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Evidence-Based Policies in Uruguay Are Successful for Tackling COVID-19

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Abstract

During the COVID-19 pandemic, different countries are showing strengths and weaknesses of both healthcare systems and technology access. Until now in Uruguay, COVID-19 has been very much under control. Evidence-based policies, a strong public health care system, and scientific innovations are believed to be the main factors of success. Uruguayan evidence-based policies consider several inputs, including scientific, medical-epidemiological, economic, and educational aspects. A Scientific Advisory Group regularly makes specific recommendations on health and data science to a team composed of high caliber figures in the government. This team evaluates and submits the reports and suggestions to the President of the Republic, for making final decisions concerning different responses to the pandemic and the economic reactivation. Designing and implementing such evidence-based policies require a vigorous scientific community and a government that gives importance to scientific and technical assessments, and an effective knowledge on brokering mechanisms.

Keywords

Evidence-Based Policy, Knowledge Brokering, Health Policy, Innovation Policy, COVID-19

1. Introduction

It seems logical that when research successfully addresses public problems, governments should exploit this to the greatest extent, designing and implementing the so-called evidence-based policies (EBP). However, this has not been historically the case, as governments have been generally reluctant to ask the academy for policy matters, a tendency that is apparently reverting in many countries.

The arrival of a pandemic of such colossal magnitude has shown that EBP is still a powerful approach to solve critical and urgent situations. Until now in Uruguay, COVID-19 has been very much under control (Taylor, 2020). As in other countries (Iceland or South Korea among others), Uruguay has followed sound EBP approaches to impact COVID-19 pandemic. In the current scenario of a deep, global health crisis, EBP has appeared as a striking solution to guide societies towards a series of rational signals and behaviors that both give credibility to governmental responses and actually offer solutions to reduce the spreading of the pandemic. It is worth studying such cases in detail in order to implement similar EBP procedures for other issues or challenges (for example on climate change or environment, among others).

2. EBP Background

Some pioneer literature and more recent papers have addressed this issue (Weiss, 1979; Nutley et al., 2007; Jones, 2009), which has nowadays enormous implications. A series of long-term benefits for both scientists and policymakers become evident when strong research–policy partnerships are built (Richards, 2017). In a recent systematic review using nearly 400 different reports, four contrasting perspectives where classified according to EBP (French, 2019). One of such perspectives backs the idea of reinforcing demands that governments pay more attention to research; a second one rejects the possibility that research can meet disciplinary standards and meaningfully address the needs of policymakers, arguing the end of EBP. A third perspective emphasizes the need to produce new procedures that govern the generation and use of evidence. The fourth perspective focuses on the reform of the relationships between researchers and policymakers, a refoundation of the dialogue and communication channels or the creation of new ones. The third and fourth perspectives seem to apply to the case of Uruguay during the COVID-19 pandemic.

To mitigate the challenges involved in EBP concerning the knowledge sharing between researchers and policymakers, a knowledge broker (KB) is generally needed to translate knowledge to both "languages". MacKillop et al. (2020) report that KB has been pointed out as a way to drastically improve policymaking worldwide, and that more and more countries are investing significant resources in KB initiatives.

There is plenty of research in health sciences that studies the "evidence-policy gap" between the production of evidence by scientists and its use by policymakers (Cairney & Oliver, 2017; Shelton & Lee, 2019). The impacts of KB on health systems are considered relevant to close the gap (Bornbaum et al., 2015).

In Uruguay, very few EBP studies have been made. Those works have been related to science, technology and innovation (STI) policy and its links with research, which seems a priori a natural match. For instance, a report shows how to design STI policies based on Uruguayan research efforts (Baptista, 2012). There is a larger study (Snoeck et al., 2012) based on interviews to researchers

and policymakers on STI issues from several Latin American countries. Some contrasting opinions were obtained on their visions about the research-policy nexus. The policymakers show that the role they assign to social sciences research is impressive when compared to their actual use of published research outcomes, but they practically never mentioned the need or convenience to work together with research groups on agenda setting. On the other side, researchers considered that policymakers have an a priori agenda, relatively immune to research results, in some cases to such an extent that they go on with policies that research outcomes have explicitly shown to be misplaced. In several developed countries also studied by this work, best practices increasingly recognize the importance of KB and other forms of "boundary work" (think tanks, advisory bodies, etc.) between scientists and policymakers to overcome the "two communities' problems". Latin America has a long way to go in this presently underexplored action field.

