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Prevalence of syphilis acquired in the municipality of Patos de Minas, Minas Gerais

Prevalência de sífilis adquirida no município de Patos de Minas, Minas Gerais

Prevalencia de sífilis adquirida en el municipio de patos de Minas, Minas Gerais

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ABSTRACT

Objective: to analyze the prevalence of acquired syphilis in male and female individuals reported from January 2016 to August 2017 by the municipality of Patos de Minas - MG. **Method**: retrospective, descriptive cross - sectional study with 112 medical records collected during January 2016 to August 2017. **Results**: The proportion of male to female infections was 2.25 in 2016 and 1.64 in 2017. The total prevalence of syphilis increased from 26 cases between January and August 2016 to 66 cases in the same monthly range of 2016, demonstrating that the number of cases of acquired syphilis increased by 2.54 times. The age group that was most affected was between 21 and 30 years of age, 46.2% in 2016 and 34.9% in 2017, without statistically differing between the periods (p> 0.05). No cases of gestational syphilis were reported. **Conclusion**: the prevalence of acquired syphilis in the municipality of Patos de Minas has increased exponentially regardless of sex, but it is still more prevalent in men and young individuals under 30 years of age.
Keywords: Treponemal Infections, *Treponema pallidum,* Syphilis serodiagnosis, Epidemiological studies.

RESUMO

Objetivo: analisar a prevalência de sífilis adquirida em indivíduos do sexo masculino e feminino notificados dentre janeiro de 2016 a agosto de 2017 pelo município de Patos de Minas – MG. **Método:** pesquisa transversal retrospectiva, descritiva, com 112 prontuários coletados durante janeiro de 2016 a agosto de 2017. **Resultados:** A proporção de infecção no sexo masculino em relação ao sexo feminino foi de 2,25 em 2016 e de 1,64 em 2017. A prevalência total de sífilis aumentou de 26 casos, entre janeiro a agosto de 2016, para 66 casos na mesma faixa mensal de 2016, demonstrando que o número de casos de sífilis adquirida aumentou em 2,54 vezes. A faixa etária que mais foi afetada foi entre os 21 e 30 anos de idade, 46,2% em 2016 e 34,9% em 2017, sem diferir estatisticamente entre os períodos (p>0,05). Nenhum caso de sífilis gestacional foi notificado. **Conclusão:** a prevalência de sífilis adquirida no município de Patos de Minas aumentou exponencialmente independentemente do sexo, porém continua a ser mais prevalente em homens e em indivíduos jovens com idade inferior a 30 anos.
Palavras-chave: Infecções por treponema, *Treponema pallidum*, Sorodiagnóstico da sífilis, Estudos epidemiológicos.

RESUMÉN

Objetivo: analizar la prevalencia de sífilis adquirida en individuos del sexo masculino y femenino notificados entre enero de 2016 a agosto de 2017 por el municipio de Patos de Minas - MG. **Metodo**: investigación transversal retrospectiva, descriptiva, con 112 prontuarios recogidos durante enero de 2016 a agosto de 2017. **Resultados**: La proporción de infección en el sexo masculino en relación al sexo femenino fue de 2,25 en 2016 y de 1,64 en 2017. La prevalencia total de sífilis aumentó de 26 casos, entre enero a agosto de 2016, para 66 casos en la enfermedad la misma franja mensual de 2016, demostrando que el número de casos de sífilis adquirida aumentó en 2,54 veces. El grupo de edad más afectado fue entre los 21 y 30 años de edad, el 46,2% en 2016 y el 34,9% en 2017, sin diferir estadísticamente entre los períodos (p> 0,05). No se ha notificado ningún caso de sífilis gestacional. **Conclusión**: la prevalencia de sífilis adquirida en el municipio de Patos de Minas aumentó exponencialmente independientemente del sexo, pero sigue siendo más prevalente en hombres y en individuos jóvenes con edad inferior a 30 años.
Palabras clave: Infecciones treponémicas, *Treponema pallidum*, Serodiagnóstico por sífilis, Estudios epidemiológicos.

