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Clinical, epidemiological, and demographic profile of adolescents with covid-19 in Divinópolis, central-west region of Minas Gerais

Perfil clínico, epidemiológico e demográfico de adolescentes com COVID-19

Perfil clínico, epidemiológico y demográfico de adolescentes con COVID-19.

Luciene Aparecida Muniz [I] ORCID: 0000-0003-2185-1595
Cezenário Gonçalves Campos [III] ORCID: 0000-0001-5650-0096
Vinícius Silva Belo [I] ORCID: 0000-0003-0183-1175
Joel Alves Lamounier [I] ORCID: 0000-0002-8386-4140
Márcia Christina Caetano Romano [II] ORCID: 0000-0002-1819-4689

[I] Universidade Federal de São João Del-Rei, Programa de Pós-Graduação em Ciências da Saúde. Divinópolis, Minas Gerais, Brasil.
[II] Universidade Federal de São João Del-Rei, Programa de Pós-Graduação em Enfermagem.
[III] Universidade do Estado de Minas Gerais

Corresponding author

Luciene Aparecida Muniz
E-mail: lucieneaparecidamuniz@yahoo.com.br

ABSTRACT

Objective: To analyze the clinical, epidemiological, and demographic profile of adolescents with covid-19. **Method:** A population-based cross-sectional study was conducted using clinical, epidemiological, and demographic data from confirmed and unconfirmed covid-19 cases registered in the e-SUS Notifica system between March 15, 2020, and March 31, 2022, in a city in the central-west region of the state of Minas Gerais. Descriptive and analytical statistics were applied, including multivariate logistic regression, with $p < 0.05$. **Results:** The prevalence of covid-19 among adolescents was 14.4 per 100 reported cases. Symptoms such as olfactory disorders (OR = 2.3; 95 % CI = 1.9-2.7), headache (OR = 1.4; 95 % CI = 1.2-1.6), and fever (OR = 1.2; 95 % CI = 1.1-1.4) increased the chance of diagnosis. Sore throat (OR = 0.7; 95 % CI = 0.67-0.8) and runny nose (OR = 0.8; 95 % CI = 0.7-0.9) reduced the chance of a covid-19 diagnosis. **Conclusion:** Adolescents with olfactory disorders, headache, and fever have a higher risk of covid-19. Knowing this profile contributes to clinical practice and indicates the need for longitudinal studies. **Descriptors:** Adolescent; Health profile; SARS-CoV-2 infection; Pandemic; Epidemiology.

RESUMO

Objetivo: Analisar o perfil clínico, epidemiológico e demográfico de adolescentes com covid-19. **Método:** Estudo transversal de base populacional, com dados clínicos, epidemiológicos e demográficos de casos

confirmados e não confirmados de covid-19 registrados no sistema e-SUS Notifica entre 15 de março de 2020 e 31 de março de 2022, em uma cidade do Centro-Oeste de Minas Gerais. Foram aplicadas estatísticas descritiva e analítica, incluindo regressão logística multivariada, com p<0,05. **Resultados:** A prevalência de covid-19 entre adolescentes foi de 14,4 a cada 100 casos notificados. Sintomas como distúrbios olfativos (OR=2,3; IC95%=1,9-2,7), dor de cabeça (OR=1,4; IC95%=1,2-1,6) e febre (OR=1,2; IC95%=1,1-1,4) aumentaram a chance de diagnóstico. Dor de garganta (OR=0,7; IC95%=0,67-0,8) e coriza (OR=0,8; IC95%=0,7-0,9) reduziram a chance de diagnóstico de covid-19. **Conclusão:** Adolescentes com distúrbios olfativos, dor de cabeça e febre apresentam maior risco de covid-19. Conhecer esse perfil contribui para a prática clínica e indica a necessidade de estudos longitudinais.
Descritores: Adolescente; Perfil de saúde; Infecção pelo SARS-CoV-2; Pandemia; Epidemiologia.

