ARTÍCULO ORIGINAL

Gac Méd Caracas 2020;128(Supl 2):S196-S207
DOI: 10.47307/GMC.2020.128.s2.7

Effects and sequencing of COVID-19 pandemic control policies in Latin America

Dr. Marino J. González R[1]

SUMMARY

Introduction: *The extraordinary impact caused by the COVID-19 pandemic in Latin America gives special importance to the analysis of the control policies implemented.* **Objectives**: *1) To update the evolution of the characteristics of COVID-19 control policies in Latin America, and 2) to analyze the sequence in which these policies are implemented.* **Methods**: *Data from the Government Response Stringency Index (GRSI), developed by the Blavatnik School of Government at Oxford University, was analyzed for the 20 Latin American countries in the period January 21 to November 9, 2020. The evolution of the GRSI, as well as of some of its components, was taken into account. The sequence of implementation in three countries (Uruguay, Argentina, and Panama) was also analyzed.* **Results:** *The vast majority of the region's countries recorded an average GRSI of over 57 (out of 100) for the period. In 15 countries of the region, the mandatory closure of educational institutions was in effect on 75 % of the days. Eighteen countries implemented mandatory closures of businesses at some point. Ten countries applied requirements to remain in the home on more than 80 % of the days. The sequence of policies implemented by Uruguay reveals greater flexibility in application than those implemented by Argentina and Panama.* **Discussion**: *Uruguay's experience shows that control of the pandemic was possible, and that differences with other countries may be related to structural (pre-pandemic) factors, and management performance.* **Conclusions**: *Health systems in the region must identify in detail the institutional constraints evident in controlling the pandemic, both to meet the challenges of health services in the coming months, and to improve preparedness for future pandemics.*

Key words: *Latin America, COVID-19, pandemic, control policies, Government Response Stringency Index (GRSI), health policy.*

RESUMEN

Introducción: *La extraordinaria afectación causada por la pandemia de COVID-19 en América Latina otorga especial importancia al análisis de las políticas de control implementadas.* **Objetivos:** *1) Actualizar la evolución de las características de las políticas de control de COVID-19 en América Latina, y 2) Analizar la secuencia en la implementación de estas políticas.* **Métodos:** *Los datos del "Government Response Stringency Index (GRSI)", elaborado por la Escuela de Gobierno Blavatnik de la Universidad de Oxford, fueron analizados para los 20 países de América Latina en el período 21 de enero a 9 de noviembre de 2020. Se tomó en cuenta la evolución del GRSI, así como de algunos de sus componentes. También se analizó la secuencia de implementación en tres países (Uruguay, Argentina y Panamá).* **Resultados:** *La gran mayoría de los países de la región registró un GRSI promedio mayor de 57 (sobre 100) en el período. En quince países de la región el cierre obligatorio de instituciones educativas estuvo vigente en el 75 %*

DOI: https://doi.org/10.47307/GMC.2020.128.s2.7

ORCID: 0000-0002-6204-272X
[1]Professor, Simón Bolívar University (USB), Venezuela. National Corresponding Member Nº 39 of the National Academy of Medicine. Member of the Latin American Academy of Sciences (ACAL). Associate Researcher, University of La Rioja, Spain. E-mail: marinojgonzalez@gmail.com

Recibido: 02 de diciembre de 2020
Aceptado: 04 de diciembre de 2020

de los días. Dieciocho países implementaron cierres obligatorios de empresas en algún momento. Diez países aplicaron los requerimientos para permanecer en los hogares en más de 80 % de los días. La secuencia de políticas implementadas por Uruguay revela una mayor flexibilidad en la aplicación que las ejecutadas por Argentina y Panamá. **Discusión:** *La experiencia de Uruguay evidencia que el control de la pandemia fue posible, y que las diferencias con otros países pueden estar relacionadas con factores estructurales (previos a la pandemia), y con el desempeño en la gestión.* **Conclusiones:** *Los sistemas de salud de la región deben identificar en detalle las restricciones institucionales evidenciadas en el control de la pandemia, tanto para enfrentar los retos de los servicios de salud en los próximos meses, como para mejorar la preparación ante próximas pandemias.*

Palabras clave: *América Latina, COVID-19, pandemia, políticas de control, Government Response Stringency Index (GRSI), políticas de salud.*

INTRODUCTION

The COVID-19 pandemic has had an extraordinary impact on Latin American countries. By early November 2020, the region had recorded 22 % of global COVID-19 cases (Figure 1), approximately 11 million cases.

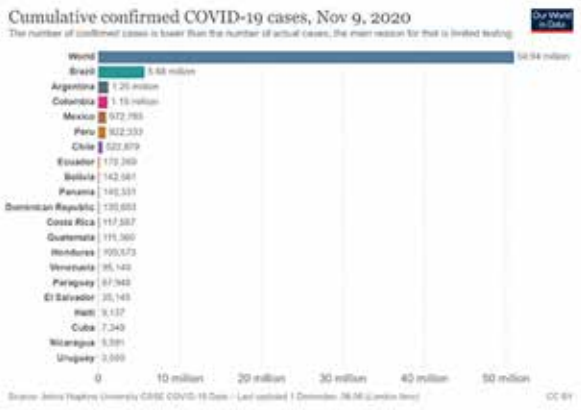

Figure 1. Latin America: cumulative confirmed cases of COVID-19 until November 9, 2020.
Source: (1).

