# Post-COVID-19 Functional Status and Physical Health in the Affected Population of the Department of Córdoba, Colombia

## Estado funcional y salud física pos COVID-19 en la población afectada del Departamento de Córdoba, Colombia

Sindy Ariza[1*], Kathelyn Gaviria[2], Cindy Carriazo[3], Fermina Vásquez[4], Ricardo Rueda[5], Carolina Castellanos[6], Stefano Vinaccia[7], Leydis Espitia[8], Ivonne Romero[9], Ana Aponte[10], Leidy Esquivel[11], Luz Hernández[12], Karen Duque[13], Juan Torres[14], Angel Pinto[15]

DOI: https://doi.org/10.47307/GMC.2024.132.2.19

ORCID: https://orcid.org/0000-0003-2645-64201[1]
ORCID: https://orcid.org/0000-0002-2116-4907[2]
ORCID: https://orcid.org/0000-0003-3822-6462[3]
ORCID: https://orcid.org/0000-0003-4841-9022[4]
ORCID: https://orcid.org/0000-0003-0614-2520[5]
ORCID: https://orcid.org/0000-0003-0981-0707[6]
ORCID: https://orcid.org/0000-0001-5169-0871[7]
ORCID: https://orcid.org/0009-0004-6646-8527[8]
ORCID: https://orcid.org/0000-0002-4626-0081[9]
ORCID: https://orcid.org/0009-0009-9706-9197[10]
ORCID: https://orcid.org/0009-0006-8214-499X[11]
ORCID: https://orcid.org/0009-0002-0086-010X[12]
ORCID: https://orcid.org/0009-0004-4777-6858[13]
ORCID: https://orcid.org/0000-0002-9368-1436[14]
ORCID: https://orcid.org/0000-0002-6792-8095[15]

[1]Faculty of Health Sciences, Physiotherapy Program, Universidad del Sinú – Elías Bechara Zainúm, 230001 Montería, Colombia 1. E-mail: sindyariza@unisinu.edu.co;
[2]Faculty of Health Sciences, Physiotherapy Program, Universidad del Sinú – Elías Bechara Zainúm, 230001 Montería, Colombia 2; E-mail: kathelyngaviria@unisinu.edu.co;
[3]Faculty of Health Sciences, Physiotherapy Program, Universidad del Sinú – Elías Bechara Zainúm, 230001 Montería, Colombia 3; E-mail: cindycarriazo@unisinu.edu.co;
[4]Faculty of Health Sciences, Physiotherapy Program, Universidad del Sinú – Elías Bechara Zainúm, 230001 Montería, Colombia 4; E-mail: ferminavasquez@unisinu.edu.co;

[5]Faculty of Health Sciences, Psychology Program, Universidad del Sinú – Elías Bechara Zainúm, 230001 Montería, Colombia 5; E-mail: camiloruedaa@unisinu.edu.co;
[6]Faculty of Health Sciences, Surgical Instrumentation Program Universidad del Sinú – Elías Bechara Zainúm, 230001 Montería, Colombia 6; E-mail: carolinacastellano@unisinu.edu.co;
[7]Faculty of Health Sciences, Psychology Program, Universidad del Sinú – Elías Bechara Zainúm, 230001 Montería, Colombia 7; E-mail: stefanovinacci@unisinu.edu.co;
[8]Faculty of Health Sciences, Surgical Instrumentation Program, Universidad del Sinú – Elías Bechara Zainúm, 230001 Montería, Colombia 8; E-mail: leidyespitia@unisinu.edu.co;
[9]Faculty of Health Sciences, Nursing Program 9, Universidad del Sinú – Elías Bechara Zainúm, 230001 Montería, Colombia 9; E-mail: ivonneromero@unisinu.edu.co;
[10]Faculty of Health Sciences, Nursing Program, Universidad del Sinú – Elías Bechara Zainúm 10; E-mail: anaaponte@unisinu.edu.co;
[11]Faculty of Health Sciences, Psychology Program, Universidad del Sinú – Elías Bechara Zainúm, 230001 Montería, Colombia 11; E-mail: leidyesquivel@unisinu.edu.co;
[12]Universidad del Sinú – Elías Bechara Zainúm, 230001 Montería, Colombia 12; E-mail: luzzher-nande@gmail.com;
[13]Universidad del Sinú – Elías Bechara Zainúm, 230001 Montería, Colombia 13; E-mail: karen-duque@unisinu.edu.co;
[14]Faculty of Sciences and Engineering Universidad del Sinú – Elías Bechara Zainúm 14; E-mail: juantor-rest@unisinu.edu.co;
[15]Faculty of Sciences and Engineering Universidad del Sinú – Elías Bechara Zainúm 15; E-mail: angelpin-to@unisinu.edu.co;

* Correspondence: Sindy Ariza. E-mail: sindyariza@unisinu.edu.co; Tel: +57 3183724808

## SUMMARY

*COVID-19, classified as a public health emergency by the World Health Organization, has significantly impacted the Department of Córdoba, affecting more than 11 925 individuals. In this context, a cross-sectional correlational quantitative study was conducted to analyze the relationship between functional status and physical health among the affected population in the 30 municipalities of the department. The sample for this study included 1 075 individuals, of whom 634 met the inclusion criteria. Surveys were administered along with the Post-COVID-19 Functional Scale (Spanish version) to collect sociodemographic and physical health data, and IBM SPSS version 24 software was used for data analysis. The results revealed a range of functional decline ranging from 18.77 % to 32.18 %. Multiple linear regression analysis identified factors such as age, family type, educational level, and hypertension significantly associated with the participants' functional status. Despite the sequelae, the studied population could carry out their daily activities with the same level of intensity. These findings underline the need for comprehensive care and long-term follow-up for those affected by COVID-19 to address potential functional limitations and ensure optimal quality of life.*

**Keywords:** *Post-COVID-19, viral infection, functional status, physical health, cross-sectional study.*

## RESUMEN

*El COVID-19, catalogado como emergencia de salud pública por la Organización Mundial de la Salud, ha tenido un impacto significativo en el Departamento de Córdoba, afectando a más de 11 925 personas. En este contexto, se realizó un estudio cuantitativo correlacional transversal con el objetivo de analizar la relación entre el estado funcional y la salud física de la población afectada en los 30 municipios del departamento. La muestra para este estudio incluyó a 1 075 personas, de las cuales 634 cumplieron los criterios de inclusión. Para la recolección de datos sociodemográficos y de salud física se administraron encuestas junto con la Escala Funcional Post-COVID-19 (versión en español) y para el análisis de los datos se utilizó el software IBM SPSS versión 24. Los resultados revelaron un rango de deterioro funcional que oscilaba entre el 18,77 % y el 32,18 %. El análisis de regresión lineal múltiple identificó factores como la edad, el tipo de familia, el nivel educativo y la presencia de hipertensión que se asociaron significativamente con el estado funcional de los participantes. A pesar de las secuelas, la población estudiada pudo realizar sus actividades diarias con el*

*mismo nivel de intensidad. Estos hallazgos subrayan la necesidad de una atención integral y un seguimiento a largo plazo para los afectados por COVID-19, con el objetivo de abordar posibles limitaciones funcionales y garantizar una calidad de vida óptima.*

**Palabras clave:** *Post-COVID-19, infección viral, estado funcional, salud física, estudio transversal.*

## INTRODUCTION

In the context of COVID-19, collaboration and interdisciplinarity in scientific research have become very important, as emphasized by Espina-Romero in her studies (1,2). These studies highlight the need for a synergistic approach to ad-dress today's issues, including post-pandemic scientific dissemination. This collaborative approach is key to understanding the long-term consequences of COVID-19, an area that has generated interest in the global scientific community.

Coronavirus (COVID-19) is an infectious disease caused by the SARS-CoV-2 virus (3), which spread rapidly around the world in 2019 (4,5) and has been classified by the World Health Organization (WHO) as a public health emergency of international importance, recognizing cases on all continents, with the first confirmed case occurring in Colombia in March 2020 (4,6).

