

Health Care Seeking and Mortality of Patients with Diabetes during the COVID-19 Pandemic in Colombia: A Nationwide Study

José Moreno-Montoya^{1,2} , Silvia Marcela Ballesteros¹ , Heidy García-Orozco³ ,
Nubia E. Bautista-Bautista³ , Pedro Barrera-López¹ , José A. De la Hoz-Valle¹ 

¹Subdirectorato de Clinical Studies and Clinical Epidemiology, Fundación Santa Fe de Bogotá, Bogotá, Colombia.

²School of Medicine, Department of Public Health, Universidad Industrial de Santander, Bucaramanga, Colombia.

³Ministerio de Salud y Protección Social, Bogotá, Colombia.

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Correspondence:

José Moreno-Montoya;
josemorenomontoya@gmail.com

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ABSTRACT

Introduction: Besides the direct health implications of COVID-19, the pandemic and its containment measures have had multiple negative consequences, especially in the prevention and treatment of chronic diseases.

Objective: To evaluate the effects of the COVID-19 pandemic on mortality rates and health care seeking among individuals with diabetes in Colombia.

Methods: A nationwide ecological panel study was conducted using secondary data from Colombian official records of mortality and medical attentions due to diabetes between 2015 and 2021. Aggregated data of hospitalizations, ambulatory and emergency care visits, as well as death rates due to diabetes were assessed once adjusted by health care infrastructure and rurality.

Results: During the COVID-19 pandemic, the mortality rate from diabetes increased by 30.4%, and the average rate of medical attention increased by 67.2%, in which ambulatory care arose by 44.6% and hospitalizations by 42.3%. Rurality was inversely associated with health visits, and the availability of tertiary care institutions was associated with both diabetes mortality and consultations.

Conclusions: An important increase in consultations and mortality rates among diabetes patients was observed during the COVID-19 crisis in Colombia. The results suggest that people without access to specialized health services were neglected. The actual impact of the COVID-19 pandemic in patients with diabetes remains unclear.

Búsqueda de atención en salud y mortalidad en pacientes con diabetes durante la pandemia de COVID-19 en Colombia: un estudio a escala nacional

José Moreno-Montoya^{1,2} , Silvia Marcela Ballesteros¹ , Heidy García-Orozco³ ,
Nubia E. Bautista-Bautista³ , Pedro Barrera-López¹ , José A. De la Hoz-Valle¹ 

¹Subdirección de Estudios Clínicos y Epidemiología Clínica, Fundación Santa Fe de Bogotá, Bogotá, Colombia.

²Escuela de Medicina, Departamento de Salud Pública, Universidad Industrial de Santander, Bucaramanga, Colombia.

³Ministerio de Salud y Protección Social, Bogotá, Colombia.

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Correspondencia:

José Moreno-Montoya;
josemorenomontoya@gmail.com

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RESUMEN

Introducción: la pandemia por COVID-19 y sus medidas de contención han tenido múltiples consecuencias negativas, especialmente en la prevención y tratamiento de enfermedades crónicas.

Objetivo: evaluar el impacto de la pandemia de COVID-19 en la mortalidad y atención en salud de los pacientes con diabetes en Colombia.

Métodos: se llevó a cabo un estudio de panel ecológico nacional de mortalidad y atenciones médicas por diabetes entre 2015 y 2021. Se evaluaron las hospitalizaciones, consultas ambulatorias y de emergencia; las tasas de mortalidad, la disponibilidad de instituciones de salud especializados y ruralidad.

Resultados: durante la pandemia de COVID-19, la tasa de mortalidad por diabetes aumentó un 30,4 %, y la de atenciones médicas un 67,2 %, específicamente la atención ambulatoria aumentó en un 44,6 % y las hospitalizaciones en un 42,3 %. La ruralidad se asoció negativamente con las consultas médicas, y la disponibilidad de instituciones especializadas se asoció con la mortalidad por diabetes y las atenciones en salud.