The number of deaths per COVID-19 recorded in Latin America by the same date reached 32 % of total deaths (Figure 2). Since Latin America represents 8 % of the world's population, it is clear that the pandemic has had a greater effect on the region. Different dimensions of this impact have been analyzed in recent publications (2-11).

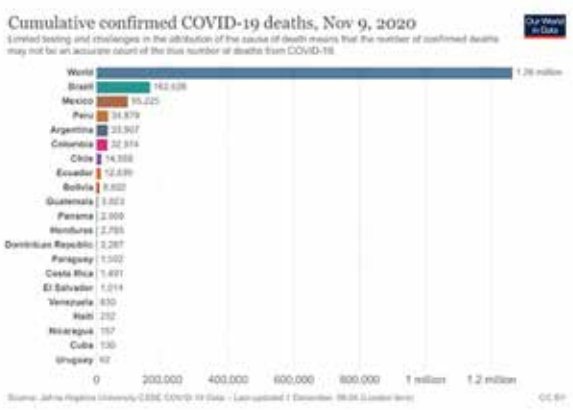

Figure 2. Latin America: cumulative confirmed COVID-19 deaths until November 9, 2020.
Source: (1).

This great impact makes it necessary to analyze the characteristics of the control policies that have been implemented in Latin American countries. An analysis conducted in mid-May 2020 reported the relevance of structural factors within health systems to explain these performance differences, such as financial protection, service coverage, and service organization (12). It also pointed out that the monitoring of the implemented policies, as well as their specific characteristics, becomes especially relevant to identify the tasks that must be carried out to correct these restrictions (12).

Contrary to the experience in Europe and Asia, most Latin American countries had not controlled the pandemic in the first half of this year (12). This situation has continued into the second half of 2020, resulting in very high demand for health services. Restrictions on health care services have resulted in the fact that in early November, seven countries in the Americas (Peru, Brazil, Chile,

Bolivia, Argentina, Mexico, and Ecuador) were in the group of the ten with the highest mortality rates per COVID-19 in the world (Figure 3).

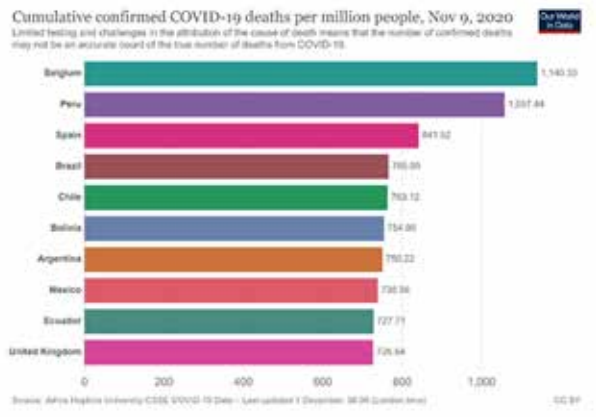

Figure 3. Countries with the highest mortality per COVID-19 as of November 9, 2020 (population over 1 million).
Source: (1).

Two objectives are proposed for this analysis. The first is to update the evolution of the characteristics of COVID-19 control policies in the region. To do so, special consideration is given to the stringency of the policies, as available in the Government Response Stringency Index (GRSI) developed by the Blavatnik School of Government at the University of Oxford (13). This index is now being used more frequently for monitoring pandemic control policies by COVID-19 (14-28). In Latin America, recent work has explored the relationship of GRSI to various demographic and health issues (29), and as part of the process of estimating the incidence of the pandemic (30). This paper focuses on the analysis of some of the components of GRSI to characterize the degree of policy implementation. The second objective is to analyze the sequence of policies implemented in selected countries. The orientation of this analysis is to describe the sequencing features that may evidence lessons learned for improving performance in the pandemic or in other areas that require control policies.

METHODS

The analysis was divided into two parts. The first part considered the GRSI for the 20 countries of Latin America. The information for these countries was extracted from the complete GRSI database (31). Table 1 shows the components of the GRSI. For each of the countries, there are daily measures of the GRSI. The measurement begins on January 21, 2020, as this was the first day on which control measures were recorded in the countries of the region. The registry ends on November 9, 2020, as it was the last day with information from all the countries in the region. The GRSI varies between 0 and 100. The maximum stringency value is 100.

This analysis took into account the general evolution of the GRSI in the period indicated, as well as the variations in the following components: 1) school closing, 2) workplace closing, and 3) stay at home requirements.