According to the National Institute of Health (7), as of June 07, 2023, Colombia has registered more than 6 369 916 confirmed cases of COVID-19, with more than 6 190 683 people recovered and more than 142 780 deaths due to the disease. In the department of Córdoba, more than 122 709 cases have been confirmed, with more than 117 770 people re-covered and a total of 4 939 deaths. The data show that the most affected population is in the 20-49 age range, followed by the 50-69 age group. However, it is important to note that the 10 to 19 age group has also experienced a high number of infections, with more than 10 349 confirmed cases. These numbers reflect the disease's impact on different segments of the population in Colombia, particu-larly in the department of Córdoba.

At the beginning of the pandemic, scientists fo-cused on controlling the high number of cases

and deaths and developing vaccines. However, it became clear that there was a need to understand the consequences of the COVID-19 syndrome (8). This is because COVID-19 can cause permanent damage in some infected individuals, even if they have only mild symptoms, and can have long-term persistent effects known as "sequelae." These sequelae have adverse effects and implications for the physical and mental health of the population, including problems such as pulmonary fibrosis, heart failure, chronic kidney disease, neurological deficits, myalgias, generalized weakness, deficits in muscle strength and endurance, decreased functional capacity, anxiety, depression, stress, and post-traumatic stress disorders (9-12). Consequently, COVID-19 has been revealed as a complex and multifaceted disease affecting several human body systems (13).

In the study by Carfi et al. (14), 143 people discharged after contracting the virus infection were followed up. After seven weeks of follow-up, it was observed that a proportion of the participants experienced various symptoms. Specifically, 53 % of participants reported fatigue, 43 % experienced shortness of breath, and 27 % reported joint pain.

Furthermore, in the study by Halpin et al. (15), 30 participants experienced difficulties in mobility, self-care ability, and daily activity performance. Among them, 21 experienced new or exacerbated shortness of breath, while 26 experienced fatigues again.

Scientific evidence has shown decreases in exercise and pulmonary function six months after discharge and depression, anxiety, and post-traumatic stress disorder one year after discharge (16,17).

Although various studies have been carried out regarding the consequences of COVID-19, the long-term consequences that survivors will experience after discharge are still being studied. According to Aiyegbusi et al., Nalbandian et al., and Ohtake et al. (18-20), survivors of critical illnesses experience a disability. A decline in physical and cognitive function may persist for years after hospital discharge.

People who have recovered from a severe condition will require a rehabilitation team to reduce the impact of the pulmonary and extra-pulmonary effects of the disease, both on physical activity and their level of daily functioning (21-24).

Due to the consequences that the SARS-CoV-2 virus infection can generate (25), this study aims to correlate the post-COVID-19 functional status and physical health in the affected population of the 30 municipalities of the department of Córdoba.

## MATERIALS AND METHODS

It corresponds to a cross-sectional correlation investigation with a quantitative approach involving people affected by COVID-19 in the Department of Córdoba. The participants were selected between April and September 2022.

### Population and Sample

The participants were selected through non-probabilistic convenience sampling, with willingness and consent to participate in the research. The sample was made up of 1 075 people, 435 women and 199 men, for a total of 634 participants who met the inclusion criteria, such as being of legal age, having or having had COVID-19, and being born in one of the 30 municipalities of the department of Córdoba.

### Procedure

To collect the data, a sociodemographic characterization survey was applied that allowed us to obtain parameters that facilitated the description of the population concerning age, gender, role in the pandemic, area of residence, marital status, type of family, health system, occupation, educational level, income level, religion, stratum, Córdoba subregion of isolation, and Córdoba subregion of current residence.

The post-COVID-19 Functional Scale instrument, the Spanish version, was then applied. The scale is intended to help users realize the current functional limitations of patients with COVID-19, whether because of a specific infection or to determine this degree of disability

objectively. The scale is ordinal, has six steps ranging from 0 (no symptoms) to 5 (death, D), and covers the entire range of functional outcomes by focusing on limitations in usual tasks or activities, whether at home, work, or study, as well as lifestyle changes. The scale ratings are intuitive and can be easily understood by both clinicians and patients (26).

Finally, a questionnaire was applied that inquired about the state of physical health, allowing us to investigate the variables of hypertension, diabetes, alcohol consumption, cigarette consumption, and self-perception of health status.

## Ethical considerations

This research was approved by the research ethics committee of the University of Sinú — Elías Bechara Zainúm. It was governed by the ethical principles for human studies set forth by the Declaration of Helsinki (27). Article 11 of Resolution 008430 of October 4, 1993, considers the present research an investigation without risk (28). Informed consent authorization was requested from each study participant before applying the instruments.

## Statistical analysis

Firstly, a database review was conducted to identify possible transcription errors, a procedure in which no inconsistencies were detected. Next, a missing values analysis was carried out, in which 37.70 % of empty cases were discovered only in the questions of the physical health questionnaire related to hypertension, diabetes, alcohol consumption, and cigarette habit. And self-perception of health status. Because of this, it was verified using the Little test that the pattern of information loss was completely random ($\chi^2$=21.91, gl=27, p=0.742), allowing us to continue the analysis without eliminating records or imputing data.

Subsequently, box and whisker plots were constructed to identify univariate outliers, finding respective percentages of 0.63 % and 1.10 % in the "need for constant care" and "symptom checklist" dimensions of the functional status scale. Considering that the fraction of atypical data was insignificant, the study proceeded without excluding these cases. Likewise, compliance with the parametric assumptions at the variable level was evaluated, for which tests such as the Shapiro-Wilk, Kolmogorov-Smirnov, Levene, and Wald-Wolfowitz tests were used, as well as tools such as the frequency histogram, diagram box, and quantile plot (Q-Q). This phase evidenced violating conditions such as normality and homogeneity of variances.

In the above, sensitive and robust descriptive statistics measures were used to describe the constructs of interest, using the minimum, lower quartile, median, upper quartile, maximum, range, interquartile range, mean, mode, standard deviation, coefficient of variation, and two-sided 95 % confidence interval for the mean. The qualitative variables were presented through counts, accumulated counts, and percentages, using tables to facilitate their visualization.

Regarding the functional status scale, the items of each dimension were added to obtain the subtotals, subsequently adding all the items to find the overall instrument. In addition, an interpretation scale was built based on the distribution of the percentiles, composed of three functionality levels. According to the indications in this questionnaire, high scores imply a decrease in the person's operational capacity. On the other hand, the relationship between the characteristics of interest for the research was explored through multiple linear regression models, in which the dependent variables were each of the dimensions of the functional status scale. In contrast, the independent variables were the participant's sociodemographic aspects and physical health conditions.

In this regard, the assumptions linked to this technique were examined. Consequently, normality was verified through the quantile graph, while homoscedasticity and homogeneity were weighed with the Breusch-Pagan and Levene tests, respectively. The Durbin-Watson statistic was used to rule out residual autocorrelation, while variance inflation factors allowed us to confirm the absence of multicollinearity. The presence of atypical multivariate data was low, a fact that was inspected by calculating the

robust Mahalanobis distances, Cook distances, standardized residuals, and studentized residuals. Linearity was verified through scatter diagrams in which the standardized residuals were plotted on the ordinate axis, and the values predicted by the model were located on the abscissa axis.

Continuing with the regression analysis, the marginal means were estimated for each level of the qualitative independent variables, making comparisons between these and the reference categories, which were arbitrarily selected and identified with italic letters in Tables 4-7. Post hoc contrasts were carried out by applying the Tukey and Bonferroni approaches. In addition, the estimated regression coefficients (Beta), their standard errors (SE), the 95 % bilateral confidence interval (95 % CIB) for said estimates, the t-student test with the respective significance (p), and effect size ($\eta^2$) were carried out with the IBM SPSS program in version 27 for 64-bit Windows.

