Journal of Current Research in Oral Surgery
2025, Volume 5, Issue 2, Page No: 1-8

Available online at: www.tsdp.net

ISSN: 3062-3480

Original Article

Factors Associated with Xerostomia in Severe COVID-19 Survivors: A Multicenter Latin American Cohort Study

Lucas Meyer[1]*, Anna Schmid[2], Stefan Braun[1]

[1]Department of Oral Surgical Sciences, Faculty of Dentistry, ETH Zurich, Zurich, Switzerland.
[2]Department of Clinical Dentistry and Oral Surgery, Faculty of Medicine, University of Bern, Bern, Switzerland.

[2]***E-mail** ✉ lucas.meyer@gmail.com

Received: 17 March 2025; **Revised:** 20 June 2025; **Accepted:** 21 June 2025

ABSTRACT

The respiratory system is the primary site of SARS-CoV-2 infection; however, growing data indicate that the oral cavity is involved in patients recovering from severe COVID-19. The present work explores correlates of xerostomia among severe COVID-19 survivors drawn from a Latin American sample. Conducted as a prospective multicenter analysis within the Latin American Registry of Cardiovascular Disease and COVID-19, the study examined records of 272 severe COVID-19 patients managed at 7 facilities across 5 countries (Colombia, Dominican Republic, Ecuador, Argentina, and Paraguay). Extended follow-up captured demographic profiles, comorbid conditions, lifestyle habits, cardiovascular sequelae, and oral health status. Associations with xerostomia were identified via logistic regression in R. 20.6% of subjects experienced xerostomia. Females accounted for 53.6% of the affected subgroup, whereas they represented 35.6% of those free of the symptom. Across the entire cohort, the predominant comorbidities were overweight/obesity (57.0%), hypertension (55.9%), and dyslipidemia (32.0%). Relative to individuals without xerostomia, those reporting the symptom presented elevated proportions of dyslipidemia (48.2% vs. 27.8%) and asthma/COPD (16.1% vs. 4.2%). Multivariable logistic regression revealed independent associations with xerostomia for asthma/COPD (aOR: 5.14; 95% CI: 1.76–15.7), palpitations (aOR: 2.47; 95% CI: 1.04–5.94), and chest pain (aOR: 3.74; 95% CI: 1.67–8.43). Male sex, on the other hand, was tied to diminished xerostomia odds (aOR: 0.47; 95% CI: 0.24–0.89). The present results emphasize that clinicians should incorporate active screening for oral health complaints, including xerostomia, into post-COVID follow-up, particularly for individuals burdened by cardiopulmonary conditions and lingering systemic manifestations.

Keywords: Long COVID, Xerostomia, COVID-19 sequelae, Dry mouth, Mouth dryness

How to Cite This Article: Meyer L, Schmid A, Braun S. Factors Associated with Xerostomia in Severe COVID-19 Survivors: A Multicenter Latin American Cohort Study. J Curr Res Oral Surg. 2025;5(2):1-8. https://doi.org/10.51847/19NINfGspB

Introduction

Xerostomia (the subjective sensation of dry mouth) is widespread and capable of markedly eroding the quality of life through difficulties with swallowing, dulled taste perception, coughing, and phonatory changes [1]. Among the general public, pharmacotherapy is the foremost trigger: more than 400 prescription and nonprescription agents have been linked to reduced salivary output and xerostomia (e.g., antihypertensives, antidepressants, anticholinergics, diuretics, opioids, nonsteroidal anti-inflammatory drugs, antihistamines) [2–5]. Uncommon etiologies include systemic illnesses—Sjögren's syndrome, connective tissue diseases, diabetes mellitus, chronic renal failure, and autoimmune disorders—as well as certain infections such as human immunodeficiency virus and cytomegalovirus [2, 6].