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INTRODUCTION

Sexually transmitted infections (STIs) present high prevalence and great impact on the health of the population. STI's are group of endemic infections of multiple causes that have as a common trait transmission during unprotected sexual activity with a person who is infected. In general, STIs present clinical signs such as ulcers on the genitals, vaginal and cervical discharge, warts and vesicles[1,2,3,4]. The World Health Organization (WHO) estimates the occurrence of more than 1 million cases of STI per day globally. About 357 million new infections are reported per year, including chlamydia, gonorrhea, syphilis and trichomoniasis[5]. Despite the technological advances in the health areas, Brazil still presents a high incidence of sexually transmitted infections, occurring about 900 thousand cases per year in the country[6,7].

Syphilis is a chronic, systemic infectious disease caused by the bacterium Treponema pallidum subspecies pallidum whose transmission is predominantly sexual or congenital. It is an infection that can be controlled through effective public health actions and measures, because it presents sensitive diagnostic tests[6,8,9]. When untreated, it evolves into chronic disease with irreversible sequelae that can affect any part of the human body, including the Central Nervous System and not only the genito-anal regions.[9] In Brazil, in 2016, there were 87,593 reports of cases of acquired syphilis, 37,436 cases of gestational syphilis and 20,474 cases of congenital syphilis - with 185 deaths. The highest proportion of cases were reported in the Southeast region[7].

The bacteria reach the lymphatic chain in hours or days after the mucosal penetration. The onset of symptoms occurs 10 to 90 days after infection[10]. The disease is characterized by a prolonged latency period, explained in great part by the immunological characteristics of Treponema pallidum. The bacteria causing the infection does not confer protective immunity, this means that an individual may be infected every time it is exposed to bacteria of the genus T. pallidum and yet there is no vaccine syphilis[5,11].

Another form of transmission and infection of syphilis occurs through the placental route during pregnancy, when the mother with syphilis was not treated or did not perform the treatment correctly. Transmission of Syphilis can also occur by contact of the newborn with genital lesions at birth, at birth, but is uncommon. Blood transfusion, although possible, is rare due to the rigorous blood bank screening performed on the blood bags for the presence of T. pallidum infectious agents. And also, because the blood bags are kept at low temperatures, which is enough to exterminate the bacteria outside the human body[5,6,15].

Syphilis is classified into three stages, the primary phase is characterized by onset of ulcerative lesions that eventually disappears; the secondary phase that after a period of latency, goes into activity again affecting skin and internal organs; and the tertiary phase also known as the late phase characterized by a slowly progressive inflammation, evolving and affecting several organs[10,12,13,14].

The clinical diagnosis for syphilis usually occurs after the appearance of the first

symptoms that are evidenced during the clinical anamnesis of the patient. Thus the doctor can choose the fast chromatographic test or directly by the VDRL[8,13].

Non-treponemal tests detect antibodies against antigens found in both Treponema pallidum and certain human tissues and thus are not specific for syphilis. If a non-treponemal test is positive (titre is ≥1: 8), the same serum is subjected to a treponemal test, such as the more specific and sensitive Fluorescent Treponema Antibody Absorbency Test (FTAAbs). As a window period is shorter, and may be positive after the appearance of lesions (chancre). Once positive, the FTAAbs will remain for the rest of the life, even after the cure of the patient, which does not occur with VDRL (Veneral Desease Research Laboratory), that declines progressively after the cure, and may or may not become negative after a successful treatment[8,16].

Considering the high incidence of syphilis in Brazil, the risks to which men and women are exposed, and that no similar research was carried out in the city of Patos de Minas / MG, this study aimed to analyze the prevalence of syphilis acquired through retrospective research of the medical records of patients with an established diagnosis of the disease from January 2016 to August 2017.

METHODS

The present study was conducted through a retrospective, descriptive, quantitative, and documental study that evaluated the prevalence of acquired syphilis in men and women in the city of Patos de Minas, MG, through a survey of data obtained from patients' records in the Unit Basic Health Center “Centro Viva a Vida”.

Patos de Minas is located 399.5km from the capital Belo Horizonte, on the upper Paranaíba, with a territorial area of 3,189km^2 and a population of 149,856 inhabitants and Human Development Index (HDI) of 0.765.

