

Health in prison: coronavirus disease 2019's challenges in the Brazilian criminal justice system

João Paulo Silva de Paiva¹ , Thiago Cavalcanti Leal¹ , Leonardo Feitosa da Silva¹ , Lucas Gomes Santos¹ , Gibson Barros de Almeida Santana¹ , Michael Ferreira Machado^{1,2} , Carlos Dornels Freire de Souza^{1,2*} 

INTRODUCTION

On December 31, 2019, China reported to the World Health Organization (WHO) an outbreak of pneumonia in Wuhan City, the capital of Hubei Province. The disease, coronavirus disease 2019 (COVID-19), quickly spread around the world, resulting in a pandemic, declared by WHO on March 11, 2020^{1,2}.

Faced with the worsening of the health situation, governments have adopted measures aimed at limiting the spread of the disease in order to avoid the collapse of health systems. The main measures include the reinforcement of hygiene actions and of the health system and social distancing/isolation. These provisions consider the transmission dynamics of SARS-CoV-2, which is occurred by aerosols, to reduce the intensity with which the disease spreads in the population^{3,4}.

Therefore, it is necessary to worry about possible places where the disease can become an even more serious problem, with incidence and lethality rates higher than the national average. This is the case of the persons deprived of liberty (PDL), and within this group, the prison population deserves to be highlighted.

PDL is any form of detention, imprisonment, institutionalization, or custody of a person, for reasons of humanitarian assistance, treatment, guardianship, or protection, or for offenses and infractions of the law, ordered by a judicial or administrative authority or any other authority, or under their de facto control, in a public or private institution in which they do not have freedom of movement⁵.

Brazil has the third largest prison population in the world, leaving behind only the USA and China, which occupy the first and second positions, respectively. There are about 750,000 prisoners in prison units with over 150% overcrowding and living in conditions that violate the most basic human rights⁵.

It should be noted that the entry of the new coronavirus into the criminal justice system will bring damages that will extend to the entire Brazilian society. That said, we reflect on the following five aspects: *i. characterization of the prison population in Brazil, ii. risk groups for COVID-19 in the prison population and the supply of health services, iii. confinement, the rapid spread of the virus, and unsanitary conditions as a determinant of risk, iv. the way the virus can enter the prison system, and v. difficulties in adopting preventive measures.*

Characterization of the prison population in Brazil

The Brazilian criminal justice system presents difficulties related to the quality of its operation, the treatment offered to prisoners, and its resocializing effectiveness. A reflection of this is the disorderly growth of the prison population, which, when associated with the current management problems, aggravates the situation even more⁶.

In Brazil, unlike other countries, such as China and the USA, the prison population has been increasing systematically in recent years. Between 2001 and 2019, this population increased more than threefold, reaching about 755,000 individuals, of which about 748,000 are located in prison units and 7,300 are in police station jails^{6,7}.

The Brazilian prison system is composed of 1,435 confinement institutions, distributed throughout the 27 Federative Units. They are concentrated mainly in the Southeast region (n=493; 34.4%), followed by the Northeast region (n=314; 21.9%)⁶. Data from 2019 show that the Brazilian prison population is predominantly composed of males (95.1%), young people aged between 18 and 24 years (23.1%), browns (43.4%), and people with incomplete elementary education (43.4%). With regard to the sentence regime issued, serving

¹Universidade Federal de Alagoas, Department of Medicine, Medical Sciences and Nursing Complex – Arapiraca (AL), Brazil.

²Universidade Federal de Alagoas, Fundação Oswaldo Cruz, Postgraduate Program in Family Health – Arapiraca (AL), Brazil.

*Corresponding author: carlos.freire@arapiraca.ufal.br

Conflicts of interest: the authors declare there is no conflicts of interest. Funding: none.

Received on May 06, 2020. Accepted on May 23, 2020.

the sentence in a closed regime accounted for almost half of the cases (48.46%)⁷.

In 2019, these prison institutions held the capacity to accommodate 442,349 individuals; however, by means of the total number of incarcerated persons in the same period, there was also a surplus population of 312,925⁷. This leads to overcrowding, in which the inmate/vacant ratio is about 1.7, leading to unhealthy situations, marked mainly by poor hygiene and environmental conditions. These factors are a strong potential for the transmission of respiratory diseases, such as tuberculosis, which represents an obstacle for an already deficient system.