Notwithstanding that SARS-CoV-2 principally expresses itself in the human respiratory tract, the question arises as to whether this pathogen, akin to other infectious agents, can extend its reach into the mouth. Salivary glands have been posited as viable targets for COVID-19 owing to the verified expression

of ACE2/transmembrane serine protease 2 receptors within salivary gland epithelial cells [7, 8]. An accumulating body of evidence suggests that the oral cavity represents a potential theater of COVID-19 involvement, with enduring disturbances evident in the majority of convalescent individuals well beyond clinical resolution. Subjects who have overcome the acute phase of COVID-19 have cataloged a range of upper aerodigestive complaints—xerostomia, polydipsia, and intractable dry cough among them—that extend through a protracted post-infectious interval and fall under the umbrella of long COVID or post-COVID-19 syndrome [9].

Systematic characterization of long-haul oral sequelae in COVID-19 patients is a pressing need, given the pronounced heterogeneity in reported prevalence figures driven by study design and methodology. One review pooling seven xerostomia-focused investigations encompassed 654 COVID-19 survivors from Italy, Turkey, China, India, Israel, and Colombia. Prevalence estimates ranged from 2% to 40% across follow-up windows of 28–230 days, without stratification by inpatient status or illness severity [10]. Further inquiry remains essential to disentangle the lasting repercussions of SARS-CoV-2 for oral health, as existing evidence is both sparse and inconsistent. Critical questions remain regarding the roles of direct viral insult, systemic inflammatory cascades, neuropathic mechanisms, and iatrogenic factors, such as antibiotic exposure, in the genesis of xerostomia and other oral manifestations [11]. Closing these knowledge gaps demands investigations that not only quantify the frequency of xerostomia but also systematically probe its determinants within rigorously defined patient cohorts.

Objective

To document the frequency and determinants of xerostomia in a sample of Latin American individuals recovering from severe COVID-19.

Materials and Methods

Study design and participants

A prospective cohort design was employed, drawing on records from the CARDIO COVID–19–20 Registry (Registro Latinoamericano de Enfermedad Cardiovascular y COVID-19) and its extended follow-up component, the CARDIO COVID–20–21 registry. The CARDIO COVID-19–20 registry functioned as an observational, multicenter, ambispective, hospital-anchored database of subjects with laboratory-confirmed COVID-19 requiring inpatient management across Latin America, while the CARDIO COVID–20–21 registry performed prospective surveillance of a subset of these subjects after hospital discharge. The CARDIO COVID 19–20 registry enrolled adults aged 18 years or older hospitalized for more than 24 h with RT-PCR-confirmed SARS-CoV-2 infection, according to World Health Organization (WHO) protocols. The initiative involved 44 hospitals distributed among 14 Latin American countries: Argentina, Brazil, Chile, Colombia, Costa Rica, Dominican Republic, Ecuador, El Salvador, Guatemala, Mexico, Panama, Paraguay, Peru, and Venezuela [12].

Spanning June 2020 to June 2021, the CARDIO COVID–19–20 registry enrolled 3,260 patients. Of this group, 869 (26.7%) died while hospitalized, and 417 (12.8%) were removed due to failure to meet severity benchmarks, resulting in 1,974 (60.5%) individuals classified as having experienced severe COVID-19. This subset served as the basis for prolonged observation in the CARDIO COVID-20–21 registry.

A severe COVID-19 episode was established by the presence of no fewer than one of the subsequent indicators: heightened risk of venous thromboembolism (increased D-dimer: 1219 patients, 61.8%), need for intensive care unit (ICU) stay (896 patients, 45.4%), cardiovascular events during hospitalization (arrhythmia, arterial or venous embolism, coronary incidents, and heart failure: 406 patients, 20.6%), or myocardial damage (troponin concentrations surpassing the 99th percentile: 302 patients, 15.3%).