Conclusiones: los desenlaces generales en salud para pacientes con diabetes empeoraron durante la pandemia. Los resultados sugieren que las personas que no tenían acceso a servicios de salud especializados fueron desatendidas. El impacto real de la pandemia de COVID-19 en pacientes con diabetes está por esclarecer.

INTRODUCTION

Amid a growing crisis of metabolic diseases, the COVID-19 pandemic emerged causing major impacts on human population in late 2019. At the time, the virus found fertile ground among people with preexisting metabolic diseases and due to its rapid transmission, it quickly evolved into a world-wide pandemic (1). Current evidence shows that during the coronavirus pandemic, diabetes was a risk factor for severe clinical course or mortality (2); in parallel, the COVID-19 infection was associated with the onset of hyperglycemia (3) and a greater risk of developing diabetes up to a year later (4). People living with risk factors for diabetes mellitus were thus considered a high-risk population (5), even during the post-vaccination era (6). Public health measures developed to limit the spread of the virus are also known to adversely influence the glycemic status of individuals with diabetes or the lifestyles of people at risk of developing it (7). Measures such as lockdowns, social distancing and limiting outdoor activities may have had negative consequences in terms of diabetes prevention or treatment (8), including the disruption of health care services and the loss of care continuity (9). The interruption of regular medical consultations, the limitation of sunlight exposure, the increased risk of mental health related concerns, and the affectation of physical activity levels, as well as the alteration of dietary habits, especially among individuals suffering from metabolic diseases or those at risk of developing them, were major concerns during the COVID-19 pandemic (10).

For people with diabetes, the availability of medicines, including insulin, self-monitoring and diagnostic tools could have been affected, especially in low-middle income settings. However, aspects such as maintenance of the prescribed medications regimen, changes in dose or time, or even the omission of any of them, are challenging to measure (11). The effect of region-level variables like the availability of supplies and its distribution during periods of lockdown is also unclear (12). In this regard, rurality, health care infrastructure and services affordability could have been determinant for guaranteeing diabetic patients access to health care services (13). In Colombia, around 40% of the population diagnosed with diabetes lived in non-capital cities in 2020 (14). However, while cities like Bogotá registered 62 physicians per 10,000 inhabitants, more rural regions such as Vaupés, Vichada and Guainía registered 1 to 3 physicians for each 10,000 habitants (15).

Despite the above, the extent to which interruptions in some care services or changes in lifestyle induced by public health measures affected the monitoring of people with diabetes during the COVID-19 pandemic has yet to be established. This study aims to quantify the impact of the COVID-19 pandemic on health care utilization (consultations and hospitalizations) and mortality among patients with diabetes in Colombia from 2015 to 2021.

METHODS

Design and settings

A nationwide retrospective ecological panel study based on open, anonymized, department-level aggregated data of inpatient and outpatient consultations and deaths due to diabetes from the Colombian Ministry of Health and Social Protection records from 2015 to 2021 (ICD-10 codes E10 to E14 were used). Aggregated data from the capital city, Bogotá, and for each of the 32 departments of the country were obtained from the Colombian Ministry of Health through a request sent to the institutional email address 'correo@minsalud.gov.co'. The databases did not include individual characteristics of the patients, and no selection criteria were considered.

Variables

Biannual mortality and medical consultations rates (per 100,000 inhabitants) from 2015 to 2021 were considered as outcome variables. Consultations were classified as follows: hospitalizations, ambulatory care, emergency care, and total consultations, including non-medical. Dummy variables for each half-year period were used to assess the temporal variation in the numbers as well as the effect of COVID-19 pandemic. These records include consultations by all health service providers, both public and private, including independent professionals as well as institutions. The numbers for every outcome in Bogotá and each of the 32 departments of the country were aggregated semi-annually. Therefore, each semester contained 33 data points, resulting in 66 data points per year.