RESUMEN

Objetivo: Analizar el perfil clínico, epidemiológico y demográfico de adolescentes con COVID-19. **Método:** Estudio transversal poblacional que utilizó datos clínicos, epidemiológicos y demográficos de casos confirmados y no confirmados de COVID-19 registrados en el sistema e-SUS Notifica entre el 15 de marzo de 2020 y el 31 de marzo de 2022 en una ciudad de la región Centro-Oeste de Minas Gerais. Se aplicaron estadísticas descriptivas y analíticas, incluyendo regresión logística multivariante, con p<0,05. **Resultados:** La prevalencia de COVID-19 entre adolescentes fue de 14,4 por cada 100 casos notificados. Síntomas como trastornos olfativos (OR=2,3; IC del 95%=1,9-2,7), dolor de cabeza (OR=1,4; IC del 95%=1,2-1,6) y fiebre (OR=1,2; IC del 95%=1,1-1,4) aumentaron la probabilidad de diagnóstico. El dolor de garganta (OR=0,7; IC del 95%=0,67-0,8) y la rinorrea (OR=0,8; IC del 95%=0,7-0,9) redujeron la probabilidad de diagnóstico de COVID-19. **Conclusión:** Los adolescentes con trastornos olfativos, dolor de cabeza y fiebre tienen un mayor riesgo de COVID-19. Conocer este perfil contribuye a la práctica clínica e indica la necesidad de realizar estudios longitudinales.
Descriptores: Adolescente; Perfil de salud; Infección por SARS-CoV-2; Pandemia; Epidemiología.

INTRODUCTION

In December 2019, in the city of Wuhan, China, several simultaneous cases of pneumonia caused by the novel coronavirus, called Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2), which causes the disease covid-19, were identified. Initially, the virus was highly contagious, spreading rapidly to other countries, constituting a pandemic with social, economic, and public health impacts[1]. The transmission of this coronavirus is mainly through contact with infected people, via respiratory droplets such as coughs, sneezes, saliva, or nasal secretions[2].

According to an integrative review, studies show that adolescents are as susceptible to infection as adults and the elderly. They may eventually progress to more severe forms of the disease requiring hospitalization or even to death. In the literature, we did not find clear evidence regarding the predominance of more symptomatic or asymptomatic cases in the adolescent population, since global testing in adolescents is not routine[3].

Among the most serious implications caused by the SARS-CoV-2 virus is severe acute respiratory syndrome (SARS), which can lead to long periods of hospitalization and death[4]. A cohort study conducted in Canada with adolescents aged 13 to 17 years, infected with the SARS-CoV-2 virus, identified that the prevalent clinical symptoms were fever, cough, and vomiting. In this investigation, 15.6 % were hospitalized with mild to moderate disease and 31 % developed the severe form, with the presence of comorbidity being associated with greater disease severity[5].

Multisystem inflammatory syndrome in children (MIS-C) is another serious clinical condition associated with covid-19. This manifestation is similar to Kawasaki disease and appears approximately two to four weeks after infection with the SARS-CoV-2 virus. It is an inflammatory response that can compromise blood vessels and various organs and systems, especially the heart[6-7].

Epidemiological data on covid-19 are constantly being updated. The World Health Organization estimates that the percentage of covid-19 confirmed adolescents worldwide is 6 % of the general covid-19 population and 2 % in Brazil, with the case fatality rate due to complications from the disease potentially reaching 40 %[8]. Up to June 2022, 3,359 adolescent deaths were recorded worldwide[6-8].

The prevalence of covid-19 in the adolescent population is quite divergent[9]. A study in Brazil identified a prevalence of 4.2 out of every 100 confirmed cases[10] and research in the United States reported 13 %[3].

Despite the rapid national and international scientific production on covid-19, there is no effective consensus in the literature regarding the clinical, epidemiological, and demographic profile in the adolescent population. The proportion of asymptomatic and symptomatic cases and prevalent symptoms are unclear, as are the epidemiological health indicators and demographic aspects[11].