The excess population in confinement generates a high maintenance cost for public authorities. On average, 2,700 *Reais* are spent per month per prisoner, which becomes 2 billion *Reais* when considering the total contingent of PPL in Brazil in 2019⁸. This situation is inconsistent with the Brazilian economic state and may be worsened if there is an increased demand for investment with the likely arrival of COVID-19 in prisons.

Risk groups for coronavirus disease 2019 in the prison population and the supply of health services

The health of people in prison is a right established in international and national laws that define the responsibility of the state in preserving their health. For the analysis of the pandemic of COVID-19 in the prison system, it should be evidenced that the profile of this population is far from being a reflection of the population outside the prison walls. These epidemiological differences are of fundamental importance for the identification of the risk profile in the prison system. For COVID-19, the literature¹³ points out the main risk groups: *i. the elderly population (60 years or older)*; *ii. people with chronic diseases* (heart disease, lung disease, diabetes, hypertension, cancer, among others); *iii. pregnant women*; and *iv. individuals with infectious diseases and compromised immune system*.

Elderly prison population

In 2019, 1.3% of inmates over the age of 60 years are part of the incarcerated contingent in Brazil⁷. These people deserve special attention for their tendency to develop more aggressive forms of COVID-19, requiring medical care and often interventions at the hospital level.

People with chronic diseases

Chronic diseases are not contemplated in prison information surveys, but it is known that these are present in prison. Chronic diseases, such as diabetes mellitus (DM) and systemic arterial hypertension (SAH), were found in 3.2 and 11.6% of

the inmates, respectively, and from the total of these prisoners, 26.1% used controlled medication⁹.

However, in people with cardiovascular diseases (i.e., hypertension, stroke, heart failure, and dyslipidemias), it can reach rates of up to 10.5%. In the sequence, diabetics (7.3%), people with chronic respiratory disease (6.3%), hypertensive people (6%), and cancer patients (5.6%) have the highest mortality rates¹⁰.

In the case of patients with heart disease, impaired circulation and impaired pulmonary function seem to favor the aggressiveness of the infection. *DM*, mainly type 2 (DM2), is a risk factor for the aggravation of several infections because it impairs the body's defenses against viruses and bacteria¹¹.

Pregnant women in the prison system

In the period from January 25, 2018 to March 5, 2018, the National Council of Justice inspected 24 women's correctional facilities, finding that at the time, there were 179 pregnant and 167 lactating women. The vast majority serve their sentences in precarious and unsanitary situations¹².

Individuals with infectious diseases and compromised immune system

In 2019, according to the National Prison Information Survey (InfoPen), among the Brazilian prison contingent (n=755,274), 8,523 individuals living with HIV (1.13%), 3,030 (0.40%) cases of hepatitis, and 9,113 (1.21%) cases of tuberculosis were recorded⁷. However, the literature points out that these numbers can be even higher, with up to 28.5% for tuberculosis, up to 33.8% for STIs, and 35.2% for HIV. In addition, inmates are classified as vulnerable to infectious diseases: syphilis, tuberculosis, scabies, mycosis, HIV, gonorrhea, genital herpes, HPV, meningitis, and hepatitis as highly prevalent in the incarcerated population⁹.

These diseases weaken the host, are potential aggravating factors in new coronavirus infections, and reveal a compromised immune system in these individuals. Additionally, as these diseases, especially HIV, are highly prevalent, the number of severe forms of COVID-19 may increase significantly, overburdening the health care system¹³.

As for drug use, about 58% of the inmates use licit drugs and 38% use illicit ones⁹. Smoking is highly noted among inmates and contributes to an increase in the chance of opportunistic infections, worsening of preexisting infections, and impairment of the respiratory system¹⁴.

Only 69% of the country's prison units offer medical assistance, and only 37% of these units have health modules to attend to the prison population^{5,15}. In some regions, such as the Northeast, which is second in the number of inmates, the

offer of health care is even lower, with only 57.3% of the units providing some type of service⁷.

Confinement, rapid spread of the virus, and unsanitary conditions as a risk determinant

Besides the biological determinants, environmental risk factors, such as inadequate prison architecture, poor sanitation, overcrowding, and poor ventilation conditions, are present in daily prison life^{7,15}. The characterization of environments as unhealthy is given by precarious environmental and personal hygiene, which remains the target of preventive intervention. Such measures, along with social isolation, are the main ways to avoid the transmission of the virus¹⁶.