The sample of this study was constituted by 112 medical records of individuals of both sexes that obtained positive results in the tests for the bacterium Treponema pallidum, between January of 2016 and August of 2017. The fast test kit used by the Secretary of Health of the Municipality of Patos de Minas is Alere Syphilis, an immunochromatographic test for the qualitative detection of antibodies of all isotypes (IgG, IgM, IgA) against the T. pallidum bacterium.

The inclusion criteria were: to present a rapid test reagent for syphilis, to be aged at least 10 years, to be followed up at the referral service; and those of exclusion: medical records with illegible or incomplete data and users with cognitive difficulties.

The data obtained were tabulated in spreadsheet editors and analyzed through descriptive statistics using absolute and relative frequencies as well as inferential statistics for qualitative variables using non-parametric binomial and chi-square tests and correlation test by Contingency Coefficient C. All analyzes were performed using the Statistical Package of Social Sciences software (SPSS® 20.0). The research was carried out with the approval of an ethics committee in research with human

beings, according to opinion of approval nº 067667/2017.

RESULTS AND DISCUSSION

Between January 2016 and August 2017, 112 cases of syphilis were reported, 68.75% were male (n = 77) and 31.25% were female (n = 35), this frequency was statistically higher in males compared with females from the non-parametric binomial test (p <0.05), according to table 1.

Table 1: Contingency table for the comparison of absolute and relative frequencies of syphilis reports in the municipality of Patos de Minas - MG between male and female with different monthly ranges from January 2016 to August 2017

Monthly Range between the months of January 2016 and August 2017		Sex						Inferential statistics			
		Male		Female		Total		Chi-square test		Contingency Coefficient C	
		n	%	n	%	n	%	Value	p-value	Value	p-value
January to December. 2016	Yes	36	78.3	10	21.7	46	100	3.287	0.070	0.169	0.070
	No	41	62.1	25	37.9	66	100				
January to August. 2016	Yes	18	69.2	8	30.8	26	100	0.004	0.952	0.006	0.952
	No	59	68.2	27	31.4	86	100				
September to December. 2016	Yes	18	90	2	10	20	100	5.117	0.024*	0.203	0.024*
	No	59	64.1	33	35.9	92	100				
January to August. 2017	Yes	41	62.1	25	37.9	66	100	3.284	0.070	0.169	0.070
	No	36	78.3	10	21.7	46	100				
Total	Notified cases	77	68.75	35	31.25	112	100	Binomial test with the same probability of occurrence between the sexes: p<0.05*			

