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Original Article

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EFFECTS OF GOVERNMENT DECREES ON COVID-19

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MORTALITY RATES IN SOUTHERN BRAZIL

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14 Abstract

15 **Introduction:** The COVID-19 pandemic is a global challenge, marked by uncertainties in
16 prevention and therapeutic management. **Objective** The objective of this study was to
17 investigate the effects of government decrees on institutional, organizational, governance and
18 political factors (IOGP) that occurred during the pandemic period in Brazil and how the states in
19 the South region managed the different factors. **Methods:** Retrospective case studies were
20 conducted using data from state and national health websites in 2020-2021. Data on cases,
21 mortality and recoveries relating to the population of the Southern Region during the spread of
22 the pandemic were analyzed. **Results:** The results revealed different dynamics of COVID-19 in
23 the states of the Southern region, often marked by limited commitment from both the population
24 and state authorities. As cases fell, restrictions were eased, promoting a return to normality.
25 Analysis of the determinants of COVID-19 highlighted the interplay between unemployment,

26 education, and state-specific policies. Factors such as inadequate sanitation, limited access to
27 education and healthcare, crowded public transport and challenges associated with isolation have
28 contributed to the transmission of the virus. **Conclusion:** The effect of government decrees
29 during the COVID-19 pandemic in southern Brazil demonstrated the intricate relationship
30 between policy implementation and its far-reaching consequences. This research also highlighted
31 the complexities of managing a pandemic within a decentralized governance framework,
32 shedding light on the interaction between government decrees, institutional dynamics and the
33 implementation of public health strategies.

34 **Keywords:** COVID-19, pandemic, institutional, organizational, crisis management

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36 **Article original**

37 **EFFETS DES DECRETS GOUVERNEMENTAUX SUR LES TAUX DE** 38 **MORTALITE DUS AU COVID-19 DANS LE SUD DU BRESIL**

39 **Abstrait**

40 **Introduction:** La pandémie de COVID-19 constitue un défi mondial, marqué par des
41 incertitudes en matière de prévention et de prise en charge thérapeutique. **Objectif:** Cette étude
42 visait à étudier les effets des décrets gouvernementaux sur les facteurs institutionnels,
43 organisationnels, de gouvernance et politiques (IOGP) qui ont influencé la prise de décision,
44 ainsi que la sélection et la mise en œuvre ultérieures d'interventions de santé publique visant à
45 gérer l'impact du COVID-19. pandémie dans le sud du Brésil. **Méthodes** Des études de cas
46 rétrospectives ont été menées à l'aide de données provenant de sites Web de santé étatiques et
47 nationaux en 2020-2021. Les données sur les cas, la mortalité et les guérisons relatives à la
48 population de la région Sud au cours de la propagation de la pandémie ont été analysées.
49 **Résultats:** Les résultats ont révélé différentes dynamiques du COVID-19 dans les États de la
50 région Sud, souvent marquées par un engagement limité de la part de la population et des
51 autorités étatiques. À mesure que les cas diminuaient, les restrictions ont été assouplies,
52 favorisant un retour à la normale. L'analyse des déterminants du COVID-19 a mis en évidence
53 l'interaction entre le chômage, l'éducation et les politiques spécifiques aux États. Des facteurs
54 tels qu'un assainissement inadéquat, un accès limité à l'éducation et aux soins de santé, des
55 transports publics bondés et les défis associés à l'isolement ont contribué à la transmission du
56 virus. **Conclusion:** L'effet des décrets gouvernementaux pendant la pandémie de COVID-19
57 dans le sud du Brésil a démontré la relation complexe entre la mise en œuvre des politiques et
58 leurs conséquences à grande échelle. Cette recherche a également mis en évidence les
59 complexités de la gestion d'une pandémie dans un cadre de gouvernance décentralisé, mettant en
60 lumière l'interaction entre les décrets gouvernementaux, la dynamique institutionnelle et la mise
61 en œuvre de stratégies de santé publique.

