


BRICS in the production and distribution of COVID-19 vaccines to countries of the south


BRICS na produção e distribuição de vacinas de covid-19 aos países do sul¹

Helena Ribeiro^a

 <https://orcid.org/0000-0002-1321-7060>

E-mail: lena@usp.br

Anizia Aguiar^b

 <https://orcid.org/0009-0001-7237-6133>

E-mail: anizia.neta@fiocruz.br

^aUniversidade de São Paulo. Faculdade de Saúde Pública. Departamento de Saúde Ambiental. São Paulo, SP, Brasil.

^bFiocruz Amazônia. Instituto Leônidas e Maria Deane. Manaus, AM, Brasil.

Abstract

This study describes the participation of the BRICS in the production and distribution of COVID-19 vaccines in 2020 and 2021 and its commitment to prioritizing access by the countries of the Global South. It also reflects on how the Group dealt with the challenges of technology sharing and the economic empowerment of peripheral countries, signaling the space dispute between vaccine diplomacy and the economic interests of nations. This analysis was based on institutional reports, journalistic and scientific documentary data, and their dialogue with the knowledge of Health Diplomacy and International Health Cooperation, showing the complexity and challenges of the world after the emergence of the SARS-CoV-2 virus and its variables.

Keywords: Vaccine; Covid-19; BRICS; Health Diplomacy; Health Emergency.

Correspondence

Helena Ribeiro

Rua Silveira Sampaio, 199. São Paulo, SP, Brasil. CEP 05656-010

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Resumo

Este artigo aborda a participação do BRICS na produção e distribuição de vacinas contra covid-19 durante 2020 e 2021, e o compromisso com a priorização do acesso aos países do Sul Global. Faz, ainda, uma reflexão sobre como o grupo lidou com os desafios do compartilhamento de tecnologias e do empoderamento econômico dos países periféricos, sinalizando a disputa de espaço entre a diplomacia da vacina e os interesses econômicos das nações. A análise se deu com base em relatórios institucionais, dados documentais jornalísticos e científicos, e no diálogo destes com os conhecimentos da Diplomacia da Saúde e da Cooperação Internacional em Saúde, demonstrando a complexidade e os desafios do mundo após o surgimento do vírus SARS-CoV-2 e suas variantes. **Palavras-chave:** Vacina; Covid-19; BRICS; Diplomacia da Saúde; Emergência de Saúde.

Introduction

The strategies adopted by countries during a health emergency of international concern are decisive for controlling the disease. Cueto (2015) shows that such strategies should be determined by the World Health Organization (WHO), explaining that, to control disease-transmitting microorganisms, actions educating the population may be needed (as occurred in Mexico during the H1N1 epidemic in 2009), and the author warns about the possibility of some governments, in seeking to protect vested interests, might not give the health emergency due attention or adopt the necessary measures to control it:

One of the main current sets of standards for the control of emerging and re-emerging diseases are the WHO International Health Regulations (IHR), approved by the World Health Assembly in 2005. These Regulations incorporated new and ambitious goals, such as the transfer of the power to determine when an event becomes an international health emergency to the WHO. This power was previously held by governments, which often preferred to hide epidemics for fear of economic consequences and of the fall in tourist flows. (Cueto, 2015, p. 74; our translation)

The political and administrative structures of each BRICS country (Brazil, Russia, India, China, and South Africa) had a direct influence on these nations' responses to the challenges of the COVID-19 pandemic, and the consequences of these responses, whether positive or negative, will continue to influence the future of these countries' health care fields. It is important to interpret social, economic, and health damages from a perspective of "active and generous multilateralism, [...] through active health diplomacy" (Buss; Fonseca, 2020, p. 15).

The economic power and particular expertise of the BRICS became evident in the pandemic context because, in addition to offering vaccines against

COVID-19 to the world (twelve of the twenty vaccines produced and approved until September 2020 were created and developed in the BRICS), these countries produced Active Pharmaceutical Ingredients (API), technologies used to diagnose, prevent, and treat the disease, and developed vaccines for several other pathologies in the contemporary world (Buss; Hoirisch; Alcazar, 2021).

BRICS, as an economic bloc, stood out in the international race to understand, treat, and prevent SARS-CoV-2. However, the Brazilian government was slow to act in preventing thousands of deaths in the first year of the pandemic, questioned the safety of vaccines, and contributed to the spread of the virus (Brum, 2021). Meanwhile, Russia was investing in the production of Sputnik V, and China and India were innovating in the development of equipment, vaccines and medicines to control the COVID-19 pandemic.

