%), while the male peaks were during the years of 2019 (8 out of 32 cases, 25%) 2018 (5 out of 32 cases, 15.6%) and 2013 (5 out of 32 cases, 15.6%). Therefore, a difference was demonstrated in the distribution of cases over the analyzed years and also in relation to sex ($p < 0.001$).

Regarding seasonality, it was also observed that, during the periods between January-March and August-October, cases tend to increase, with peaks occurring in February (14 cases) and September (19 cases; $p < 0.001$). A tendency that the increase in cases begins, in the male indigenous, about a month before the peak among the female indigenous, is observed, as it is possible to evaluate in the **Figure 1**. The months with the lowest amounts of diagnosed cases were April-July and November-January (being May and April the months with the lowest rates). During the months of March, April and October, the prevalence of diagnoses among men was zero.

Table 1 – Total number of diagnoses of sexually transmitted infections per village. Compiled from 2010 to 2020. Distrito Sanitário Especial Indígena Alto Rio Solimões, Tabatinga, Amazonas, Brasil.

Village	Population	Cases	Prevalence in the village (%)
Bom Pastor	361	23	6.4
Canimaru	461	3	0.7
Cordeiro de Deus	59	1	1.7
Nova Alegria	60	6	10
Nova Galiléia	53	2	3.8
Nova Itália	1,497	68	4.5
Porto Caldas	60	2	3.3
Porto Gama	95	6	6.3
Santo Inácio	31	0	0
São Domingos	55	1	1.8
São Pedro	55	0	0
Tambaqui	90	1	1.1
Vargem Grande	13	0	0
Total	2,890	113	3.9

Profile

In **Table 2** the distribution of cases by year and by sex is observed. Diagnosed cases were mostly observed and present in women, 81 (71.7%), than in men, 32 of the cases (28.3%; $p < 0.001$). In the analyzed years, 72% had a higher number of diagnoses performed in women, and only three years had a higher number of cases in men (2014, 2017, 2018).

The age group of diagnosed patients is concentrated between 25 and 49 years (65 cases; $p < 0.001$), with prevalence between 30 and 34 years (15 cases). The proportion of diagnosed STIs decreases considerably at age extremes, such as 0-14 years (five cases) and 65-90 years (six cases), as can be seen in the **Figure 2**. The age group of 80 to 84 years was the only not reached. There were about 14 cases among children under the age of 18.

DISCUSSION

The indigenous population strongly lacks information about sex education, as confirmed by this article. Of the 13 villages studied, only three did not present STI cases during the study period, demonstrating the relevance and poverty of studies involving STIs and the population in question.

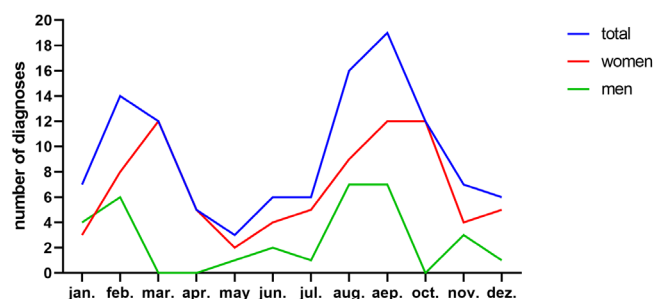


Figure 1 – Total number of diagnoses of sexually transmitted infections per month and per sex. Compiled from 2010 to 2020. Distrito Sanitário Especial Indígena Alto Rio Solimões, Tabatinga, Amazonas, Brasil.

Table 2 – Total number of diagnoses of sexually transmitted infections per year and per sex. Distrito Sanitário Especial Indígena Alto Rio Solimões, Tabatinga, Amazonas, Brasil.