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63 **Mots-clés:** COVID-19, pandémie, institutionnel, organisationnel, gestion de crise.

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Artículo original

EFEITOS DE LOS DECRETOS GUBERNAMENTALES SOBRE LAS TASAS DE MORTALIDAD POR COVID-19 EN EL SUR DE BRASIL

Resumen

Introducción: La pandemia de COVID-19 es un desafío global, marcado por incertidumbres en la prevención y el manejo terapéutico. **Objetivo:** Este estudio tuvo como objetivo investigar los efectos de los decretos gubernamentales sobre los factores institucionales, organizativos, de gobernanza y políticos (IOGP) que ocurrieron durante el período de la pandemia en Brasil y cómo los estados de la región Sur gestionaron los diferentes factores. **Métodos:** Se realizaron estudios de casos retrospectivos utilizando datos de sitios web de salud estatales y nacionales en 2020-2021. Se analizaron datos de casos, mortalidad y recuperaciones de la población de la Región Sur durante la propagación de la pandemia. **Resultados:** Los resultados revelaron diferentes dinámicas de la COVID-19 en los estados de la región Sur, muchas veces marcadas por un compromiso limitado tanto de la población como de las autoridades estatales. A medida que disminuyeron los casos, se suavizaron las restricciones, promoviendo el regreso a la normalidad. El análisis de los determinantes de la COVID-19 destacó la interacción entre el desempleo, la educación y las políticas estatales específicas. Factores como el saneamiento inadecuado, el acceso limitado a la educación y la atención sanitaria, el transporte público abarrotado y los desafíos asociados al aislamiento han contribuido a la transmisión del virus. **Conclusión:** El efecto de los decretos gubernamentales durante la pandemia de COVID-19 en el sur de Brasil demostró la intrincada relación entre la implementación de políticas y sus consecuencias de largo alcance. Esta investigación también destacó las complejidades de gestionar una pandemia dentro de un marco de gobernanza descentralizada, arrojando luz sobre la interacción entre los decretos gubernamentales, la dinámica institucional y la implementación de estrategias de salud pública. **Palabras clave:** COVID-19, pandemia, institucional, organizacional, gestión de crisis.

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Artigo Original

EFEITOS DOS DECRETOS GOVERNAMENTAIS NAS TAXAS DE MORTALIDADE POR COVID-19 NO SUL DO BRASIL

Resumo

Introdução: A pandemia de COVID-19 é um desafio global, marcado por incertezas na prevenção e manejo terapêutico. **Objetivo:** Este estudo teve como investigar os efeitos dos decretos governamentais sobre os fatores institucionais, organizacionais, de governança e políticos (IOGP) ocorridos durante o período pandêmico no Brasil e como os estados da região Sul administraram os diferentes fatores. **Métodos:** Foram realizados estudos de caso

106 retrospectivos utilizando dados de sites de saúde estaduais e nacionais em 2020-2021. Foram
107 analisados dados de casos, mortalidade e recuperados relativos à população da Região Sul na
108 propagação da pandemia. **Resultados:** Os resultados revelaram diferentes dinâmicas da COVID-
109 19 nos estados da região Sul, muitas vezes marcadas por comprometimento limitado tanto da
110 população quanto das autoridades estaduais. À medida que os casos diminuíram, as restrições
111 foram atenuadas, promovendo o regresso à normalidade. **Conclusão:** O efeito dos decretos
112 governamentais durante a pandemia da COVID-19 no sul do Brasil demonstrou a intrincada
113 relação entre a implementação de políticas e suas consequências de longo alcance. Esta
114 investigação também destacou as complexidades da gestão de uma pandemia num quadro de
115 governação descentralizada, lançando luz sobre a interação entre decretos governamentais,
116 dinâmicas institucionais e a implementação de estratégias de saúde pública.
117 **Palavras-chave:** COVID-19, pandemia, institucional, organizacional, gestão de crises