During the first half of 2020, experts around the world worked hard to establish the pattern of transmission of the virus in order to guide individuals on ways to protect each other.

This reality has led to frequent emergences of new guidelines on the use of personal protective equipment and practices. The creation of new protocols and ways to train staff, as well as the acquisition and production of innovative equipment to treat those infected by COVID-19 proved insufficient, which has led the world to rethink policies, management, and procedures to deal with global health emergencies (Dominguez, 2020).

The 2005 International Health Regulations (IHR) will be reformed by gathering information that may help nations in dealing with possible new situations of this nature. The reformulation of the IHR was the subject of much debate during the 74th World Health Assembly, which took place between May 24 and June 1, 2021. The referrals of the Assembly resulted in the creation of the Working Group of the Member States of the World Health Organization (WHO), focused on “Strengthening WHO Health Emergency Preparedness and Response,” on analyzing the development of a possible new international instrument, and on

thinking about the reformulations of the IHR (PAHO; WHO, 2021).

Fukuda-Parr, Buss, and Ely Yamin (2021) believe that any instrument dealing with the reformulation of the IHR (convention, agreement, or even an international WHO instrument) should consider this not only a time for small changes and temporary solutions, but an opportunity to propose assertive actions and their implementation.

Buss (2021) defends the prioritization of health security systems and instruments that are sensitive to the protection of public health and emphasizes that the main focus of global health security regimes, notably the IHR, is the creation of a high-performance system that monitors outbreaks of new pathogens and that can protect the public health and economic interests (especially international trade) of the Global North from diseases that are presumed to run rampant in the Global South (Buss, 2021, p. 253).

Over the years, the BRICS economic group has advocated a diplomacy that is committed to sensitive and relevant issues affecting developing countries, and that takes into account the current challenges to ensure the Earth’s sustainability (Buss; Tobar, 2017). This facilitated the emergence of great global expectations regarding the Group’s contributions to tackling COVID-19, based on its political and economic weight at a global level—in 2020 the BRICS GDP, driven by China and India, totaled approximately 25% of the global GDP (US\$ 21 trillion), and its participation in international trade was around 20% (US\$ 6.7 trillion).

The political, economic, social, and health-related demands generated or exacerbated by COVID-19 require strong international cooperation from nations, which should engage in intersectoral and multilevel actions (Rítsar, 2022). BRICS has stood out for its constant commitment to collaborate in strengthening health systems through the provision of strategic technologies that empower developing countries.

The commitment to vaccinate the world against COVID-19, signed by the BRICS at the 2020 and 2021 summit meetings (Brasil, 2020, 2021b),

contributed to the expectations toward a leap in quality of the execution of assertive diplomatic actions, which would have solidarity in intra- and extra-bloc relations as their main ingredient. This solidarity should be demonstrated by valuing and adopting decisive mechanisms for the safe and definitive immunization of all, especially in the countries of the Global South. However, Buss clarifies that

one of the main gaps exposed during this pandemic has been the lack of international solidarity and sharing: the sharing of pathogen data, epidemiological information, resources, and technologies (particularly the much-needed vaccines). (Buss, 2021, p. 250; our translation)

The BRICS Foreign Ministers' Meeting in June 2021 reiterated the countries' solidary intentions, expressed in the proposal of a temporary exemption from intellectual property ownership of the COVID-19 vaccine and in the discouragement of the implementation of measures that could hinder the flow of vaccines, health products, and essential supplies. The expectation was that this fact would contribute to simplify extensive vaccination, with countries sharing doses, transferring technology, developing and improving local production capacities, among other measures, with price transparency as a constant fundamental aspect (Brasil, 2021a, 2021b).

Although BRICS made these commitments to tackle COVID-19, its countries were severely affected by the pandemic, with 1 million deaths occurring between March 2020, the start of the health emergency, and July 2021. In this context of human and economic losses, China, Russia, and India were investing heavily in vaccine production technologies, standing out among the world's largest producers. Part of this production was destined for poor countries, where vaccination rates reached only 3% of the population between May and September 2021 due to the accumulation

of doses by rich countries, which resulted in the disease remaining uncontrolled in the countries of the Global South².

COVID-19 confirmed the potential of BRICS to provide effective responses to global health emergencies. However, it also evidenced the weaknesses of health systems around the world and the urgent need for a reformulation of global health governance, which should be committed to public health and able to act beyond hasty arrangements that favor the privatization of health and promote a false idea of health security (Gostin; Moon; Benjamin, 2020).