The second part of the analysis consisted of selecting three countries to compare the sequence of control policies implemented in the period. To examine the sequence, a database was constructed for each country, including daily data for each of the nine components of the GRSI (Table 1). A first country was selected as a reference, taking into account the lowest GRSI value in the period analyzed, and which also had diagnostic records of COVID-19 available for international comparisons. This showed the difference between the other two selected countries. These two countries had the largest number of new cases of COVID-19 by November 9, 2020 (1).

RESULTS

For each of the parts of the analysis, the results are presented below. They are divided into each of the aspects of the stringency policies for COVID-19 control: 1) effects, and 2) sequence.

Effects of stringency policies

Five countries in the region reached the maximum value of the GRSI (100) in the

Table 1

Government Response Stringency Index (GRSI), composition

Code	Name	Measures
C1	School closing	(0) no measures, (1) recommend closing, (2) require closing (only some levels or categories), (3) require closing all levels
C2	Workplace closing	(0) no measures, (1) recommend closing (or work from home), (2) require closing (or work from home) for some sectors or categories of workers, (3) require closing (or work from home) all but essential workplaces
C3	Cancel public events	(0) no measures, (1) recommend cancelling, (2) require cancelling
C4	Restrictions on gathering	(0) no restrictions, (1) restrictions on very large gatherings (above 1000 people), (2) restrictions on gatherings between 101-1000 people, (3) restrictions on gatherings between 11-100 people, (4) restrictions on gatherings of 10 people or less
C5	Close public transport	(0) no measures, (1) recommend closing, (2) require closing
C6	Stay at home requirements	(0) no measures, (1) recommend not leaving house, (2) require not leaving house with exceptions for daily exercise, grocery shopping and "essential" trips, (3) require not leaving house with minimal exceptions
C7	Restriction on internal movement	(0) no measures, (1) recommend not to travel between regions/cities, (2) internal movement restrictions in place
C8	International travel controls	(0) no measures, (1) screening, (2) quarantine arrivals from high-risks regions, (3) ban on arrivals from some regions, (4) ban on all regions or total border closure
H1	Public info campaigns	(0) no COVID-19 public information campaigns, (1) public officials urging caution about COVID-19, (2) coordinated public information campaign

Source: (13).

period analyzed (Table 2). These countries are Argentina, Cuba, Dominican Republic, El Salvador, and Chile. Eight other countries reached maximum values above 90. This means that on the days when these values were obtained all the components of the GRSI also reached the maximum value or were very close to it. On the other hand, Uruguay was the country with the lowest maximum value (72) among the countries with internationally comparable records. Although Nicaragua had the lowest GRSI value, the fact that no data are available from this country for international comparisons of COVID-19 diagnosis does not allow for an adequate relationship between the value and the actual evolution of the pandemic. The other countries without data for international comparisons of COVID-19 diagnostic tests are Argentina, Haiti, Honduras, and Venezuela (2).

When calculating the average GRSI for the period under consideration (Table 3), the country with the highest value is Honduras, followed by Argentina, Bolivia, and Peru, all with more than 70 GRSI on average. Except for Haiti, Uruguay, and Nicaragua, all the countries in the region had an average GRSI above 57 (out of a maximum of 100). As mentioned above, in the group of countries with the lowest average, only Uruguay (average GRSI of 38.45) meets the condition of international comparability for the diagnosis of COVID-19 cases.

Table 2

Latin America: Government Response Stringency Index (GRSI) value until November 9, 2020 (Countries in descending order)

Country	GRSI
Argentina	100
Cuba	100
Dominican Republic	100
El Salvador	100
Honduras	100
Bolivia	96
Guatemala	96
Peru	96
Paraguay	94
Ecuador	94
Haiti	94
Panama	94
Colombia	91
Chile	89
Venezuela	88
Mexico	82
Costa Rica	81
Brazil	81
Uruguay	72
Nicaragua	17

Source: (31), own calculations.

Table 3

Latin America: Government Response Stringency Index (GRSI) average November 9, 2020 (Countries in descending order)

Country	Average GRSI
Honduras	76.61
Argentina	74.80
Bolivia	72.62
Peru	71.36
Guatemala	70.88
El Salvador	70.55
Venezuela	69.40
Panama	68.23
Paraguay	68.18
Colombia	67.72
Dominican Republic	67.18
Cuba	65.03
Chile	64.34
Ecuador	63.08
Brazil	60.74
Mexico	58.76
Costa Rica	57.85
Haiti	49.10
Uruguay	38.45
Nicaragua	10.43

Source: (31), own calculations.

Mandatory closure is the highest level of stringency in the school closure component of the GRSI (C1, Table 1). This level was reached at some point during the period by 19 of the 20 countries in the region (Table 4). Only in Nicaragua was no measure of school closure established. In 15 countries, mandatory closure was in effect for more than 75 percent of the days of the period (294). In eight countries the mandatory closure was in effect for more than 80 % of the days, with El Salvador having the longest duration (244 days). Uruguay was the country with the fewest days of mandatory closure (79), equivalent to 26.87 % of total days.