118 Introduction

119 The global challenge presented by the COVID-19 pandemic has introduced numerous
120 uncertainties in terms of prevention and therapeutic management. Despite the increasing body of
121 literature on health interventions and outcomes, few studies provide comprehensive insights into
122 the outcomes within their specific institutional and governmental contexts. Traditional research
123 on the public health response to COVID-19 typically includes: (a) Understanding the
124 epidemiology of the infection and its progression to severe illness and mortality. (b)
125 Recommending and implementing a range of interventions for populations, encompassing both
126 social public health measures and clinical interventions. (c) Assessing the impact of these
127 interventions on health outcomes.

128 However, a recent examination of the existing public health structures for evaluating epidemic
129 responses has identified five critical "lines of analysis" (JENEI et al., 2020). Among these, few,
130 if any, frameworks offer a holistic interpretation of "context analysis," which has prompted the
131 proposal for a case study in the Southern region of Brazil. Numerous "upstream" or contextual
132 factors are believed to shape the effectiveness of the public health response, both in terms of
133 utilizing scientific evidence to guide action and in persuading the population to adhere to
134 recommendations. Therefore, the primary focus of this study is on the two-year period of the
135 pandemic in the Southern region of Brazil, spanning from March 2020 to February 2022.

136 According to the census, 85% of the population in the South region resides in urban areas, with a
137 significant demographic concentration in the metropolitan regions of the three capital cities. In
138 the extreme south of Rio Grande do Sul, intensive livestock farming is prevalent, featuring high
139 technological use but low labor demand, resulting in low demographic density (FRANCISCO,
140 2021). Another noteworthy sociodemographic factor in the Southern region is the significant
141 decline in the birth rate observed in recent years.

142 The Southern region encompasses approximately 564 thousand square kilometers, representing
143 7% of Brazil's total land area. Its population numbers 29,975,984 inhabitants, making it the
144 country's third most populous region. The per capita household income in the South region
145 stands at R\$1,744.33, with a demographic density of 53.19 inhabitants per square kilometer and
146 a human development index of 0.756.

147 In the state of Rio Grande do Sul, on February 26, 2021, State Decree No. 55,771 was issued,
148 introducing a set of segmented sanitary measures known as the "Final Black Flag," characterized
149 by high restrictions in response to the surge in COVID-19 cases and fatalities (FILHO, 2021).
150 This decision was prompted by the complete occupation of ICU beds in the state. In Paraná, a
151 pattern of rising cases and deaths, mirroring the situation in Rio Grande do Sul, has been evident
152 since the early stages of the pandemic. Notably, all public events were canceled, with the
153 exception of the municipal elections in October 2020. The situation worsened significantly in the
154 first weeks of December and early January, resulting in Paraná reporting the highest number of
155 COVID-19 cases and deaths. On February 27, 2021, there was a substantial 45.9% increase in
156 cases over a 15-day period. Meanwhile, in Santa Catarina, during February 2021, authorities
157 reinstated restrictive measures in response to a new wave of COVID-19 cases in the South
158 Region (KERR et al., 2020). The state of Santa Catarina adopted a more flexible approach
159 compared to the other two states, particularly concerning access and mobility restrictions, and
160 this flexibility was primarily coordinated through the state's Health Emergency Operations
161 Center.

162 This case study seeks to investigate the effects of government decrees on the institutional,
163 organizational, governance and political factors (IOGP) that occurred during the pandemic
164 period in Brazil and how the states in the southern region managed the different factors.