Part of the overcrowding stems from the delay in judging cases. At least 40% of the prison population is composed of people waiting to know whether they will be convicted or not. This makes the environment favorable for the spread of infectious and contagious diseases since the vacancy deficit is more than 350,000^{7,8}. Thus, overcrowding forces the sharing of cells between healthy and sick individuals.

This situation has repercussions for the professionals who perform services inside prisons, who are in direct contact with the prison population; therefore, a failure in the health system¹⁷ indicates an increased risk of infection for these workers, who may become potential facilitators of transmission, in a two-way street: from inside to outside and from outside to inside the prison system.

How the virus can enter the prison system?

The mechanism of virus transmission from person to person, by contact and aerosols, favors the massive transmission in closed environments that promote the union of droplets containing the virus in the ambient air, promoting the formation of aerosols^{18,19}. This aspect becomes even more relevant when added to a majority of asymptomatic carriers²⁰ and the average incubation time that ranges from 2 to 11 days²⁰.

The sum of these factors sows a favorable environment and strengthens the silent entry of the infection in the prison population through its servers who carry out the transfer from home to work. In this context, only one contaminated employee can act as a vector of mass transmission, since it is impossible to maintain the minimum distance of 1.5 m from person to person²⁰, unworkable in an overcrowded system.

Besides the fixed prison and penitentiary employees, it is necessary to reiterate that around 1,033 units make use of outsourced services, referring to health, food, cleaning, laundry, security, administrative services, and educational, labor, social, and legal assistance⁷. This aspect leads to an environment of

even greater contacts, whether due to employee turnover in these companies or their circulation in the environment outside the workplace.

Visits to detainees also present themselves as a possible mechanism, facilitating the entry of the virus into the prison environment. This is because, first, visits generate population clusters, and second, viruses of the *coronaviridae* family can remain alive on surfaces for long periods of time (metal for up to 5 days and glass surfaces for up to 4 days)²¹. The third mechanism concerns the release of inmates for medical care outside the units.

Controlling the movement of people is one of the most effective strategies in controlling the pandemic^{21,22}. This way, the temporary exits of prisoners, foreseen in the Brazilian legal system, act as another facilitator of the virus dissemination by the transit of people in prison and hospital environments.

Difficulties in adopting preventive measures

The Penitentiary System, as part of the Brazilian population, must adapt to the changes in order to also fight against COVID-19. These measures basically involve changes in lifestyle habits that reduce the probability of infection and delay the peak of the epidemic, thus reducing the burden caused by the disease²³. They are based on the reduction or prevention of contact through distancing, segregation, or social isolation and sanitization of hands and shared objects²⁴.

However, it should be noted that Brazilian inmates are facing a specific situation imposed by the lack of operational conditions in the prison system^{7,8}. This situation presents several factors that are contrary to international recommendations, turning prisons into high-risk sites for the dissemination of COVID-19.

Social distancing is one of the measures that aim to reduce the speed of virus transmission^{20,23}. The basic premise of this measure is to move away, therefore, to have space for it. When it comes to the Brazilian prison system, the impossibility of implementing this measure must be emphasized. The overcrowding resulting from these environments makes it impossible to apply social distancing as a prevention measure.

Added to the exchange of shifts and work schedules, these professionals, evidently, when they return to their families and their leisure activities, may come into contact and potentially expose themselves to the virus. Thus, they serve as a vector for transmission inside prisons. It is estimated that the system has more than 40,000 professionals that enter and leave the penitentiary units every day²⁵.

Due to the lack of space to hold all the inmates, the prison system is insufficient to take the basic measures in the situation of suspected and/or confirmed cases of COVID-19, when it is necessary to keep the individual in isolation for 14 days^{20,23}, a

difficult measure in an overcrowded system without the minimum necessary structure.

In overcrowded prisons, a single toilet can be shared with up to 70 inmates, and since it does not have a working flush, it receives water only once a day. Besides this, the supply of water for sanitation is deficient. A similar situation occurs for other items of support to personal hygiene.

FINAL NOTES

The pandemic of COVID-19 poses challenges to all governments and health systems to ensure the health protection of the population. In the Brazilian context, a country marked by health inequities²⁴, population groups are more vulnerable to the effects of the pandemic.