## RESULTS

### Sociodemographic characteristics of the participants

The sample comprised 634 people, of whom 435 (68.61 %) identified themselves as women and 199 (31.39 %) as men. Of these, 452 (71.29 %) were between 18 and 25 years old, 114 (17.98 %) were between 26 and 40, and 68 (10.73 %) were over 40 years old. Regarding place of birth, 466 (73.50 %) people were born in Córdoba, while 168 (26.50 %) were born in other Colombian departments. Of the participants, 326 (51.42 %) served only as patients during the health emergency due to COVID-19; however, 308 (48.58 %) were patients and caregivers. During the pandemic, 343 (54.10 %) participants were in Montería, while the remaining fraction was in municipalities such as Lorica, Sahagún, Cereté, and Tierralta. On the other hand, 553 (87.22 %) lived in urban areas and 81 (12.78 %) settled in rural settlements, in addition to 350 (55.21 %), 195 (30.76 %), and 89 (14.04 %) belonging to the first, second, and third socioeconomic strata, respectively. These and the other sociodemographic characteristics are presented in Table 1.

### Functional status after the COVID-19 pandemic

The functional status of the participants is presented in Table 2. As can be seen, in all scale dimensions, an average score lower than the possible average score was observed, implying that the participants exhibited adequate operational capacity. It is important to remember that the items of this instrument have an inverse structure; that is, the higher the score, the less functionality. Also, none of the upper limits of the confidence intervals were more significant than the nominal average score of the questionnaire, a result that reinforces the previous comment. Regarding the level of functionality, the percentages of participants who reflected a decreased range varied from 18.77 % to 32.18 %, suggesting that close to 70 % of the people who participated in the research did not experience any impairment relevant to its capabilities because of the infection caused by the SARS-CoV-2 virus.

### 3.3. Physical health status of the participants

Table 3 presents the aspects associated with these people's physical health. The prevalence of hypertension and diabetes was low, as was the fraction of participants who smoked cigarettes. On the contrary, the percentage of individuals who consumed alcohol was almost 40 %, while the proportion of people who self-perceived their health as good was approximately 70 %.

### Functional status, physical health, and sociodemographic characteristics

The multiple linear regression analysis revealed that only age, type of family, academic level, and hypertension were factors associated with the participant's functional status.

Table 4 shows that if the rest of the model factors remain constant, people whose ages ranged from 18 to 25 years exhibited an average of 1.93 points higher in the "basic daily activities" dimension than individuals aged 40 or older (Beta = 1.93, EE = 0.83, LCl = 0.30, UCL = 3.57). The above represents a significant difference of small magnitude in favor of the young group (M18-25=8.24, EE18-25=1.05, M40 or more=6.31, EE40 or more=1.08, t=2.33, p=.020, $\eta^2$= 0.01).

Table 1. Sociodemographic characteristics of the participants

| Feature | Rank | Recount | Percentage | Rec. accu. | Perc. accu. |
|---|---|---|---|---|---|
| Gender | Women | 435 | 68.61 | 435 | 68.61 |
| | Men | 199 | 31.39 | 634 | 100.00 |
| Age | From 18 to 25 years | 452 | 71.29 | 452 | 71.29 |
| | From 26 to 40 years | 114 | 17.98 | 566 | 89.27 |
| | More than 40 years | 68 | 10.73 | 634 | 100.00 |
| Place of origin | Córdoba | 466 | 73.50 | 466 | 73.50 |
| | Another department | 168 | 26.50 | 634 | 100.00 |
| Pandemic role | Patient alone | 326 | 51.42 | 326 | 51.42 |
| | Patient and carer | 308 | 48.58 | 634 | 100.00 |
| Residential area | Urban | 553 | 87.22 | 553 | 87.22 |
| | Countryside | 81 | 12.78 | 634 | 100.00 |
| Marital Status | marriage | 553 | 87.22 | 553 | 87.22 |
| | Single | 81 | 12.78 | 634 | 100.00 |
| | Divorce | 0 | 0.00 | 634 | 100.00 |
| | Legally recognized | 0 | 0.00 | 634 | 100.00 |
| | Widowed | 0 | 0.00 | 634 | 100.00 |
| Type of family | Nuclear family | 442 | 69.72 | 442 | 69.72 |
| | Big family | 140 | 22.08 | 582 | 91.80 |
| | single-parent family | 52 | 8.20 | 634 | 100.00 |
| Health System | Sisbén | 132 | 20.82 | 132 | 20.82 |
| | EPS | 440 | 69.40 | 572 | 90.22 |
| | Prepaid or particular | 62 | 9.78 | 634 | 100.00 |
| Occupation | Employee | 205 | 32.33 | 205 | 32.33 |
| | Student | 409 | 64.51 | 614 | 96.85 |
| | Unemployed | 12 | 1.89 | 626 | 98.74 |
| | Retired | 8 | 1.26 | 634 | 100.00 |
| Education | baccalaureate | 221 | 34.86 | 221 | 34.86 |
| | Technical | 99 | 15.62 | 320 | 50.47 |
| | Professional career | 314 | 49.53 | 634 | 100.00 |
| Monthly Income | Less than 1 CLAW | 349 | 55.05 | 349 | 55.05 |
| | Approx. 1 CLAW | 160 | 25.24 | 509 | 80.28 |
| | More than 1 CLAW | 125 | 19.72 | 634 | 100.00 |
| Social Class | Stratum 1 | 350 | 55.21 | 350 | 55.21 |
| | Stratum 2 | 195 | 30.76 | 545 | 85.96 |
| | Stratum 3 or upper | 89 | 14.04 | 634 | 100.00 |
| Córdoba Subregion of insulation | Alto Sinú | 32 | 5.05 | 32 | 5.05 |
| | Sinú medio | 77 | 12.15 | 109 | 17.19 |
| | Bajo Sinú | 53 | 8.36 | 162 | 25.55 |
| | Sabanas | 48 | 7.57 | 210 | 33.12 |
| | San Jorge | 45 | 7.10 | 255 | 40.22 |
| | Costanera | 36 | 5.68 | 291 | 45.90 |
| | Downtown (Montería) | 343 | 54.10 | 634 | 100.00 |
| Córdoba subregion of current residence | Alto Sinú | 14 | 2.21 | 14 | 2.21 |
| | Sinú medio | 61 | 9.62 | 75 | 11.83 |
| | Bajo Sinú | 46 | 7.26 | 121 | 19.09 |
| | Sabanas | 27 | 4.26 | 148 | 23.34 |
| | San Jorge | 19 | 3.00 | 167 | 26.34 |
| | Costanera | 19 | 3.00 | 186 | 29.34 |
| | Downtown (Montería) | 448 | 70.66 | 634 | 100.00 |

*Rec. accu.: accumulated count. Perc. accu.: accumulated percentage. Sisbén: Identifica-tion System of Potential Beneficiaries of Social Programs. EPS: health-promoting company or entity.