In this paper we discuss the importance of EBP and KB in the formulation of specific responses to the ongoing sanitary crisis. The pre-pandemic conditions are key to understand the excellent performance in the response to the COVID-19 pandemic in Uruguay. A novel governmental structure, allowing an interphase with scientists, was established to propose EBP both in the response to the health urgency but also in the reopening of spaces and activities to minimize the risks of spreading the virus. Unfortunately, the same approach was not used to propose measures for the social and economic impacts on the most vulnerable people.

3. Pre-Pandemic Conditions

Uruguay, a small country in the southern cone of Latin America (LATAM) with a population of 3.3 million, surrounded by two large neighbors, Brazil and Argentina, is regarded as one of the most democratic and socially developed nations in LATAM, highly ranked on measures to improve individual rights and tolerance. Unlike other LATAM countries, it has a deeply rooted and stable political party system and has had a secular government, independent from the influential Catholic Church for more than a century. Moreover, it was the first nation in LATAM to establish a welfare state and began earliest its demographic transition (Rofman et al., 2016). It was also the first LATAM country allowing women's vote in the last century and has had a sustained gender agenda since the beginning of the present century, despite being currently challenged by the necessity to introduce a gendered approach to welfare reform to establish the political economy and the economy of care and unpaid work (Filgueira et al., 2011).

Back in 2013, The Economist named Uruguay "country of the year" (The Economist, 2013), acknowledging the innovative policies in legalizing cannabis, same sex marriage, and abortion. Uruguay has a relatively high human development index (United Nations Development Program index), ranking 52nd

among the United Nations and third within LATAM. In addition, it ranks first in this region in many indexes of political, social, and economic stability.

A sustained gross domestic product (GDP) growth during the past 15 years allowed advancement in social and economic policies towards a deepening of the welfare system. Investment in healthcare has increased over these years, reaching 9.8% of the GDP both in public and private healthcare providers (Ministry of Public Health [MSP by Spanish acronym], 2020). Healthcare considerably improved in quality, territorial coverage, and inclusion (primary care units, community and visiting doctors), reaching virtually all residents. These primary care units diagnosed around 87% of the positive COVID-19 cases (official data from June 2020) thus avoiding overcrowded hospitals and emergency rooms.

In a media briefing of September 7th, 2020, the World Health Organization (WHO) Director General highlighted the fact that "…although the Americas have been the most-affected region, Uruguay has reported the lowest number of COVID-19 cases and deaths in Latin America, both in total and on a per capita basis. This is not an accident. Uruguay has one of the most robust and resilient health systems in Latin America with sustainable investment based on political consensus on the importance of investing in public health" (WHO, 2020a).

The Uruguayan innovation system (IS) has a peripheral position in global innovation activities, mostly as a receptor of knowledge through acquisition of devices, medicines and licenses (Bianchi, 2019). The investment in STI was only 0.45% of the GDP in 2018, even if in monetary terms it increased three times its volume during the last 15 years (see National Research and Innovation Agency's [ANII by Spanish acronym] Prisma database).

In that context, the health IS has specific features which differentiate to both rich and poor countries. Indeed, Uruguay is a small income country (SMIC) which satisfies a dual condition regarding size (small) and wealth (middle income, ageing population and universal healthcare coverage). These features are determinant of the health innovation processes. First, the Uruguayan government and firms are not able to conduct big and expensive world-class research and development (R&D) projects. Therefore, health-related innovation activities are mainly focused on the research phases and in specific developments projects. Second, small scale affects the formation of a critical mass of problem solver agents and the functioning of market mechanisms, i.e. competition, as selection mechanisms of innovation. Moreover, small scale also constrains the potential development of local innovation based on public procurement agreement with the public healthcare services (Bianchi, 2019).

Until now, Uruguay has had an outstanding response to the pandemic (The Economist, 2020), despite being one of LATAM's countries showing the lowest fiscal effort to tackle social and economic impacts of COVID-19 (1.6% of its GDP, figure from ECLAC, 2020, p. 127 [Information updated as of September 7, 2020]). The latter might bring important negative effects on poverty and vulnerability in the future.