To ponder about the prison population is not limited to thinking about health care strategies for this group, but it involves all workers and other professionals who work directly or indirectly in the prison system. It is necessary for an articulated action of the health sector with the other areas of the social protection system, in order to plan and execute actions that favor the adhesion of protective measures and minimize the deleterious impacts of the pandemic. It is essential that these decisions are based on the best scientific evidence available.

REFERENCES

- Zhu N, Zhang D, Wang W, Li X, Yang B, Song J, et al. A novel coronavirus from patients with pneumonia in China, 2019. *N Engl J Med*. 2020;382(8):727-33. <https://doi.org/10.1056/NEJMoa2001017>
- World Health Organization. Coronavirus disease 2019 (COVID-19): situation report – 51. 2020. [cited on March 11, 2020]. Available from: https://www.who.int/docs/default-source/coronaviruse/situation-reports/20200311-sitrep-51-covid-19.pdf?sfvrsn=1ba62e57_10
- Qualls N, Levitt A, Kanade N, Wright-Jegede N, Dopson S, Biggerstaff M, et al. Community mitigation guidelines to prevent pandemic influenza - United States, 2017. *MMWR Recomm Rep*. 2017;66(1):1-34. <https://doi.org/10.15585/mmwr.rr6601a1>
- Organização dos Estados Americanos. Princípios e boas práticas para a proteção das pessoas privadas de liberdade nas américas. Washington (DC): Comissão Interamericana de Direitos Humanos (CIDH); 2020. Available from: <https://www.oas.org/pt/cidh/mandato/Basicos/principiosPPL.asp>
- Departamento Penitenciário Nacional. Levantamento nacional de informações penitenciárias – Infopen. 2019. [cited on April 17, 2020]. Available from: <http://depen.gov.br/DEPEN/depen/sisdepen/infopen/infopen>
- Conselho Nacional de Justiça. Reentradas e reinterações infracionais: um olhar sobre os sistemas socioeducativo e prisional brasileiros. Brasília (BR): CNJ; 2019.
- Departamento Penitenciário Nacional. Levantamento nacional de informações penitenciárias – Infopen. 2019. [cited on April 17, 2020]. Available from: <http://depen.gov.br/DEPEN/depen/sisdepen/infopen/infopen>
- Conselho Nacional de Justiça. Ressocializar presos é mais barato que mantê-los em presídios (online). 2017. [cited on April 19, 2020]. Available from: <https://www.cnj.jus.br/apac-onde-ressocializar-presos-custa-menos-que-nos-presidios>
- Alves JP, Brazil JM, Nery AA, Vilela ABA, Martins Filho IE. Perfil epidemiológico de pessoas privadas de liberdade. *Rev enferm UFPE on line*. 2017;11(suppl. 10):4036-44. Available from: <https://pesquisa.bvsalud.org/portal/resource/pt/bde-33193>
- Sociedade Brasileira de Cardiologia. Infecção pelo Coronavírus 2019 (COVID-19). SBC informa: nota de esclarecimento. 2020. [cited on March 13, 2020]. Available from: <http://www.cardiol.br/sbcinforma/2020/20200313-comunicado-coronavirus.html>
- Jordan RE, Adab P, Cheng KK. Covid-19: risk factors for severe disease and death. *BMJ*. 2020;368:m1198. <https://doi.org/10.1136/bmj.m1198>
- Conselho Nacional de Justiça. Relatório estatístico. Visita às mulheres grávidas e lactantes privadas de liberdade. 2018. Available from: <https://www.cnj.jus.br/presidios-femininos-tem-466-gravidas-ou-lactantes>
- Chen J. Pathogenicity and transmissibility of 2019-nCoV - A quick overview and comparison with other emerging viruses. *Microbes Infect*. 2020;22(2):69-71. <https://doi.org/10.1016/j.micinf.2020.01.004>