Department-level counts of independent health care professionals, and the number of tertiary care institutions (categorized as: *none*, *from 1 to 10*, and *more than 10*), reported from the Special Registry of Health Service Providers (16) were considered as explanatory variables. Concerning *rurality*, defined as the proportion of rural residents in each department, some data was obtained from the Rural Statistical Bulletin of the Rural Development Agency (17), and it was included in the adjusted models.

Statistical analysis

Differences in the average of each outcome were assessed using the Wald test. The Im-Pesaran-Shin unit-root test was applied to evaluate stationarity in the panel datasets (18). Linear panel regression models were used to assess the effect of explanatory variables; $p < 0.05$ was considered the threshold for statistical significance. All analyses were carried out via STATA (V.17) (19).

Research Ethics Approval

The ethics approval was granted by the Institutional Committee of Human Ethics of the Fundación Santa Fe de Bogotá Hospital. The approval ID is CCEI-13931-2022.

RESULTS

The average diabetes-related mortality rate across Colombian departments was 8.13 deaths per 100,000 inhabitants per semester (SD = 3.35), ranging from a minimum of 6.93 (SD = 3.28) in the first semester of 2017 to a maximum of 11.40 (SD = 4.02) in the second semester of 2020; during the pandemic, the diabetes mortality rate increased by 30.40%, comparing the 2020 average to the 2015–2019 average.

Regarding health care visits, a department-level average of approximately 3,700 consultations per 100,000 inhabitants was reported between 2015 and 2021. The most frequent consultation was the ambulatory care with an average rate of 2,172.1 (SD = 1,386.3), followed by emergency care and hospitalizations with 29.3 (SD = 18.1) and 20.6 (SD = 14.5), respectively. Throughout the study period, the total amount of consultations showed a steady increase from approximately 2,000 per 100,000 inhabitants in 2015 to 4,500 per 100,000 in 2021, with the highest peak observed during the first semester of the COVID-19 pandemic (2020-1) at 6,998 (SD = 3640.1) consultations per 100,000 inhabitants. On average, total health care consultations increased by 67.24% during the pandemic (Table 1).

Table 1. Departments' average of consultations and mortality rates (per 100,000 inhabitants) by semester

| | Ambulatory consultations | Emergency consultations | Hospitalizations | Total of attentions | Mortality |
|---------|---------------------------------|--------------------------------|-------------------------|----------------------------|------------------|
| | Mean (SD) | Mean (SD) | Mean (SD) | Mean (SD) | Mean (SD) |
| 2015-1 | 1,759.49 (899.52) | 36.85 (20.97) | 23.96 (12.94) | 2,672.86 (1,480.76) | 7.68 (3.51) |
| 2015-2 | 1,322.22 (636.37) | 30.18 (18.71) | 16.34 (8.75) | 2,022.35 (1,225.43) | 7.79 (2.60) |
| 2016-1 | 1,266.34 (915.79) | 22.78 (12.90) | 10.31 (8.21) | 1,822.22 (1,499.71) | 7.80 (2.75) |
| 2016-2 | 1,046.63 (745.67) | 19.40 (13.14) | 8.64 (7.12) | 1,608.42 (1,471.60) | 7.14 (2.63) |
| 2017-1 | 1,397.27 (843.45) | 25.74 (14.85) | 9.36 (6.36) | 2,362.60 (1,751.03) | 6.93 (3.28) |
| 2017-2 | 2,424.01 (1353.90) | 34.18 (19.85) | 18.90 (14.80) | 3,586.09 (2,127.76) | 7.42 (2.84) |
| 2018-1 | 2,614.85 (1641.58) | 27.88 (16.54) | 20.19 (11.43) | 4,327.28 (2,578.21) | 7.86 (2.91) |
| 2018-2 | 1,961.38 (1381.04) | 22.03 (12.50) | 18.92 (10.52) | 3,405.07 (2,158.49) | 8.47 (3.61) |
| 2019-1 | 2,535.70 (1087.05) | 35.78 (18.56) | 29.43 (14.81) | 4,523.45 (2,184.29) | 7.91 (2.82) |
| 2019-2 | 2,937.86 (1414.05) | 35.67 (19.40) | 27.70 (13.61) | 5,303.37 (2,738.37) | 8.34 (3.83) |
| 2020-1 | 3,501.26 (1697.79) | 48.42 (23.04) | 35.83 (17.09) | 6,998.17 (3,640.11) | 8.77 (3.29) |
| 2020-2 | 2,433.36 (1185.16) | 26.30 (12.36) | 26.30 (16.48) | 5,044.90 (2,870.21) | 11.40 (4.02) |
| 2021-1 | 2,786.07 (1326.40) | 24.52 (12.65) | 22.03 (12.74) | 4,702.51 (2,204.47) | N/A* |
| 2021-2 | 2,422.83 (1268.53) | 21.05 (11.52) | 20.45 (13.96) | 4,416.19 (2,249.84) | N/A* |
| Overall | 2,172.09 (1386.25) | 29.34 (18.13) | 20.60 (14.48) | 3,771.11 (2,675.26) | 8.13 (3.35) |

