DOI: https://doi.org/10.11144/Javeriana.umed62-4.call

Healthcare Workers during the COVID-19 Pandemic from a Street-Level Bureaucracy Perspective - A Narrative Review of Literature

Trabajadores de la salud durante la pandemia por COVID-19 desde la perspectiva de la burocracia de calle: una revisión narrativa de la literatura

Received: 05 June 2021 | Accepted: 07 July 2021

Daniela Mojica Méndez[a]
Medical Intern, School of Medicine, Pontificia Universidad Javeriana, Bogotá, Colombia
ORCID: https://orcid.org/0000-0001-6028-0129
Silvana Michelsen Gómez
Medical Intern, School of Medicine, Pontificia Universidad Javeriana, Bogotá, Colombia
ORCID: https://orcid.org/0000-0002-5764-0522
Yazmin Cadena Camargo
Public Health Physician, Teacher and Researcher at the Department of Preventive and Social Medicine. School of Medicine, Pontificia Universidad Javeriana, Bogotá, Colombia
ORCID: https://orcid.org/0000-0002-5016-6119

[a] Correspondence author: daniela.mojica@javeriana.edu.co

Cómo citar: Mojica Méndez D, Michelsen Gómez S, Cadena Camargo Y. Healthcare workers during COVID-19 pandemic from a street-level bureaucracy perspective: a narrative review of literature. Univ. Med. 2021;62(4). https://doi.org/10.11144/Javeriana.umed62-4.call

ABSTRACT

Street-level bureaucrats are professionals whose main role consists in the implementation of public policies at a community level, guiding themselves through the use of autonomy and discretion. In this narrative review of literature 44 articles that had information about street-level bureaucracy regarding healthcare workers in the COVID-19 pandemic in specific countries (China, United States, Italy, Brazil, Mexico and Colombia) were selected from various databases and analyzed to explore how the implementation of health public policies during the current COVID-19 pandemic impacted and shaped the work of healthcare workers. Various ideas were extracted and analyzed using the street-level bureaucracy model as a reference point. We concluded that street-level bureaucrats have played a crucial role in this pandemic and that providing them with government support, clear public policies and enough resources is essential for them to correctly manage public health problems. Further research needs to be done regarding the consequences brought upon street-level bureaucrats by the pandemic and the impact that street-level bureaucrats have had in countries like Colombia.

Keywords

street-level bureaucrats; healthcare workers; COVID-19; pandemic; autonomy; discretion; public policies; political will.

RESUMEN

Los burócratas de calle son trabajadores de la primera línea de atención, cuyo principal rol consiste en implentar políticas públicas comunitarias,

guiándose a través de los conceptos de autonomía y discreción. En esta revisión narrativa de la literatura se seleccionaron 44 artículos de diferentes bases de datos, que contenían información sobre la implementación de políticas en medio de la pandemia por COVID-19 en ciertos países en específico (China, Estados Unidos, Italia, Brasil, México y Colombia). Desde el modelo de la burocracia de calle, se analizó cómo la implementación de dichas políticas repercutió en el trabajo de los profesionales de la salud. Se concluye que los burócratas de calle han desempeñado un rol crucial en esta pandemia y que proveerlos con apoyo estatal, políticas públicas claras y recursos suficientes es esencial para que puedan manejar adecuadamente los problemas de salud pública en la actualidad. Se requiere mayor investigación sobre las consecuencias de la pandemia para los burócratas de calle y el impacto de estos en países como Colombia.

Palabras clave
burócratas de calle; trabajadores de la salud; COVID-19; pandemia; autonomía; discreción; políticas públicas; voluntad política.

Introduction

2020 was a year of crisis triggered by the COVID-19 pandemic which led countries to having problems in the health field, with numerous implications in other aspects. At the time in which this paper was written, there had been more than 70 million cases and at least 1.6 million deaths worldwide due to this pandemic (1). As cases began to increase rapidly, hospitals faced a shortage of resources available for patient care while dealing with a patient overload, making it necessary for governments to carry out strategies to reduce contagion and avoid a health system collapse. Such policies included declaring quarantines and states of emergency, investing in personal protective equipment, expansion of Intensive Care Unit (ICU) beds and purchasing ventilators (2–8).

The implementation of public policies created by governments is done by professionals that are in the first line of action and in direct contact with citizens, who are known as street-level bureaucrats (SLB), which includes healthcare workers (9). In this article, we examine the impact of these SLBs in the application of public policies in the context of the current coronavirus pandemic, and how this situation has affected their decision-making processes. As healthcare professionals across countries had to implement different measures for COVID-19 control, this raises a question on how their professional role has been shaped in this process. To explore this, we analyze the situation in China (known as the country of origin of the pandemic), Europe, the United States (US), and Latin-American countries.

The term street-level bureaucracy, created by Michael Lipsky, refers to individuals that have public charges and characterize themselves by constantly interacting with citizens, having a high level of autonomy and discretion in decision-making processes, and impacting people's lives (9), thus fulfilling a very important role in society. SLBs in the health field include physicians, nurses, and social workers. In their hands lies the responsibility to decide who can have access to health resources and services, therefore contributing to diminishing inequalities or continuing to reproduce them (10).

The relationship between SLBs and the other citizens is one in which the first ones have a superior position due to them deciding who benefits from their help and how these people are helped (10). They can use policies in ways that might go against policy directives or an agency's specific goals, as pointed out by Ermin Erasmus (11). Therefore, SLBs find themselves facing a constant dilemma between having flexibility versus being impartial and strictly applying public policies (12).

Steven Maynard-Moody (13) and Michael Musheno (14) criticize Lipsky's traditional approach. They support their analysis on their own findings, obtained through years of work. From Lipsky's perspective, SLBs are government workers that do not only execute government policies but that also guide themselves by these when making decisions. From Maynard-Moody's and Musheno's perspectives, SLBs define themselves according to their role in society. They guide their decision-making processes based on their colleagues' behavior rather than on the administrative policies they implement, allowing them to take more advantage of the autonomy and discretion they possess (15).