In this context, it becomes imperative to analyze the occurrence of covid-19 in adolescents to understand the disease in this age group, with a view to providing indicators to support the development of public policies, as well as contributing to the current literature in the field of adolescent health. This study assumes that there are differences in clinical, epidemiological, and demographic characteristics between adolescents with confirmed and unconfirmed diagnosis of covid-19, indicating that certain symptoms and individual factors may be associated with infection by the SARS-CoV-2 virus. The objective of this study was to analyze the clinical, epidemiological, and demographic profile of adolescents with covid-19.

METHODS

This is a population-based cross-sectional study, with analysis of secondary data, developed according to the recommendations of Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) [12].

The study was conducted in the municipality of Divinópolis, located in the central-west region of the state of Minas Gerais, Brazil, which has an estimated population of approximately 240,000 inhabitants[13]. The choice of this municipality is justified by the representativeness of its number of notifications of influenza-like illness and covid-19, concentrating a large volume of records in the territory and enabling a consistent analysis of the epidemiological dynamics of the disease among adolescents.

Clinical, epidemiological, and demographic data were collected from records entered into the municipal Epidemiological Surveillance database, referring to confirmed and unconfirmed reported cases of covid-19 in adolescents, available in the e-SUS Notifica system[14]. Notifications are made by primary health care units, doctor's offices, clinics, care centers, emergency rooms, specialized services in safety engineering and occupational medicine, sentinel surveillance units for influenza-like illness, and public and private hospitals[14].

The outcome of the study was laboratory confirmation of covid-19, according to the International Classification of Diseases (ICD-10)[15], following the nomenclature of the Influenza-like Illness Notification Form (e-SUS Notifica) and the diagnostic criteria of the Ministry of Health (Ministério da Saúde, 2020), which considers a confirmed case to be one with a positive result for SARS-CoV-2 in a molecular test (RT-PCR), antigen test, or serology with confirmatory criteria[14].

The inclusion criteria considered were all records of adolescents aged 10 to 19 years[8], of both sexes, corresponding to cases confirmed by laboratory criteria and to unconfirmed cases of covid-19, registered in the e-SUS Notifica system, in the period from March 15, 2020 to March 31, 2022.

The variables analyzed were classified according to three profiles: demographic, epidemiological, and clinical. The demographic profile included the variables age, age group (stratified into early adolescence – 10 to 14 years – and late adolescence – 15 to 19 years[16]), and sex. The epidemiological profile included the region of residence, the diagnostic method used, and previous health conditions, such as respiratory diseases, obesity, diabetes, immunosuppression, pregnancy, among others. The clinical profile was defined by the symptoms presented, including cough, fever, headache, sore throat, runny nose, olfactory and gustatory changes, dyspnea, among others.

Regarding the exclusion criteria, variables contained in the database with 25 % or more of missing data were excluded in order to control for information bias[11]. Thus, variables related to race/color, testing location, vaccination, case outcome, and contact tracing were excluded.

The study was approved by the Research Ethics Committee of the Federal University of São João Del Rei, CAAE: 53090121.0.0000.5545 – Opinion number 5.132.613.

The study data were organized and stored in a spreadsheet created using Microsoft Excel 2016. The tabulation was performed by two previously trained researchers, distinct from those responsible for data collection, with double-checking of the selected variables, which allowed for comparison between the findings and adjustments when necessary, composing the final set of variables in the database.

Subsequently, the data were exported to the Statistical Package for the Social Sciences (SPSS) software version 20, in which statistical analysis was performed. The Kolmogorov-Smirnov test was used to verify the normality of the distribution of the variable values, and Pearson's chi-square test or Fisher's exact test were used to compare proportions and for verifications in the bivariate analysis. Quantitative data were described using median and interquartile range, and qualitative data were described using absolute frequency and percentage. The prevalence of positive cases for covid-19 was calculated using the formula: Prevalence = (Number of cases/Total population) x 10017. In the multivariate analysis, a logistic regression model was used, using the stepwise backward method, in which all variables that had a $p \leq 0.20$ in the bivariate analysis were included. Odds ratios (OR) values were estimated, with a 95 % confidence interval (95 % CI). The model fit was verified by Hosmer-Lemeshow and residual analysis tests. All tests considered a significance level set at $p < 0.05$.