	Total		Women		Men	
	N	%	N	%	N	%
2010	37	32.7	36	44.4	1	3.1
2011	0	0	0	0	0	0
2012	6	5.3	4	4.9	2	6.3
2013	17	15	12	14.8	5	15.6
2014	3	2.7	0	0	3	9.4
2015	4	3.5	2	2.5	2	6.3
2016	0	0	0	0	0	0.0
2017	5	4.4	2	2.5	3	9.4
2018	9	8	4	4.9	5	15.6
2019	26	23	18	22.2	8	25
2020	6	5.3	3	3.7	3	9.4
Total	113	100	81	71.7	32	28.3

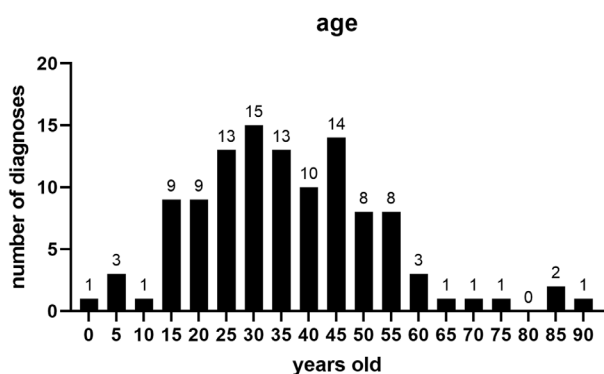


Figure 2 – Total number of diagnoses of sexually transmitted infections by age. Compiled from 2010 to 2020. Distrito Sanitário Especial Indígena Alto Rio Solimões, Tabatinga, Amazonas, Brasil.

The prevalence of STIs obtained with this research (3.91%), although it seems small, corresponds to 113 cases in a small population of 2,890 Indigenous people and is significant when considering the intense epidemiological underreporting of the diseases addressed. Studies indicate that the prevalence of STIs in Brazil is variable, being approximately 0.72% for syphilis, 1.4% for acute urethral discharge syndromes and 7.5% for human papillomavirus infection⁽⁶⁾.

This rate can be interpreted in a multifactorial way, including the lack of information on sex education, limited strategies and public policies, low availability of materials (condoms and medicines), examinations and medical care, and also the traditions of the villages themselves. The Amazon region is characterized by a large part of its population living in small and economically underdeveloped cities. Other characteristics, such as poverty, mobility difficulties and limited access to education and health services, make it difficult to prevent STIs⁽³⁾. Some articles still suggest that the proximity between indigenous villages and white peoples significantly increases the rates of these diseases⁽²⁾, which, together with interethnic relations, may explain a greater number of cases in the most populous villages, as is the case of Nova Itália.

Regarding the distribution of infections by sex, women (71.7%) were abruptly more affected than men (28.3%). This pattern remained for some years, demonstrating the fragility of Indigenous women's health. This may be related to some specific characteristics of the tribes, such as interethnic sexual relations, multiple partners and early Indigenous woman initiation of sexual life and other more comprehensive characteristics, such as the presence of prostitution houses in the localities, sexual abuse, and lack of sexual education and instruction strategies⁽⁷⁾. The data found on the profile of sexual and reproductive health and sociocultural aspects of Indigenous women show a sexual and reproductive pattern characterized by conditions of vulnerability due to early onset of sexual life, poor adherence to condom use, as well as exposure to STDs⁽⁷⁾.

Regarding the number of diagnoses per disease, acute urethral discharge syndromes (gonorrhea/chlamydia) were the most diagnosed (77). Gonorrhea is a disease caused by the bacteria *Neisseria gonorrhoeae*, a highly sexually transmissible gram-negative diplococcus⁽⁷⁾ easy to diagnose and prevent and whose prevalence is higher in

vulnerable communities, such as indigenous populations. Chlamydia is characterized by infection with *Chlamydia trachomatis* and it is considered the most prevalent bacterial STI worldwide. Gonorrhea/chlamydia co-infection occurs in up to 50% of cases and is difficult to distinguish clinically. Due to this association, they are put together as acute urethral discharge syndromes and treated concomitantly. Thus, the grouping of the two infections is often used⁽⁸⁾.