In 2016, Barret explained the causes of failure in the implementation of public policies by SLBs following Lipsky's model. The main problem is that the objectives of public policies are very general, making it easy for implementers to have different interpretations and get different results (16). The more ambiguous a policy is, the more autonomy the worker will have in its implementation (15).

Taking all this into account, we will analyze how SLBs dealt with the COVID-19 pandemic in specific countries (China, United States, Italy, Brazil, Mexico, and Colombia).

Methods

This study can be classified as a narrative review paper because it aims to collect the most relevant information about a specific topic, in this case, healthcare workers and their role during the COVID-19 pandemic, basing our research on the available medical literature. In this type of research, authors examine and analyze their findings, focusing them from a certain perspective (17). This paper focuses on SLBs (health workers), their characteristics, and their role in society. Inclusion and exclusion criteria were used to select publications that included street-level bureaucracy in the context of healthcare. Additional research was complemented through snowball sampling.

The countries chosen for analysis were China as this was the country where the pandemic originated, the United States (US) due to this being the country with the largest number of cases globally, Italy as it was the epicenter of the pandemic in Europe, Brazil because it is one of the countries with the highest number of cases at a global level, and Mexico because it holds the largest number of deaths among health workers. We used our own country, Colombia, to analyze the current situation experienced by SLBs in our health system.

A literature search was made in Cochrane, PubMed, Scopus, Embase, and Web of Science. Research included information on the definition of street-level bureaucracy, street-level bureaucracy in healthcare workers, and how the role of SLBs changed in the context of the coronavirus pandemic. The following key terms were used: "health workers, COVID-19, street bureaucracy;" "impact COVID-19, Colombia;" "public policies, healthcare workers, pandemic;" "pandemic, street-level bureaucracy;" "China, COVID management, health workers," "United States, government, COVID-19."

As scarce information about some topics was obtained and the design of this narrative review allowed to complement the research done in databases with other sources, we searched for information in gray literature using key terms like ""China cover-up covid" "Chinese government and healthcare workers" United States, health workers, COVID-19;" "United States, Trump, COVID-19," "Italy, first-line doctors, COVID-19;" "Brazil government impact on COVID-19," "Brazil, COVID pandemic," "Colombia, uso de ventiladores COVID-19;" "manejo pandemia en Colombia" (in English: Colombia, use of ventilators COVID-19, management of pandemic in Colombia). We supplemented this research with a manual review of the references used. Most of the information found was published in 2020.

We selected articles that had information about street bureaucracy during the coronavirus pandemic, on the approach that different countries had from the healthcare point of view when facing the pandemic, the public policies formulated by governments and the role of healthcare workers in their implementation. Publications that included information about street bureaucracy in contexts other than the healthcare system, data about SLBs in scenarios other than the current pandemic or information containing public policies in contexts other than the health system were not included. Article selection was based on the information obtained from the abstract.

A total of 44 articles were selected. The results found will be exposed below to analyze how the pandemic has affected the work of SLB across different countries according to the theoretical background exposed and the information found. In the results, information

was organized according to the country it referred to, giving a thorough description of the situation in each country. Also, an analysis was carried out taking into account the following categories: the relationship between street-level bureaucracy, healthcare workers and public policies, and the management of the pandemic according to actions taken by governments in the specific countries mentioned above. Based on the experiences of these countries, a reflection was made on what should and what should not be taken into account when going through such experiences.

Data was compared between all of the countries. An important thing in common was the ambiguity of public policies between some of the countries and how this conditioned the response of SLBs. We discussed how and why a political will is essential when facing a crisis like the current one, how it impacts the outcomes in each country and how it contributes to shift barriers. We focused on how the use of autonomy and discretion has varied in different countries. It was concluded that one of the most important issues were the barriers faced by SLBs during the pandemic, in which we included the lack of personal protective equipment, the high number of positive cases across countries and the stigmatization of healthcare workers.

Results

The information obtained about the different public policies implemented by governments during the current pandemic was organized into categories according to the country to which it referred to, analyzing it from a street-level bureaucracy perspective. Findings were then compared between countries in the discussion.

China: sacrificing discretion and autonomy to control cases

China, the country where the pandemic started in November of 2019, applied a rapid strategy to reduce the spread of the virus. In January and February of 2020, 3,387 health workers in 476 Chinese hospitals were infected with the virus. After this, the rate of spread decreased significantly at a national level: by October 2020, China had 90,604 confirmed cases while the United States had 7,382,194 confirmed cases (2). Chinese authors (2020) suggest this is due to the mandatory use of protective personal equipment in health workers before there was an increase in the number of cases at a national level. At the West China Hospital, the obligatory use of personal protective equipment was applied since January 2020, three days before the first SARS-CoV 2 case in the hospital was identified. Chinese protocols concerning the use of protective personal equipment were quite rigorous and the management of positive patients at a national level was centralized in specific hospitals (3).

Due to the mandatory application of strict guidelines regarding personal protective equipment and the centralization of health services, Chinese health workers were not able to take advantage of their discretion and autonomy when confronting this pandemic. Clear and straightforward government instructions facilitated patient attention and guaranteed an adequate supply of personal protective equipment, so Chinese physicians did not have to involve themselves in difficult decision-making processes concerning their own safety or the health of their patients.

Poland (2020) explains that the promptness with which action was taken by Chinese health workers is due to the social functioning of their culture. Despite the lack of discretion and autonomy of Chinese doctors, Poland points out that because this is a culture that is willing to follow strict government policies and interventions without questioning them, and because community welfare prevails over individual welfare, it facilitated a successful control of the pandemic (2). He also mentioned that Chinese government has the ability to impose greater constraints on individual freedoms than what would be considered acceptable in most Western countries (2). Because of the culture and political model, citizens (including SLBs) had to comply

with those rules and if they did not, the government provided drones equipped with echoing loudspeakers that rebuked those Chinese citizens.