With those exceptional results in sanitary terms, many wonder about the true reasons of success. Some hypotheses among others are: measures taken by the government at the right time and driven by scientific evidence, BCG (for tuberculosis) mandatory vaccination (Klinger et al., 2020), people's positive response to government recommendations, solidarity and common interest vision, universal primary healthcare, scientific and technological solutions, or a combination of all the above.

4. New Government, Unexpected Challenges

Uruguayan new President, Luis Lacalle Pou, took power last March 1st, 2020, after 15 years of leftist Frente Amplio's government. A complete change of authorities, high and middle rank officials, was in place when the first cases of COVID-19 were diagnosed (March 13th, 2020). Only 13 days after its inauguration, the new government was confronted with the worst pandemic of the last hundred years. The same day the first COVID-19 cases were diagnosed, the government declared a state of sanitary emergency, closed borders and implemented a series of measures in order to avoid community spread of the virus (closing schools, universities, spectacles, some businesses, etc.). Social distancing was recommended but quarantine was never mandatory. The population had confidence in these first governmental moves and public support was extensive and strong, with some asking for even stricter measures of isolation. A specific governmental fund was created to respond to the COVID-19 economic and social challenges: mounting unemployment and weakened small businesses because of lower economic activity than normal or no activity at all.

In addition to food programs from municipalities and the Ministry of Social Welfare, civil society also reacted to the pandemic effects on the vulnerable people. A widespread and spontaneous array of support actions for these people began organizing around initiatives to donate prepared food and food baskets.

5. Scientists Are Giving Specific Solutions

The new Health Minister, Dr. Daniel Salinas, has been counselled by scientists who were reproducing the qPCR diagnostic kit according to protocols by the Hong Kong University. The technology was very rapidly transferred from the School of Sciences of the University of the Republic (Udelar by Spanish acronym) and the Institut Pasteur de Montevideo to a small local diagnostics' company (ATGen) that is now producing the kit for Uruguay and exporting it across the region. Nature magazine recognized Gonzalo Moratorio contribution in reducing the impact of the pandemic in Uruguay (Rodríguez Mega, 2020). Dr. Moratorio and his colleague Dr. Pilar Moreno, are the scientists behind this diagnostic kit that allowed massive testing. The same scientists are involved now in the production of a rapid molecular test. Another group of scientists from the Udelar and the Institut Pasteur de Montevideo has been working on an immunity test and is also transferring technology to the same small company. Other in-

itiatives from the research sector include the production and repair of artificial respirators, swabs, sterilization rooms, surgical masks, plasmapheresis, and additional medical tools and techniques, all the same type of public-private collaborative endeavors. Several research groups are reconverting or refocusing to COVID-19: genomics of the virus, modelling of the pandemics, epidemiology and statistics, molecular modelling of the docking of cheaper existing drugs targeting viral proteins, among other studies.

The ANII promptly opened calls to support the production of respirators, qPCR diagnostic kits, and serological tests. The MSP granted authorization for the use of biomedical tools in record time. An amazing coordination of public offices that regularly would have taken months in registries took place in few days.

Some of the innovations mentioned above are simple in nature and some are copies of open source materials and procedures. Other advancements are very competitive and involve original research. These progresses are possible due to a broad scientific international collaboration in different fields, with an open science approach that guarantees access to these technologies to anybody with minimal capacities to reproduce them.

Uruguay has a record of examples on successful health innovations in collaboration between small companies, governmental institutions and the academic sector, such as the Neonatal Research Program (depicting several congenital diseases in all newborns), a specific diagnostic method for non-invasive arterial therapy, or a phototherapy device that has therapeutic effects for newborn jaundice, among others (Bianchi, 2019).

Innovation processes are determined by the domain features where they emerge (Bianchi, 2019; Borras & Edquist, 2013). Uruguay, as most SMICs, has a peripheral position in global markets and regulations. Hence, domestic innovation usually appears as a complement within a large field dominated by global players. Local innovation may fill the niches where global players are not producing or where current technical solution is unsatisfactory given the local needs and constraints. These contextual features help us to understand the emergent dynamics of health innovation focused on non-radical innovations, mainly evaluated according to satisfactoriness criteria rather than novelty and leveraged by local research capabilities (Bianchi, 2019). Accumulated capacities in STI both in researchers and in laboratory infrastructure was crucial for the developments of local innovations aiming at responding to the pandemic (Deana & Pittaluga, 2020).