Mandatory workplace closure (except for essential sites) is the highest level of stringency in the C2 component of the GRSI (Table 1). Eighteen of the region's 20 countries reached this level at some point during the period under review. Only Uruguay and Nicaragua did not implement this measure. In Uruguay, the most stringent measure was the recommendation of workplace closure or work from home (measure 1, Table 1). Nicaragua did not implement any type of site closure (measure 0, Table 1).

Table 4

Latin America: Effective days for the mandatory closure of educational institutions until November 9, 2020 (Countries in descending order)

Country	More stringent measure	Days of effect	% over total days
El Salvador	3	244	82.99
Bolivia	3	243	82.65
Brazil	3	243	82.65
Panama	3	243	82.65
Peru	3	243	82.65
Ecuador	3	242	82.31
Honduras	3	242	82.31
Argentina	3	239	81.29
Colombia	3	239	81.29
Guatemala	3	239	81.29
Venezuela	3	239	81.29
Costa Rica	3	238	80.95
Dominican Republic	3	236	80.27
Mexico	3	232	78.91
Cuba	3	224	76.19
Chile	3	210	71.43
Paraguay	3	194	65.99
Haiti	3	144	48.98
Uruguay	3	79	26.87
Nicaragua	0	Not applicable	Not applicable

Source: (31), own calculations.

Table 5

Latin America: Effective days for the mandatory closure of workplaces until November 9, 2020 (Countries in descending order)

Country	More stringent measure	Days of effect	% over total days
Chile	3	184	62.59
Brazil	3	173	58.84
Venezuela	3	161	54.76
Mexico	3	138	46.94
Argentina	3	137	46.60
Guatemala	3	132	44.90
Bolivia	3	96	32.65
Ecuador	3	94	31.97
Honduras	3	80	27.21
Colombia	3	78	26.53
Cuba	3	77	26.19
El Salvador	3	73	24.83
Paraguay	3	73	24.83
Dominican Republic	3	62	21.09
Panama	3	54	18.37
Peru	3	46	15.65
Costa Rica	3	39	13.27
Haiti	3	32	10.88
Nicaragua	0	Not applicable	Not applicable
Uruguay	1	Not applicable	Not applicable

Source: (31), own calculations.

In those countries that implemented mandatory closure (except in essential workplaces), Argentina, Brazil, and Venezuela maintained this level on more than 54 % of the total days in the period (294). Panama, Peru, Costa Rica, and Haiti are the countries with less than 20 % mandatory closure of these work sites in the period.

The requirements for people to stay in their homes (component C6 of the GRSI) range from recommendation (Measure 1, Table 1) to the obligation not to leave except exceptionally (Measure 3, Table 1). The first step was to quantify the days of the requirement to remain in the case by including measures 1, 2, and 3.

In Table 6, the countries have been ordered according to the number of days in which some type of restriction on leaving the home was in effect (Column 1). Paraguay was the country with the highest number of total days of requirements to stay at home (245), representing 83.3 % of the total days of the period. Eleven countries in the region recorded more than 80 % of the days with some type of restriction on the mobility of persons outside the home (column 2). Uruguay was the only country that had approved measures to require people to stay at home and recorded less than 50 % of the days in this condition (40.8 %). Nicaragua was the only country that did not apply measures in this component of the GRSI.

Table 6 also shows that the most stringent measure of this component, not leaving the household but with minimal exceptions (column 3), was applied in 11 countries. In Venezuela, Haiti, Colombia, Mexico, Guatemala, Ecuador, and Uruguay the maximum level of stringency was 2 (leaving for grocery shopping and other essential activities). In Costa Rica, the most stringent measure of this component of the GRSI was the recommendation not to leave the home.

Considering only the countries with the most stringent measure, the number of days of effect (column 4) varied from 179 in Chile to 4

Table 6

Latin America: Effective days with requirements to stay at home until November 9, 2020
(countries in descending order)

	1	2	3	4	5
Country	Days with requirements to stay at home (sum of days with options 1, 2, and 3 of the GRSI component C6)	Days with requirements to stay at home over total days (%)	More stringent measure	Days of effect of measure 3	Days of effect of measure 3 over total days (%)
Paraguay	245	83.33	3	61	20.75
Brazil	242	82.31	3	7	2.38
Venezuela	242	82.31	2	Not applicable	Not applicable
Peru	240	81.63	3	54	18.37
Honduras	239	81.29	3	159	54.08
Bolivia	238	80.95	3	4	1.36
Dominican Republic	238	80.95	3	20	6.80
Panama	238	80.95	3	76	25.85
Argentina	236	80.27	3	39	13.27
Haiti	236	80.27	2	Not applicable	Not applicable
El Salvador	234	79.59	3	87	29.59
Chile	230	78.23	3	179	60.88
Colombia	230	78.23	2	Not applicable	Not applicable
Mexico	225	76.53	2	Not applicable	Not applicable
Costa Rica	223	75.85	1	Not applicable	Not applicable
Guatemala	193	65.65	2	Not applicable	Not applicable
Ecuador	181	61.56	2	Not applicable	Not applicable
Cuba	152	51.70	3	38	12.93
Uruguay	120	40.82	2	Not applicable	Not applicable
Nicaragua	0	Not applicable	0	Not applicable	Not applicable

Source: (31), own calculations.

in Bolivia. This meant that in Chile the most stringent measure was effective on 60.8 percent of the days in the period, while in Bolivia it was 1.36 percent (column 5).