According to Bulki (2020) the most important factor associated with a successful control of the pandemic in China was the speed with which the government acted. 14,000 health checkpoints were established in public transportation services across the country with which nine million tests were performed in Wuhan in the course of a few weeks. It is estimated that the public health actions carried out between January 29, 2020, and February 29, 2020, prevented 1.4 million new cases and 56,000 deaths at a national level (2).

Despite the statistics, some opinions regarding the origin of the pandemic have generated worldwide concern. A report from Sparrow (18) and Putnoki (19) showed that Chinese authorities instead of notifying the World Health Organization about the outbreak of pneumonia, decided to censor information to cover the spread of the virus between humans. To do that, they arrested eight doctors in December 2019 and early January 2020 for speaking out about the existence of the virus and for trying to warn other colleagues before any official information was given by government entities. Due to the information exemplified above, we recognize that there is still a lack of information regarding the situation of healthcare workers, their infection rate and the veracity of the statistics that are officially presented in literature due to same sociopolitical conditions of this country.

United States: confusing strategies due to a decentralized response

One of the countries most affected by the pandemic is the United States. By July 2020, fourteen states had an ICU occupancy above 70% (4) and at the time of this review more than 315,000 lives had been lost. A severe shortage of personal protective equipment has been reported (5). Cohen describes that in May of 2020, 87% of nurses had to reuse a single-use disposable mask or N95 respirator and 27% had been exposed to confirmed cases without wearing appropriate personal protection equipment. According to information published by the Centers of Disease Control and Prevention, the US had more than 170,000 cases among healthcare workers and ranked second worldwide in mortality, with 1,077 deaths in September 2020. The government anticipated personal protective equipment shortages since 2006 based on a report published by the National Institute for Occupational Safety and Health (5). This shortage in equipment supply, combined with healthcare workers becoming infected and having to complete a period of isolation and the increased demand for hospital availability, destabilized the healthcare infrastructure. Individual health workers had to buy their own supplies and states had to compete for the acquisition of these tools (6,20).

The above is an example of how general officials in the US created a decentralized and fragmented response to the COVID-19 emergency (20). The government never developed a well-defined strategy, leaving local governments on their own, which resulted in disorganized contact tracing with limited coverage and effectiveness. This made decision-making difficult and affected the work of doctors, worsening the saturation of the health system and increasing the number of cases. Doctors developed different strategies to efficiently distribute the remaining resources. Prescott (2020), working in Michigan, describes how her team had to organize patients in three categories according to the severity of their symptoms based on the SALT Mass Casualty Algorithm. Healthcare workers in Arizona began to make triage decisions based on patients' pre-existing comorbidities. Hibbert, working in Boston, tells how resources had to be transferred and shared between hospitals to have enough resources to treat patients (4).

People suffering from conditions such as acute myocardial infarction or decompensated heart failure also required health services, therefore they had to be taken into account when distributing resources in the different hospitals. Telemedicine became important for patients that

did not require invasive procedures and for patients that could be treated at home (6). Teladoc, one of the leading American telehealth providers, expected between 8 and 9 million total visits in 2020, compared to the 4.1 million they had in 2019 (5).

As an emergency state was declared, healthcare workers had to rethink applying some common medical practices because of the risk of contagion. Al-Tawfiq (6), mentioned that as part of the actions taken to face the pandemic and because of a high risk of aerosolization, they used non-surgical interventions like thrombolysis for acute coronary syndrome instead of interventions such as catheterization.

Italy: complicated ethical decisions through autonomy and discretion

For Sanfelici (7), Italy's response to the coronavirus outbreak was effective at the critical point of the outbreak but did not prevent the country's collapse. By March 2020, Italy had 12,426 cases and 827 deaths. Hospitals were overwhelmed as many patients needed treatment in ICUs. Doctors working in various hospitals mentioned how they took into account the patient's age and comorbidities to decide who to treat. The situation became so distressing that physicians sought advice from ethics departments as they did not know whether those decisions were ethically appropriate (21). Aloudat suggests that physicians should make decisions concerning patients collectively, as this reduces the moral burden and anguish generated (4).

By March 2020, the government issued a decree, 'Il Decreto Cura Italia,' to strengthen the country's health system. In April, ICU beds had doubled, and 13 million euros had been invested to produce more personal protective equipment. With the help of nonprofit organizations and volunteers new hospitals were built (7).

Italian SLBs also faced stigmatization, according to a study done by Ramaci (22), which was carried out with 273 healthcare workers from the National Health Service hospitals in Sicily. In this study, they examined the effects that stigmatization had on healthcare workers during this pandemic. Results showed that stigmatization generates high levels of stress and fatigue leading to burnout. Stigma may inhibit health workers from providing treatment to patients, as they fear getting physically or emotionally attacked. In the context of the coronavirus pandemic, this increases the risk of contagion in the population as physician productivity diminishes and treatment options are threatened.

Mexico: changing roles while dealing with innumerable deaths

The situation of health care workers in Mexico became dramatic, as their role as SLBs within the health system changed (10). Their main purpose before the ongoing pandemic focused on decision-making processes regarding patients' lives, now their main task became resource rationing. This abrupt change gave rise to new roles: physicians became "unitaskers" as they only focused on treating patients infected with coronavirus and left aside other activities. Physician-patient relations changed as they had to modify how they interacted with patients and their families due to an increase in patient volume. Before patients had an active role in decision-making processes but doctors had to start making clinical decisions without taking into account patients' opinions, as decisions began to be based on the risk of respiratory arrest and death (10).

An Amnesty International report from September 2020 shows that Mexico has the highest mortality rate among healthcare workers due to coronavirus infection. At the time, 1,320 Mexican healthcare workers had died, ranking the country in first place worldwide. Penman explains that this is because Mexico is one of the few countries that count healthcare worker deaths in detail, thus providing higher statistics than other countries. Mexican doctors give other explanations for this phenomenon. Martínez de León says that a lot of people who belong to the

medical community have comorbidities (diabetes mellitus, arterial hypertension, and obesity) that can be considered bad prognostic factors for severe coronavirus disease (23).