The objective of this article is, therefore, to analyze the actions of the BRICS in the first two years of the COVID-19 pandemic (2020 and 2021), presenting data and information on the vaccines produced, authorized, marketed, and donated in and by the group, and on the progress of vaccination in each country during the year 2021, using global health and global health diplomacy as a guiding principle.

The methodological procedures adopted were the search, collection, and analysis of data and documents related to the studied topics in different websites of the countries. Reports from international health institutions, the press, and civil society organizations, as well as scientific and journalistic articles, were used. The objective was achieved by accessing studies that combined the terms "global health" and "global health diplomacy" and the acronym BRICS, and by analyzing scientific and journalistic articles and institutional reports that connected this knowledge to COVID-19.

The Participation of BRICS in the Production and Distribution of COVID-19 Vaccines

The rapid contamination of people around the world, despite lockdowns, border closures,

² Available at: <<https://data.undp.org/vaccine-equity/>>. Accessed April 26, 2023.

and similar measures, led to the overcoming of diplomatic barriers and economic limits, revealing the ability of nations to achieve, in a space of time never imagined, the only solution capable of containing the disease: the production of vaccines and their rapid distribution.

The vaccine production process required the “adoption of strategies for parallelism of R&D phases” which, through a fast track allowed for this audacious project to be carried out in record time (Homma et. al., 2021). According to the same authors, the development of the COVID-19 vaccine involved investments of “high-risk [...] carried out by developed countries, such as the projects supported by the Coalition for Epidemic Preparedness Innovations (CEPI), created in 2017, and the Biomedical Advanced Research and Development Authority (BARDA), created in 2006” (Homma et. al., 2021, p. 67; our translation).

Complex and costly clinical studies involving the design and production of vaccines allowed for a process that would normally take at least ten years to happen in ten months, considering the period ranging from the moment when China informed the WHO about the circulation of the new coronavirus and the sequence of the viral genome until the date of availability of the first vaccine (Homa et. al., 2021).

The BRICS countries played a key role in speeding up this production process. At the end of the first half of 2020, the Russian government announced the large-scale production of the first COVID-19 vaccine, Sputnik V. At that time, Russia had registered half a million infected people, ranking fourth in the world in terms of the number of cases, surpassed only by the United States, Brazil, and India (Johns Hopkins University, 2020; Ungaretti, 2020)

In August 2020, after reaching the mark of almost one million infected, Russia presented the first batch of the recombinant vector vaccine from the Gamaleya Scientific Research Institute of Epidemiology and Microbiology laboratory. This announcement took place under accusations

that the production of the Russian vaccine had violated several scientific protocols, a fact that did not compromise the orders placed by twenty other countries interested in acquiring the vaccine, which the Russian government itself evaluated as very effective at the time (Hoirisch, 2021).

Soon after the first batch of the Sputnik V became available, at least thirty countries placed orders with Russia. The vaccine was evaluated as having good results and was featured in *The Lancet* in September 2020, in an article that showed that participants in tests the Sputnik V produced antibodies and did not show side effects (Jones; Roy, 2021).

President Vladimir Putin even proposed sharing Sputnik V within BRICS and signed an agreement with Chinese companies to manufacture the vaccines (Statista, 2021). This agreement aroused the interest of India, which promptly ordered 250 million doses from Russia—a fact that can be interpreted, from a health diplomacy perspective, as a timid demonstration of intra-BRICS openness.

The Russian endeavor seemed well advanced in terms of meeting the target of supplying, with the help of partner countries, 800 million people with vaccines by the end of 2021. However, political motivations and resources from the RDIF (Russian Direct Investment Fund) were not enough for the country to achieve this goal. The main obstacles identified were the delivery goals, which were too ambitious to be achieved, and the fact that Russia overestimated the technological capacity of the countries it had partnered with, which led potential buyers to look for other producers to meet their demands (Hoirisch, 2021).

In addition to the aforementioned obstacles, Russia raised doubts about the real efficacy of Sputnik V, since it was not approved by the World Health Organization (WHO) and the European Medicines Agency (EMA), and received criticism regarding its cost, which was three times higher

than that of the AstraZeneca vaccine, for example (Hoirisch, 2021).

The limiting factors presented by Russia during the production of the first vaccines against COVID-19 presume a certain discrediting of the country on the global vaccine diplomacy stage, although it launched Sputnik Light as a strategy to regain advantage in the diplomatic game that governs the market, but the chances of success followed in the footsteps of Sputnik V.