165 **Methods**

166 Case study of a region of Brazil. Sociodemographic, cultural and climatic aspects were
167 investigated to better understand its characteristics and spread the virus in 2020-2022. This
168 document describes case studies to explore how institutional, organizational, governance and
169 policy (IOGP) factors shape decision-making factors and the choice and implementation of
170 public health interventions to manage COVID-19 in the Southern Region of Brazil. The Method
171 was proposed by the University of British Columbia, in Canada, by Dr. Peter Berman's team
172 (Figure 1). The framework comprises the following:

173 ***Upstream Factors (those influencing decisions to choose and implement interventions):***

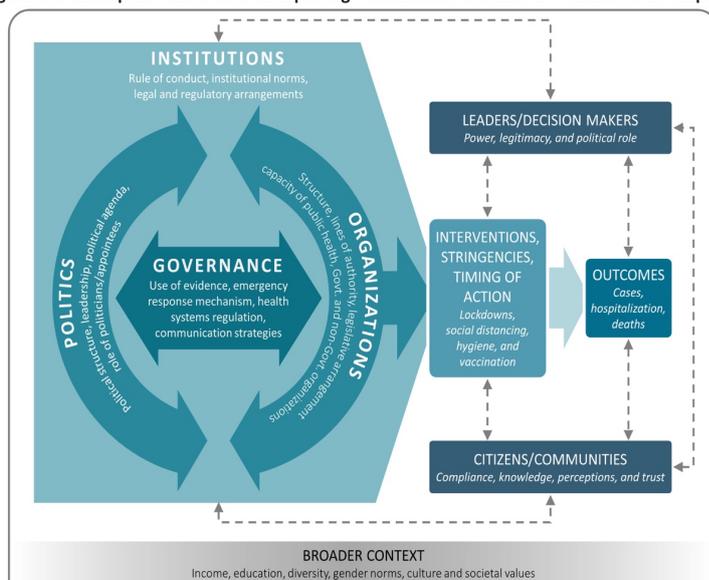
- 174 ▪ Broader context – representing more stable social, cultural, behavioral, and economic
175 factors that vary across jurisdictions, but less so over shorter time periods.
- 176 ▪ Institutions – representing both institutional structures and widely accepted norms of
177 behavior and rules of conduct, building on the concepts elaborated by North, Ostrom, and
178 others.
- 179 ▪ Politics – including features of the political ideology of parties, the role and position of
180 elected officials and leaders, the role of key social interests, and the influence of electoral
181 events.
- 182 ▪ Organizations – primarily focusing on the government organizations charged with public
183 health functions but also other health system organizations within and outside
184 government that may be important in implementing or influencing the public health
185 response.
- 186 ▪ Governance – focussing on understanding the processes of decision-making and
187 implementation at the interface between politics, organizations, and citizens.

189 ***Downstream Effects (those related to the implementation of interventions and their effects):***

- 190 ▪ Implementation of interventions to mitigate pandemic spread and address clinical and
191 social needs.
- 192 ▪ Stringency of interventions – assessment of how widely and well interventions are
193 implemented.
- 194 ▪ Timing of interventions related to the epidemiology of pandemic evolution in a
195 jurisdiction.
- 196 ▪ Health outcomes such as cases, hospitalization, and deaths.
- 197 ▪ Other outcomes such as those related to mental health, economic stresses, education
198 performance.

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Figure 1: A conceptual framework to exploring IPOG factors influence on the COVID-19 response



201 For this study, sociodemographic, cultural and climatic information were first researched. After
 202 this step, the first pandemic decree was researched in each state in the southern region of Brazil
 203 and data on the number of deaths, cases and recovered were obtained from the platform of the
 204 Ministry of Health and each state. From these data, the numbers of deaths and cases per 100,000
 205 inhabitants were calculated. Another piece of information was the number of inhabitants per
 206 state researched on the website of the Brazilian Institute of Geography and Statistics (IBGE).
 207 SPSS Statistics 21 software (IBM Corporation) was used to perform the analyses. Data were
 208 transcribed as mean and standard deviation.
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211 Results

212 Data on the number of cases, deaths and recoveries are presented in Table 1 along with the total
 213 number of inhabitants by state in the southern region of Brazil, in addition to the date of the first
 214 state pandemic decree. The First Pandemic Decree of each state was issued between the months
 215 of February (Decree No. 40,475 of February 28, 2020 - Federal District) and May (Decree No.
 216 55,240, of May 10, 2020- State of Rio Grande do Sul). When analyzing the number of cases,
 217 there were similar numbers in the three states of the southern region in relation to the number of
 218 infected: Paraná (1,963.743), Santa Catarina (1,442.511) and Rio Grande do Sul (1,826.295).