RESULTS

Between March 15, 2020, and March 31, 2022, 12,289 cases of flu-like syndrome were reported, corresponding to adolescents aged 10 to 19 years of both sexes, residing in Divinópolis, Minas Gerais. Of the reported cases, 1,767 were considered positive for covid-19, according to laboratory testing, corresponding to a prevalence of 14.4 per 100 reported cases.

A higher percentage of contamination was observed in adolescents aged 15 to 19 years, with 1,266 cases (71.6 %). In the 10 to 14 age group, 501 cases were identified (28.4 %). The median age for confirmed cases was 17 years (interquartile range - IQR 25 % = 14 and IQR 75 % = 18). Furthermore, a higher frequency of confirmed covid-19 was observed among female adolescents, being 939 (53.1 %).

The residential area with the highest frequency of confirmed cases in adolescents in the municipality was the southwest area with 401 (22.7 %) infected, and the least prevalent was the west, with 123 (7 %).

Regarding the diagnostic method used to confirm cases, it was evident that the most used test was the rapid antigen test (67.1 %), followed by RT-PCR (20.5 %) and serological tests for IgM, IgG, and total antibodies (12.4 %). A 16-year-old male adolescent died, and he presented with obesity, asthma, hypertension, and symptoms of cough, runny nose, retro-orbital pain, and dyspnea.

The proportion of symptomatic infected individuals was 81.4 %, and the prevalent symptoms were cough (45.7 %) and headache (43.4 %). Approximately 5.7 % of adolescents presented pre-existing health conditions, with respiratory diseases being the most frequent, with 31 cases (1.8 %) (Table 1).

Table 1: Characteristics of confirmed reported cases of covid-19 in adolescents by clinical symptoms and pre-existing health conditions in Divinópolis, Minas Gerais, Brazil, 2022. (n = 1767)

Variables	n (1767)	%
Symptoms*		
Cough	808	45.7
Headache	767	43.4
Fever	639	36.2
Sore throat	593	33.6
Runny nose	520	29.4
Olfactory disorders	210	11.9
Gustatory disorders	161	9.1
Dyspnea	146	8.3
Others‡	24	1.4
Previous/pre-existing health conditions		
Respiratory diseases	31	1.8
Others#	24	1.4
Pregnancy	15	0.8
Obesity	12	0.7
Chromosomal diseases or state of immunological fragility	5	0.3
Diabetes	5	0.3
Heart disease	3	0.2
Immunosuppression	3	0.2

Source: e-SUS Notifica database, Municipality of Minas Gerais, Brazil. Period from March 2020 to March 2022.
* The total number of symptoms will always exceed the total number of adolescents, as the same individual may present more than one symptom.
‡Others: diarrhea, vomiting, nasal congestion, nausea, myalgia, abdominal pain, retro-orbital pain, chest pain, abdominal pain.
#Others: hypothyroidism, hypertension, meningoencephalitis

Table 2a: Association of demographic and epidemiological characteristics in confirmed and unconfirmed cases of covid-19 (n = 12,289). Divinópolis-MG, 2022.

Variables	Reported confirmed and unconfirmed cases of covid-19 n / (%)		*p* value
	Confirmed	Unconfirmed	
Age range (Years)			
10 to 14	501 (13.7)	3,157 (86.3)	0.160*
15 to 19	1,266 (14.7)	7,365 (85.3)	
Sex			
Female	939 (14.5)	5,516 (85.5)	0.576*
Male	828 (14.2)	5,006 (85.8)	
Respiratory diseases			
Yes	31 (11.7)	235 (88.3)	0.200*
No	1,736 (14.4)	10,287 (85.6)	
Heart disease			
Yes	3 (12.5)	21 (87.5)	1.000†
No	1,764 (14.4)	10,501(85.6)	
Diabetes			
Yes	5 (16.7)	25 (83.3)	0.610†
No	1,762 (14.4)	10,497 (85.6)	
Immunosuppression			
Yes	3 (23.1)	10 (76.9)	0.417†
No	1,764 (14.4)	10,512 (85.6)	

To be continued

Table 2a (concluded)