The collaborations between Brazil and China centered on the clinical trials for the production of the successful CoronaVac (Sinovac), which were coordinated by the respected Butantan Institute, linked to the São Paulo state government, and carried out using API imported from China. Diplomatic indispositions caused by the Brazilian federal government interfered in the production process, hindering the supply of the API by China, who demanded that Brazil adopt a diplomatic posture compromised with the need to immunize the world against COVID-19. Negotiations between China and the São Paulo state government allowed the resumption of API supply and the large-scale production of CoronaVac in the Brazilian territory, as well as its distribution throughout the country, after it was approved by the Brazilian Health Surveillance Agency (Anvisa) (Por unanimidade..., 2022).

The production of AstraZeneca by the Brazilian government, at Bio-Manguinhos/Fiocruz, also began with the API imported from China. However, in 2021, a promising venture for independent production was already underway at Bio-Manguinhos/Fiocruz (Lang, 2021), and would come to fruition in the first days of 2022. The goal of Brazilian producers was to gain autonomy, knowing that a 100% national vaccine would be important for the country to achieve technological independence for COVID-19 prevention, which was the capital most sought after by nations around the world. The autonomy to produce the API required proof of quality and

efficacy from ANVISA. Fiocruz complied with all the requirements of the regulatory bodies and obtained authorization to produce the API in February 2022 (Melo, 2022). The project of Fiocruz to independently produce COVID-19 vaccines was thus consolidated, making it possible to deliver the doses needed to meet the 2022 demand in Brazil and to reinforce the vaccination campaign, essential due to the emergence of new SARS-CoV-2 variants.

China's contribution to vaccine production was quite potent, agile, and effective, surpassed only by that of the European Union (EU). The initial production of vaccines in China was based on the inactivated virus, which had already been extensively tested as a method. The country subsequently diversified production through other procedures, following agreements signed with partner countries, such as Fosun-Pharma and BioNTech (Chamas, 2021).

In addition to the seven vaccines approved and authorized in BRICS by September 2021, China presented other proposals for inactivated vaccines, such as those produced by Minhai Biotechnology Co. and Kangtai Biological Products Co. Ltd., and by the Chinese Academy of Medical Sciences, from the Institute of Medical Biology. In August 2021, the country already had 22 proposals for vaccines in the clinical stage, nine of which were in phase 3 (Hoirisch, 2021). Critics and scholars have considered the possibility that vaccine diplomacy could serve to project China even further onto the international stage, in dispute for hegemony with the U.S. (Jabbour; Rodrigues, 2021). It is a fact that China favored Asia in the donation of COVID-19 vaccines, which evidences its intention to resume "ancient trade routes through a network of infrastructure projects for Central Asia, Southeast Asia, the Middle East, and Africa" (A iniciativa..., 2022; our translation).

Chart 1 shows the main vaccines authorized and produced in BRICS countries until September 2020, and their vaccination coverage in 2021.

Chart 1 - COVID-19 vaccines authorized/approved and produced in BRICS countries by September 2020, and vaccination coverage in each country by December 2021

Vaccine Name	Type	Primary Developers	Country	Vaccination coverage in 2021
Sputnik V	Recombinant adenovirus vaccine (rAd26 and rAd5)	Gamaleya Research Institute, Acellena Contract Drug Research and Development		
EpiVacCorona	Peptide vaccine	State Research Center of Virology and Biotechnology	Russia	Mar. – 2.9% Jun. – 13% Dec. – 48%
CoviVac	Inactivated vaccine	Chumakov Federal Scientific Center for Research and Development of Immune-and-Biological Products		
Covaxin (BBV152)	Inactivated vaccine	Bharat Biotech, ICMR; Ocugen; ViroVax	India	Jan. – 0.1% Jun. – 3.4% Dec. – 38%
AstraZeneca (AZD1222) *designed in the United Kingdom	Vaccine against adenovirus	BARDA	Brazil	Feb. – 1.6% Jun. – 27% Dec. – 77%
CoronaVac	Inactivated vaccine	Sinovac	Brazil/China	
Coronavac in production in Brazil	Inactivated vaccine	Sinovac		
BBIBP-CorV	Inactivated vaccine	Beijing Institute of Biological Products; China National Pharmaceutical Group (Sinopharm)		
Convidicea (PakVac, Ad5-nCoV)	Recombinant vaccine (vector type adenovirus type 5)	CanSino Biologics	China	Aug. – 74%
WIBP-CorV	Inactivated vaccine	Wuhan Institute of Biological Products; China National Pharmaceutical Group (Sinopharm)		Dec. – 87%
ZF2001 (ZIFIVAX)	Recombinant vaccine	Anhui Zhifei Longcom Biopharmaceutical,		
Vaccine candidate (unnamed)	Inactivated vaccine	Institute of Microbiology, Chinese Academy of Sciences		
Vaccine candidate (unnamed)	Inactivated vaccine	Minhai Biotechnology Co; Kangtai Biological Products Co. Ltd.		