219 When analyzing the number of deaths in each state, the highest death records occurred in
 220 Paraná (41,017) and Rio Grande do Sul (36,873). In relation to deaths by sex, the highest
 221 number of deaths occurred in women in Paraná (53%) and Rio Grande do Sul and in Santa
 222 Catarina in men (57.7%). In relation to vaccination by state until February 2022, Paraná had
 223 vaccinated 9,683,790 people with two doses, 5,101,650 in Santa Catarina and 8,027,190 in Rio
 224 Grande do Sul.

Table 1. Population characteristics and epidemiological data since the date of the First pandemic Decree of each State in South Region and number cases, deaths and recovered for State 2019-2022

	First Decree	Number of cases	Number of deaths	Number of recovered	Number of inhabitants (2010 CENSUS)	Demographic density (2010 CENSUS) Inh/Km ²
SOUTH REGION						
Parana	Decree n°. 4,319, of March 23, 2020, it declares the state of public calamity, as a measure to face the public health emergency of international importance resulting from the Coronavirus (COVID-19).	1,963.743	41,017	1,577.943	11,516.840	52.40
Santa Catarina	Decree n°. 515, of March 17, 2020, it declares an emergency situation throughout the territory of Santa Catarina, under the terms of COBRADE n°. 1.5.1.1.0 - viral infectious diseases, for the purpose of preventing and fighting COVID-19, and other measures.	1,442.511	20,579	1,355.363	7,252,502	65.29
Rio Grande do Sul	Decree n°. 55,240, of May 10, 2020, institution of a controlled distance system for the purpose of preventing and fighting the epidemic caused by the new Coronavirus (COVID-19) within the scope of the State of Rio Grande do Sul, reiterates the declaration of state of public calamity throughout the state and other measures.	1,826.295	36,873	1,654.066	11,422,973	39.79

225 Data source: IBGE 2010; SSPR2022; SESSC,2022; CEVS-RS, 2022;

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227 In the State of Paraná, 53% of cases occurred in women and 47% in men, with 58% of
 228 deaths in men (n=23,605) and 42% in women (n=17,412) (SESA, 2022). As for vaccination
 229 against COVID-19, by the beginning of February 2021, 22 and a half million people had
 230 received the first and second doses, for a total of almost 10 million vaccinated (SESA,
 231 01/31/2022). In the State of Santa Catarina, 52.6% of women (758,772) and 47.4% of men
 232 (683,711) had COVID-19, with the most affected age groups being between 20 and 40 years old.
 233 Regarding deaths, 57.7% were men (11,864) and 42.3% were women (8,715). Deaths occurred
 234 mainly in the age group of 60 to 80 years. As for vaccination, 5,363,873 were immunized with
 235 the first and second dose, which corresponds to 73.96% of the population. In the state of Rio
 236 Grande do Sul, 46% of cases were in men and 54% in women. Most deaths occurred in women
 237 and men aged 30 to 39. In relation to the two doses, 8,027,190 people received both doses.

238 The table 2 shows, by federation unit, the relationship between the number of deaths and
 239 the number of cases, case rate per 100,000 inhabitants, mortality rate per number of inhabitants
 240 and mortality rate per 100,000 inhabitants in the year 2020-2022. The states with the highest
 241 number of cases per 100,000 inhabitants were Paraná (1,963.743), Rio Grande do Sul
 242 (1,826.295) e Santa Catarina (1,442.511).