* Not available.

Source: Author's own work

Rates of ambulatory medical attentions and hospitalizations increased during the pandemic by 44.6% and 42.3%, respectively. Ambulatory rates varied from a minimum of 1,046.6 (SD = 745.7) per 100,000 inhabitants in 2016-2 to 3,501.3 (SD = 1697.8) in the first semester of 2020 (2020-1). Hospitalizations average rates ranged between 8.6 (SD = 7.1) in 2016-2 to 35.8 (SD = 17.1) in 2020-1. Emergency consultations rates varied from 19.4 in 2016-2 (SD = 13.1) to 48.4 in 2020-1 (SD = 23.0) (Table 1).

Among the departments, Vaupés and Guaviare had the highest increase between 2015 and 2020 in their total number of medical consultations. In Vaupés, the average rate between semesters increased from 10.6 consultations per 100,000 inhabitants in 2015, to 1,358.7 per 100,000 inhabitants in 2020. The departments with the lowest increase between 2015 and 2020 were Putumayo and Antioquia. In Putumayo, medical consultations went from 2,130.5 per 100,000 inhabitants in 2015 to 3,158.6 per 100,000 inhabitants in 2020 ([Appendix 1](#)).

The adjusted analyses showed that the number of tertiary care institutions (category 1 to 10 tertiary care hospitals in the department) together with the first year of pandemic (2020) were positively associated to the number of deaths among diabetic patients, in opposition to the number of independent health care professionals and rurality, which were inversely associated with mortality rates (Table 2).

Table 2. Adjusted effects of the pandemic and health care facilities on diabetes mortality rates

| | Coefficient | 95% CI | | p-value |
|--|-------------|---------|----------|---------|
| Independent health care professionals | -0.0003 | -0.0006 | -0.00001 | 0.046 |
| 1 to 10 tertiary care institutions* | 1.65 | 0.05 | 3.24 | 0.043 |
| More than 10 tertiary care institutions* | 0.06 | -5.86 | 5.99 | 0.983 |
| 2020 first semester | 1.04 | 0.37 | 1.70 | 0.002 |
| 2020 second semester | 3.66 | 2.99 | 4.33 | <0.001 |
| Rurality | -0.10 | -0.15 | -0.05 | <0.001 |
| Constant | 10.88 | 8.53 | 13.22 | <0.001 |

*Reference category = no tertiary care institutions

Source: Author's own work

As regards the total of health consultations for diabetes, results showed an increase associated with the number of tertiary care institutions (category *1 to 10 tertiary care hospitals in the department*); on the contrary, rurality was inversely associated (Table 3).