Another shortage situation faced by Uruguay concerned the diagnostic laboratory infrastructure, since only a scarce number of laboratories could perform COVID-19 qPCR tests. The same research laboratories that generated the qPCR kit also started a network of diagnostics labs in different institutions, according to the availability of P2 security chambers. Following a nationwide survey and redistribution of equipment, laboratory tools, security conditions, and personnel to be trained, eight different laboratories were set up to cover the whole territo-

ry. The laboratories were installed at the Udelar decentralized premises, the Ministry of Agriculture and the National Institute for Agronomics Research (INIA by Spanish acronym).

The response to COVID-19 included the work of scientists and health professionals whose initiatives could have been isolated contributions with little or no impact if they were not coordinated by an assessment group established by the government.

6. Scientist Assessment and Government Actions

Early in the response to COVID-19, the newly established government created an honorary body to counsel the Minister of Health and other governmental offices. This body, called Scientific Honorary Advisory Group (GACH by Spanish acronym), is presided by Rafael Radi, an accomplished scientist, president of the Uruguayan Academy of Sciences, and international member of the USA Academy of Sciences - Biochemistry Section. Co-Chairs of this Group are Fernando Paganini, a renowned mathematician, also a member of the Uruguayan Academy of Sciences, and Henry Cohen, President of the Uruguayan Academy of Medicine.

The GACH makes specific recommendations in the areas of health and data science to a government policymaker team called TransiciónUY, constituted by high caliber figures in the government, including the Secretary of Budget and Planning (Isaac Alfie). TransiciónUY evaluates and submits reports and suggestions to the President Lacalle Pou, for making final decisions, such as the return to classes or the reactivation of different economic activities.

The GACH is supported by a technical secretariat, a scientific health team and a scientific data team. The area of modelling and data science is coordinated by Fernando Paganini, while Henry Cohen oversees the area of health planning, care, and prevention. In total, there are more than fifty collaborators as experts and scientists, summoned because of their expertise. These teams meet every week and issue weekly technical reports for review and subsequently provide recommendations to the government. The teams also gather information from meetings with government representatives, the MSP, the Udelar, the Pan American Health Organization, among others.

We identify the GACH as a KB, although they are also involved in the generation of original scientific knowledge. TransiciónUY on the other hand, is a governmental policymaker body which is permeable to the GACH assessments. These policymakers have the responsibility to make EBP real by implementing specific measures in health, the control of the spread of the pandemic, and in the reopening of commercial, education and leisure activities. We highlight that a novel channel of communication was possible between researchers and policymakers despite that in Uruguay EBP is not a usual practice as mentioned before.

7. Triple T Strategy

As part of the several suggestions made by the WHO, the triple T approach (test, track and treat) is meant to reduce mortality rate from the COVID-19 pandemic.

In a media briefing Director General of WHO, Tedros Adhanom Ghebreyesus, stated last March 18th 2020: "…to suppress and control epidemics, countries must isolate, test, treat and trace. If they don't, transmission chains can continue at a low level, then resurge once physical distancing measures are lifted" (WHO, 2020b). In fact, the triple T strategy was difficult to put in practice by many countries where the spread of the disease was already uncontrollable and untraceable. Some successful examples of this effort were highlighted by the WHO Director General such as the case of South Korea.

Uruguay has controlled the pandemic and avoided until now community transfer of the virus. The initial contagious episodes were due to travelers returning from trips around mid-February to the beginning of March 2020. So far, due to the tracking studies that are performed on each positive patient, it has been possible to restrict and confine the virus spread among those most closely related. The interruption of this horizontal social transfer allowed the control of the spread of the virus. To achieve the goal of reducing horizontal transfer, a triple T approach was needed. In a few words, triple T implies finding the cases, tracing, and confining them. Even in situations of porous borders like in the border cities with Brazil, where specific peaks of positives were observed, the government put in place the triple T strategy by reducing substantial dispersion of COVID-19. First, all who tested positive where asked to stay isolated with strict recommendations to them and their family members, followed by a contact tracing strategy that included a questionnaire on prior physical contacts during the previous 15 days. These contacts were also tested and asked to return to a primary health care test provider and were retested in case early signs of disease appeared. In addition to this meticulous follow up, a randomized testing was put into place covering every block of those neighborhoods random houses within each block were selected for in house testing. This was possible thanks to the consistent household survey from the National Institute of Statistics.