Tabel 2 - Mortality rate, cases rate and death to 100.000 inhabitants in South Region of Brazil, 2020.

	Deaths/Number of cases (%)	Cases rate /100.000 inhabitants	Deaths/Number of inhabitants (%)	Mortality rate/100.000 inhabitants
SOUTH REGION	1.79%	6,486.95	0.12%	116.12
Paraná	2.1%	5,618.14	0.12%	280,78
Santa Catarina	1.4%	9,246.51*	0.11%	352,42
Rio Grande do Sul	2.0%	5,610.83	0.12%	309,79
AVERAGE BRAZIL	2.48%	6,579.27	0.13%	132.94

243 Data source: IBGE 2010; SSPR2022; SESSC,2022; CEVS-RS, 2022; *Data above the Brazilian average.

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248 Discussion

249 The COVID-19 pandemic, caused by the new coronavirus SARS-CoV-2, generated
250 significant global repercussions in the medical, epidemiological, social, economic,
251 political, cultural and historical dimensions (MELLO et al., 2020). The challenges in
252 combating COVID-19 arose from limited knowledge about the virus, its rapid transmission
253 and its potential to cause fatalities in vulnerable populations, creating uncertainty regarding
254 the most effective strategies around the world (WERNECK & CARVALHO, 2020).

255 In Brazil, a national public health emergency was declared in February 2020,
256 initiating technical training for coronavirus laboratory diagnosis. The quarantine law
257 (BRASIL, Law No. 13,979) came into effect on March 20, 2020, coinciding with the
258 Ministry of Health's declaration of community transmission after confirming the first
259 COVID-19 case in São Paulo on February 26, 2020. The country experienced two
260 pandemic waves, with the first peaking in July and the second commencing in January
261 following year-end and summer festivals, resulting in approximately 254,221 deaths by
262 early 2021. The COVID-19 outbreak exacerbated political, economic, and social
263 challenges (AQUINO et al., 2021). Brazil's vast size, regional disparities, and the
264 decentralization of pandemic response actions, as dictated by the Supreme Federal Court
265 (STF), allowed states and municipalities to adopt their own measures, granting each state
266 autonomy, with financial support provided by the Federal Government (MORAES, 2020).

267 The COVID-19 pandemic in Brazil witnessed varying moments of contagion and
268 death influenced by a range of factors. Initial cases were associated with the failure to
269 cancel Carnival celebrations in February 2020, leading to public health chaos in several
270 states. Throughout 2020, flexibility in pandemic control measures was observed during
271 celebrations like Mother's Day, Father's Day, and Valentine's Day, particularly in
272 commerce and entertainment. In November, municipal elections for 5,570 City Halls
273 further facilitated gatherings. Brazil's approach to relaxing social distancing measures
274 differed from that of most countries, which emphasized monitoring the pandemic's
275 transmission speed (AQUINO et al., 2021).

276 At the national level, Law No. 14,019/2020, enacted on July 3, 2020, made the use
277 of personal protective masks mandatory in public and private spaces during the COVID-19
278 pandemic. Initially, several measures, including restrictions on gatherings and compulsory
279 mask usage in essential activities, were rigorously enforced (HOUVÈSSOU et al., 2020).
280 These measures were simultaneously implemented, with different regions issuing
281 pandemic onset decrees between February and May. Responses from each state varied,
282 making it challenging to assess the impact of social isolation. Interestingly, the state of Rio
283 Grande do Sul, which was the last to declare a pandemic situation, had fewer cases and
284 lower total deaths per inhabitants compared to the national average.