Brazil: facing the pandemic on their own

Brazil is considered one of the countries that have handled the pandemic in a questionable way. Gabriela Lotta, Vera Coelho, and Eugenia Brage (24) explain why the country has had a tough time fighting this pandemic. The country's government minimized the pandemic's effects by expressing that the pandemic's impact has been exaggerated by the media (24) as well as saying that there should not be a national concern regarding the rise in deaths (25). Due to these statements, the government did not implement measures to reduce the impact of the pandemic. Treatment guidelines that had ambiguous and contradictory information were published four weeks after the start of the pandemic in Brazil. The guidelines proposed new monitoring strategies such as telemedicine but failed to explain how these should be carried out. There was no distribution of resources or personal protective equipment for the correct implementation of these guidelines. By July 2020, more than 40,000 healthcare workers had been infected nationwide. The absence of government support, the vagueness of the published guidelines, and the lack of resources led each region in the country to apply different strategies and to the inactivity of health workers (24).

In November 2020, the government ordered the Sanitary Vigilance Agency to cancel the phase three clinical trials for the Chinese coronavirus vaccine CoronaVac that were being made under the pretext that the vaccine trials had caused the death of an individual. The entity in charge of producing vaccines in Brazil explained that the person's death had no relationship with the vaccine trials. The suspension of the clinical trials was celebrated by Brazil's current administration (25).

Fernando Lima-Silva surveyed several SLBs working with the Brazilian social care network (including social workers and healthcare workers) during the pandemic. 59% of the surveyed workers stated that they did not receive support from their superiors and 46% referred that they did not receive guidance on how to handle the pandemic. They mentioned that the pandemic exacerbated structural problems present in the country, such as the scarcity of healthcare resources as a consequence of Brazil's economic and social crisis (26). Brazil's management of the pandemic proves how the political and economic context of a country can determine the availability and distribution of resources (10).

Colombia: coping with stigmatization

Limited information has been published regarding the impact of government policies on Colombian health workers during the current pandemic, even though the country ranks 10th worldwide in deaths per 100,000 inhabitants and accumulates more than 1,5 million cases (1). Among the information found, the issues affecting Colombian SLBs that stood out most were the availability of personal protective equipment and stigmatization.

Regarding the availability of personal protective equipment, a controversy arose about whose obligation it was to provide these elements to health workers: that of the health-providing institutions or that of the occupational risks' insurers. The lack of legislation and supervision by the government caused the mentioned parties to fail to comply with the necessary supplies and generated a legal vacuum in the process. Health workers had to buy these elements themselves or accept donations. The insufficient quantity of these elements facilitated contagion among health professionals. In June 2020, a report from the National Health Institute showed that at least 1,547 health workers had gotten infected (27).

Regarding stigmatization, more than twenty attacks on medical staff have been recorded

(27). According to a report published by the Colombian Health Ministry, the Panamerican Health Association, and the International Committee of the Red Cross between January and September of 2020, 242 attacks were registered against healthcare workers, the highest number of attacks in the country in the last 24 years (28). Another study carried out with general practitioners found that 40% of doctors have felt discriminated at some point during the pandemic (29). Such behaviors can undermine strategies used to mitigate disease as they lead to denial of medical care in the general population (30). The Colombian president rejected discriminatory acts and set up telephonic lines to report threats anonymously. Various physicians have received death threats, but no one has been penalized for it, leading to conclude that state measures do not appear to be enough to address this issue (27).

The Colombian government has made an effort to expand resources and ICUs across the country. The health minister announced the acquisition of 2,767 ventilators on June 25, 2020 (31), making Colombia the largest purchaser of ventilators in Latin America. The number of ventilators assigned to each department was organized by prioritizing regions where the pandemic had caused more complex situations (32) or regions where these resources had never been available (33). In September 2020, the health minister reported a 91% growth in the total number of ICU beds nationwide (34), and in July 2020, the country increased the availability of coronavirus test processing from one laboratory to 93 nationwide (35). These statistics show that an increase in resource availability improves working conditions and facilitates the decision-making processes for health professionals, but we do not know yet if it is enough for a second or third wave that specialists foresee will come.

In recognition of the work of the SLBs (physicians, nurses, nursing assistants, bacteriologists) during the pandemic, the Colombian government issued economic recognition bonds in the amount of COP $364.742 millions. As of December 2020, 239,841 health workers had received this economic benefit. Additionally, the Colombian Federation of Insurers informed that they would offer insurance coverage to families of healthcare workers who die from coronavirus while exercising their role as health workers. This aid will be given up to June 30, 2021 (36). So far, no information regarding the acquisition and distribution of these economic aids has been published.

Colombia's situation differs from the economic support received by SLB in other countries. The European Observatory on Health Systems and Policies explains that 19 out of the 36 countries analyzed by this institution provided financial aid to their workers. Bulgaria established a monthly payment of 511 extra euros to health professionals throughout the year 2020. Lithuania, Belarus, and Montenegro increased health workers' salaries by 60-100% and France provided a bonus of 500-1500 euros to workers in the highest risk areas (37). German ICU workers received an increase from 46.02 to 100 euros in their monthly salary (38).

Discussion

In examining the results, several central themes were found that can be analyzed using Michael Lipsky's street-level bureaucracy model. These central ideas can be divided into four main categories based on Lipsky's model: the ambiguity of public policies and how this affects SLBs, their use of autonomy and discretion, how they have been affected by the political will and the barriers faced by these social actors.

The Ambiguity of public policies

According to Lipsky, one of the main causes of public policy failure is ambiguity and unclear objectives. This can be seen in the response that the different states had to the pandemic. As demonstrated by the COVID-19 study in the US (5), the rates above mentioned (1), and the analysis about governance in this country done by Reich (20), the actions taken by the US

government were decentralized and fragmented. This caused each state to individually decide how to apply each policy and federal states to compete for resources. There were no traces of leadership, as the head of government publicly rejected scientific advisors, creating conflicting narratives about the value of science and its influence over public policy and personal behavior (20). In the same line, research on the actions of the Brazilian government (10,24,26) showed that they did not implement appropriate and clear measures in time. Guidelines were ambiguous and contradictory, with no clear instructions of how to carry them out. This caused insecurity and indecision in SLBs, applying different strategies in each region that ended up failing because of the absence of support from the state.