Table 2. Post-COVID-19 functional status of the participants.

| Statistical | Need Constant care | Basic activities of daily living | Instructional activities of daily life | Part. in usual social roles | Symptom checklist |
|---|---|---|---|---|---|
| Minimum | 1 | 4 | 3 | 5 | 3 |
| Under Quartile | 1 | 4 | 3 | 5 | 3 |
| Median | 1 | 4 | 3 | 7 | 3 |
| Upper Quartile | 2 | 10 | 8 | 12 | 6 |
| Maximum | 4 | 16 | 12 | 20 | 12 |
| Rank | 3 | 12 | 9 | 15 | 9 |
| Interquartile Rank | 1 | 6 | 5 | 7 | 3 |
| Number of items in the di-mension | 1 | 4 | 3 | 5 | 3 |
| Minimum dimension | 1 | 4 | 3 | 5 | 3 |
| Maximum dimension | 4 | 16 | 12 | 20 | 12 |
| Mean dimension | 2.50 | 10.00 | 7.50 | 12.50 | 7.50 |
| Mean | 1.61 | 6.81 | 5.34 | 8.69 | 4.93 |
| Mode | 1 | 4 | 3 | 5 | 3 |
| Standard Deviation | 0.91 | 3.83 | 2.92 | 4.36 | 2.58 |
| Coefficient of variation (%) | 56.26 | 56.18 | 54.64 | 50.17 | 52.45 |
| 95 % LCL for the mean | 1.54 | 6.51 | 5.11 | 8.35 | 4.73 |
| 95 % UCL for the mean | 1.68 | 7.11 | 5.57 | 9.03 | 5.13 |
| Low Functionality (n, %) | 119 (18.77) | 186 (29.34) | 204 (32.18) | 194 (30.60) | 158 (24.92) |
| Medium Functionality (n, %) | 117 (18.45) | 90 (14.20) | 92 (14.51) | 152 (23.97) | 126 (19.87) |
| High Functionality (n, %) | 398 (62.78) | 358 (56.47) | 338 (53.31) | 288 (45.43) | 350 (55.21) |

* Instr.: instrumental Part.: participation. LCL: lower confidence limit. UCL: upper confi-dence limit.

Table 3. Physical health status of the participants

| Variable | Rank | Re-count | Percentage | Rec. accu. | Perc. accu. |
|---|---|---|---|---|---|
| Hypertension | Present | 42 | 6.62 | 42 | 6.62 |
| | Absent | 592 | 93.38 | 634 | 100.00 |
| Diabetes | Present | 9 | 2.28 | 9 | 2.28 |
| | Absent | 386 | 97.72 | 395[a] | 100.00 |
| Alcohol con-sumption | Consume | 153 | 38.73 | 153 | 38.73 |
| | Does not con-sume | 242 | 61.27 | 395[a] | 100.00 |
| Cigarette consump-tion | Consume | 11 | 2.78 | 11 | 2.78 |
| | Does not con-sume | 384 | 97.22 | 395[a] | 100.00 |
| Self-perception of health condition | Bad shape | 5 | 1.27 | 5 | 1.27 |
| | Stable shape | 78 | 19.75 | 83 | 21.01 |
| | Good shape | 252 | 63.80 | 335 | 84.81 |
| | Very Good shape | 60 | 15.19 | 395[a] | 100.00 |

*The cumulative count only adds up to 634 due to the fraction of missing data reported in the statistical analysis section. Rec. accu.: accumulated. Perc. Accu: accumulated percent-age.

Table 4. Relationship between basic daily activities, physical health status, and sociodemographic characteristics

| Intercept and independent variables | Beta (EE) | CIB 95% | Ctg. ppal.a | Ctg. ref. a | Statistic t (p, $\eta^2$) |
|---|---|---|---|---|---|
| Gender (women vs. men) | –0.01 (0.44) | [–0.87, 0.86] | 7.20 (0.99) | 7.21 (1.03) | –0.02 (.986, 0.00) |
| Age (from 18 to 25 vs. more than 40) | 1.93 (0.83) | [0.30, 3.57] | 8.24 (1.05) | 6.31 (1.08) | 2.33 (.020, 0.01) |
| Age (from 26 to 40 vs. more than 40) | 0.76 (0.76) | [–0.75, 2.26] | 7.06 (1.09) | 6.31 (1.08) | 0.99 (.322, 0.00) |
| Occupation (Employee vs. Retired) | –0.14 (1.47) | [–3.04, 2.76] | 6.51 (0.91) | 6.66 (1.57) | –0.10 (.923, 0.00) |
| Occupation (student vs. Retired) | –0.61 (1.60) | [–3.74, 2.53] | 6.05 (1.00) | 6.66 (1.57) | –0.38 (.705, 0.00) |
| Occupation (Unemployed vs. Re-tired) | 2.93 (2.09) | [–1.18, 7.05] | 9.59 (1.74) | 6.66 (1.57) | 1.40 (.162, 0.01) |
| Education (baccalaureate vs. Profes-sional career) | 0.78 (0.43) | [–0.07, 1.64] | 7.37 (1.01) | 6.59 (1.01) | 1.80 (.072, 0.01) |
| Education (Technical vs. Professional career) | 1.06 (0.54) | [0.00, 2.12] | 7.65 (1.07) | 6.59 (1.01) | 1.97 (.050, 0.01) |
| Social Class (Stratum 1 vs. Stratum 3 or upper) | –0.60 (0.61) | [–1.80, 0.61] | 6.85 (0.98) | 7.45 (1.12) | –0.97 (.331, 0.00) |
| Social Class (Stratum 2 vs. Stratum 3 or upper) | –0.14 (0.65) | [–1.41, 1.14] | 7.31 (1.01) | 7.45 (1.12) | –0.21 (.833, 0.00) |
| Isolation Subregion (Alto Sinú vs. Montería) | 0.92 (0.81) | [–0.68, 2.53] | 7.57 (1.26) | 6.65 (1.00) | 1.13 (.257, 0.00) |
| Isolation Subregion (Sinú Medio vs. Montería) | 0.85 (0.68) | [–0.48, 2.19] | 7.50 (1.08) | 6.65 (1.00) | 1.26 (.210, 0.00) |
| Isolation Subregion (Bajo Sinú vs. Montería) | 0.10 (0.79) | [–1.45, 1.64] | 6.75 (1.21) | 6.65 (1.00) | 0.12 (.903, 0.00) |
| Isolation Subregion (Sabanas vs. Montería) | 0.04 (0.84) | [–1.61, 1.68] | 6.68 (1.22) | 6.65 (1.00) | 0.04 (.966, 0.00) |
| Isolation Subregion (San Jorge vs. Montería) | 0.98 (0.72) | [–0.43, 2.39] | 7.63 (1.18) | 6.65 (1.00) | 1.37 (.171, 0.01) |
| Isolation Subregion (Costanera vs. Montería) | 0.99 (0.77) | [–0.52, 2.50] | 7.64 (1.21) | 6.65 (1.00) | 1.29 (.197, 0.00) |
| Type of family (nuclear vs. sin-gle-parent l) | 0.54 (0.69) | [–0.82, 1.90] | 7.00 (0.97) | 6.46 (1.15) | 0.78 (.435, 0.00) |
| Type of family (big Fam. vs. single parent) | 1.69 (0.79) | [0.15, 3.24] | 8.15 (1.04) | 6.46 (1.15) | 2.15 (.032, 0.01) |

Similar results were found when inspecting the type of family; in this case, individuals belonging to extended families exhibited 1.69 points more than people who came from single-parent families about basic daily activities, provided that the rest of the terms of the regression equation are not modified (Beta = 1.69, EE = 0.79, LCL = 0.15, UCL = 3.24). Thus, participants who lived with their parents, siblings, and other relatives reported higher scores than those who lived only with one of the parents, a significant difference of low magnitude (Mextensa=8.15, EEextensa=1.04, Mmonoparental=6.46, EEmonoparental=1.15, t=2.15, p=.032, $\eta^2$=0.01).

Table 5 indicates that the multiple linear regression analysis showed that only educational level (up to high school vs. university) was associated with daily instrumental activities. If the other factors of the model remained constant (Beta = 0.71, EE = 0.34, LCL = 0.00, and UCL = 3.57), people who reached an academic level up to high school had a mean of 0.71.