285 Few studies have comprehensively assessed the actual impact of social distancing
286 in combating COVID-19 transmission, emphasizing the need for implementing multiple
287 preventive measures to enhance intervention strategies (AQUINO et al., 2021). In 2020,
288 there were no federal or state decrees identified that controlled the entry of international
289 flights. Notably, it was only on May 14, 2021, that Ordinance No. 653 was issued,
290 imposing exceptional and temporary restrictions on the entry of foreigners, irrespective of
291 nationality, as recommended by the National Health Surveillance Agency (NHTSA)
292 (BRASIL, Ordinance No. 653 of May 14, 2021).

293 The COVID-19 quarantine lifestyle led to changes in circadian rhythms, affecting
294 eating and sleeping patterns in both adults (SILVA et al., 2020) and adolescents (BRITO et
295 al., 2020). Such changes contributed to increased body weight and increased susceptibility
296 to COVID-19. Excess weight aggravates the inflammatory processes associated with the
297 second phase of the virus, potentially increasing the risk of therapeutic failure (SALES-
298 PERES, 2020). Some Brazilian cities have banned outdoor activities, such as visits to parks
299 and trips to the beach. However, regular physical activity has emerged as a crucial
300 protective factor (SALLIS, PRATT, 2020), with physical inactivity linked to greater
301 morbidity and mortality in cases of COVID-19 (SALLIS et al., 2021).

302 In the first months of the pandemic, Brazil took significant measures to address the
303 crisis, including expanding the capacity of the Unified Health System (UHS), improving
304 health infrastructure, increasing the availability of ICU beds for patients with COVID-19
305 and the reinforcement of human resources through doctors' recruitment via notices.
306 Furthermore, there was a change in health service provision protocols, mainly in the
307 regulation of telemedicine (CIMINI, JULIÃO & SOUZA, 2021). Field hospitals,
308 temporary emergency care units with multidisciplinary teams, were created in almost all
309 Brazilian states to respond to the growing number of COVID-19 cases (AIRES, 2020).
310 Assessing the effectiveness of these field hospitals was a challenge. The discordant actions
311 of federal, state and municipal governments, compounded by the struggle to balance
312 economic stability and public health, have likely contributed to the worsening health crisis
313 in Brazil, especially in southern Brazil

314 The systematic analysis of 28 Contingency Plans, including a national plan and
315 state plans, highlighted commonalities between national and state levels in proposals for
316 healthcare reorientation, case detection, and referral hospital recommendations.
317 Weaknesses in state-level plans were identified, including challenges in acquiring
318 mechanical ventilation devices, determining human resource needs, regionalizing hospital
319 care, and forecasting bed availability, particularly in opening reference hospitals or
320 contracting additional ICU beds (SANTOS et al., 2021). Importantly, bed shortages in
321 Brazilian hospitals and ICUs were a preexisting issue (MEDEIROS, 2018).

322 As the pandemic progressed, the gap between strategies to “flatten the curve” and
323 “expand the capacity of the health system” increased, with difficulties in expanding
324 infrastructure, such as acquiring testing equipment and ventilators (CIMINI, JULIÃO &
325 SOUZA, 2021). The heterogeneity of actions at the federal, state and municipal levels
326 revealed the complexity of Brazil's response to COVID-19, with regional disparities,
327 weaknesses in state health systems and limited coordination by the Ministry of Health
328 (SANTOS et al., 2021). The lack of common criteria to guide social distancing measures
329 and allocate resources for the expansion of the SUS became evident at the beginning of the
330 crisis (CIMINI, JULIÃO & SOUZA, 2021).

331 While income and employment protection measures in the mitigation axis were
332 crucial for encouraging social distancing, they were not implemented in time to
333 compensate families for income loss. Social distancing alone appeared insufficient in
334 mitigating the virus's spread, as its effect on reducing mortality was inconclusive
335 worldwide (BERRY et al., 2021; SAVARIS et al., 2021). The absence of clear guidance
336 complicated public engagement in combating the disease. On the other hand, early
337 mitigation measures, initiated as soon as the first cases were identified, helped mitigate the

338 pandemic's impact. Despite varying state responses due to the absence of centralized
339 federal measures, there was a reduction in COVID-19 deaths.