At the 30-day follow-up juncture, 318 individuals proved unreachable, and 37 fatalities occurred, rendering 1619 (49.7%) severe COVID-19 patients eligible for long-term monitoring. Only 7 of the 44 institutions (Colombia, Dominican Republic, Ecuador, Argentina, and Paraguay) opted into the second registry (CARDIO COVID 20–21), resulting in the exclusion of 1105 patients. Of the remaining 514 patients, 242 could not be retained, leaving a definitive cohort of 272 patients.

Within the 272 severe COVID-19 subjects who underwent long-term follow-up, 39.3% (107/272) met a single severity criterion, 35.7% (97/272) met two, 24.3% (66/272) met three, and 0.7% (2/272) fulfilled all four. Across these strata, the prevalence of xerostomia reached 23.4% (25/107), 20.6% (20/97), 15.2% (10/66), and 50.0% (1/2), respectively.

Follow-up encounters were conducted at a median interval of 25 months post-discharge, either in person (192 patients) or by telephone (80 patients). Guided by physicians, self-declared symptoms, medical backgrounds, and appraisals of anxiety, depression, stress, quality of life, and cognitive performance were compiled. **Figure 1** depicts the process of patient

selection and elimination, offering an overview of the study architecture and participant flow. Oral health complaints were captured through a standardized, physician-directed, self-report questionnaire. Concerning xerostomia, patients received the direct inquiry: "Have you experienced a persistent dry mouth or lack of saliva over the past month?"

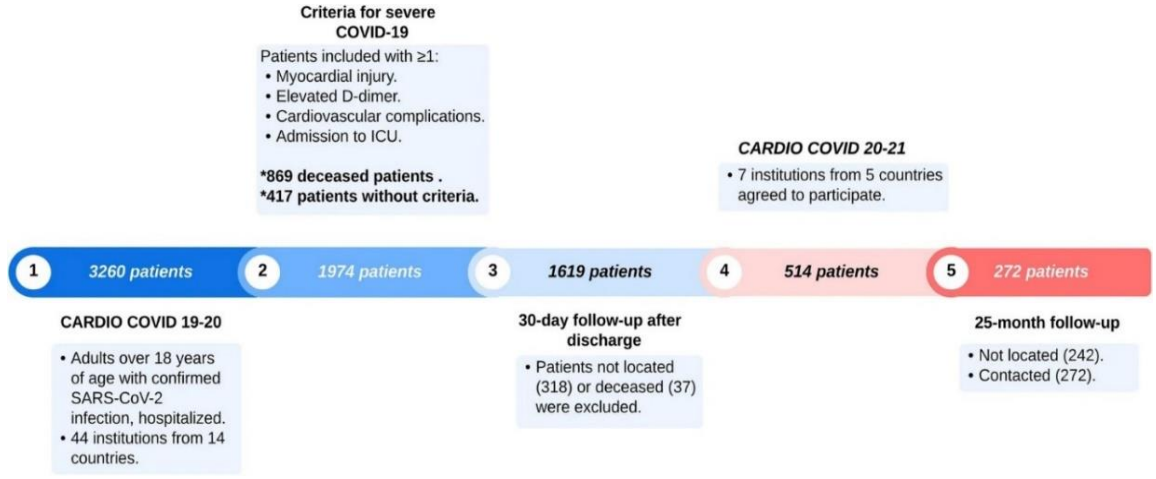

Figure 1. Flow diagram of patient enrollment.

The Inter-American Council of Heart Failure and Pulmonary Hypertension (CIFACAH), a body of the Inter-American Society of Cardiology (IASC), served as the coordinating entity for both the CARDIO COVID 19–20 and CARDIO COVID 20–21 registries, with logistical assistance furnished by the Clinical Research Center at Fundación Valle del Lili (FVL) in Cali, Colombia. Consent in writing was obtained from each individual participating, and the information was stored in a secure database with access restricted to the principal investigators. The study received ethical clearance from the IASC Academic Committee and the Institutional Review Board (IRB) of Fundación Valle del Lili (reference 2021.1756), in accordance with the principles outlined in the 1975 Declaration of Helsinki.