*…continuation Table 4. Relationship between basic daily activities, physical health status, and sociodemographic characteristics.*

| Pntercept and independent variables | Beta (EE) | CIB 95% | Ctg. ppal.a | Ctg. ref. a | Statistic t (p, η²) |
|---|---|---|---|---|---|
| Arterial hypertension (yes *vs*. not) | 1.37 (0.77) | [–0.14, 2.89] | 7.89 (1.09) | 6.52 (1.02) | 1.79 (.075, 0.01) |
| Type II Diabetes Mellitus (yes *vs*. not) | –1.88 (1.43) | [–4.70, 0.94] | 6.26 (1.43) | 8.14 (0.97) | –1.31 (.191, 0.00) |
| Alcohol consumption (yes *vs*. not) | –0.61 (0.42) | [–1.42, 0.21] | 6.90 (1.03) | 7.51 (0.98) | –1.46 (.145, 0.01) |
| Cigarette consumption (yes *vs*. not) | 0.83 (1.19) | [–1.52, 3.18] | 7.62 (1.35) | 6.79 (0.91) | 0.69 (.488, 0.00) |
| Self-perception of health condition (bad *vs*. very good) | –2.94 (1.80) | [–6.49, 0.60] | 5.26 (1.84) | 8.20 (1.08) | –1.63 (.103, 0.01) |
| Self-perception of health condition (stable *vs*. very good) | –0.46 (0.67) | [–1.78, 0.85] | 7.74 (0.98) | 8.20 (1.08) | –0.70 (.486, 0.00) |
| Self-perception of health condition (good *vs*. very good) | –0.60 (0.55) | [–1.69, 0.49] | 7.61 (0.99) | 8.20 (1.08) | –1.08 (.283, 0.00) |

*The means and standard errors (SE) of the main and reference categories are indicated (in italics). CIB 95 %: 95 % confidence interval for Beta. Significant results are highlighted in gray. Ctg.: main category. Ctg. Ref.: reference category.

Table 6 shows that in the multiple linear regression analysis, only high blood pressure (yes *vs*. no) presented a relationship between participation in habitual social roles of the study population, with a mean of 1.78 points higher in the dimension if the other factors of the model remain constant (Beta = 1.78, EE = 0.91, LCL = 0.04, and UCL = 1.38).

Regarding Table 7, the multiple linear regression analysis revealed which educational level (technical vs. university) was associated with the checklist of symptoms related to COVID-19 of the study participants, presenting an average of 0.76 points if the other factors of the model remained constant (Beta = 0.76, EE = 0.38, LCL = 0.01, and UCL = 1.52). Similar results were found when inspecting arterial hypertension (yes vs. no), with a mean of 1.50 (Beta = 1.50, SE = 0.55, LCL = 0.42, UCL = 2.58).

No significant relationships were found between the need for constant care, physical health status, and sociodemographic characteristics.

## DISCUSSION

The present study aimed to correlate the post-COVID-19 functional status and physical health in the affected population of the 30 municipalities of the department of Córdoba, revealing in its results that 68.61 % of the participating population were women and 31.39 % of men, data that are related to the study by Núñez et al. (29) and Heidemann et al. (30), who found that more than half of their participants were women.

Regarding age, it was found that 71.29 % were between 18 and 25 years old, 17.98 % between 26 and 40, and only 10.73 % were over 40 years old, observing that the large proportion of the participants were young adults, which may be related to the third wave of the pandemic where a high number of infections occurred in young people, which differs from Belli et al. (31), who reported an average age of participants of 74 years, and Heidemann et al. (30), refer to an

Table 5. Relationship between daily instrumental activities, physical health status, and sociodemographic characteristics.

| Intercept and independent variables | Beta (EE) | CIB 95 % | Ctg. ppal.a | Ctg. ref. a | Statistics t (p, $\eta^2$) |
|---|---|---|---|---|---|
| Gender (women *vs*. men) | –0.15 (0.34) | [–0.82, 0.53] | 5.49 (0.78) | 5.64 (0.80) | –0.43 (.671, 0.00) |
| Age (from 18 to 25 *vs*. more than 40) | 1.04 (0.65) | [–0.23, 2.32] | 6.07 (0.83) | 5.02 (0.84) | 1.61 (.109, 0.01) |
| Age (from 26 to 40 *vs*. more than 40) | 0.58 (0.60) | [–0.59, 1.76] | 5.60 (0.85) | 5.02 (0.84) | 0.97 (.330, 0.00) |
| Occupation (Employee *vs*. Retired) | 0.40 (1.15) | [–1.87, 2.67] | 5.21 (0.71) | 4.81 (1.23) | 0.35 (.728, 0.00) |
| Occupation (student *vs*. Retired) | 0.33 (1.25) | [–2.13, 2.78] | 5.13 (0.78) | 4.81 (1.23) | 0.26 (.794, 0.00) |
| Occupation (Unemployed *vs*. Retired) | 2.30 (1.64) | [–0.93, 5.52] | 7.10 (1.36) | 4.81 (1.23) | 1.40 (.162, 0.01) |
| Education (baccalaureate *vs*. Professional career) | 0.71 (0.34) | [0.04, 1.38] | 5.78 (0.79) | 5.07 (0.79) | 2.09 (.037, 0.01) |
| Education (Technical *vs*. Professional) | 0.78 (0.42) | [–0.05, 1.61] | 5.84 (0.84) | 5.07 (0.79) | 1.84 (.067, 0.01) |
| Social Class (Stratum 1 *vs*. Stratum 3 or upper) | –0.60 (0.48) | [–1.54, 0.34] | 5.22 (0.77) | 5.82 (0.88) | –1.26 (.209, 0.00) |
| Social Class (Stratum 2 *vs*. Stratum 3 or upper) | –0.17 (0.51) | [–1.17, 0.82] | 5.65 (0.79) | 5.82 (0.88) | –0.34 (.731, 0.00) |
| Isolation Subregion (Alto Sinú *vs*. Montería) | 0.04 (0.64) | [–1.21, 1.30] | 5.43 (0.98) | 5.38 (0.78) | 0.07 (.946, 0.00) |
| Isolation Subregion (Sinú Medio *vs*. Montería) | 0.28 (0.53) | [–0.76, 1.33] | 5.67 (0.85) | 5.38 (0.78) | 0.53 (.593, 0.00) |
| Isolation Subregion (Bajo Sinú *vs*. Montería) | 0.17 (0.62) | [–1.04, 1.38] | 5.55 (0.95) | 5.38 (0.78) | 0.27 (.785, 0.00) |
| Isolation Subregion (Sabanas *vs*. Montería) | –0.33 (0.66) | [–1.62, 0.96] | 5.06 (0.95) | 5.38 (0.78) | –0.50 (.617, 0.00) |
| Isolation Subregion (San Jorge *vs*. Montería) | 0.46 (0.56) | [–0.64, 1.56] | 5.85 (0.92) | 5.38 (0.78) | 0.82 (.410, 0.00) |
| Isolation Subregion (Costanera *vs*. Montería) | 0.62 (0.60) | [–0.56, 1.81] | 6.01 (0.94) | 5.38 (0.78) | 1.04 (.299, 0.00) |
| Type of family (nuclear *vs*. single parent) | 0.51 (0.54) | [–0.55, 1.58] | 5.50 (0.76) | 4.99 (0.90) | 0.94 (.347, 0.00) |
| Type of family (big Fam. *vs*. single parent) | 1.20 (0.62) | [–0.01, 2.42] | 6.20 (0.81) | 4.99 (0.90) | 1.96 (.051, 0.01) |
| Arterial hypertension (yes *vs*. not) | 0.95 (0.60) | [–0.23, 2.14] | 6.04 (0.86) | 5.09 (0.80) | 1.58 (.115, 0.01) |
| Type II Diabetes Mellitus (yes *vs*. not) | –1.00 (1.12) | [–3.20, 1.21] | 5.07 (1.12) | 6.06 (0.76) | –0.89 (.375, 0.00) |
| Alcohol consumption (yes *vs*. not) | –0.15 (0.33) | [–0.79, 0.49] | 5.49 (0.81) | 5.64 (0.77) | –0.47 (.642, 0.00) |
| Cigarette consumption (yes *vs*. not) | 0.44 (0.93) | [–1.39, 2.28] | 5.79 (1.05) | 5.34 (0.71) | 0.47 (.636, 0.00) |
| Self-perception of health condition (bad *vs*. very good) | –1.82 (1.41) | [–4.60, 0.95] | 4.38 (1.44) | 6.21 (0.85) | –1.29 (.197, 0.00) |
| Self-perception of health condition (stable *vs*. very good) | –0.36 (0.52) | [–1.39, 0.66] | 5.84 (0.77) | 6.21 (0.85) | –0.69 (.489, 0.00) |
| Self-perception of health condition (good *vs*. very good) | –0.38 (0.43) | [–1.23, 0.47] | 5.82 (0.78) | 6.21 (0.85) | –0.88 (.381, 0.00) |

*The means and standard errors (SE) of the main and reference categories are indicated (in italics). CIB 95 %: 95 % confidence interval for Beta. Significant results are highlighted in gray. Ctg.: main category. Ctg. Ref.: reference category.