Sequencing of stringency policies

Three countries were selected to analyze the sequence of stringency policies. The first of these was Uruguay, as it met the criteria of having the lowest average GRSI for the period (Table 3), and also having information on COVID-19 diagnoses for international comparisons. The other two countries were Argentina and Panama because they had the highest incidence rates per COVID-19 on the final day of the period analyzed (November 9, 2020), as shown in Figure 4.

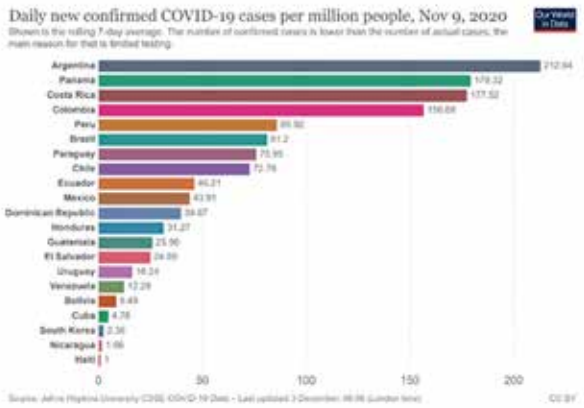

Figure 4. Latin America: New COVID-19 cases recorded on November 9, 2020.
Source: (1).

Uruguay kept the number of new cases of COVID-19 below 6.9 per million inhabitants until October 13, 2020, comparable to South Korea's record (Figure 5), between 40-50 times less than that recorded by Panama and Argentina.

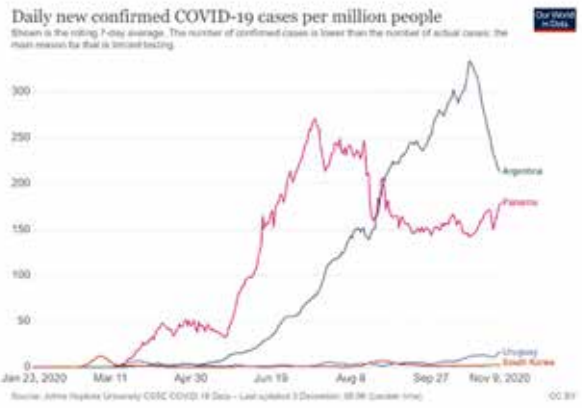

Figure 5. New COVID-19 cases in Uruguay, Argentina, Panama, and South Korea, January - November 9, 2020.
Source: (1).

No pandemic control measures were taken in Uruguay until March 13 (Figure 6). Initial measures included the following: prohibition of public events, recommendation to stay home (Measure 1 of GRSI component C6), recommendation to avoid cross-regional travel, and initiation of quarantine for persons from high-risk regions. The following day, all educational institutions were ordered to be closed and public information campaigns began. By March 15 (that is, two days after the report of the first case of COVID-19 in Uruguay), the GRSI was already at 52.

On March 24th the borders are ordered to be closed, bringing the GRSI to 57. Three days later, it is recommended that public transportation be closed, which increases the GRSI to 63. The maximum number of cases is registered on March 31st. On April 2 the level of stay at home requirements is increased (only outings for essential activities are allowed). The maximum GRSI is thus reached (72).

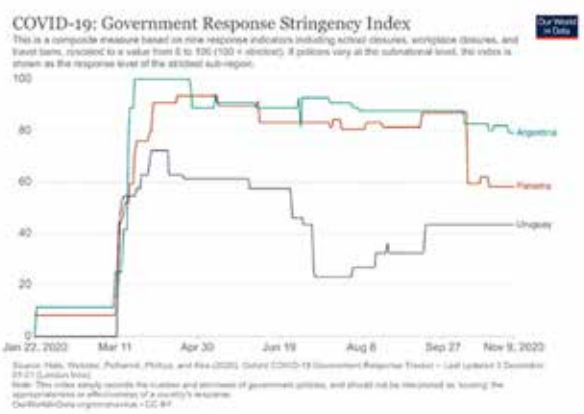

Figure 6. Government Response Stringency Index (GRSI) in Uruguay, Argentina, Panama
January - November 9, 2020.
Source: (1).

This GRSI maximum level was maintained for only 11 days (April 2-12). The daily case peak in Uruguay was half (in terms of population) that of South Korea. As the daily cases began to decrease on April 6, the de-escalation began on April 13 (the GRSI was reduced to 63, due to the reduction in the level of confinement, that is, again with the recommendation not to leave home). The GRSI remains close to 60 until May 31. The GRSI remains close to 60 until May 31. On this day, the total closure of educational institutions is modified by closing only some levels, thus reducing the GRSI slightly to 57.