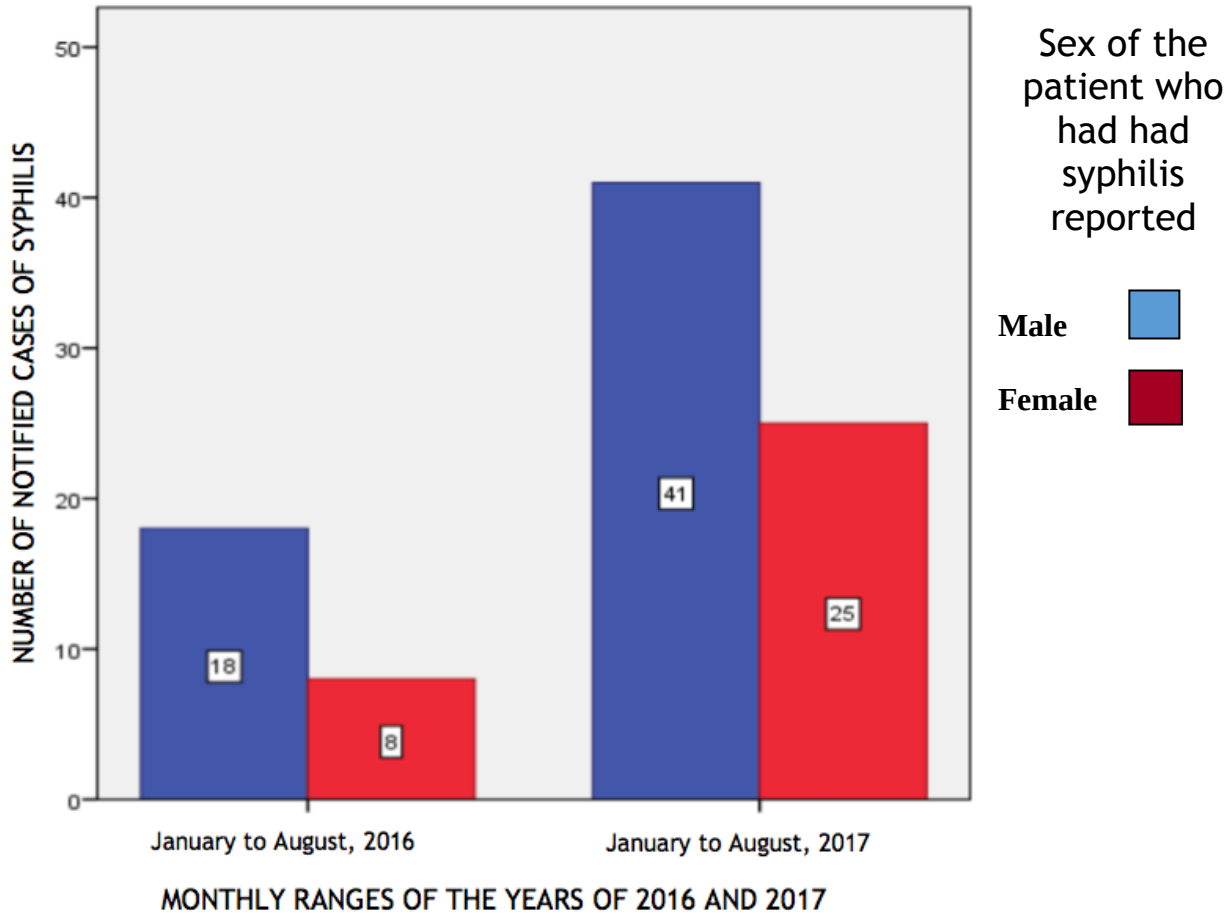
* It presented statistical differences.

There was a high prevalence of syphilis acquired in this study. This fact may be linked to the increase in cases in the country, evidenced by data from the last epidemiological bulletin launched by the Ministry of Health in 2017, which highlights a 26.8% increase in the incidence of acquired syphilis. This is a serious and worrying data, since the population analyzed in this study included adolescents and women of childbearing age, because it is found that congenital syphilis is responsible for 40% of fetal and perinatal deaths in the country. This emphasizes the importance of the study in relation to the population awareness campaigns and serves as a warning to the competent health agencies. In 2016, the total number of cases reported in Brazil was 87,593, with 53.5% of cases reported in the Southeast region[6].

Table 1 shows that 46 cases of syphilis were registered in all 2016, and 78.3% of them were male (n = 36) and 21.7% female (n = 10). In the year 2017, between January and August, 66

cases were recorded, 62.12% of which were male (n = 41) and 37.88% female (n = 25). Due to the fact that the data collection for the year 2017 was only carried out up to the month of August, data were collected from the year 2016 corresponding to the same period for subsequent statistical comparison. Therefore, from January to August 2016, 26 cases of syphilis were reported, 69.2% were male (n = 18) and 30.8% female (n = 8) (Figure 01).

Figure 1: Absolute frequencies of reported cases of syphilis between the male and female sexes by the monthly ranges from January to August 2016 and January to August 2017.