Statistical analysis

Categorical variables were depicted using frequencies and percentages, while continuous variables were expressed as medians accompanied by their interquartile ranges [interquartile range (IQR)]. Between-group comparisons of proportions were performed via cross-tabulations employing Chi-square or Fisher's exact tests. The Kruskal–Wallis and Mann–Whitney U tests were utilized to contrast continuous variables across groups. Univariate and multivariate logistic regression models were constructed to evaluate the influence of designated variables on the emergence of xerostomia. Predictors achieving a P-value < 0.05 in univariate screening, along with those cited in prior research as plausible confounders or deemed clinically pertinent, were incorporated into the multivariate framework. All statistical analyses were conducted in R (version 4.02). Clinical data were collected and managed using REDCap (Research Electronic Data Capture).

Results and Discussion

Table 1 condenses the foundational traits of the participant pool. The overall median age was 58 years, showing no discrepancy between the xerostomia-positive and xerostomia-negative groups. Women were disproportionately represented among those reporting xerostomia versus men (53.6% vs. 35.6%; P = 0.021). Dyslipidemia (48.2% vs. 27.8%; P = 0.006) and asthma/COPD (16.1% vs. 4.2%; P = 0.004) also surfaced significantly more often in the xerostomia subset, whereas the distribution of other comorbid conditions and drug treatments remained comparable.

Table 1. Xerostomia by demographic and clinical characteristics.

Feature	P-value	Xerostomia absent (n = 216)[a]	Xerostomia present (n = 56)[a]	Total cohort (n = 272)[a]
Age, median (IQR)	0.4[b]	58 (48–69)	57 (47–63)	58 (48–69)
Sex				
Male	0.021[c]	139 (64.4)	26 (46.4)	165 (60.7)
Female		77 (35.6)	30 (53.6)	107 (39.3)

Comorbidities				
Overweight/Obesity	0.4[c]	120 (55.6)	35 (62.5)	155 (57.0)
Hypertension	0.8[c]	120 (55.6)	33 (58.9)	152 (55.9)
Dyslipidemia	0.006[c]	60 (27.8)	27 (48.2)	87 (32.0)
Diabetes mellitus	0.069[c]	57 (26.4)	22 (39.3)	79 (29.0)
CKD	0.6[c]	30 (13.9)	9 (16.1)	39 (14.3)
Asthma/COPD	0.004[c]	9 (4.2)	9 (16.1)	18 (6.6)
Pharmacological therapy				
ARBs	0.072[c]	60 (27.8)	23 (41.1)	83 (30.5)
Statins	0.7[c]	53 (24.5)	15 (27.0)	68 (25.0)
Hypoglycemic agents	0.6[c]	34 (15.7)	11 (19.6)	45 (16.5)
CCBs	0.8[c]	31 (14.4)	9 (16.1)	40 (14.7)
BB	0.5[c]	27 (12.5)	9 (16.1)	36 (13.2)
Diuretics	0.3[c]	26 (12.0)	10 (17.9)	36 (13.2)
ACE inhibitors	> 0.9[c]	22 (10.2)	5 (8.9)	27 (9.9)

ACE = angiotensin-converting enzyme; ARBs = angiotensin receptor blockers; BB = beta blockers; CCBs = calcium channel blockers; CKD = chronic kidney disease; COPD = chronic obstructive pulmonary disease.
Bolded P-values indicate statistical significance.
[a]: Values are expressed as median (interquartile range) or n (%).
[b]: P-value from the Wilcoxon rank sum test.
[c]: P-value from Fisher's exact test.

Vital signs and anthropometric measurements collected at the 25-month face-to-face follow-up visit (192 out of 272 individuals, 70.6%) are presented in **Table 2**. Within this subgroup, no statistically significant differences were observed between participants with xerostomia and those without when comparing respiratory rate, heart rate, systolic or diastolic blood pressure, oxygen saturation, or body mass index.