Regarding the distribution of diagnoses by month of the year, it can be inferred that the holding of typical local festivities also influences STI rates. The data from this study showed a significant increase in infections in the period of September, the month in which the Festival Internacional das Tribos do Alto Solimões (FESTISOL) (International Festival Of The Tribes of Alto Solimões) takes place. Large parties often attract individuals from different parts of the state, different tribes and ethnicities, in addition to favoring the abusive consumption of alcohol and/or drugs, which can provide unsuspecting sexual relations, significantly changing the number of infected individuals, especially among the most vulnerable ones. Alcoholism is one of the factors that have also provoked tension within Indigenous communities, stimulating sexuality outside the rules of the group, sexual abuse and prostitution in urban centers and on highways⁽⁹⁾.

Some Indigenous traditional rituals and festivities take place at non-predefined periods during the year and can also attract a significant volume of individuals, such as the Festa da Moça Nova, a Tikuna ritual that symbolizes the passage from girl to woman from menarche. Other indigenous traditions are characterized by the handling of blood, commonly from skin cuts. These rites, especially, can promote significant increase in diseases such as hepatitis B, found in 15 patients of this study⁽¹⁰⁾.

From the age distribution perspective, it was observed that the most affected age group was adults (25 to 49 years), given convergent with the prevalence of infections in the age group surveyed by the World Health Organization⁽⁹⁾.

Another data revealed by the current research concerns the distribution of STIs by age, in which the appearance of STIs was observed in patients under ten years of age, which could suggest vertical transmission (transmission during childbirth), early initiation of sexual life or sexual abuse. An example of vertical transmission is given by Marx et al., in which, among the 90 children born to Indigenous mothers infected with tertiary syphilis, 76 children aged 18 months or older tested negative, but up to eight younger children acquired congenital syphilis⁽¹¹⁾.

Predominantly, intra-family sexual abuse classified situations occur in some indigenous villages, involving Indigenous children or young people, but always as something internal to the community, and which, for different motivations, become public or can be communicated to indigenous bodies. High rates of child sexual abuse are a significant problem in indigenous minority communities around the world⁽¹²⁾. In addition, underreporting rates in these communities are estimated to be significantly higher than in non-Indigenous communities, in which problems with reporting child sexual abuse to authorities are exacerbated⁽¹³⁾. The facet of sexual exploitation, on the other hand, would be related to intercultural relations between Indigenous and non-Indigenous, with levels of insertion and/or sexual vulnerabilities established according to the time of contact of the peoples with the non-Indigenous Society⁽¹⁴⁾.

Strengths

The unprecedented research in the communities studied is reinforced. Studies conducted in Brazilian indigenous groups are rare. The study may also contribute in these communities to their knowledge about sex education, since its dissemination may serve as relevant data to expand awareness campaigns about STI in indigenous peoples.

Limitation

This study has as limitation the possibility of working with incomplete data; since the information entered in the SIASI are operator-dependent, there may be underreporting.

CONCLUSION

A higher prevalence of STI was observed in Indigenous women, mainly from the Nova Italia town and the Tikuna ethnic group. The information evidenced by this research also demonstrates the need for the implementation of projects that promote sex education in indigenous populations and provide more subsidies for public policies aimed at the training of health professionals, which include more in-depth studies about the singularities of these groups.

Author's contributions

Pablo Michel Barcelos Pereira: study outline, data analysis and interpretation, drafting of the article, critical review and approval of the version of the article.

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André Gabriel Gruber: study outline, data analysis and interpretation, critical review and approval of the version of the article.

Williams Ferreira Portela: study outline, data analysis and interpretation, critical review and approval of the version of the article

Rafael Mariano de Bitencourt: final review and approval of the version of the article

Mariana Pereira de Souza Goldim: study outline, data analysis and interpretation, drafting of the article, critical review and approval of the version of the article.

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Conflict of interests

Authors have no conflict of interests to declare

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