340 In May 2020, Brazil witnessed a grim milestone, with a thousand deaths occurring
341 within 24 hours, following a prolonged period of increasing transmission cases. This was
342 followed by a stabilization in the number of infections and deaths, prompting the Ministry
343 of Health to advise the easing of certain restrictive measures, even though a significant
344 decrease in cases had not been observed. Notably, the state of Santa Catarina, known for its
345 flexibility in implementing containment measures, had among the lowest rates in the
346 southern region and across Brazil.

347 The importance of state contingency plans is evident, highlighting that they should
348 cover strategies and actions that go beyond guaranteeing hospital care for serious cases.
349 These plans should address the organization of care for COVID-19 cases at different health
350 points and include initiatives to reduce social inequalities and provide specialized care to
351 vulnerable groups (Santos et al., 2021; Lana et al., 2020; Massuda et al., 2020; Massuda et
352 al., 2020; Santos et al., 2021; Lana et al., 2021; Lana et al., 2020). From a public health
353 perspective, promoting healthy behaviors was essential. In addition to the well-documented
354 impact on physical and metabolic health, both physical activity and sedentary behaviors
355 have been strongly associated with mental health, including depression, anxiety, stress, and
356 general well-being (Zhao, 2020; Netz, 2017). Regrettably, during the period of social
357 isolation among Brazilian families, there was a decrease in physical activity, leading to
358 worsened sleep and dietary habits among children, adolescents, adults, and the elderly
359 (Brito et al., 2021; Brito et al., 2020).

360 The COVID-19 pandemic has brought significant global challenges, with the
361 emergence of more aggressive SARS-CoV-2 variants leading to additional waves of
362 contamination, raising concerns about vaccine effectiveness (Sweijd & Zaitchik, 2021).
363 Worldwide, policy responses have varied, including extensive testing, lockdowns, and
364 voluntary social distancing (Peña, 2020). Initially, the focus was on reducing virus
365 transmission, but over time, policies shifted to address broader health and well-being
366 impacts (Cimini, Julião & Souza, 2021). Efforts have also concentrated on strengthening
367 healthcare capacity and governance responses (Delivorias & Scholz, 2020; Peña et al.,
368 2020; Smith et al., 2020).

369 In May 2020, Brazil experienced a high daily death toll, leading the Ministry of
370 Health to recommend easing restrictions despite the lack of a significant decline in the
371 number of cases. The state of Santa Catarina, adopting more flexible containment
372 measures, had lower rates in the southern region. Effective state contingency plans should
373 encompass strategies for healthcare, management, actions to reduce social inequalities,
374 specialized care for vulnerable groups, and the promotion of healthy behaviors like
375 physical activity.

376 With additional waves of infections caused by new, more aggressive virus variants,
377 influenced by several factors, including vaccine distribution, concerns have arisen
378 regarding vaccine effectiveness. The global response to the COVID-19 pandemic has
379 involved a range of policy measures focused on reducing transmission of the virus and
380 addressing broader impacts on health and well-being (Cimini, Julião & Souza, 2021).
381 These measures included strengthening health capacity and governance responses
382 (Delivorias & Scholz, 2020; Peña et al., 2020; Smith et al., 2020).

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384

385 Conclusion

386 Studying the effect of government decrees during the COVID-19 pandemic in southern
387 Brazil demonstrated the intricate relationship between policy implementation and its far-
388 reaching consequences. It becomes clear that these decrees not only dictated immediate
389 responses, but also significantly shaped organizational structures, governance dynamics
390 and decision-making processes at various levels of authority. Furthermore, it showed the
391 importance of political considerations in defining responses, evident in the way events
392 impacted virus transmission. This research also highlighted the complexities of managing a
393 pandemic within a decentralized governance framework, shedding light on the interaction
394 between government decrees, institutional dynamics and the implementation of public
395 health strategies.

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