A different scenario was found in China. According to Burki, Zong, and Zhu (2,3), the government was able to implement strict and clear policies, with protocols that included a rigorous use of personal protective equipment, an organization model of coronavirus-centered hospitals, the massive realization of diagnostic tests in checkpoints, among other things. This system allowed Chinese SLBs to have more confidence and knowledge of when and how to apply protocols. This led to better control of the pandemic and avoided overcrowding of the healthcare system.

In between these two examples lies Italy. The Italian government's response (7), which consisted of declaring red zones across the country to keep critical areas isolated and designating a large amount of money to the acquisition of ICU beds and personal protective equipment, made it possible for Italian SLBs to have the necessary resources to adequately manage cases despite the rapid spread of the virus.

The ambiguity of political decision-makers shown by Brazil and the US had opposite consequences to the decisions implemented in China and Italy. As Lipsky pointed out, in the first case there was a failure to control the pandemic, which led to adverse outcomes such as more deaths and further spread of the virus; while in the second case, having clear health public policies and well-established goals led to better control of the spread of the virus and, in case of China, to avoid a health system collapse according to official statistics.

Political will

From Lipsky's theory belief in authority is essential for SLBs to efficiently implement public policies. Thus, if a front-line worker does not agree or does not believe in the government policies that they are supposed to implement, they will not be able to implement a protocol correctly. This can be exemplified by comparing the relationship that SLBs have with their rulers in the countries previously mentioned.

In China, SLBs implemented the government's strict isolation policies, followed by mandatory measures involving the use of personal protective equipment, and established a large number of health checkpoints (2,3). Chinese frontline workers were able to efficiently implement the government's public policies because they firmly believed in the decisions made by the government. The country's social functioning, mentioned by Gregory Portland (2), made it possible for SLBs to achieve adequate and fast virus control.

The US and Brazil underestimated the severity of the pandemic as governments were not willing to take preventive measures, which contributed to an unmanageable increase in the number of cases, to the saturation of health resources, and ultimately caused these countries to lead the world rankings in case numbers and deaths. SLBs in these countries made decisions based on their own knowledge because of unclear government policies combined with a lack of government support. The absence of help from authorities impacted the responsiveness of healthcare workers, as they were not able to implement enough strategies to have sufficient control of the virus. This absence of governmental will was explained by Gideon Lasco (2020) using the perspective of medical populism (39), this being a way in which politicians act when facing a public health crisis that puts people against

health establishments. The approach of Brazil and the United States was characterized by the fact that both governments simplified the impact of the pandemic and encouraged division.

Use of autonomy and discretion

Autonomy and discretion are some of the most important characteristics of SLBs according to Lipsky. Autonomy is defined as the right of self-governance (40), while discretion is defined as the ability to make decisions based on individual judgment (41). SLBs in the different analyzed countries had varying degrees of discretion and autonomy that influenced their decision-making processes during the pandemic.

Due to the uncontrollable number of infected patients combined with the saturation of the health system, SLBs in Italy and the US were not able to make decisions based on their judgment. Italian healthcare workers had to seek ethical advice from experts when making decisions based on the age and comorbidities of patients to decide who to treat (21). US health workers in Michigan had to treat patients at random because by doing this they felt that they avoided bias when having to choose between patients (4). Discretion was lost in these scenarios because SLB in these countries did not know how else to handle the situation. In contrast to the circumstances experienced in Italy and the US, healthcare workers in Brazil had to manage the pandemic using discretion as their only tool. Brazil did not have clear government policies and the few guidelines available were issued four weeks after the pandemic had reached the country (24). This caused Brazilian health workers to implement different strategies based on their judgment to cope with the pandemic.

Autonomy in countries where the pandemic got extremely out of control played a very different role than it had in China. In the US, Italy, and Brazil healthcare workers had complete autonomy when making decisions regarding their patients. In the context of Brazil and the US, this was because their rulers created vague and general guidelines, which forced health workers to make decisions based on their own experience (4,24,26,39). In Italy, health workers relied on their autonomy when deciding which patients should be accepted for management in the ICUs (21). In China, SLBs had very little autonomy and discretion, as they faced Lipsky's dilemma of finding a balance between flexibility versus the strict application of public policies and were forced to guide their actions by strict government policies (2,3).

Barriers faced by street-level bureaucrats

Lipsky's approach takes into account limitations that SLBs have to face. When analyzing the results found in this review, it is clear that healthcare workers have come across different barriers during the current pandemic. These include an enormous shortage of protective personal equipment on a global scale, the high number of positive cases, and dealing with stigmatization.

Personal protective equipment

The shortage of protective personal equipment has contributed to a rise in the number of positive cases in healthcare workers worldwide (5). The deficient policies of governments related to the availability and distribution of personal protective equipment have caused major outbreaks in Mexico, US, Brazil, and Colombia. SLBs have had to buy their equipment, wait for donations, or simply treat patients without these elements (5,6,23). A study directed by the Sant Joan Hospital research team on the availability of personal protective equipment during the pandemic in Brazil, Colombia, and Ecuador (42) found that 70% of participants reported a lack of resources for diagnosing and treating COVID-19 patients and 32% of healthcare workers who had close contact with suspected or confirmed COVID-19 cases without implementing adequate protective measures were forced to continue working.

A very different situation was seen in China where rigorous protocols were carried out by the

government, as exposed by Zhu and Zong (3). China is the world's leading producer of personal protective equipment (2), so Chinese healthcare workers did not have to worry about treating patients without these instruments. They were able to manage their patients properly, which contributed to reducing the number of new cases in the country and resulted in better development of street-level bureaucracy.