Table 6. Relationship between participation in usual social roles, physical health status, and sociodemographic characteristics .

| Intercept and independent variables | Beta (EE) | CIB 95% | Ctg. ppal.a | Ctg. ref. a | Statistic t (p, η²) |
|---|---|---|---|---|---|
| Gender (women *vs*. men) | –0.28 (0.52) | [–1.30, 0.74] | 8.50 (1.17) | 8.79 (1.21) | –0.54 (.587, 0.00) |
| Age (from 18 to 25 *vs*. more than 40) | 1.88 (0.98) | [–0.05, 3.80] | 9.53 (1.24) | 7.65 (1.27) | 1.92 (.056, 0.01) |
| Age (from 26 to 40 *vs*. more than 40) | 1.09 (0.90) | [–0.68, 2.87] | 8.75 (1.28) | 7.65 (1.27) | 1.21 (.226, 0.00) |
| Occupation (Employee *vs*. Retired) | 0.12 (1.74) | [–3.30, 3.53] | 8.21 (1.07) | 8.09 (1.85) | 0.07 (.946, 0.00) |
| Occupation (student *vs*. Retired) | 0.36 (1.88) | [–3.34, 4.06] | 8.45 (1.18) | 8.09 (1.85) | 0.19 (.849, 0.00) |
| Occupation (Unemployed *vs*. Re-tired) | 1.74 (2.47) | [–3.12, 6.59] | 9.83 (2.05) | 8.09 (1.85) | 0.70 (.482, 0.00) |
| Education (baccalaureate *vs*. Profes-sional career) | 0.95 (0.51) | [–0.06, 1.96] | 8.88 (1.18) | 7.93 (1.19) | 1.86 (.064, 0.01) |
| Education (Technical *vs*. Profession-al) | 1.21 (0.64) | [–0.04, 2.46] | 9.13 (1.26) | 7.93 (1.19) | 1.90 (.058, 0.01) |
| Social Class (Stratum 1 *vs*. Stratum 3 or upper) | –0.98 (0.72) | [–2.40, 0.43] | 8.09 (1.15) | 9.07 (1.32) | –1.36 (.173, 0.01) |
| Social Class (Stratum 2 *vs*. Stratum 3 or upper) | –0.31 (0.76) | [–1.81, 1.20] | 8.77 (1.19) | 9.07 (1.32) | –0.40 (.689, 0.00) |
| Isolation Subregion (Alto Sinú *vs*. Montería) | 0.64 (0.96) | [–1.25, 2.53] | 9.14 (1.48) | 8.50 (1.17) | 0.67 (.506, 0.00) |
| Isolation Subregion (Sinú Medio *vs*. Montería) | 0.14 (0.80) | [–1.44, 1.71] | 8.64 (1.28) | 8.50 (1.17) | 0.17 (.864, 0.00) |
| Isolation Subregion (Bajo Sinú *vs*. Montería) | –0.36 (0.93) | [–2.19, 1.46] | 8.14 (1.43) | 8.50 (1.17) | –0.39 (.694, 0.00) |
| Isolation Subregion (Sabanas *vs*. Montería) | –0.39 (0.99) | [–2.33, 1.56] | 8.12 (1.44) | 8.50 (1.17) | –0.39 (.696, 0.00) |
| Isolation Subregion (San Jorge *vs*. Montería) | 0.68 (0.84) | [–0.98, 2.33] | 9.18 (1.39) | 8.50 (1.17) | 0.80 (.423, 0.00) |
| Isolation Subregion (Costanera *vs*. Montería) | 0.29 (0.90) | [–1.49, 2.07] | 8.79 (1.42) | 8.50 (1.17) | 0.32 (.748, 0.00) |
| Type of family (nuclear *vs*. single parent) | 0.56 (0.82) | [–1.05, 2.16] | 8.54 (1.14) | 7.98 (1.36) | 0.68 (.496, 0.00) |
| Type of family (big Fam. *vs*. single parent) | 1.43 (0.93) | [–0.39, 3.26] | 9.42 (1.23) | 7.98 (1.36) | 1.55 (.123, 0.01) |
| Arterial hypertension (yes *vs*. not) | 1.78 (0.91) | [0.00, 3.57] | 9.54 (1.29) | 7.75 (1.20) | 1.97 (.049, 0.01) |
| Type II Diabetes Mellitus (yes *vs*. not) | –1.44 (1.69) | [–4.76, 1.88] | 7.92 (1.68) | 9.36 (1.14) | –0.85 (.394, 0.00) |
| Alcohol consumption (yes *vs*. not) | –0.32 (0.49) | [–1.28, 0.64] | 8.48 (1.22) | 8.80 (1.15) | –0.65 (.514, 0.00) |
| Cigarette consumption (yes *vs*. not) | 0.27 (1.41) | [–2.49, 3.04] | 8.78 (1.59) | 8.51 (1.07) | 0.20 (.845, 0.00) |
| Self-perception of health condition (bad *vs*. very good) | –3.07 (2.12) | [–7.25, 1.10] | 6.65 (2.16) | 9.72 (1.27) | –1.45 (.149, 0.01) |
| Self-perception of health condition (stable *vs*. very good) | –0.44 (0.79) | [–1.99, 1.10] | 9.28 (1.16) | 9.72 (1.27) | –0.57 (.572, 0.00) |
| Self-perception of health condition (good *vs*. very good) | –0.78 (0.65) | [–2.07, 0.50] | 8.94 (1.17) | 9.72 (1.27) | –1.20 (.231, 0.00) |

*The means and standard errors (SE) of the main and reference categories are indicated (in italics). CIB 95%: 95% confidence interval for Beta. Significant results are highlighted in gray. Ctg.: main category. Ctg. Ref.: reference category.

Table 7. Relationship between the symptom checklist, physical health status, and sociodemographic characteristics.