Table 2. Vital signs and anthropometry at 25-month follow-up (patients with face-to-face interviews).

Measurement	P-valueb	Xerostomia absent (n = 139)[a]	Xerostomia present (n = 53)[a]	Entire subgroup (n = 192)[a]
Vital signs				
Respiratory rate[c]	0.7831	17 (16, 18)	17 (17, 18)	17 (17, 18)
Heart rated	0.5242	71 (66, 80)	72 (65, 78)	72 (66, 80)
SBP[e]	0.6513	127 (116.5, 138)	125 (113, 137)	126 (116, 138)
DBP[e]	0.8250	80 (71, 84)	80 (67, 85)	80 (70, 84)
Oxygen saturation[f]	0.5775	97 (95.5, 98)	97 (96, 98)	97 (96, 98)
Anthropometry				
BMIg	0.8639	28.1 (24.95, 31.2)	27.2 (25.2, 31.5)	27.9 (25.1, 31.2)

BMI = body mass index; bpm = beats per minute; DBP = diastolic blood pressure; rpm = respirations per minute; SBP = systolic blood pressure.
[a]: Median (interquartile range) was used to express all values.
[b]: P-value obtained via the Wilcoxon rank sum test.
[c]: Unit of measurement: respirations per minute.
[d]: Unit of measurement: beats per minute.
[e]: Unit of measurement: millimeters of mercury.
[f]: Unit of measurement: percentage.
[g]: Unit of measurement: kilograms per square meter.

Table 3 summarizes the analysis of functional capacity, oral presentations, and systemic complaints carried out on the full cohort (n = 272) at the 25-month follow-up. A significantly smaller proportion of patients with xerostomia were assigned to NYHA class I compared with those without the symptom (48.2% vs. 69.0%; P = 0.006), whereas assignment to classes II and III was more common in the xerostomia subset. Higher rates were also recorded in the xerostomia group for dysphagia (30.4% vs. 7.9%; P < 0.001), discomfort or enlargement of the salivary glands (7.1% vs. 1.4%; P = 0.035), and submandibular swelling (5.4% vs. 0.5%; P = 0.028); no statistically meaningful separation between groups was detected for the other oral findings. The occurrence of systemic manifestations was notably elevated in xerostomia sufferers, specifically fatigue (75.0% vs. 46.3%; P < 0.001), myalgia/arthralgia (76.8% vs. 31.9%; P <

0.001), palpitations (50.0% vs. 15.3%; P < 0.001), and chest pain (51.8% vs. 13.9%; P < 0.001); dyspnea, in contrast, fell short of the threshold for statistical significance (P = 0.056).

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The logistic regression analyses, both univariable and multivariable, exploring factors linked to xerostomia are depicted in **Figure 2**. In the adjusted model, the male sex emerged as an independent protective factor against xerostomia (aOR: 0.47; 95% CI: 0.24–0.89; P = 0.021), while a medical history of asthma/COPD independently raised its likelihood (aOR: 5.14; 95% CI: 1.76–15.7; P = 0.003). Among the constellation of symptoms evaluated, independent associations with xerostomia persisted for both palpitations (aOR: 2.47; 95% CI: 1.04–5.94; P = 0.041) and chest pain (aOR: 3.74; 95% CI: 1.67–8.43; P = 0.001). After controlling for all covariates, no significant relationships remained for dyslipidemia, diabetes, age, dyspnea, or fatigue, even though dyspnea and fatigue had initially demonstrated significance in the unadjusted analyses.

Table 3. Functional status, oral manifestations, and systemic symptoms at 25-month follow-up.