As of June 27, the ban on public events was lifted, and the GRSI was placed at 46. On July 10, there is a return to normal working conditions. This results in the reduction of GRSI to 25. The next day, the recommendation to close schools (as opposed to the requirement to close at some levels) is made, reducing the GRSI to 23. It remains at this level until August 2. As of August 3, the recommendation to close workplaces and teleworking resumes, bringing the GRSI to 27. On August 17 the recommendation for the cancellation of public events is reintroduced, increasing the GRSI to 32 (until September 15).

On September 16 the cancellation of public events becomes mandatory and public meetings are restricted to a maximum of 1 000 people.

With these two measures, the GRSI increases to 44. The GRSI remains at this value until November 9, even though the maximum number of new cases in the pandemic had been tied since October 8. On November 9, this number of cases reached a new all-time high, almost three times the October level.

In Argentina, the first control measure (January 23) was the start of the public information campaign, which led to the GRSI starting in 11 (Figure 6). No further action was taken until March 11 (almost a month and a half later). These new measures were the cancellation of public events and the beginning of quarantines for passengers coming from countries at high risk of COVID-19. On March 16, the mandatory closure of educational institutions began, and the entry of passengers from abroad was prohibited. With these two measures, the GRSI increases to 42.

As of March 19, it was established the closure of worksites (only maintaining open the essential ones), the restriction of meetings to less than 10 people, and the requirement to remain at home (Measure 3 of component C6 of the GRSI). The following day (March 20) these measures were complemented by restrictions on internal mobility, bringing the GRSI to 89. On March 23, with the closure of public transportation, the GRSI reaches its maximum value (100), which is maintained for one month, until April 25. During this maximum GRSI period, the number of daily cases did not exceed 1 per million inhabitants.

On April 27, the requirements for remaining at home were reduced (from Measure 3 to Measure 2, Table 1), so that the GRSI stood at 89, and remained at that level (with slight variations) until October 9. From this last date, the restrictions on workplaces are reduced, so that the GRSI decreases slightly to values close to 80 until the end of the period. Between April 27 and the end of October 2020, the number of daily cases per million inhabitants in Argentina increased 100 times.

Panama begins control measures on January 21, through the indications of government officials to take precautions on COVID-19 (Figure 6). The next day, mechanisms for detecting cases at the country's entry points were introduced. In this way, the GRSI reaches the value of 8 and remains so for a month and a half (until March 11). On March 12 the closure of all levels of educational institutions goes into effect. The following day, public events are prohibited and meetings are limited to 100 people. Entry into the country from some at-risk areas is also prohibited, bringing the GRSI to 44.

On March 16, it is recommended that workplaces be closed, as well as working from home. The next day, the recommendation for people to remain in the homes begins, increasing the GRSI to 52. On March 20, workplaces are closed (only essential services are kept open). Three days later (March 23) the restrictions on travel in the country take effect. Thus, GRSI is increased to 70. On April 4 the GRSI increases to 90 with the suspension of public transportation and the beginning of the requirement to stay home (allowing only trips for essential activities). By this date, the number of new cases per day of COVID-19 had increased by 30 per million. The GRSI remains close to 90 until June 7. From this day on, it decreases to 83 and remains at values close to 80 until September 13. By this date, the number of daily cases had increased five times compared to April's figures.

On September 14 the closure of public transportation resumes, increasing the GRSI to 87. It remains at this value until October 11. On this day the number of daily cases of COVID-19 was 166 per million. On October 12, restrictions on the entry of persons from abroad were reduced and public transportation resumed, reducing the GRSI to 59, and remaining close to 60 until the end of the period analyzed (November 9). By this last day, the number of new daily cases of COVID-19 had increased to 180 per million.

DISCUSSION

Until the end of November 2020, the use of the GRSI to compare Latin American countries had been reported (12,29). In the first case (12) the maximum and average value of the GRSI from the date of registration of the first case in each country until May 17, 2020, was used. In the second case (29), the average GRSI over the first 90 days of the pandemic's evolution in each country was reported. In (12), the effects of control policies up to May 17, 2020, were also

reported, in terms of stringency, with respect to closures of educational institutions, workplace closures, and requirements to stay at home.

The results already described corresponding to the period from January 21, 2020 (date of the first measures implemented in the region), to November 9 (last date with the registration of the GRSI in all countries).

By the end of the period under review, only three Latin American countries had managed to reduce the number of cases to levels comparable to those of South Korea (Figure 5), and they also had COVID-19 diagnostic test figures for international comparisons (Uruguay, Bolivia, and Cuba). It should be noted that, by November 9, the number of new cases in Uruguay had almost tripled the maximum number of cases recorded up to October 8.

The findings indicate that it was possible to control the pandemic in Uruguay with an average GRSI of 38, which is about half the average GRSI value of many countries in the region. Specifically, Uruguay required fewer days with educational institution closures (26 %) and did not apply measures 2 and 3 related to workplace closures on any day during the period. Uruguay was also the country with the fewest days with stay home requirements (40.8 %) and did not apply the most stringent measure in this component of the GRSI. Uruguay's experience shows that control of the pandemic was possible, and that differences with other countries may be related to structural (pre-pandemic) factors and management performance. Detailed examination in each country may provide evidence in this regard. This successful performance of Uruguay is even more relevant considering that its Global Health Safety Index value was below the Latin American average in 2019 (32).