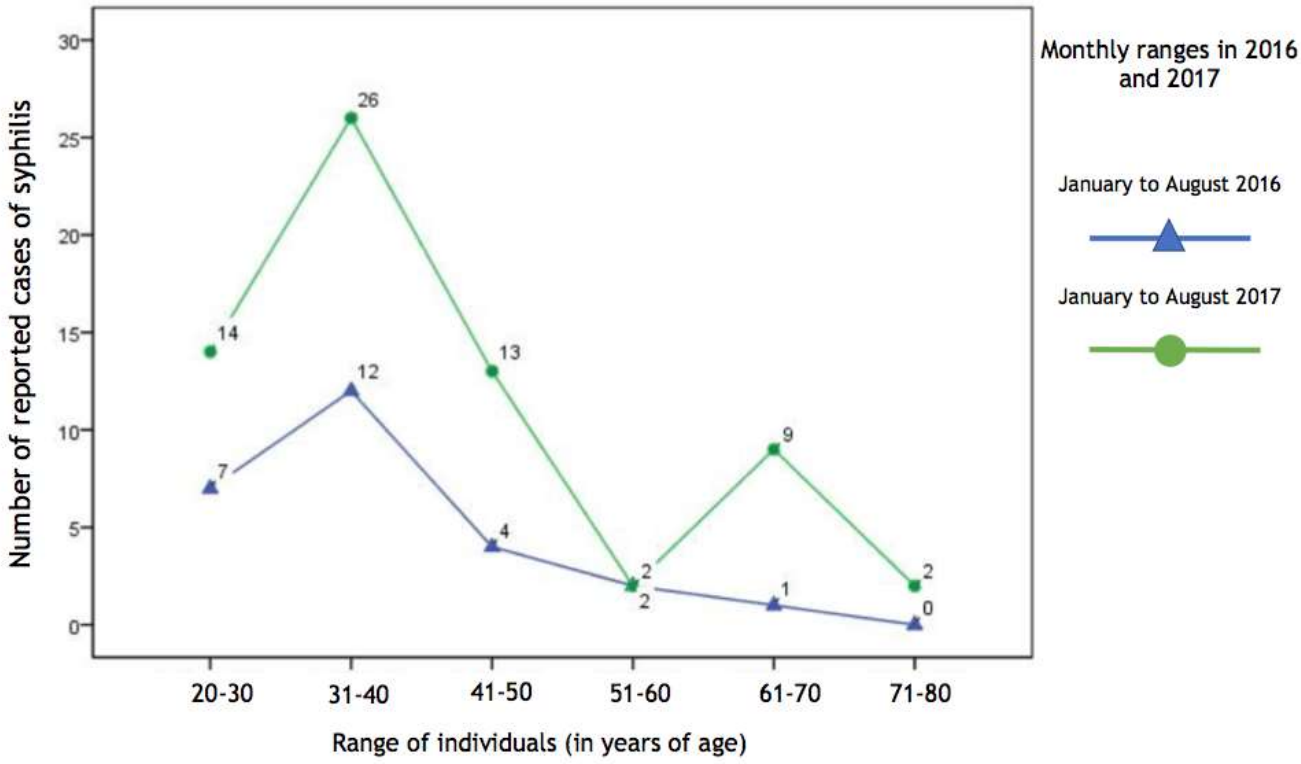
Pinto and colleagues[17] reported that in their study of 1405 individuals, 43.7% of the cases were females and 56.3% were males, demonstrating a higher prevalence in males, being in agreement with this study, which also showed a higher prevalence males when compared to females. In Brazil and Minas Gerais there is a predominance of women (51% and 50.8%, respectively)[18], which does not justify the high rate of infected men found in the research. The Ministry of Health[6] indicates that in Brazil, from 2010 to 2016, there was a high rate of infected men, in a proportion that was around 1.5 men for each infected woman, which corroborates the results found in Patos de Minas in the period studied (2,25 men for each infected woman between January and August 2016 and 1.64 for the same period in 2017).

According to the studies carried out by Silva et al.[19], an increase in the number of cases among women has increased in recent years, such as in the state of Ceará, where cases have increased from 90 to 648 cases in the period from 1999 to 2009. This prevalence was also observed in Patos de Minas - MG, where the number of female cases has increased more than the male cases when comparing the periods from January to August 2016 and the same period in 2017. In general, there was an absolute increase of 27.8% of cases, from 2015 to 2016, in the country.[6]

Table 01 showed that comparing the monthly ranges from January to August between 2016 and 2017, the year 2017 showed a substantial increase in the number of reported cases of syphilis in individuals of both sexes (from 26 to 66 cases) , showing that the number of cases of acquired syphilis increased by 2.54 times, without distinction of sex. However, there was no statistical difference when comparing the frequency of reported cases by sex in relation to these monthly ranges through the chi-square test and the test for correlation of the Contingency Coefficient C ($p > 0.05$). Statistical differences were observed only for the period from September to December 2016, when males had an even greater increase in the prevalence and correlation of syphilis with males, as at the end of 2016 the prevalence was 90 % versus 66.2 at the beginning of 2016 and 62.1% at the beginning of 2017.