| Intercept and independent variables | Beta (EE) | CIB 95 % | Ctg. ppal.a | Ctg. ref. a | Statistics t (p, $\eta^2$) |
|---|---|---|---|---|---|
| Gender (women vs. men) | –0.06 (0.31) | [–0.68, 0.55] | 5.06 (0.71) | 5.12 (0.73) | –0.20 (.842, 0.00) |
| Age (from 18 to 25 vs. more than 40) | 1.04 (0.59) | [–0.13, 2.20] | 5.60 (0.75) | 4.56 (0.77) | 1.75 (.081, 0.01) |
| Age (from 26 to 40 vs. more than 40) | 0.55 (0.55) | [–0.52, 1.62] | 5.11 (0.77) | 4.56 (0.77) | 1.01 (.314, 0.00) |
| Occupation (Employee vs. Retired) | 0.24 (1.05) | [–1.83, 2.31] | 4.82 (0.65) | 4.58 (1.12) | 0.23 (.820, 0.00) |
| Occupation (student vs. Retired) | 0.60 (1.14) | [–1.64, 2.84] | 5.18 (0.71) | 4.58 (1.12) | 0.53 (.598, 0.00) |
| Occupation (Unemployed vs. Retired) | 1.20 (1.49) | [–1.74, 4.14] | 5.78 (1.24) | 4.58 (1.12) | 0.80 (.422, 0.00) |
| Education (baccalaureate vs. Professional career) | 0.53 (0.31) | [–0.08, 1.14] | 5.19 (0.72) | 4.66 (0.72) | 1.70 (.090, 0.01) |
| Education (Technical vs. Professional) | 0.76 (0.38) | [0.01, 1.52] | 5.43 (0.76) | 4.66 (0.72) | 1.99 (.048, 0.01) |
| Social Class (Stratum 1 vs. Stratum 3 or upper) | –0.83 (0.44) | [–1.68, 0.03] | 4.61 (0.70) | 5.44 (0.80) | –1.90 (.059, 0.01) |
| Social Class (Stratum 2 vs. Stratum 3 or upper) | –0.21 (0.46) | [–1.12, 0.70] | 5.23 (0.72) | 5.44 (0.80) | –0.45 (.655, 0.00) |
| Isolation Subregion (Alto Sinú vs. Montería) | –0.06 (0.58) | [–1.20, 1.08] | 4.87 (0.90) | 4.93 (0.71) | –0.10 (.917, 0.00) |
| Isolation Subregion (Sinú Medio vs. Montería) | 0.24 (0.48) | [–0.71, 1.20] | 5.18 (0.77) | 4.93 (0.71) | 0.50 (.615, 0.00) |
| Isolation Subregion (Bajo Sinú vs. Montería) | 0.19 (0.56) | [–0.91, 1.29] | 5.13 (0.86) | 4.93 (0.71) | 0.34 (.734, 0.00) |
| Isolation Subregion (Sabanas vs. Montería) | –0.21 (0.60) | [–1.38, 0.97] | 4.73 (0.87) | 4.93 (0.71) | –0.34 (.731, 0.00) |
| Isolation Subregion (San Jorge vs. Montería) | 0.51 (0.51) | [–0.49, 1.51] | 5.44 (0.84) | 4.93 (0.71) | 1.00 (.318, 0.00) |
| Isolation Subregion (Costanera vs. Montería) | 0.43 (0.55) | [–0.65, 1.51] | 5.36 (0.86) | 4.93 (0.71) | 0.79 (.433, 0.00) |
| Type of family (nuclear vs. single parent) | 0.07 (0.49) | [–0.90, 1.04] | 4.98 (0.69) | 4.91 (0.82) | 0.14 (.889, 0.00) |
| Type of family (big Fam. vs. single parent) | 0.48 (0.56) | [–0.63, 1.58] | 5.39 (0.74) | 4.91 (0.82) | 0.85 (.397, 0.00) |
| Arterial hypertension (yes vs. not) | 1.50 (0.55) | [0.42, 2.58] | 5.84 (0.78) | 4.34 (0.73) | 2.73 (.007, 0.02) |
| Type II Diabetes Mellitus (yes vs. not) | –0.66 (1.02) | [–2.67, 1.35] | 4.76 (1.02) | 5.42 (0.69) | –0.64 (.520, 0.00) |
| Alcohol consumption (yes vs. not) | –0.25 (0.30) | [–0.83, 0.33] | 4.97 (0.74) | 5.22 (0.70) | –0.85 (.398, 0.00) |
| Cigarette consumption (yes vs. not) | –0.41 (0.85) | [–2.08, 1.27] | 4.89 (0.96) | 5.30 (0.65) | –0.48 (.632, 0.00) |
| Self-perception of health condition (bad vs. very good) | –1.50 (1.29) | [–4.03, 1.03] | 4.11 (1.31) | 5.61 (0.77) | –1.17 (.244, 0.00) |
| Self-perception of health condition (stable vs. very good) | –0.13 (0.48) | [–1.06, 0.81] | 5.49 (0.70) | 5.61 (0.77) | –0.26 (.792, 0.00) |
| Self-perception of health condition (good vs. very good) | –0.45 (0.40) | [–1.22, 0.33] | 5.17 (0.71) | 5.61 (0.77) | –1.13 (.261, 0.00) |

*The means and standard errors (SE) of the main and reference categories are indicated (in italics). CIB 95 %: 95 % confidence interval for Beta. Significant results are highlighted in gray. Ctg.: main category. Ctg. Rff.: reference category.

average age of 49.8 % within the characteristics of the population. This last study shows some similarities in the educational level, where most participants had a medium or high academic level, and in the present study, 49.53 % were university students, and 34.86 % were high school graduates.

In relation to the state of physical health, 6.6 % reported high blood pressure and 2.2 % diabetes, drawing attention to the fact that although these are considered important risk factors, less than 10 % of the population participating in the study were affected by COVID-19 comorbidities, however almost 40 % consumed alcohol, which contrasts with Heidemann et al. (30), who indicated that more than a third of the population reported having some chronic disease or health problem and approximately 50 % of the population were former smokers or current smokers. Likewise, their participants have a perception of their regular, bad, or very bad health status, while in the present study, 63.80 % of the participants self-perceive their health as good.

Referring to the level of functionality, it is observed that the participants reflected a decreased range varying from 18.77 % to 32.18 %, suggesting that close to 70 % of the people who took part in the research did not experience a relevant affectation of their abilities because of the infection caused by the SARS-CoV-2 virus, which leads to relating these results to the age of the participants, the vast majority being young adults. Less than 10 % presenting comorbidities, considering that these factors may increase the risk of introducing more serious symptoms and sequelae of COVID-19. Contrary to the findings of Badinlou et al. (32), who demonstrated that post-COVID deficiencies occurred very frequently, and 96 % at least reported a moderate to severe deterioration. General fatigue was the most common persistent symptom, and the most common areas of life impairment were the ability to work, study, and carry out leisure activities. Belli et al. (31) also reported decreased physical capacity in post-COVID-19 patients, assessed using the sit-to-stand test (STST). However, performance in the test was lower, and the percentage of patients was below the 2.5th percentile of the reference values. At the same time, in the present study, the participants exhibited adequate operational capacity.

The multiple linear regression analysis showed that people whose ages ranged from 18 to 25 years and the type of family were associated with the dimension of basic daily activities; the educational level (up to high school *vs*. university) was associated with the daily instrumental activities; arterial hypertension (yes *vs*. no); there was a relationship between participation in habitual social roles of the population subject to the study; and finally, the educational level (technical *vs*. university) was associated with the list of checks Query of COVID-19-related symptoms of study participants. This differs from Badinlou et al. (32), where the results in the regression analysis according to the standardized coefficients, advanced age, and the lowest educational level appeared as predictors of sensory functions and COVID-related pain. Furthermore, not working was associated with a significant predictor of deficiency in activities and participation.

The findings of this study could provide relevant information for the population and be of great interest to healthcare providers, considering that they provide data to carry out follow-up after hospital discharge, which is necessary to determine the post-COVID-19 consequences and improve management.

Among the study's limitations were the nature of convenience sampling, the imprecision of symptoms, and functional limitations, given that the information was collected using a subjective scale and through a virtual survey.

Future research should focus on conducting more studies, preferably clinical trials and/or longitudinal studies, that establish the relationship between functional status, sociodemographic characteristics, and physical health in people affected by COVID-19. This information would allow the definition of rehabilitation strategies necessary to impact people's health post-COVID-19.

## CONCLUSIONS

The study was conducted with a sample of 634 participants, where the female gender predominated. The level of functionality

decreased from 18.77 % to 32.18 %, meaning that 70 % of the people in the research did not experience a relevant impairment of their abilities because of the infection caused by the SARS-CoV-2 virus. Likewise, only age, type of family, academic level, and the presence of hypertension were factors associated with the participant's functional status. The effects of the viral infection can cause sequelae, such as significant functional limitations in their activities of daily living; however, despite the symptoms, the study population can perform all usual tasks with the same level of intensity.