A high number of cases

The coronavirus pandemic constituted a challenge for healthcare workers worldwide. With more than 80 million cases and 1.5 million deaths around the world (1), SLBs had to face a rapid rise in patient volume in a noticeably short time, which meant having to use a lot of materials and resources to treat them. In Italy, the country that led mortality rankings and was the epicenter of the pandemic in Europe (1,7), hospitals reported a severe saturation of the health system as they faced a scarcity of ICU beds. They had to start choosing who to treat according to specific factors (22). In the US, many states reported over 70% occupancy at these facilities. Due to the number of patients, resources became scarce in all of these countries. In Mexico, the doctor-patient relationship became affected (10) and that healthcare workers turned their main task into resource rationing (24), taking into account that this country is the leader in the case-fatality rate of this population worldwide (1). In Brazil, the pandemic was handled so poorly that since the first reported case, the country has now reported a total of more than seven million cases (1). This situation helped to exacerbate existing structural problems present in Brazil, such as the scarcity of healthcare resources. As mentioned in Lipsky's model, this has a huge impact on the lives of citizens, because putting it in the context of this pandemic, an ICU bed can make the difference between life and death.

Stigmatization

Stigmatization can be defined as a mark of disgrace that sets a person apart from others (21). In a healthcare field, it refers to the negative association related to people or a group who have a specific disease in common (21). Many healthcare workers have been stigmatized and discriminated worldwide during the current pandemic. One of the countries in which this issue has had the most media coverage has been Colombia, where healthcare workers have been facing the highest number of attacks in the country in the last 24 years. The majority of these attacks (52%) have come from patients (28).

Italian health workers in hospitals in Sicily have also suffered the consequences of stigmatization. According to Italian researchers, the most serious consequence is the increased risk of spreading the virus, as this has affected the ability of physicians to do their jobs for fear of retaliation from patients (22).

A study conducted by researchers in the US and Canada in May 2020 surveyed 3,551 Canadian and American non-healthcare citizens to find out their perception of healthcare workers that work with coronavirus. Results showed extensive levels of stigmatization in the general population against healthcare workers: more than 25% of the respondents believe that healthcare workers should have extreme limitations on their freedom. These constraints include not allowing health workers to go out to public places, being permanently isolated from their families and homes. One-third of the respondents said they would avoid contact with healthcare workers because they believe that they could get infected. In reality, healthcare workers are more likely to become infected in their communities than in their workplaces. The use of personal protective equipment minimizes the risk of contagion to 0.01% (43).

Other perspectives

Other important factors that have had an impact on SLBs include the cultural context

and the differences in population structures. The Latin American cultural context is very different from the European cultural context. Colombia is a country with a well-known history of violence that has permeated the country's culture, as Colombian healthcare workers have been severely stigmatized during this pandemic (22,27–29). In contrast, healthcare workers across Europe have been recognized for their effort in the fight against the virus: an Italian city granted healthcare workers a free three-day stay in a hotel where they can engage in numerous outdoor relaxation activities in recognition of their hard work (44).

When examining the differences in population structure, it should be noted that Europe is characterized by having a large proportion of older people. 24% of the population is 60 years or older, compared to 11.2% in Latin American countries (45–47). These variations in the population pyramids help to account for the differences in mortality rates between these regions. A lot of elderly patients in Europe live in geriatric homes, which became one of the main sources of viral transmission, accounting for 31 – 80% of all deaths in Europe during the first peak of the pandemic. Additionally, geriatric patients have been more vulnerable to the virus (48,49).

Brazilian researchers addressed street-level bureaucracy in the context of the current pandemic but focused on the experience lived by social workers in Brazil (26). SLBs in this area dealt with a shortage of resources with which to work. Social workers could not respond properly to the crisis as there was a lack of personal protective equipment and government political actions, insufficient resources, limited availability of information, and lack of guidance. Because the relationship between these workers and their clients is based on close contact, there was a change in it given the need for social distancing, so maintaining bonds was difficult.

It is necessary to know more about the impact that policymakers and governments have had on these important social actors when facing international crises like this one, especially on Colombian healthcare workers, as no information has been published.

Conclusions

The crucial role assigned to SLBs during the current COVID-19 pandemic has been influenced by the public policies and rulers of their countries. Even though this analysis was reached using Michael Lipsky's street-level bureaucracy model as our main reference, there may be some aspects that Lipsky did not consider when stating the main points of his theory that had a big impact on how healthcare SLBs handled the pandemic, like the fact that not all SLBs work in the same context, given the differences in culture, resources, and population structure, and also because as Maynard-Moody and Musheno explained in their work (15), there is also room for improvisation and decision-making based in the behavior of colleagues and environment conditions and not only on compliance with public policies and government decisions. It is worth analyzing these differences for a more complete analysis.

The role of SLBs is extremely important when it comes to tackling global public health issues, such as the SARS CoV-2 pandemic. They need to have the support of government entities to be able to break down barriers that do not allow them to do their job properly and achieve satisfactory control of the issues they address (in this case the control of the spread of the pandemic). It should be noted that there is still a big void of information on the effect that SLB has had in countries such as Colombia in the management of this pandemic, as well as studies that analyze the consequences that this pandemic had on these fundamental leaders of society.

Conflicts of interest

The authors are aware of the policy of confluence of interests of the journal and do not have any to declare.

References

1. Johns Hopkins Coronavirus Resource Center. Mortality analysis [Internet]. [Cited 2020 Dec 15]. Available from: https://coronavirus.jhu.edu/data/mortality

2. Burki T. China's successful control of COVID-19. The Lancet [Internet]. 2020;20(11):1240–1. Available from: https://www.thelancet.com/journals/laninf/article/PIIS1473-3099(20)30800-8/fulltext

3. Zhu S, Zong Z. Why did so few healthcare workers in China get COVID-19 infection. QJM Int J Med. 2020;114(4):225-6. https://doi.org/10.1093/qjmed/hcaa254

4. Parshley L. Who gets to live? How doctors make impossible decisions as COVID-19 surges. National Geographic [Internet]. 2020 Jul 24. Available from: https://www.nationalgeographic.com/science/2020/07/how-doctors-make-impossible-decisions-as-coronavirus-surges-cvd/

5. Bergquist S, Otten T, Sarich N. COVID-19 pandemic in the United States. Health Policy Technol. 2020;9(4):623–38. https://doi.org/10.1016/j.hlpt.2020.08.007

6. Al-Tawfiq JA, Al-Yami SS, Rigamonti D. Changes in healthcare managing COVID and non–COVID-19 patients during the pandemic: striking the balance. Diagn Microbiol Infecti Dis. 2020;98(4):19–22.