Table 3. Adjusted effects of the pandemic and health care facilities on the total of health care consultations due to diabetes

| | Coefficient | 95% CI | | p-value |
|--|-------------|-----------|----------|---------|
| 1 to 10 tertiary care institutions* | 1,573.36 | 510.74 | 2,635.96 | 0.004 |
| More than 10 tertiary care institutions* | 745.43 | -2,286.07 | 3,776.93 | 0.630 |
| 2020 first semester | 3,834.80 | 3,237.30 | 4,432.29 | <0.001 |
| 2020 second semester | 1,881.53 | 1,284.04 | 2,479.03 | <0.001 |
| 2021 first semester | 1,539.14 | 941.64 | 2,136.63 | <0.001 |
| 2021 second semester | 1,252.82 | 655.32 | 1,850.31 | <0.001 |
| Rurality | -46.14 | -78.46 | -13.83 | 0.005 |
| Constant | 3,975.01 | 2,411.15 | 5,538.88 | <0.001 |

*Reference category = no tertiary care institutions

Source: Author's own work

Similar results were found for the ambulatory services, in which a significant increase in outpatients' diabetes consultations was associated with the number of tertiary care institutions (category *1 to 10 tertiary care hospitals in the department*). Results also showed a negative association between outpatients' visits and rurality (Table 4).

Table 4. Adjusted effects of the pandemic and health care facilities on the number of ambulatory consultations due to diabetes

| | Coefficient | 95% CI | | p-value |
|--|-------------|-----------|----------|---------|
| 1 to 10 tertiary care institutions* | 829.96 | 285.08 | 1,374.86 | 0.003 |
| More than 10 tertiary care institutions* | -43.32 | -1,597.83 | 1,511.18 | 0.956 |
| 2020 first semester | 1,574.68 | 1,267.57 | 1,881.79 | <0.001 |
| 2020 second semester | 506.78 | 199.66 | 813.89 | 0.001 |
| 2021 first semester | 859.49 | 552.38 | 1,166.61 | <0.001 |
| 2021 second semester | 496.25 | 189.14 | 803.37 | 0.002 |
| Rurality | -30.62 | -47.19 | -14.05 | <0.001 |
| Constant | 2,585.20 | 1,783.27 | 3,387.14 | <0.001 |

*Reference category = no tertiary care institutions

Source: Author's own work

Regarding the emergency consultations, the first semester of 2020 was associated with an increased number of visits, and an inverse association was identified with 2021 period (Table 5). Likewise, the first year of the pandemic (2020-1, 2020-2) and the first semester of 2021 were significantly associated with the number of hospitalizations (Table 6). Rurality did not have any significant effects on emergency consultations or hospitalizations for diabetes during the study period.

Table 5. Adjusted effects of the pandemic and health care facilities on the number of emergency consultations due to diabetes

| | Coefficient | 95% CI | | p-value |
|----------------------|-------------|--------|-------|---------|
| 2020 first semester | 19.62 | 15.53 | 23.71 | <0.001 |
| 2021 first semester | -4.28 | -8.37 | -0.19 | 0.040 |
| 2021 second semester | -7.75 | -11.84 | -3.66 | <0.001 |
| Constant | 28.80 | 24.20 | 33.39 | <0.001 |

Source: Prepared by authors

Table 6. Adjusted effects of pandemic and health facilities on the number of hospitalizations due to diabetes consultations due to diabetes

| | Coefficient | 95% CI | | p-value |
|----------------------|--------------------|---------------|-------|----------------|
| 2020 first semester | 17.26 | 13.83 | 20.69 | <0.001 |
| 2020 second semester | 7.74 | 4.30 | 11.17 | <0.001 |
| 2021 first semester | 3.46 | 0.03 | 6.89 | 0.048 |
| Constant | 18.57 | 15.05 | 22.08 | <0.001 |

Source: Author's own work

DISCUSSION

A noticeable increase in the total amount of consultations due to diabetes was observed during the study period. More than a threefold rise in the numbers from 2016 to 2020 confirms that diabetes has become a serious health concern for Colombia due to the large and increasing number of individuals with this disease. As reported elsewhere, diabetic patients are particularly vulnerable to dying from COVID-19, which suggests that this population faced a major health crisis during the pandemic and constitutes one of the most daunting challenges to public health nowadays. In fact, our analyses showed a global escalate in diabetes-associated mortality greater than 30% during the COVID-19 crisis in Colombia. Similar results were seen for ambulatory consultations and hospitalizations.