This analysis also reports, for the first time, details on the evolution of the GRSI components, in the specific cases of Uruguay, Argentina, and Panama. Figure 6 shows the difference between the GRSI levels of Argentina and Panama with respect to Uruguay. This gap in the GRSI is evidence of the different institutional capacities in the control of the pandemic. It can also be seen when looking at the similarity of GRSI in Uruguay and South Korea (Figure 7). In the period with the highest number of cases in both countries, Uruguay's GRSI was lower than South Korea's. Another characteristic in the evolution of the GRSI in Uruguay is the flexibility which allowed, for example, that the requirements to be at home were only valid for 11 days in measure 2, and that on the vast majority of days there were no requirements to stay at home.

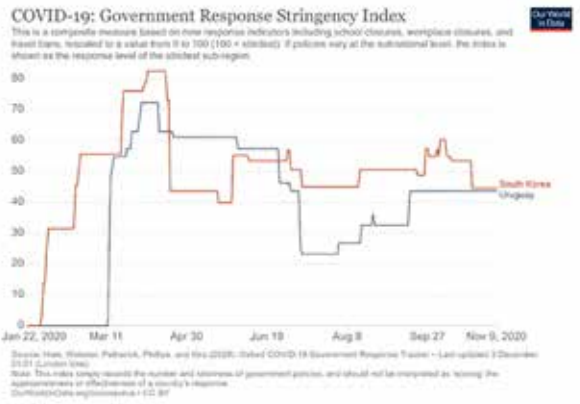

Figure 7. Government Response Stringency Index (GRSI) in Uruguay and South Korea. January - November 9, 2020. Source: (1).

Analysis of the sequence of GRSI components in each of the region's countries may enable the identification and characterization of policy patterns in the different phases of the pandemic.

The analysis has two limitations that should be noted. The first is that the recording of daily data for each component may vary as the information from the countries is updated and that detailed analysis in each country may in turn show differences from what is recorded in the GRSI database (31). The second is that the database does not include measurements of compliance. Therefore, the actual levels of stringency may be very different from those derived from the analysis of the recorded data (5).

CONCLUSIONS

In the vast majority of Latin American countries, control policies have been very stringent, but this has had no impact on reducing cases and deaths. As of early December 2020, very few countries have achieved control of the pandemic. This may mean that the effectiveness of control policies was significantly influenced by the capacities of the region's health systems. A pending task in identifying the constraints on these capabilities is to examine in detail both structural and management factors in the pandemic. The generation of databases for monitoring pandemic control policies will facilitate this identification, as well as their use in other areas of health care.

Comparative analysis of these control policies is even more necessary now that alternatives to COVID-19 immunization are already available, whose effectiveness may also be conditioned by these factors. On the other hand, since the risks of new pandemics are still present, it is even more relevant to draw lessons in the management of the COVID-19 pandemic. These lessons may also be applicable in other areas of health systems, especially in the care of chronic diseases.