Source: Prepared by the authors based on data from WHO, 2022³.

³ Available at: <<https://covid19.who.int/table>>. Accessed May 2, 2022

South Africa's participation in the design of the Comirnaty (BNT162b2), Vaccine Janssen (JNJ-78436735; Ad26.COV2.S) and CoronaVac (Sinovac) vaccines was considered praiseworthy within the BRICS framework, and it is expected that the cooperation between Brazil, India, China, and South Africa will enable important advances in this process. Despite this, the vaccination rate was low in South Africa in 2021 (Reuters, 2022). In February, the country registered that only 0.05% of people were vaccinated. This rate reached 6.1% in July and just over 18.5% at the end of the year. At one point, the country considered making vaccination mandatory, as the population demonstrated, throughout the pandemic period, skepticism about the immunizing power of the vaccine (Bridge Consulting, 2022).

The pandemic greatly impacted South Africa's economy and the population felt its immediate effects, such as increases in poverty and unemployment. This reality should require the national government to take economic measures to meet the demands expressed in the demonstrations of social movements that, according to Essop and Von Holdt (2020), had, in the COVID-19 pandemic context, a coalition so significant that it was reminiscent of Mandela's time.

The BRICS country that stood out in the production and distribution of vaccines was China, which since the beginning of the pandemic has committed itself to making immunization a global public good. The Chinese performance can be analyzed based on data obtained from the dose distribution tracking carried out by Bridge Consulting⁴. The data were obtained through consultations with official Chinese government sources, which made it possible to understand the impact of Chinese diplomacy on global health in the context of COVID-19 and to discover the amount of bilateral and multilateral sales⁵ (1.75 billion), donations⁶ (197 million), and deliveries⁷ (1.40 billion) made to the European, African, Latin American, and Asia-Pacific regions, in addition to the global distribution carried out by China.

The data shows that the supply of Chinese vaccines to these regions was based on bilateral contributions and reached 115 countries by January 2022. Asia-Pacific was the region that benefited most in terms of the number of doses received from China, having 39 of its countries favored, and Latin America followed, with 20 recipient countries. As for Africa, 46 countries benefited, but this number is not significant when national demands are taken into account, as shown in Table 1 (M=Million doses):

Table 1 – Number of COVID-19 vaccine doses supplied by China and number of countries benefiting from these vaccines by January 2022 in each geographic region

Geographical Region	Total Sales	Pledged Donations	Delivered Doses	Number of Recipient Countries
Europe	123 M	3.63 M	57.5 M	10
Africa	196 M	69.8 M	122.2 M	46
Latin America	396 M	10.2 M	285.5 M	20
Asia-Pacific	925 M	103 M	854.4 M	39

Source: Prepared by the authors based on data from Bridge Consulting, January 2022.

M: million doses.

⁴ Bridge Consulting is an independent, mission-oriented consultancy that tracks China's impact on global health, mainly focusing on infectious diseases, mental health, climate change, and others. After carrying out the research that gave rise to this article, changes in the structure of this Consultancy led to changes in the citations of the studies that supported it.

⁵ Refers to the contractually committed vaccine doses that recipient countries purchased commercially from Chinese vaccine developers.

⁶ Refer to the doses that Chinese entities (government, vaccine developer, Red Cross, etc.) pledged to donate to a recipient country.

⁷ Refer to the doses that were physically shipped from China to a recipient country. Available at: <www.bridgeconsulting.com.br>. Accessed Feb 5, 2022

Studies conducted by Bridge Consulting (2022) show that Europe was the region that received the least doses from China by the end of 2021, a situation that may be explained by the fact that the European Medicines Agency (EMA), responsible for evaluating and supervising medicines in the European Union, did not approve vaccines of Chinese origin in time to respond to the urgent demands of the pandemic. However, the autonomy of national medical regulators to authorize the acquisition of vaccines in emergency situations was used by some Central and Eastern European countries during the COVID-19 pandemic, which enabled Europe to allocate the 57 million doses received from China, of which 3 million were obtained by donation, to ten of its countries.