On the contrary, during the study period, emergency consultations were reduced; however, it is not clear if this reduction really reflects an improvement in the disease management at population level, or if, on the contrary, the superimposing of COVID-19 and diabetes suggests that preexisting complications or pathologies in patients with diabetes could aggravate the infection course and make it difficult or impossible to promptly access the emergency services for those who died (20).

Regarding service availability, the non-significant associations between having more than 10 high complexity hospitals with mortality (once compared with departments with no tertiary hospitals), suggests an important lack of access to specialized health services in less favored settings. Likewise, the reason for the decrease in the search for or access to specific diabetes-related tertiary care needs to be established. However, it could be related to the urgency of other medical or social needs associated with the COVID-19 pandemic.

Similar hypotheses can be made about rurality. The negative association of this variable with the number of health consultations could be an indicator of the existence of barriers to receive, seek or access to specialized health care during the pandemic, including competing priorities, limited access to healthy food, and inadequate health care resources among the patients with diabetes (21).

The findings up to this point revealed important issues about diabetes health care in Colombia; however, some limitations should be considered. Information availability and the study design prevented us to consider individual and cultural variables that could better explain our results, including sociodemographic characteristics and comorbidities. Situations such as the mobility of patients from one point to another to receive adequate health attention were omitted; therefore, the numbers for most rural regions could be underestimated. Furthermore, due to the type of records used in the analyses, the cause of death or consultation could be imprecise or insufficient to rightly identify the total of patients suffering from diabetes during the COVID-19 crisis.

Despite the above, the findings confirmed the existence of several challenges related to diabetes treatment and care. The role of specialized health services and the rise in the number of consultations and mortality during the pandemic undoubtedly revealed a sanitary emergency. These situations are common to most developing countries (22); hence, the lessons learned from Colombia's experience with diabetes are likely to be of immense global relevance. Moreover, diabetes-related morbidity and mortality continue to increase due to population expansion, urban migration, declining physical activity, and dietary aspects (23), factors that probably worsened during the pandemic and in lower-middle income countries may become long-lasting due to resource scarcity. As for Colombia, the organization of diabetes care seems poorly distributed, especially at a tertiary level, with consequent poor outcomes. Further research is needed to better understand the pandemic consequences beyond direct mortality, and to prepare health systems to face future massive challenges such as a pandemic, especially with vulnerable groups and populations like those with diabetes mellitus.

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Appendix 1. Average rate of medical consultations per 100,000 inhabitants by year per state. Part 1