## REFERENCES

1. Espina-Romero L. Collaboration and interdisciplinarity in scientific research: fostering synergy to address current challenges. IPSA Sci Rev científica Multidiscip. 2023;8(2):8-9.

2. Espina-Romero L. Post-pandemic scientific dissemination. Rev Virtual Univ Católica del Norte. 2023;68:1-3.

3. World Health Organization. Coronavirus disease (COVID-19). World Health Organization. 2023. https://www.who.int/news-room/questions-and-answers/item/coronavirus-disease-covid-19

4. An L, Bacon E, Hawley S, Yang P, Russell D, Huffman S, et al. Relationship between Coronavirus-related eHealth literacy and COVID-19 knowledge, attitudes, and practices among US adults: Web-based survey study. J Med Internet Res. 2021;23(3):e25042.

5. Organización Panamericana de la Salud. Coronavirus. Organización mundial de la Salud. Published 2019. https://www.paho.org/es/temas/coronavirus

6. Ministerio de Salud y Protección Social. Coronavirus (COVID -19). Ministerio de Salud de Colombia. Published 2023. https://www.minsalud.gov.co/salud/publica/PET/Paginas/Covid.aspx

7.  Instituto Nacional de Salud. Coronavirus Colombia. INS de Colombia. Published 2023.. https://www.ins.gov.co/Noticias/Paginas/Coronavirus.aspx

8.  Jimeno-Almazán A, Pallarés JG, Buendía-Romero Á, Martínez-Cava A, Franco-López F, Sánchez-Alcaraz Martínez BJ, et al. Int J Environ Res Public Health. 2021;18(10):5329.

9.  Chi X, Becker B, Yu Q, Willeit P, Jiao C, Huang L, et al. Prevalence and psychosocial correlates of mental health outcomes among Chinese college students during the Coronavirus disease (COVID-19) pandemic. Front Psychiatry. 2020;11.

10. Ponce Lino LL, Muñiz Tóala SJ, Mastarreno Cedeño MP, Villacreses Holguín GA. Secuelas que enfrentan los pacientes que superan el COVID-19. RECIMUNDO. 2020; 4(3):153-162.

11. Disser NP, De Micheli AJ, Schonk MM, Konnaris MA, Piacentini AN, Edon DL, et al. Musculoskeletal consequences of COVID-19. J Bone Jt Surg Am. 2020;102(14):1197-1204.

12. Bourmistrova NW, Solomon T, Braude P, Strawbridge R, Carter B. Long-term effects of COVID-19 on mental health: A systematic review. J Affect Disord. 2022;299:118-125.

13. O'Mahoney LL, Routen A, Gillies C, Ekezie W, Welford A, Zhang A, Corrigendum to "The prevalence and long-term health effects of long COVID among hospitalized and non-hospitalized populations: a systematic review and meta-analysis." EClinicalMedicine. 2023;59(101959):101959.

14. Carfì A, Bernabei R, Landi F. Persistent Symptoms in Patients After Acute COVID-19. JAMA. 2020;324(6):603-605.

15. Halpin SJ, McIvor C, Whyatt G, Adams A, Harvey O, McLean L, et al. Postdischarge symptoms and rehabilitation needs in survivors of COVID-19 infection: A cross-sectional evaluation. J Med Virol. 2021;93(2):1013-1022.

16. Ahmed H, Patel K, Greenwood DC, Halpin S, Lewthwaite P, Salawu A, et al. Long-term clinical outcomes in survivors of severe acute respiratory syndrome (SARS) and Middle East respiratory syndrome coronavirus (MERS) outbreaks after hospitalisation or ICU admission: A systematic review and meta-analysis. J Rehabil Med. 2020;52(5):1-11.

17. Espina-Romero L, Guerrero-Alcedo J, Marreros Tananta J. Psychological factors associated with lifestyle in Venezuelan university students. Rev Ciencias Soc. 2023;29(3):41-53.

18. Aiyegbusi OL, Hughes SE, Turner G, Rivera SC, McMullan C, Chandan JS. Symptoms, complications and management of long COVID: A review. J R Soc Med. 2021;114(9):428-442.

19. Nalbandian A, Sehgal K, Gupta A, Madhavan MV, McGroder C, Stevens JS, et al. Post-acute COVID-19 syndrome. Nat Med. 2021;27(4):601-615.

20. Ohtake PJ, Lee AC, Scott JC, Hinman RS, Ali NA, Hinkson CR, et al. Physical impairments associated with post–intensive care syndrome: Systematic review based on the World Health Organization's International Classification of Functioning, Disability and Health framework. Phys Ther. 2018;98(8):631-645.

21. World Health Organisation. Clinical management of COVID-19: Living guideline. World Health Organisation. https://www.who.int/publications/i/item/WHO-2019-nCoV-clinical-2023.2

22. Rivera-Lillo G, Torres-Castro R, Fregonezi G, Vilaró J, Puppo H. Challenge for rehabilitation after hospitalization for COVID-19. Arch Phys Med Rehabil. 2020;101(8):1470-1471.

23. Charbonneau EJ, Grover P, Johns JS, McDowell SM, Stillo J V. Baseline characteristics and outcomes for people with and without COVID-19 diagnoses receiving inpatient rehabilitation care across the US in 2020-2021. Arch Rehabil Res Clin Transl. 2023;5(3):100281.

24. Andrade SM, de Araújo Silvestre MC, de França EÉT, Queiroz MHBS, de Jesus Santana K, Madruga MLLH, et al. Efficacy and safety of HD-tDCS and respiratory rehabilitation for critically ill patients with COVID-19 The HD-RECOVERY randomized clinical trial. Brain Stimul. 2022;15(3):780-788.

25. Sick J, König D. Exercise Training in Non-Hospitalized Patients with Post-COVID-19 Syndrome — A Narrative Review. Healthcare. 2023;11(16):2277.

26. Betancourt-Peña J, Ávila-Valencia JC, Palacios-Gómez M, Rodríguez-Castro J, Benavides-Córdoba V. Traducción y adaptación cultural de la escala The Post-COVID-19 Functional Status (PCFS) Scale al español (Colombia). Rev Cuba Investig Biomédicas. 2021;40(5):e1551.

27. World Medical Association. WMA Declaration of Helsinki - Ethical Principles for Medical Research Involving Human Subjects. World Medical Association. 2022. https://www.wma.net/es/policies-post/declaracion-de-helsinki-de-la-amm-principios-eticos-para-las-investigaciones-medicas-en-seres-humanos/.

28. Ministerio de Salud de Colombia. Resolucion Numero 8430 de 1993. Ministerio de Salud. 2023. https://www.minsalud.gov.co/sites/rid/Lists/BibliotecaDigital/RIDE/DE/DIJ/RESOLUCION-8430-DE-1993.PDF

29. Núñez-Cortés R, Leyton-Quezada F, Pino MB, Costa-Costa M, Torres-Castro R. Secuelas físicas y emocionales en pacientes post hospitalización por COVID-19. Rev Med Chil. 2021;149(7):1031-1035.

30. Heidemann C, Sarganas G, Du Y, Gaertner B, Poethko-Müller C, Cohrdes C, et al. Long-term health consequences among individuals with SARS-CoV-2 infection compared to individuals without infection: Results of the population-based cohort study CoMoLo Follow-up. BMC Public Health. 2023;23:1587.

31. Belli S, Balbi B, Prince I, Cattaneo D, Masocco F, Zaccari, S, et al. Low physical functioning and impaired performance of activities of daily life in COVID-19 patients who survived hospitalisation. Eur Respir J. 2020;56(4):2002096.

32. Badinlou F, Forsström D, Jansson-Fröjmark M, Abzhandadze T, Lundgren T. Impairments following COVID-19 infection: manifestations and investigations of related factors. Sci Rep. 2023;13(1):6564.