The number of doses of Chinese vaccines marketed to Europe by the end of 2021 is estimated at 123 million, and the vast majority were obtained through an agreement signed by Turkey in November 2020, which negotiated the purchase of 100 million doses from Sinovac, which were redistributed (by donation and sale) to countries such as Bosnia and Herzegovina, Azerbaijan, Albania, and others (Bridge, 2022).

China's supply of COVID-19 vaccines to Africa was ran by South-South Cooperation, which supported China in sending doses to 19 African countries. On November 30, 2021, during the 8th Ministerial Meeting of the Forum on China-Africa Cooperation (FOCAC), Africa was promised 1 billion doses from China, of which 600 million would be donated and 400 million would be provided through a "joint production by Chinese companies and relevant African countries." However, updated data at the end of 2021 showed that "of the 196 million doses sold and 69 million donations promised to Africa, China only delivered 122 million, of which 28 million were donations" (Bridge, 2022).

The data show the limited resources of African countries, which made the conditions of access to the COVID-19 vaccine critical by the end of 2021. Despite this, Africa was able to access a portion of the vaccines through the Covax Initiative, which was still insufficient, but provided the continent with 114 million vaccine doses during this period.

Latin America (LA) was the second region to receive the most Chinese vaccines, under the

egis of South-South Cooperation and of the Belt and Road Initiative, a development strategy of the Chinese government that "aims to revive ancient trade routes through a network of infrastructure projects for Central Asia, Southeast Asia, the Middle East, and Africa" (A iniciativa..., 2022; our translation). In addition to receiving the API for the production of some vaccines, LA stood out for its participation in the development of Coronavac, of which 230 million doses were sold to 8 countries in the LA region and 834 million doses were provided worldwide (Bridge, 2022).

In terms of exports, China was the least significant country until December 2021 (31.5% of the total produced); meanwhile, the European Union exported 62.6% of its vaccines and the United States exported 51.2% of its own. However, China is the country that provided the most vaccines to South America, both through sales and donations: by the end of December, 36.4% of the doses sent to this region came from China, while the EU had sent 29.8%, the US 5.6%, and Russia 4.4% of the doses received by LA (Nolte, 2022).

Studies by the Economist Intelligence Unit (2021), which analyzed China's vaccine diplomacy towards Latin America, showed that the Chinese government's marketing skills, as well as the publicity surrounding its vaccine deliveries, created an impression in public opinion of great solidarity on the part of China. However, the data show that only 165 million of the almost 600 million doses produced by May 2021 were destined for Latin American countries and, of this number, only a small percentage was donated to LA. This fact seems to reinforce the idea that Chinese diplomacy used the COVID-19 pandemic as a new political arena for its dispute over global hegemony with the United States.

Data from Our World in Data (Mathieu et al., 2022) show that China pulled ahead of the United States in the distribution and donation of COVID-19 vaccines. The US only became active in the vaccine diplomacy game, with the export and donation of doses, after June 2021, when the vaccination campaign around the world was already in full swing. This gap in vaccine diplomacy left by the US in the first half of that year enabled China to take the lead. In the second half of 2021, however, vaccine

diplomacy was completely altered by the availability of American and European doses for Latin America. This led other nations to surpass China, which had its viability shaken due to low exports, influenced by high domestic demands.

Asia was the region that received the most Chinese vaccines, both through sales and donations: by the end of 2021, China had delivered 854 million doses to the Asian continent, 74 million of which were donated. Notably, in the period in question, China sold 925 million doses and donated another 103 million, which shows that Asia largely benefited from Chinese production, although in the last months of 2021, the Bridge Consulting tracking revealed a decrease in vaccine deliveries, possibly due to the detection of an increase in COVID-19 cases in China. This happened because even though the country had invested heavily in extensive vaccination of its population, the emergence of the Delta and Omicron variants led to new outbreaks. The new variants led China to maintain its own reserves and immunization pace, and give less attention the demands of countries seeking to boost their vaccines or to combine them with those of other manufacturers.

Regardless of the fact that China slowed deliveries, the demands for its vaccines did not stop growing, and neither did the promises and agreements made by the Chinese government for the supply of doses. As an example, we highlight the 50 million doses promised by President Xi Jinping to Central Asian countries such as Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, and Uzbekistan, on the occasion of the 30th anniversary of diplomatic relations between China and these nations, in 2021 (China..., 2022).