7. Sanfelici M. The Italian response to the COVID-19 crisis: lessons learned and future direction in social development. Int J Comm Social Dev. 2020;2(2):191–210. https://doi.org/10.1177/2516602620936037

8. Cohen J, Rodgers Y van der M. Contributing factors to personal protective equipment shortages during the COVID-19 pandemic. Prevent Med. 2020;141(October):106263. https://doi.org/10.1016/j.ypmed.2020.106263

9. Lipsky M. Toward a theory of street - level bureaucracy. Institute for Research on Poverty [Internet]. 1969 Aug [cited 2020 Dec 10];1–48. Available from: https://www.irp.wisc.edu/publications/dps/pdfs/dp4869.pdf

10. Nunes J, Lotta G. Discretion, power and the reproduction of inequality in health policy implementation: practices, discursive styles and classifications of Brazil's community health workers. Soc Sci Med. 2019 Dec;242(December):112551. https://doi.org/10.1016/j.socscimed.2019.112551

11. Erasmus E. The use of street-level bureaucracy theory in health policy analysis in low- and middle-income countries: a meta-ethnographic synthesis. Health Policy Plan. 2014;29 Suppl 3:iii70–8. https://doi.org/10.1093/heapol/czu112

12. Cadena Camargo YML. Heroes or villains? Dilemmas of professionals working with displaced adolescent mothers in Bogotá: an analysis of street-level bureaucracy. En: Medical risk or complex narratives? Using life stories of internally displaced adolescent mothers in Bogotá to put policies in perspective. Bogotá: Ibáñez; 2020. p. 113–32.

13. University of Kansas - School of Public Affairs & Administration. Steven Maynard - Moody. Professor [Internet]. Available from: https://kupa.ku.edu/steven-maynard-moody-0#:~:text=StevenMaynard-Moody'sresearchinterestsattheUniversityofKansas.%0A

14. University of Oregon - Media Relations. Michael Musheno, School of Law [Internet]. Available from: https://uonews.uoregon.edu/michael-musheno-school-law

15. Maynard-Moody S, Musheno M. Social equities and inequities in practice: street-level workers as agents and pragmatists. Public Adm Rev. 2012;72(suppl. 1):S16–23. https://doi.org/10.1111/j.1540-6210.2012.02633.x

16. Salej S, Ardila A, Bragato J. De vuelta a Lipsky: el caso del Programa Estructural en Áreas de Riesgo (PEAR) del Municipio de Belo Horizonte (Brasil). Rev Esp Investig Soc [Internet]. 2016;(154):119–35. Available from: https://www.redalyc.org/pdf/997/99746727007.pdf

17. Vera Carrasco O. Cómo escribir artículos de revisión. Red Med La Paz [Internet]. 2009;15(1):63–9. Available from: http://www.scielo.org.bo/pdf/rmcmlp/v15n1/v15n1_a10.pdf

18. Sparrow A. The Chinese government's cover-up killed health care workers worldwide. Foreign Policy [Internet]. 2021; Available from: https://foreignpolicy.com/2021/03/18/china-covid-19-killed-health-care-workers-worldwide/

19. Putnoki T. China's coverup of COVID-19 and why it is detrimental [Internet]. The Organization of World Peace. 2021 [cited 2021 Jul 11]. Available from: https://theowp.org/chinas-coverup-of-covid-19-and-why-it-is-detrimental/

20. Reich MR. Pandemic governance in Japan and the United States: the control-tower metaphor. Health Syst Ref. 2020 Dec 1;6(1):e1829314. https://doi.org/10.1080/23288604.2020.1829314

21. Rosenbaum L. Facing Covid-19 in Italy — ethics, logistics, and therapeutics on the epidemic's front line. N Engl J Med. 2020;382(20)1969–73. https://doi.org/10.1056/NEJMp2005492

22. Ramaci T, Ledda C, Barattucci M, Rapisarda V. Social stigma during COVID-19 and its impact on HCWs outcomes. Sustainability. 2020;12(9):1–13.

23. Agren D. Understanding Mexican health worker COVID-19 deaths. The Lancet [Internet]. 2020;396(10254):807. Available from: https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(20)31955-3/fulltext

24. Lotta G, Coelho VSP, Brage E. How COVID-19 has affected frontline workers in Brazil: a comparative analysis of nurses and community health workers. J Comp Policy Anal: Res Pract. 2020;23(1):63-73. https://doi.org/10.1080/13876988.2020.1834857

25. "Hay que dejar de ser un país de maricas": las controvertidas palabras de Jair Bolsonaro sobre covid-19. Revista Semana [Internet]. 2020; Available from: https://www.semana.com/mundo/articulo/hay-que-dejar-de-ser-un-pais-de-maricas-las-controvertidas-palabras-de-jair-bolsonaro-sobre-covid-19/202043/

26. Lima-Silva F, Sandim TL, Magri GM, Lotta G. Street-level bureaucracy in the pandemic: the perception of frontline social workers on policy implementation. Rev Adm Publica. 2020;54(5):1458–71.

27. Abuabara YC. Ataque al personal de la salud durante la pandemia de Covid-19 en Latinoamérica. Acta Méd Colomb. 2020;45(3):1–15.