| State / Year | 2015 | 2016 | 2017 | 2018 |
|-------------------------------|-----------------|-----------------|-----------------|-----------------|
| | Mean (SD) | Mean (SD) | Mean (SD) | Mean (SD) |
| Antioquia | 5909.1 (62.5) | 3253.4 (485.1) | 5354.6 (550.0) | 8080.3 (65.2) |
| Atlántico | 3997.8 (889.1) | 2568.4 (79.1) | 4814 (104.4) | 6081.5 (315.6) |
| Bogotá D.C | 3192.2 (582.2) | 2671.5 (5.6) | 3695.2 (418.8) | 5520.5 (264.4) |
| Bolívar | 3280.8 (1323.3) | 1966.2 (329.6) | 3396.1 (340.1) | 4749.3 (1059.0) |
| Boyacá | 2165.4 (892.6) | 1185 (313.3) | 4037.8 (1943.3) | 4662.9 (1911.5) |
| Caldas | 3661.9 (634.7) | 2597.4 (103.1) | 4536.1 (2547) | 5789.3 (1824.1) |
| Caquetá | 2306.2 (142.4) | 1804.5 (178.7) | 3587.9 (3364.7) | 3636.9 (464.2) |
| Cauca | 1785.1 (35.4) | 1252 (155.7) | 2594.7 (1659.8) | 3329 (222.6) |
| Cesar | 1713.7 (179.8) | 1149.4 (104.4) | 2111.0 (495.0) | 3090.6 (264.2) |
| Córdoba | 3573.2 (837.9) | 7926.1 (161.8) | 8206.4 (809.8) | 9288.9 (266.7) |
| Cundinamarca | 2477.1 (756.9) | 3040.6 (1157.0) | 2870.4 (417.7) | 4112.7 (813.4) |
| Chocó | 679.0 (248.7) | 488.4 (41.2) | 678.0 (61.6) | 1435.9 (169.4) |
| Huila | 3734 (1398.8) | 3213.1 (90.7) | 6202.8 (3163.3) | 7483.2 (2538.7) |
| La Guajira | 1288.1 (222.1) | 986.8 (87.1) | 2054.3 (72.5) | 5361.9 (3458.0) |
| Magdalena | 1910.5 (734.7) | 1175 (179.1) | 2857.2 (22.6) | 5057.1 (485.3) |
| Meta | 2626.5 (1398.3) | 1095.6 (413.4) | 3315.1 (2180.4) | 3025 (1814.8) |
| Nariño | 2858.7 (133.8) | 1891.8 (125.1) | 2570.3 (724.9) | 2896.1 (189.4) |
| Norte de Santander | 2583.6 (762.1) | 1870.4 (164.2) | 3715.5 (1290.8) | 4585.9 (1919.7) |
| Quindío | 3494.9 (660.8) | 1919.8 (310.7) | 3570.6 (1610.8) | 5082 (768.8) |
| Risaralda | 3563.5 (1160.4) | 2045.3 (539.6) | 3954.8 (1863.8) | 4882.2 (418.1) |
| Santander | 3458.2 (307.4) | 2923.6 (295.0) | 4985.7 (603.9) | 5882.8 (416.9) |
| Sucre | 2357.6 (529.7) | 1286.8 (22.3) | 1668.7 (439.3) | 3160.5 (353.1) |
| Tolima | 2597.3 (1246.5) | 1530.6 (337.7) | 3603.7 (1649) | 4681.7 (2099.1) |
| Valle del Cauca | 3578.6 (263.9) | 2501.5 (96.6) | 3767.6 (716.8) | 5254.5 (37.7) |
| Arauca | 1680.8 (567.4) | 437.5 (135.8) | 1583.6 (675.2) | 2157.9 (45.6) |
| Casanare | 1758.8 (663.9) | 1345.9 (237.8) | 2055.5 (750.2) | 2258.8 (731) |
| Putumayo | 2130.5 (236.8) | 1302.3 (65.0) | 1616.1 (536.6) | 1959.5 (119.2) |
| San Andrés y Provi- dencia | 1223.8 (222.2) | 515 (576.2) | 2948.2 (238.7) | 1675.1 (808.9) |
| Amazonas | 536.0 (342.4) | 309.7 (62.3) | 732.3 (190.2) | 880 (356.4) |
| Guainía | 392.7 (35.9) | 54.8 (77.5) | 48.6 (65.7) | 241.1 (58.8) |
| Guaviare | 778.5 (241.4) | 160.5 (36.8) | 586.3 (409.3) | 425.9 (158.1) |
| Vaupés | 10.6 (7.5) | 9.0 (1.8) | 54.0 (40.9) | 259.8 (176.8) |
| Vichada | 166.3 (67.6) | 127.6 (62.0) | 380.3 (212.0) | 594.6 (224.3) |