AUTHORS' CONTRIBUTIONS

CDFS: Conceptualization, Data curation, Formal Analysis, Funding acquisition, Investigation, Methodology, Project administration, Resources Software, Supervision, Validation, Visualization, Writing – original draft, Writing – review & editing. **JPSP:** Conceptualization, Methodology, Project administration, Resources Software, Supervision, Validation, Visualization, Writing – original draft, Writing – review & editing. **LFS:** Conceptualization, Formal Analysis, Funding acquisition, Investigation, Methodology, Resources Software, Supervision, Validation, Visualization, Writing – original draft. **TCL:** Conceptualization, Data curation, Formal Analysis, Funding acquisition, Investigation, Methodology, Project administration, Resources Software, Visualization, Writing – original draft, Writing – review & editing. **GBAS:** Conceptualization, Formal Analysis, Funding acquisition, Investigation, Project administration, Resources Software, Supervision, Validation, Visualization, Writing – original draft. **LGS:** Conceptualization, Funding acquisition, Investigation, Methodology, Project administration, Validation, Visualization, Writing – original draft, Writing – review & editing. **MFm:** Conceptualization, Investigation, Methodology, Project administration, Resources Software, Supervision, Validation, Visualization, Writing – review & editing.

14. Jacondino C, Schwanke C, Closs VE, Gomes I, Borges CA, Gottlieb M. Associação do tabagismo com biomarcadores REDOX e fatores de risco cardiometabólicos em idosos. *Cad Saúde Colet.* 2019;27(1):45-52. <https://doi.org/10.1590/1414-462x201900010279>
15. Santana N, Ribeiro LS, Reis LS, Freitas MYG, Oliveira CC, Souza ILC. Dificuldades para o controle da Tuberculose em unidade prisional do Brasil. *Investigação qualitativa em saúde.* Volume 2, Atas CIAIQ. 2019. Available from: <https://www.proceedings.ciaiq.org/index.php/CIAIQ2019/article/view/2219>
16. Ministério das Saúde. Protocolo de manejo clínico do Coronavírus (Covid-19) na atenção primária à saúde. Versão 8. Secretaria de atenção primária à saúde (SAPS). Brasília (BR): Ministério das Saúde; 2020.
17. Silva ACLG, Nazaré ON, Lima DC. Atenção à saúde do Homem privado de liberdade. Florianópolis (BR): Universidade Federal de Santa Catarina, Centro de Ciências da Saúde; 2015.
18. Adhikari SP, Meng S, Wu Y-J, Mao Y-P, Ye R-X, Wang Q-Z, et al. Epidemiology, causes, clinical manifestation and diagnosis, prevention and control of coronavirus disease (COVID-19) during the early outbreak period: a scoping review. *Infect Dis Poverty.* 2020;9(1):29. <https://doi.org/10.1186/s40249-020-00646-x>
19. Backer JA, Klitgenberg D, Wallinga J. Incubation period of 2019 novel coronavirus (2019-nCoV) infections among travellers from Wuhan, China, 20-28 January 2020. *Euro Surveill.* 2020;25(5):2000062. <https://doi.org/10.2807/1560-7917.ES.2020.25.5.2000062>
20. Ministério das Saúde. Protocolo de manejo clínico do Coronavírus (Covid-19) na atenção primária à saúde. Versão 8. Secretaria de atenção primária à saúde (SAPS). Brasília (BR): Ministério das Saúde; 2020.
21. Kampf G, Todt D, Pfaender S, Steinmann E. Persistence of coronaviruses on inanimate surfaces and its inactivation with biocidal agents. *J Hosp Infect.* 2020;104(3):246-51. <https://doi.org/10.1016/j.jhin.2020.01.022>
22. Kraemer MUG, Yang C-H, Gutierrez B, Wu C-H, Klein B, Pigott DM, et al. The effect of human mobility and control measures on the Covid-19 epidemic in China. *Science.* 2020;368(6490):493-7. <https://doi.org/10.1126/science.abb4218>
23. Belingheri M, Paladino ME, Riva MA. COVID-19: Health prevention and control in non healthcare settings. *Occup Med (Lond).* 2020;70(2):82-3. <https://doi.org/10.1093/occmed/kqaa048>
24. European Centre for Disease Prevention and Control. Guidelines for the use of non-pharmaceutical measures to delay and mitigate the impact of 2019-nCoV. ECDC technical report, Stockholm. 2020. [cited on April 28, 2020]. Available from: <https://www.ecdc.europa.eu/en/publications-data/guidelines-use-non-pharmaceutical-measures-delay-and-mitigate-impact-2019-ncov>
25. de Barcellos AP. Violência urbana, condições das prisões e dignidade humana. *Rev Direito Admin.* 2010;254:39-65. <https://doi.org/10.12660/rda.v254.2010.8074>