An epidemiological analysis shows that one critical aspect was the reduction in the effective reproduction number. Due to a massive testing strategy, most local transmission chains have been efficiently controlled at the second generation of contacts (Moreno et al., 2020). In some contagious events, systematic sequencing of the virus in several patients allowed scientists to determine the origin of the viral spreads which provided unprecedented data for the traceability of SARS-CoV-2. A combination of these tools enabled the government to control several boosts of local spreads in a matter of a few days, in border cities with Brazil and in particular hospitals. Genomic vigilance in real time is the goal of this approach and allows the health authorities to understand the mobility of the virus. So far, 12% of positive cases have been sequenced and phylogenetic distances measured (Salazar et al., 2020). The potential of this tool is enormous for the epidemiology of COVID-19, as was previously shown in Iceland covering the viral sequence in 30% of the infected people (Gudbjartsson et al., 2020). This is easier in countries with relatively small population size and legacy of medical registries.

8. Conclusion

In sum, applying EBP in Uruguay has been possible and proved to be successful, in the control and confinement of the COVID-19 pandemic. These EBP consider several inputs from the scientific and medical-epidemiological. A novel channel of participation and communication between scientists and policymakers was established to bridge the usual gap between research and policy. Accumulated capacities in STI both in researchers and in laboratory infrastructure were crucial for the developments of local innovations aiming at responding to the pandemic. The presence of prestigious scientists leading the GACH has transmitted confidence to the public opinion. Sound evidence was used to propose specific measures to fight COVID-19 pandemic and its effects. Assertive communication to the public opinion has precluded fake science news spread through social networks. Finally, we conclude that implementing such EBP needs a strong scientific community and a government that gives relevance to scientific and technical assessments, and effective KB mechanisms.

So far, EBP approaches have not been implemented to revert the social and economic impacts of the pandemic in Uruguay. This becomes evident by the composition of the GACH that excluded social scientists. The consequences of the pandemic will be reflected in an increase in poverty, unemployment, inequalities in education among other aspects. This is not accidental. The government, despite the Covid-19 outbreak, is moving forward with an ambitious agenda to reduce fiscal deficit and, as mentioned above, has invested only 1.6% of its GDP (ECLAC, 2020) to tackle social and economic pandemic effects, relying on market recovery to solve these issues in the future. These cuts have even reached the scientific sector very dependent on public funds (Prieto, 2020).

However, in a recent report from the Economic Institute of Udelar (IECON, 2020 March 23), a comparable situation post COVID-19 crisis is analyzed with the social measures taken in the 2002 regional economic crisis. At that time, Uruguay had little initiative to implement vigorous containment responses to the rapidly falling incomes and rising unemployment. No additional social protection programs were deployed aimed at households with adults with informal jobs or unemployed and, thus, between 1999 and 2003 the incidence of poverty doubled, and inequality exacerbated, with consequences that last until today. On that occasion, some social policies considered a priority by the government (for instance, food programs) were not affected by budget cuts. However, initiatives for social inclusion on a larger scale were not developed.

As several studies on economic crises in different parts of the world and Latin America in particular have shown, poverty and inequality can increase very rapidly in such situations, while their reduction requires a strong investment of resources and sustained efforts over long period. Using a simple methodology that provides early estimates, micro-simulating the short-run effect of the crisis on the poverty rate, it has been observed that during the first trimester of the pandemics in Uruguay, the poverty rate grew by more than 38%, reaching 11.8%

up from 8.5% (Brum & Da Rosa, 2020).

It should also be borne in mind that some effects of economic crises are irreversible, for example, the chronic effects on the health of children exposed to prolonged periods of poor nutrition (Swartz et al., 2017; Noble et al., 2015).

The previous arguments highlight the urgency of activating all national capacities to neutralize the economic and social effects that deepen the pre-existing inequalities in the Uruguayan society. It is necessary to prevent the burden of the crisis from being borne by the most vulnerable sectors, as it happened in 2002.

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Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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