Variables	Reported confirmed and unconfirmed cases of covid-19 n / (%)		*p* value
	Confirmed	Unconfirmed	
Chromosomal disease#			
Yes	5 (26.3)	14 (73.7)	0.178†
No	1,762 (14.4)	10,508 (85.6)	
Pregnancy			
Yes	15 (12.2)	108 (87.8)	0.488*
No	1,752 (14.4)	10,414 (85.6)	
Obesity			
Yes	12 (21.4)	44 (78.6)	0.132*
No	1,755 (14.3)	10,478 (85.7)	
Others#			
Yes	24 (13.9)	149 (86.1)	0.849*
No	1,743 (14.4)	10,373 (85.6)	

Source: e-SUS Notifica database, Municipality of Divinópolis, MG, period from March 15, 2020 to March 31, 2022.
*Chi-square test
†Fisher's Exact Test
#Other (hypothyroidism, hypertension, dengue meningoencephalitis)

Table 2b: Association of clinical profile characteristics in confirmed and unconfirmed cases of covid-19 (n = 12,289). Divinópolis-MG, 2022.

Variables	Reported confirmed and unconfirmed cases of covid-19 n / (%)		*p* value
	Confirmed	Unconfirmed	
Sore throat			
Yes	593 (13.0)	3,959 (87.0)	**0.001***
No	1.174 (15.2)	6,563 (84.8)	
Headache			
Yes	767 (17.4)	3,645 (82.6)	**0.001***
No	1,000 (12.7)	6,877 (87.3)	
Cough			
Yes	808 (14.7)	4,701 (85.3)	0.412*
No	956 (14.1)	5,821 (85.9)	
Runny nose			
Yes	520 (13.7)	3,280 (86.3)	0.142*
No	1,247 (14.7)	7,242 (85.3)	
Fever			
Yes	639 (16.6)	3,210 (83.4)	**0.001***
No	1,128 (13.4)	7,312 (86.6)	
Gustatory disorders			
Yes	161 (24.4)	498 (75.6)	**0.001***
No	1,606 (13.8)	10,024 (86.2)	
Olfactory disorders			
Yes	210 (27.5)	553 (72.5)	**0.001***
No	1,557 (13.5)	9,969 (86.5)	
Dyspnea			
Yes	146 (14.2)	879 (85.8)	0.898*
No	1,621 (14.4)	9,643 (85.6)	
Others‡			
Yes	24 (13.9)	149 (86.1)	0.849*
No	1,743 (14.4)	10,373 (85.6)	

Source: e-SUS Notifica database, Municipality of Divinópolis, MG, period from March 15, 2020 to March 31, 2022.
*Chi-square test
‡ Other symptoms (diarrhea, vomiting, nausea, myalgia, dizziness, abdominal pain, chest pain, fatigue, nasal congestion, arthralgia, retro-orbital pain, tiredness)

Table 3: Multiple logistic regression analysis of factors associated with covid-19 diagnosis. Municipality in the Central-West region of Minas Gerais, Brazil, 2022. (n = 1767)

Variables	Final Model
	OR [CI 95 %]
Olfactory disorders	2.3 [1.9 - 2.7]
Headache	1.4 [1.2 - 1.6]
Fever	1.2 [1.1 - 1.4]
Runny nose	0.8 [0.7 - 0.9]
Sore throat	0.7 [0.6 - 0.8]

OR = Odds Ratio
CI 95 % = 95 % Confidence Interval
p value < 0.05

The bivariate analysis of the association between demographic and clinical-epidemiological characteristics in confirmed and unconfirmed cases of covid-19 is presented in Tables 2a and 2b. After the results of the bivariate analysis, logistic regression analysis was performed (Table 3). Only the variables olfactory disorders, headache, fever, runny nose, and sore throat remained in the final model, since the others did not show statistical significance.

Multivariate analysis showed that adolescents who presented with olfactory disorders, headache, and fever had a (2.3), (1.4), and (1.2) times greater chance, respectively, of having covid-19. Conversely, adolescents who had a runny nose and sore throat had a (0.8) and (0.7) times lower chance of being diagnosed with covid-19 respectively (Table 2).