Feature	P-value	Xerostomia absent (n = 216)[a]	Xerostomia present (n = 56)[a]	Total cohort (n = 272)[a]
NYHA functional class				
Class I	0.006[b]	149 (69.0%)	27 (48.2%)	176 (64.7%)
Class II		46 (21.3%)	17 (30.4%)	63 (23.2%)
Class III		19 (8.8%)	12 (21.4%)	31 (11.4%)
Class IV		2 (0.9%)	0 (0%)	2 (0.7%)
Oral manifestations				
Dysphagia	< 0.001[c]	17 (7.9%)	17 (30.4%)	34 (12.5%)
Oral ulcers[d]	0.2[c]	7 (3.2%)	4 (7.1%)	11 (4.0%)
Salivary gland pain/swelling[e]	0.035[c]	3 (1.4%)	4 (7.1%)	7 (2.6%)
Gum bleedin[g]	0.6[c]	4 (1.9%)	2 (3.6%)	6 (2.2%)
Oral lesions[f]	> 0.9[c]	3 (1.4%)	1 (1.8%)	4 (1.5%)
Submandibular swelling[g]	0.028[c]	1 (0.5%)	3 (5.4%)	4 (1.5%)
Burning mouth/tongue[h]	0.5[c]	2 (0.9%)	1 (1.8%)	3 (1.1%)
Tongue redness	0.11[c]	1 (0.5%)	2 (3.6%)	3 (1.1%)
Signs and symptoms				
Fatigue	< 0.001[c]	100 (46.3%)	42 (75.0%)	142 (52.2%)
Myalgia/arthralgia	< 0.001[c]	69 (31.9%)	43 (76.8%)	112 (41.2%)
Dyspnea	0.056[c]	48 (22.2%)	20 (35.7%)	68 (25.0%)
Palpitations	< 0.001[c]	33 (15.3%)	28 (50.0%)	61 (22.4%)
Chest pain	< 0.001[c]	30 (13.9%)	29 (51.8%)	59 (21.7%)

P-values reaching statistical significance are shown in bold.

[a]: All values are reported as n (%).

[b]: P-values were derived from Fisher's exact test employing a simulated P-value approach (2,000 replicates), which was applied to the NYHA functional class (an ordinal variable spanning 4 categories).

[c]: P-values were obtained from Fisher's exact test (for categorical variables with two levels).

[d]: Oral ulcers: ulcerations within the oral cavity.

[e]: Salivary gland pain/swelling: tenderness or enlargement localized to the salivary glands (in the preauricular or cheek area).

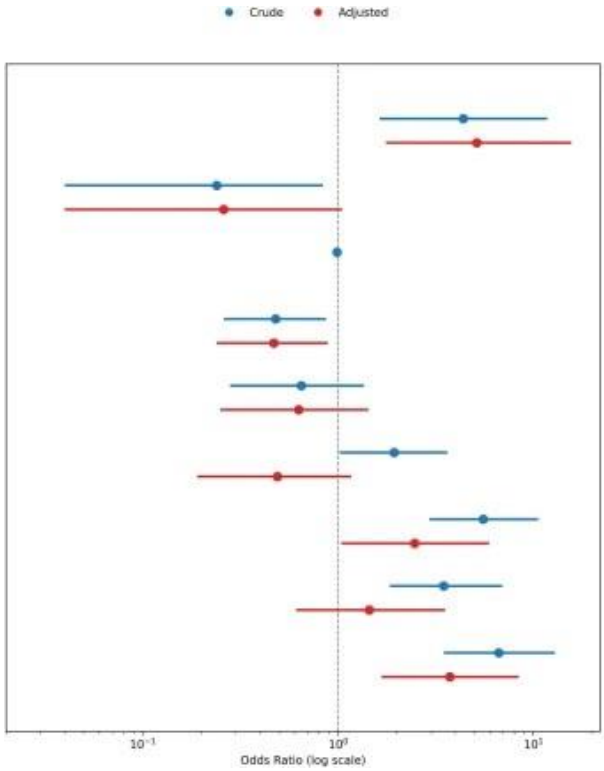
[f]: Oral lesions: spots or ulcerated areas on the lips or inside the mouth.

[g]: Submandibular swelling: palpable enlargement beneath the mandible.