Funding: None

Conflicts of interest: None

REFERENCES

1. University of Oxford, Oxford Martin School, Global Change Data Lab. Our World in Data. Coronavirus Pandemic (COVID-19). https://ourworldindata.org/coronavirus
2. Bautista-Molano W, Ferreyra Garrot L, Toro C. PANLAR Joven. Exploring the Impact of COVID-19 in Latin America. J Clin Rheumatol. 2020;26(6):218-219.
3. The Lancet. COVID-19 in Latin America: A humanitarian crisis. Lancet. 2020;396(10261):1463.
4. Blukacz A, Cabieses B. COVID-19: leaving no one behind in Latin America. Lancet. 2020;396(10257):1070.
5. Idrovo AJ. Long but Unreal Lockdowns in Latin America. Comment on Chen YT, Yen YF, Yu SH, Su EC. An Examination on the Transmission of COVID-19 and the Effect of Response Strategies: A Comparative Analysis. Int J Environ Res Public Health 2020;17:E5687. Int J Environ Res Public Health. 2020;17(21):8064.
6. Muñoz N. COVID-19 in Latin America: A first glance to the mortality. Colomb Med (Cali). 2020;51(2):e4366.
7. Taylor L. How Latin America is fighting COVID-19, for better and worse. BMJ. 2020;370:m3319.
8. Ramírez de la Cruz EE, Grin EJ, Sanabria-Pulido P, Cravacuore D, Orellana A. The Transaction Costs of the Governments' Response to the COVID-19 Emergency in Latin America. Public Adm Rev. 2020:10.1111/puar.13259.
9. Pablos-Méndez A, Vega J, Aranguren FP, Tabish H, Raviglione MC. COVID-19 in Latin America. BMJ. 2020 Jul 27;370:m2939. doi: 10.1136/bmj.m2939.
10. Loaiza JR, Rao K, Eskildsen GA, Ortega-Barria E, Miller MJ, Gittens RA. COVID-19 pandemic in Panama: Lessons of the unique risks and research opportunities for Latin America. Rev Panam Salud Publica. 2020;44:e86.
11. Andrus JK, Evans-Gilbert T, Santos JI, Guzman MG, Rosenthal PJ, Toscano C, et al. Perspectives on Battling COVID-19 in Countries of Latin America and the Caribbean. Am J Trop Med Hyg. 2020;103(2):593-596.
12. González R Marino J. Características iniciales de las políticas de control de la pandemia de COVID-19 en América Latina. Gac Méd Caracas. 2020;128(2): 207-216.
13. Hale T, Boby T, Angrist N, Cameron-Blake E, Hallas L, Kira B, et al. Variation in government response to COVID-19. Version 9.0. Blavatnik School of Government Working Paper. University of Oxford. 2020/032. 2020. www.bsg.ox.ac.uk/covidtracker
14. Cross M, Ng SK, Scuffham P. Trading Health for Wealth: The Effect of COVID-19 Response Stringency. Int J Environ Res Public Health. 2020;17(23):E8725.
15. Geng DC, Innes J, Wu W, Wang G. Impacts of COVID-19 pandemic on urban park visitation: A global analysis. J For Res (Harbin). 2020(12):1-15.
16. Cao Y, Hiyoshi A, Montgomery S. COVID-19 case-fatality rate and demographic and socioeconomic influencers: worldwide spatial regression analysis based on country-level data. BMJ Open. 2020;10(11):e043560.
17. Kim HH, Jung JH. Social isolation and psychological distress during the COVID-19 Pandemic: A Cross-National Analysis. Gerontologist. 2020;gnaa168.
18. Tran TPT, Le TH, Nguyen TNP, Hoang VM. Rapid

response to the COVID-19 pandemic: Vietnam government's experience and preliminary success. J Glob Health. 2020;10(2):020502.

19. Ferraresi M, Kotsogiannis C, Rizzo L, Secomandi R. The 'Great Lockdown' and its determinants. Econ Lett. 2020;197:109628.
20. Kayral İE, Buzrul S. Forecasting of COVID-19 infections in E7 countries and proposing some policies based on the Stringency Index. J PopulTher Clin Pharmacol. 2020;15;27(S Pt 1):e76-e84.
21. Deshpande A. Early effects of lockdown in India: Gender gaps in job losses and domestic work. Indian J Labour Econ. 2020;6:1-4.
22. Mori H, Schol J, Geeraerts A, Huang IH, Jandee S, Gonlachanvit S, et al. The Impact of COVID-19 on gastrointestinal motility testing in Asia and Europe. J Clin Med. 2020;9(10):3189.
23. Braithwaite J, Tran Y, Ellis LA, Westbrook J. The 40 health systems, COVID-19 (40HS, C-19) study. Int J Qual Health Care. 2020; 30:mzaa113.
24. Teixeira da Silva JA, Tsigaris P. Policy determinants of COVID-19 pandemic-induced fatality rates across nations. Public Health. 2020;187:140-142.
25. Vannoni M, McKee M, Semenza JC, Bonell C, Stuckler D. Using volunteered geographic information to assess mobility in the early phases of the COVID-19 pandemic: A cross-city time series analysis of 41 cities in 22 countries from March 2nd to 26th 2020. Global Health. 2020;16(1):85.
26. Arsalan M, Mubin O, Alnajjar F, Alsinglawi B, Zaki N. Global and Temporal COVID-19 Risk Evaluation. Front Public Health. 2020;8:440.
27. König M, Winkler A. COVID-19 and economic growth: Does good government performance pay off? Inter Econ. 2020;55(4):224-231.
28. Kaxiras E, Neofotistos G. Multiple epidemic wave model of the COVID-19 Pandemic: Modeling Study. J Med Internet Res. 2020;22(7):e20912.
29. Acosta LD. Capacidad de respuesta frente a la pandemia de COVID-19 en América Latina y el Caribe [Response capacity to the COVID-19 pandemic in Latin America and the Caribbean]. Rev Panam Salud Publica. 2020;44:e109.
30. Zhu D, Mishra SR, Han X, Santo K. Social distancing in Latin America during the COVID-19 pandemic: an analysis using the Stringency Index and Google Community Mobility Reports. J Travel Med. 2020; 30:taaa125.
31. Hale T, Boby T, Angrist N, Cameron-Blake E, Hallas L, Kira B, et al. Oxford COVID-19 GOVERNMENT Response Tracker, Blavatnik School of Government. 2020. www.bsg.ox.ac.uk/covidtracker
32. Nuclear Threat Initiative (NTI), Johns Hopkins University, Bloomberg School of Public Health, Center for Health Security. GHS Index. Global Health Security Index: Building Collective Action and Accountability. 2019. October. https://www.ghsindex.org/wp-content/uploads/2020/04/2019-Global-Health-Security-Index.pdf