When comparing the monthly ranges from January to August 2016 with January to August 2017, by figure 2, it can be verified that the age group of 21 to 30 years was the one with the most reported cases of syphilis in both 26 cases in 2017 and 12 cases in 2016 (46.7% vs 39.4% in relation to the age group per analyzed period). Followed by the age group of 10 to 20 years, 14 cases in 2017 and 7 cases in 2016 (21.3% vs 26.9%); for the range of 31 to 40 years with 13 cases in 2017 and 4 cases in 2016 (17.7% vs 15.6%); for the range of 51 to 60 years with 9 cases in 2017 and only one case in 2016 (13.6% vs 13.6%); in the age group 41 to 50 years old, with 2 cases in 2016 (7.7%) and 2 cases in 2017 (3.9%). Finally, there were two cases of syphilis among individuals with more than 60 in 2017 (3%) and none in 2016. These data demonstrate that the prevalence of syphilis cases was higher in almost all age groups in 2017 when compared to the same period in 2016, prevailing among younger individuals and increasing in individuals over 50 years. However, the chi-square test provided a value of 4.02 with p value = 0.546 and thus did not show statistical differences between the increase in prevalence among the age groups compared to the monthly ranges between 2016 and 2017 (Figure 2).

Figure 2: Absolute frequency of reported cases of syphilis between January and August 2016 and between January and August 2017 by age group.



According to the Ministry of Health, the highest incidence of reports of syphilis acquired in Brazil in 2016 occurred in individuals between 20 and 29 years (34.1%), followed by individuals who were between 30 and 39 years of age (22.1%). Reported cases of individuals aged 13 to 19 years and 20 to 29 years have shown a tendency to increase since 2010. Between 2010 and 2016, the percentage increase in the age group from 13 to 19 years was of 39.9% and in the age group from 20 to 29 years was 13.8%. The other age groups mentioned are stable or tend to fall.[6]

The results found in this research emphasize the importance of greater clarification and information on the prophylaxis of the disease. Among the causes of the increase in the number of people infected, may be the non-use of condoms among the younger population and the lack of adequate public policies in the field of education for this group, especially.

Some limitations were found in the course of the research concerning the data collection, since some variables presented their analyzes impaired due to lack of information; among them, the presence of pregnancy, an issue of great importance in public health of the country.

CONCLUSION

Despite having adequate diagnostic methods and simple treatment, syphilis remains an important public health problem. From the epidemiological analysis on the prevalence of Syphilis performed here, it was concluded that the disease had a higher prevalence in the male sex in the time interval studied. The present study also evidenced that the age group with the highest prevalence of syphilis occurred between 21 and 30 years for both sexes. Not least, no case of syphilis during pregnancy was found in this study, although a large proportion of the women studied were of reproductive age.

It is hoped that the data presented in this study could alert and promote public health actions in Patos de Minas, with the elaboration of strategies in relation to prophylactic and care measures aimed at disease control, aiming at minimizing morbidity in this population and subsidizing new studies that deepen the knowledge in the area. The attitude of reinforcing actions to control syphilis, with early screening, diagnosis and treatment strategies, avoiding complications, reducing morbidity with improved sexual and reproductive health of the general population.

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CONTRIBUTIONS

Sales FJ and Cardoso SRA participated in the initial conception of the research project, from the choice and design of the study to the data collection and interpretation of the initial results obtained. Diniz FL, Silva AL and Soares Melo HC contributed with the writing of the article, its critical revision until the development of the final published version.

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INTEREST CONFLICTS

There are no conflicts of interest to report.

AVAILABILITY OF DATA

Available upon request to the authors.

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