[h]: Burning mouth/tongue: a persistent burning sensation affecting the oral mucosa or tongue.

The logistic regression analyses, both univariable and multivariable, exploring factors linked to xerostomia are depicted in **Figure 2**. In the adjusted model, the male sex emerged as an independent protective factor against xerostomia ([a]OR: 0.47; 95% CI: 0.24–0.89; P = 0.021), while a medical history of asthma/COPD independently raised its likelihood ([a]OR: 5.14; 95% CI: 1.76–15.7; P = 0.003). Among the constellation of symptoms evaluated, independent associations with xerostomia persisted for both palpitations ([a]OR: 2.47; 95% CI: 1.04–5.94; P = 0.041) and chest pain ([a]OR: 3.74; 95% CI: 1.67–8.43; P = 0.001). After controlling

for all covariates, no significant relationships remained for dyslipidemia, diabetes, age, dyspnea, or fatigue, even though dyspnea and fatigue had initially demonstrated significance in the unadjusted analyses.



Variable	Model	OR	95% CI	P-value
Asthma / COPD	Crude	4.38	1.63–11.80	0.003
	Adjusted	5.14	1.76–15.70	0.003
Dyslipidemia	Crude	0.24	0.04–0.84	0.058
	Adjusted	0.26	0.04–1.05	0.10
Age (years)	Crude	0.99	0.97–1.01	0.34
Gender (male)	Crude	0.48	0.26–0.87	0.016
	Adjusted	0.47	0.24–0.89	0.021
Diabetes Mellitus	Crude	0.65	0.28–1.36	0.28
	Adjusted	0.63	0.25–1.43	0.30
Dyspnea	Crude	1.94	1.02–3.64	0.040
	Adjusted	0.49	0.19–1.17	0.12
Palpitations	Crude	5.55	2.93–10.60	<0.001
	Adjusted	2.47	1.04–5.94	0.041
Fatigue	Crude	3.48	1.84–6.95	<0.001
	Adjusted	1.45	0.61–3.54	0.40
Chest Pain	Crude	6.66	3.49–12.90	<0.001
	Adjusted	3.74	1.67–8.43	0.001

aOR: Adjusted Odds Ratio. CI: Confidence Interval.
COPD: Chronic obstructive pulmonary disease.

Figure 2. Summary of logistic regression models for xerostomia.

Drawing on data from 272 severe COVID-19 survivors distributed across five Latin American settings, this work established that roughly one in five individuals continued to experience xerostomia at a follow-up point surpassing two years. Female sex conferred a higher burden, and the symptom showed independent relationships with asthma/COPD, palpitations, and chest pain—a pattern that speaks to its complex, multi-domain etiology.

Among this study's assets are its recruitment of patients from multiple countries, its reliance on direct, in-person contact for the majority of participants, and an observation interval extending beyond 24 months, a duration that exceeds that of most comparable published investigations. These design features strengthen the breadth of applicability of the results. At the same time, several constraints should be noted. The retrospective framework could introduce selection effects; ascertainment of dry mouth depended entirely on subjective accounts, without salivary flow measurement or other objective verification; oral health status before SARS-CoV-2 infection was not documented; and the granularity of pharmacotherapy data was insufficient to model its precise role. Each of these factors limits the capacity to draw firm causal conclusions and calls for caution when seeking to broaden the inferences.

The patterns we observed resonate with earlier work describing elevated comorbidity rates among severe COVID-19 survivors [13, 14]. The proportion of individuals reporting xerostomia in our series (20.6%) was lower than previously reported for Italian (30%) and Colombian (26%) samples [11, 15], a gap likely attributable to differences in surveillance duration and cohort composition. Such dispersion in prevalence estimates is well recognized, with the published literature documenting rates ranging from 2% to 40% depending on the investigative approach and measurement strategy [10]. Significantly, the link with asthma/COPD remained detectable beyond the two-year threshold, extending findings from shorter-term analyses and reinforcing the notion that chronic respiratory illness, together with its associated treatments, continues to play a meaningful role [11, 16].