Table 2 confirms China's important contributions to immunization in Asian countries. Although the country shows political and economic interests in global governance and in consolidating strategies to achieve more pragmatic material objectives, such as that of "collaboration in research and counterbalancing Western expansionism in the game of geopolitics" (Hoirisch, 2020, p. 214; our translation), vaccination was an important factor in the resumption of economic activities in these countries and an initial step towards controlling the pandemic.

Table 2 – COVID-19 vaccine doses sold, donated, and delivered by China to countries around the world between the start of the vaccine production and the end of 2021

Sales	Donations	Deliveries
Indonesia (259M)	Cambodia (16M)	Indonesia (255M)
Pakistan (132M)	Egypt (12M)	Iran (114M)
Iran (110M)	Kenya (12M)	Pakistan (111M)
Turkey (100T)	Zimbabwe (12M)	Brazil (95M)
Brazil (100T)	Myanmar (11M)	Philippines (60M)
Egypt (96T)	Laos (9.1M)	Morocco (45M)
Bangladesh (95M)	Nepal (8.4M)	Myanmar (44M)
Mexico (75M)	Vietnam (7.3M)	Mexico (42M)
Chile (61M)	Bangladesh (5.6M)	Bangladesh (41M)
Philippines (55T)	Sri Lanka (5M)	Vietnam (37M)

Source: Prepared by the authors based on data from Bridge Consulting, January 2022.

M: million doses; T: thousand doses.

Jabbour et al. (2020) and Jabbour and Rodrigues (2021) use the concept of "New Project-Based Economy" to represent China's economic interests in the context of the COVID-19 pandemic. The sale of vaccines to Indonesia is an example of Chinese influence on the economic recovery of Asian countries: by the end of 2021, Indonesia had received 98.4% of the doses purchased from China, an essential acquisition, since it is the fourth largest country in the world by population. China did not donate doses to Indonesia, which has an economy marked by a strong presence of small farmers. The vaccines delivered, however, ensured the continuity of activities exploring the country's abundant mineral wealth, timber, crude oil, and natural gas.

By the end of 2021, Pakistan had received 84% of the vaccines it purchased from China, which helped the country resume its activities more quickly, since its economy is underdeveloped and based on the trade and services sector, and a large part of its workforce is employed in the agriculture sector (Guitarrara, 2022).

Iran received all the doses it purchased from China, plus a good surplus. The vaccines were important in ensuring the continuity of Iranian economic activities, which are based on large fossil fuel reserves. The country accounts for the world's second-largest natural gas supply and holds the

fourth largest oil reserves. The supply of these energy resources on the market gives the country great geopolitical relevance, a factor that contributed to it benefiting from Chinese vaccine diplomacy (Hoirisch, 2020, 2021; Ungaretti, 2020).

No records of deliveries of doses purchased by Turkey and Chile until the end of 2021 were found. However, China pledged to donate doses to some countries in Asia, such as Cambodia, Laos, Nepal, and Sri Lanka (which also did not receive these donations until the end of 2021). The Philippines, a country with an agricultural economy, but considered one of the Asian tigers because of its significant industry and tourism rates, received extra doses, a stimulus to boost its economic recovery. Vietnam, which has an economy based on agriculture (like most Asian countries), low industrialization, and low per capita income rates, and Myanmar, which maintains a strong agricultural base besides considered an emerging economy country, also received, through donations, more doses than promised. Bangladesh, also considered an emerging economy, only received 41 million doses, which is less than the total number of doses purchased and promised as donations by the government of China. Among African countries, Morocco was the only one that received vaccines from China by the end of 2021. Egypt's purchase was not delivered, and Zimbabwe also did not receive the 12 million doses promised by China for that period.

In terms of diplomatic actions with a strong impact in the context of COVID-19 and its effects on global health, it is worth highlighting the fact that China “endorsed the proposal to suspend material rights for vaccines” (Proposta..., 2021; China..., 2021). This posture was not supported by the other BRICS countries, and this situation contradicted the Group's original discourse and evidenced a lack of solidarity with the countries of the global periphery (Buss, 2021).

Nevertheless, China's position and posture helped alleviate the crisis caused by the lack of vaccination in the countries of the Global South, although it does not represent the necessary solidarity in terms of sharing technologies and supplying vaccines to the entire world population.

Final considerations

In a world devastated by COVID-19, behaviors that point to a real “vaccine apartheid” prevail. International initiatives proved insufficient to meet global demands, and some countries in Africa were even unable to vaccinate health workers by the end of 2021, while countries such as the United States and Canada timidly contributed to alleviating this crisis by donating surplus doses.