Appendix 1. Average rate of medical consultations per 100,000 inhabitants by year per state. Part 2

| State / Year | 2019 | 2020 | 2021 |
|-------------------------------|-----------------|------------------|-----------------|
| | Mean (SD) | Mean (SD) | Mean (SD) |
| Antioquia | 8443 (267.0) | 8911.6 (1045.0) | 5177.3 (331.1) |
| Atlántico | 8239.3 (1376.0) | 7143.5 (1582.5) | 5665 (957.6) |
| Bogotá D.C | 6863 (415.5) | 9009.6 (2802.2) | 6266.1 (334.2) |
| Bolívar | 7538.5 (1226.6) | 7466.8 (2256.2) | 5901.4 (763.9) |
| Boyacá | 4230.0 (438.0) | 7209.8 (1122.6) | 4016.9 (866.9) |
| Caldas | 5137.7 (200.1) | 7839.5 (2499.3) | 4284.6 (719.8) |
| Caquetá | 4381.3 (69.1) | 4982.4 (1655.3) | 4030.8 (587.5) |
| Cauca | 4206.2 (369.6) | 6271.9 (1534.4) | 4646.2 (706.1) |
| Cesar | 5516.3 (492.6) | 4121.2 (565.3) | 3801.6 (234.9) |
| Córdoba | 6762.6 (470.1) | 6395.8 (834.6) | 5330.5 (710.7) |
| Cundinamarca | 3735.8 (173.2) | 4428.4 (1836.1) | 3553.8 (30.0) |
| Chocó | 1807.1 (1022.8) | 1427.9 (187.6) | 1483.5 (246.9) |
| Huila | 9150.8 (2615.7) | 10405.1 (2376) | 7839.1 (965.6) |
| La Guajira | 3842.8 (200.7) | 3354.8 (481.2) | 6264.2 (143.8) |
| Magdalena | 5304.4 (388.6) | 5369.1 (1287.9) | 4473.1 (1229.6) |
| Meta | 7787.5 (72.2) | 4426.3 (1447.3) | 4102.8 (443.9) |
| Nariño | 4183.9 (299.2) | 4654 (681.7) | 3295.1 (1272.3) |
| Norte de Santander | 5802.8 (1830.9) | 10286 (2073.4) | 8586.8 (507.4) |
| Quindío | 7203.7 (769.8) | 8724.8 (1071.9) | 6268.6 (682.1) |
| Risaralda | 8257.6 (1296.2) | 10752.8 (2135.4) | 8232.0 (589.1) |
| Santander | 8109.2 (1681.9) | 11442 (873.1) | 6819.1 (193.9) |
| Sucre | 3510.2 (226.8) | 5947 (731.1) | 6330.0 (282.5) |
| Tolima | 5134.9 (1519.0) | 11025.9 (2492.1) | 6900.2 (2653.2) |
| Valle del Cauca | 7370.2 (1773.5) | 10681.2 (1316.2) | 7153.4 (138.4) |
| Arauca | 2884.2 (339.3) | 4403.5 (1599.0) | 2951.8 (516.8) |
| Casanare | 2736.4 (674.5) | 2671.6 (89.2) | 3400.0 (942.7) |
| Putumayo | 3037.7 (126.3) | 3158.6 (623.2) | 2926.5 (866.6) |
| San Andrés y Provi- dencia | 2430.3 (1594.6) | 2712.3 (791.6) | 1342.9 (169.5) |
| Amazonas | 1138.2 (207.3) | 1165.5 (73.4) | 929.6 (274.2) |
| Guainía | 1984.9 (122.9) | 2803.3 (1280.5) | 3559.8 (31.6) |
| Guaviare | 2694.9 (871.4) | 7394.7 (5188.0) | 3629.2 (470.7) |
| Vaupés | 1667.8 (912.0) | 1358.7 (988.4) | 647.3 (81.6) |
| Vichada | 1049.3 (83.8) | 764.9 (235.4) | 649.0 (345.0) |