Other complaints referable to the oral cavity also surfaced less commonly than in the broader global literature. The dysphagia rate (12.5%) fell below pooled prevalence figures from systematic reviews [17, 18], and oral ulcers were similarly sparse in our material compared with earlier reports [11, 19]. These contrasts plausibly originate from heterogeneity in the demographic and clinical makeup of study samples, the instruments or questions used to elicit oral symptoms,

and the specific time point at which follow-up was conducted. In sum, the evidence points to a pressing requirement for uniform, validated protocols to capture oral cavity sequelae in post-COVID populations.

Medication-related contributions represent an additional layer of complexity. It is well established that over 400 prescribed and non-prescribed preparations can precipitate salivary hypofunction and the sensation of oral dryness in community-dwelling populations—examples spanning antihypertensives, antidepressants, anticholinergics, diuretics, opioids, nonsteroidal anti-inflammatory drugs, and antihistamines [4, 5]. A number of the drug families habitually prescribed to individuals recovering from COVID-19, notably ACE inhibitors, beta blockers, calcium channel blockers, diuretics, and ARBs, carry specific associations with impaired salivary performance [20, 21]. In the present dataset, ARB use was somewhat more prevalent among those reporting xerostomia, but this difference did not reach statistical significance. This observation encapsulates the broader methodological challenge of isolating the respective influences of chronic drug exposure, pre-existing illness, and direct post-viral phenomena on the persistence of oral dryness.

When interpreted holistically, the data imply that xerostomia emerging in the setting of long COVID is best understood as a product of intersecting pathways—cumulative effects of systemic morbidity, sustained pharmacologic intervention, and residual consequences of SARS-CoV-2 infection [7, 11, 20, 21]. From a practical clinical standpoint, the message is that oral health surveillance deserves a formal place within the extended care paradigm for COVID-19 survivors. Clinicians in both medicine and dentistry should remain alert to the adverse impact of dry mouth on daily functioning and be prepared to deploy coordinated, cross-specialty responses [8, 9]. Moving forward, investigative efforts should focus on incorporating direct measurements of salivary gland output, exhaustive cataloging of medication regimens and their temporal relationships, and pinpointing modifiable contributors, all aimed at shaping concrete preventive and remedial actions.

Conclusion

The present work positions xerostomia as a relatively frequent residual symptom following severe COVID-19, calling for heightened clinical suspicion among physicians and oral health providers so that systematic detection and treatment become routine components of extended post-acute care. Because xerostomia frequently coexists with broader systemic pathology—including asthma/COPD, dyslipidemia, and cardiovascular disorders—a multidisciplinary care model may prove necessary to fully address its consequences for patient quality of life. In addition, our results indicate that prolonged observation windows are fundamental for capturing the true trajectory of oral symptomatology in recovering individuals and elucidating the underlying pathophysiological substrates. Prospectively designed studies should now prioritize the search for risk factors amenable to intervention and rigorously dissect the contributions of long-term medication use and inflammatory biology to the onset and perpetuation of xerostomia, with the ultimate goal of equipping clinicians with evidence-based prophylactic and treatment paradigms.

Acknowledgments: We extend our gratitude to all individuals and institutions involved in the design and execution of the CARDIO COVID 21-21 study.

Conflict of Interest: None

Financial Support: The author(s) declare that financial support was received for the research and/or publication of this article. This study was funded through a general research grant from Tecnoquimicas S.A to the Centro de Investigaciones Clínicas at Fundación Valle del Lili (TQ-2021-1756). The results and conclusions are those of the authors and do not necessarily represent the view of either institution.

Ethics Statement: The studies involving humans were approved by the Institutional Review Board (IRB) of Fundación Valle de Lili (2021.1756). The studies were conducted in accordance with the local legislation and institutional requirements. The participants provided their written informed consent to participate in this study.

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