DISCUSSION

This investigation addressed the clinical, epidemiological, and demographic profile of adolescents with covid-19. The study showed that participants with the signs and symptoms of olfactory disorders, headache, and fever had a greater chance of being infected with covid-19. Conversely, those with a runny nose and a sore throat had a lower chance of being diagnosed with covid-19.

As in the present research, investigations show that anosmia may be present in 12 to 98 % of cases of adolescents infected with the covid-19 virus. This finding is relevant and typical, but the pathophysiology has not yet been fully elucidated[18]. It is believed that the virus, upon entering the nasal mucosa through angiotensin-converting enzyme 2 receptors, may trigger an inflammatory process and damage olfactory cells, as well as impair olfactory neural function, contributing to the appearance of disorders. There is also the hypothesis that the virus may attack the olfactory cortex in the brain region[18-19]. A meta-analysis showed that anosmia is associated with covid-19 infection (relative risk - RR = 4.560; 95 % CI = 3.320–6.240), p < 0.00119, suggesting greater attention to adolescents with olfactory disorders regarding the propaedeutics of the case.

Corroborating the results of this research, the symptoms of headache and fever appeared in recent research in 42 to 43 % of cases positive for covid-19[18-20-21]. Afonso and colleagues also identified the presence of headache in 55.2 % of infected participants[22]. In China, fever occurred in 60 % of positive cases[23]. A possible explanation, although not fully clarified, refers to the fact that the SARS-CoV-2 virus has a certain tropism for the central nervous system. The virus can invade the central nervous system and affect both neurons and glial cells, potentially causing headaches and fever, and even neurological pathologies[24-25].

The presence of runny nose and sore throat symptoms in adolescents affected by covid-19 is reported in the literature[5-9-26]. In the present study, the association of these symptoms

with covid-19 was statistically significant, however, inversely related. That is, these symptoms were protective factors for the diagnosis of covid-19. One hypothesis to justify this finding may be related to the Alpha and Gamma variants circulating for most of the investigated period, whose symptoms of runny nose and sore throat were less specific[27-28-29]. Another explanation is that the clinical manifestations of SARS-CoV-2 infection are similar to those of other viral respiratory infections; however, symptoms such as sore throat and runny nose are more likely to be found in patients with influenza or the common cold than in patients with covid-19, although the pathophysiological mechanisms for this association are unclear[30-31].

In the present investigation, most adolescents confirmed with covid-19 were symptomatic. A cross-sectional study conducted in Brazil observed that 76 % of positive cases for covid-19 are asymptomatic[1]. However, research conducted in Goiânia, Brazil, corroborates the results of the present study, as it found that 55 % of confirmed cases are symptomatic[22]. There is no consensus in the literature as to whether adolescents are more or less symptomatic when infected with covid-19, and more research on the subject is needed[1-22]. A possible explanation for these results is the heterogeneity of data sources. In the present investigation, for example, the use of secondary data may lead to the absence of important data for the characterization of the population.

Regarding pre-existing health conditions, studies have shown that adolescents with comorbidities have a higher risk of developing severe and critical cases of the disease, which may progress to hospitalization or death[6]. In the present research, a minority of participants had pre-existing conditions, and there was only one death of an adolescent who, in fact, had chronic diseases, as also evidenced in other investigations[6-7].

Although the association of covid-19 symptoms with disease outcomes is not the focus of this study, it is necessary to be attentive to its evolution to severe cases and death. The cohort conducted in Brazil and the United States demonstrated that dyspnea (OR = 6.320; 95 % CI = 2.800 – 14.300), fever (OR = 3.820; 95 % CI = 2.000 – 7.400) and cough (OR = 3.440; 95 % CI = 2.000– 6.000) are symptoms associated with the severity of covid-19[33-26].