28. Unidad de Salud. Se dispararon los ataques a la Misión Médica durante la

pandemia. El Tiempo [Internet]. 2020 Oct 20. Available from: https://www.eltiempo.com/salud/aumentan-ataques-a-la-mision-medica-en-colombia-durante-la-pandemia-544186

29. Monterrosa-Castro A, Dávila-Ruiz R, Mejía-Mantilla A, Contreras-Saldarriaga J, Mercado-Lara M, Flórez-Monterrosa C. Estrés laboral, ansiedad y miedo al COVID-19 en médicos generales colombianos. MedUNAB [Internet]. 2020 Jul 22;23(2):195–213. Available from: https://revistas.unab.edu.co/index.php/medunab/article/view/3890

30. Cassiani-Miranda CA, Campo-Arias A, Tirado-Otálvaro AF, Botero-Tobón LA, Upegui-Arango LD, Rodríguez-Verdugo MS, et al. Stigmatisation associated with COVID-19 in the general Colombian population. Int J Soc Psychiatry. 2020 Nov 8;0020764020972445. https://doi.org/10.1177/0020764020972445

31. Ruiz Gómez F. Minsalud destacó inversión en el sector para la atención a la población durante la pandemia [Internet]. Ministerio de Salud y Protección Social; 2020. Available from: https://www.minsalud.gov.co/Paginas/Minsalud-destaco-inversion-en-el-sector-para-la-atencion-a-la-poblacion-durante-la-pandemia.aspx

32. Ruiz Gómez F. Colombia ha accedido a 5.692 ventiladores durante la pandemia [Internet]. Ministerio de Salud y Protección Social; 2020 Jul 22. Available from: https://www.bcnoticias.com.co/colombia-ha-accedido-a-5-692-ventiladores-durante-la-pandemia/

33. Por primera vez en su historia, Chocó tiene una Unidad de Cuidados Intensivos. BluRadio [Internet]. 2020 [cited 2020 Dec 20]. Available from: https://www.bluradio.com/salud/por-primera-vez-en-su-historia-choco-tiene-una-unidad-de-cuidados-intensivos

34. Ruiz Gómez F. Total de camas UCI en el país para la atención de covid-19 incrementó 91% [Internet]. Ministerio de Salud y Protección Social; 2020 Sep 7. Available from: https://www.minsalud.gov.co/Paginas/Total-de-camas-UCI-en-el-pais-para-la-atencion-de-covid-19-incremento-91.aspx

35. Cárdenas M, Martínez H. COVID-19 in Colombia: impact and policy responses. Center for Global Development [Internet]. 2020 [cited 2020 Dec 10];(Figure 1):1–19. Available from: https://www.cgdev.org/sites/default/files/Cardenas-Beltran-Covid-in-Colombia.pdf

36. Ruiz Gómez F. Van $364 mil millones girados como bonificación a trabajadores de la salud [Internet]. Ministerio de Salud y Protección Social; 2020 Dec 10. Available from: https://www.minsalud.gov.co/Paginas/Van-364-mil-millones-girados-como-bonificacion-a-trabajadores-de-la-salud.aspx#:~:text=Van%24364millmillonesgiradoscomobonificaciónatrabajadoresdelasalud-MinisteriodeSalud&text=Losbeneficiariossonelcóny

37. Williams G, Scarpetti G, Bezzina A, Vincenti K, Grech K, Kowalska - Bobko I, et al. How are countries supporting their health workers during COVID-19? Eurohealth [Internet]. 2020;26(2):58–62. Available from: https://www.euro.who.int/en/about-us/partners/observatory/publications/eurohealth/health-system-responses-to-covid-19/12.-how-are-countries-supporting-their-health-workers-during-covid-19

38. European Public Service Union. Germany: latest agreement to boost pay in health and care [Internet]. 2021. Available

from: https://www.epsu.org/article/germany-latest-agreement-boost-pay-health-and-care

39. Lasco G. Medical populism and the COVID-19 pandemic. Global Public Health. 2020 Oct 2;15(10):1417–29. https://doi.org/10.1080/17441692.2020.1807581

40. Merriam-Webster Dictionary. Autonomy [Internet]. Available from: https://www.merriam-webster.com/dictionary/autonomy

41. Merriam-Webster Dictionary. Discretion [Internet]. Available from: https://www.merriam-webster.com/dictionary/discretion

42. Martin-Delgado J, Viteri E, Mula A, Serpa P, Pacheco G, Prada D, et al. Availability of personal protective equipment and diagnostic and treatment facilities for healthcare workers involved in COVID-19 care: A cross-sectional study in Brazil, Colombia, and Ecuador. PLoS ONE. 2020;15(11 November):1–13.

43. Taylor S, Landry CA, Rachor G, Paluszek M, Asmundson GJ. Fear and avoidance of healthcare workers: an important, under-recognized form of stigmatization during the COVID-19 pandemic. J Anxiety Disord. 2020;75. https://doi.org/10.1016/j.janxdis.2020.102289

44. Trapp E. Enfoque Europa Coranavirus en Italia: reconocimiento al personal médico. Deutsche Welle [Internet]. 2020. Available from: https://www.dw.com/es/coranavirus-en-italia-reconocimiento-al-personal-médico/av-54024099

45. National Academy of Science. Aging in Latin America and the Caribbean in Global Perspective. In: Strengthening the Scientific foundation for policymaking to meet the challenges of aging in Latin America and the Caribbean: summary of a workshop [Internet]. Washington (DC): National Academies Press (US); 2015. Available from: https://www.ncbi.nlm.nih.gov/books/NBK321995/

46. Eurostat. Eurostat - a look at the lives of the elderly in the EU today [Internet]. European Union - Eurostat. 2020. Available from: https://ec.europa.eu/eurostat/cache/infographs/elderly/index.html

47. Federación Iberoamericana de Asociaciones de Personas Adultas Mayores. América Latina envejece a pasos de gigante [Internet]. 2019. Available from: https://fiapam.org/america-latina-envejece-a-pasos-de-gigante/

48. Pitkala K. COVID-19 has hit nursing homes hard. Eur Geriatr Med. 2020;11:889–91. https://doi.org/10.1007/s41999-020-00411-1

49. Dhama K, Kumar S, Kumar R, Jigyasa R. Geriatric population during the COVID-19 pandemic: problems, considerations, exigencies, and beyond. Front Public Health. 2020; 8:574198. https://doi.org/10.3389/fpubh.2020.574198