COVID-19 exacerbated the global health crisis and paradoxically served to increase the profits of the health industry, especially that of the most powerful nations, which had their political and economic power increased by obtaining incalculable profits from the sale of vaccines to poor countries. Vaccine manufacturers obtained large amounts of public funds, benefiting from tax incentives that greatly increased the capital of companies such as Moderna, Pfizer, and BioNtech, whose sums in 2021 reached 41 billion dollars above the production cost their vaccines (Egan, 2021).

The monopoly of the pharmaceutical industries is the true reason for the non-sharing of the knowledge and technologies related to medicines, vaccines, active pharmaceutical ingredients, etc., which left poor countries to depend on the products of these industries, limiting access to COVID-19 vaccines.

The interests of powerful financial agents also benefited greatly in the pandemic context, which will most likely influence the maintenance of the fragmented characteristics of public and universal health systems. Equally worrying is the general shortage of health services, especially in developing countries, which historically suffer with the constant imposition of work overload and discontinuity in management, generating precarious services and unsatisfactory deliveries. These factors contribute to countries not receiving care that is more aligned with the needs of their populations, not only in pandemic contexts, but in everyday life.

Expectations regarding the BRICS economic bloc would remain unchanged if it were not for the creation of the Vaccine Research and Development Center, inaugurated in March 2022, which aims to significantly strengthen “the global

capacity to prepare for and respond to pandemics of various diseases” (Golub, 2022) and is “a good example of international cooperation in the field of science” (Blade Nzimande, Minister of Higher Education, Science and Innovation of South Africa) (Golub, 2022).

The BRICS Vaccine Research and Development (R&D) Center aims to bring together the best practices of the five countries of the bloc and work on the development of medicines, combining the countries’ fields of expertise in the research for vaccine design. The goal is to increase the prevention and control of infectious diseases, and to make different technologies available to help BRICS countries and developing countries recover from the damage caused by the pandemic (Golub, 2022).

Even with renewed hopes after this BRICS initiative, the reality of 2022 remained unchanged from that of 2020, when the COVID-19 pandemic swept across all continents. Despite standing out in the fast track of vaccine production, vaccinating with the second dose over 40% of the world’s population by the end of 2021, and China taking the initial step towards the immunization of some countries with donations, the balance of the pandemic was quite negative for the BRICS countries.

Human losses are not recoverable and economic losses depend on a disposition that seems to be far from the interests of the dominant economic countries. By the end of 2021, no concrete changes in the global health governance model had been sensitive enough to achieve the bare minimum: the immunization of all countries. Nor was there any international cooperation actions that could have effectively led the countries of the Global North to share vaccines, something that would be perfectly possible, since a large amount of vaccines were lost in these countries.

The challenge lies, in fact, in extrapolating the solidarity capacity of rich countries towards poor countries, which has not happened so far. On the contrary: rich countries continue to act to neutralize initiatives aimed at suspending, even temporarily, intellectual property rights. This suspension would have made it possible to expand access to scientific knowledge and to increase the production capacity of developing countries, allowing them to develop

medicines, vaccines, and other means that could contribute to stopping COVID-19 infections.

The world is still waiting for more BRICS initiatives based on strong intra- and extra-bloc cooperation. It is up to the more powerful countries to influence and act towards a more balanced distribution of vaccines, allowing immunization to reach countries located on the periphery of global economy. In China, for instance, there is a renewed desire for Chinese vaccines to become widely accessible, which would mean bringing President Xi Jinping’s statements about “making Chinese vaccines a global public good” to reality (Xi Jinping..., 2020). To this end, disputes for power or economic domination must give way to solidarity, in order to save lives and help the economies of peripheral countries, strongly impacted by COVID-19.

The important contributions of BRICS to the immunization process against SARS-CoV-2, along with these countries’ repeated declarations about their strong intentions to put an end to the pandemic, did not prevent Health Diplomacy scholars (Buss; Fonseca, 2020) from interpreting the Group’s responses to the complex demands generated or exacerbated by the health crisis as insufficient.

Regarding the Brazilian response, all health care areas require further investments, and these should be based on a high-level political convergence involving the BRICS leaders. The challenge is for more resources from the New Development Bank (NDB) to be allocated to respond to the economic and social crisis aggravated by the pandemic and to structure the country for possible new pandemic situations.

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Authors' contribution

Aguiar conceived and carried out the research, organized the data, and wrote the manuscript. Ribeiro supervised the research, participated in the writing, and reviewed the manuscript.

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