The prevalence of covid-19 in this research was higher than in a national study in the Pará region, at 4.2 out of every 100 confirmed cases[10]. Research in the United States corroborates the present findings, indicating a prevalence of 13 % in the adolescent population[3]. It is observed that the occurrence of cases in adolescents varies nationally and internationally. The under-identification and under-reporting of positive cases, as well as the infrequent testing of suspected cases, the absence of tests, and limited access to health services may justify the discrepancy between the data found and the actual prevalence of the disease. Furthermore, asymptomatic adolescents do not seek medical attention and, therefore, are not diagnosed[9]. In this respect, the prevalence of the disease in adolescents may be much higher than that already indicated in the literature[3-6-9-10].

The results of this study revealed that female adolescents aged 15 to 19 years constitute the highest frequency of confirmed cases of covid-19, although without statistical difference. Some Brazilian studies found a higher proportion of positive cases in females (54 %) and also in the 15 to 19 age group (70 %) compared to the 10 to 14 age group (30 %)[22-34-35]. It is believed that adolescents in the 15 to 19 age group have greater exposure to work activities and gatherings (events and parties) [36], in addition to the fact that, culturally, female adolescents tend to access health services more often, which are arguments that may explain the results[37].

Social inequalities may have directly impacted the contamination of adolescents in Brazil, since many of them needed to work to help with family income. With the advent of the covid-19 pandemic, the emergence of the financial crisis and the loss of jobs for adults (parents and guardians), the presence of adolescents in working situations exposed to the disease

intensified. Many of these are employed in commercial establishments considered essential during the pandemic, such as supermarkets, bakeries, pharmacies, and delivery services[36-38].

It is noteworthy that adolescence can be considered a period of vulnerability to covid-19 contamination, due to neuro-maturational factors which can induce behaviors of curiosity, inability to assess risks, and impulsivity[39]. A North American study evaluated the prevalence of covid-19 in adolescents compared to the elderly population, finding that the prevalence of covid-19 in adolescence was significantly higher than in the elderly. The likely explanation for the finding lies in the adolescent's group behavior and consequently in the greater need for socialization, in addition to underestimating the disease, and in the pleasure of risky attitudes, disregarding social distancing, thus neglecting the use of masks and taking care of their health[40].

In the present study, a higher frequency of confirmed covid-19 cases was observed in adolescents from socially vulnerable regions of the municipality, although there was no statistical significance. The socioeconomically less favored regions had greater difficulty in coping with the pandemic due to poor access to health services, lack of materials and supplies, and non-compliance with the proposed sanitary measures due to precarious financial conditions, such as the use of masks, use of hand sanitizer, cleaning materials for sanitizing environments, thereby impacting the greater contamination of underprivileged populations[11-34].

Returning to the findings on the diagnosis of the disease, the most frequently performed tests were the rapid antigen test, followed by RT-PCR, and serological tests for IgM, IgG, and total antibodies. It should be noted that the World Health Organization recommends the RT-PCR test as the gold standard for diagnosing the disease. However, the high cost of the test and its unavailability in public health services justify the greater frequency of rapid testing[1-41].

STUDY LIMITATIONS

Among the study's limitations is the use of secondary data sources, which depend on professional records, often lacking important information for analysis.

Even so, the study provides relevant information about the profile of adolescents confirmed with covid-19, contributing to assisting healthcare professionals in identifying these characteristics, enabling specific care strategies for addressing the disease in this population. The investigation also contributes to the current literature in the field of adolescent health.

CONCLUSION

Adolescents with olfactory disorders, headache, and fever have a higher chance of being diagnosed with covid-19. Most confirmed cases were symptomatic, with a higher proportion in the 15-19 age group and female, residing in socially vulnerable areas of the municipality.

Knowing the clinical and demographic profile of adolescents in the context of covid-19 contributed to providing indicators for the care practice in addressing the disease in adolescents. However, the heterogeneity and diversity of the results point to the relevance of further studies, especially longitudinal, for a better understanding of covid-19 in adolescents.

Municipal health managers are recommended to strengthen epidemiological surveillance actions, with an emphasis on the continuous training of teams, improving the completeness and quality of notifications, and implementing specific strategies aimed at adolescents, especially in socially vulnerable areas. Health professionals are recommended to recognize clinical signs and symptoms early and to properly record information in order to contribute to effective monitoring and improvement of disease prevention and control actions.

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