Total Containment of Libreville, Police Checks and Risk of Propagation of COVID-19

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Abstract:

The malicious actions of certain police officers deployed on the ground by the Gabonese authorities with the aim of enforcing the total containment of Libreville may encourage the propagation of COVID-19. It is the result of modeling social interactions between a corrupt police officer assigned to a checkpoint, motorists and their passengers. In fact, following police corruption, 5 people are likely to be infected on the first day and a total of 573 people at the end of the containment period.

Keywords: *Police officers; Total containment of Libreville; Propagation of COVID-19*

1. Introduction

To fight against the propagation of COVID-19 in Gabon, "*the containment (of Grand Libreville[1]) will take effect on Sunday, April 12 at 24 hours or Monday, April 13 at 00 hours and will last 15 days ... The Police and Defense Forces(will be deployed on the ground) to ensure compliance with the measures enacted by the government including those related to containment, closure of places of worship and drinking places ...*" said the Minister of the Interior on 11 April 2020[2]. This announcement marks a turning point in the policy to combat the spread of COVID-19 in Gabon, which to date has 166 people declared positive, including 24 healed and one deceased.

However, the behavior of some police officers deployed in the field is not always beyond reproach. Indeed, they use corruption[3]and abuse of the population and[4] do not always respect the recommended barrier measures, despite the fact that they have been equipped with protective equipment by the Government.

Therefore, we ask ourselves whether this indelicate behavior could not be one of the factors that could accelerate the propagation of COVID-19 in Gabon in a period of total containment.

To this end, we assume that if no effective measures are taken by the authorities to neutralize these agents early in the containment process, they may become a vector for the propagation of COVID-19. To demonstrate this, we are developing a "***corrupt cop model***" in which social interactions between a corrupt police officer, certain motorists and the population going to the food market are formalized using mathematical tools.

Data on the propagation of the virus, generated from a simulation, confirm our working assumption. Indeed, their analysis shows that the social interactions between the three protagonists listed above may lead to an increase in the number of infected people.

The rest of the work is presented as follows: in section 2, the assumption of the propagation of COVID-19 through the channel of rogue police officers during the period of total confinement in Libreville is explained. In section 3, the "***corrupt cop model***" is urbanized. Finally, in section 4, advice is made before concluding.

[1] Political capital of Gabon, a Central African country

[2]https://www.gabonmediatime.com/confinement-du-grand-libreville-les-precisions-du-ministere-de-linterieur/

[3]https://7joursinfo.com/actualites/le-confinement-total-un-business-pour-qui-les-forces-de-lordre/?fbclid=IwAR22J81YYU6wSu0BD1zK0JrRc3MaE1uZ5Xfp-8ABOqK_L07yHSHHl1Z0BNk

[4]https://www.focusgroupemedia.com/confinement-du-grand-libreville-des-agent-des-forces-de-lordre-abuseraient-de-leur-autorite/?fbclid=IwAR1octdciAArWSYmwhbHfbDcNv7lR1mIkCYQO2D3eUEqFzlWlFjcsTd01uY

2. Method

2.1. Libreville Total Containment, Indiscriminate Police Officers and the Assumption of the Spread of COVID-19

Since the beginning of the total containment of Libreville, it is observed the malicious acts by some police officers at certain checkpoints. These acts may be a factor in the propagation of COVID-19. This assertion is based on press papers[5], testimonies of the population in the social media[6] and an investigation conducted by a journalist[7]. These malicious acts can be classified in three categories: abuse of power, corruption and non-compliance with barrier measures.

With regard to the abuse of power, at some checkpoints in Libreville, some police officers unfortunately abuse their power with the population with a disconcerting excess of zeal. Testimonies abound in the press[8] and social media[9]. In an article published by the online information site "*gabonactu.com"* it is stated that "*put to work by thegovernment to enforce the barrier measures against Covid-19, the police have turned themselves into real agents collecting imaginary taxes from economic operators."*[10]

At a press briefing organized by Copil-Gabon[11] on 17 April 2020, a journalist denounced to Copil-Gabon a number of abuses he had allegedly suffered at the hands of police officers in the performance of his duties.

In addition, during the period of total confinement, people are allowed to buy food in markets that remain open every day of the week. They are also allowed to go out for medical emergencies[12].

However, the authorities have not established a pass to the population for this purpose[13]. As a result, some police officers have rushed into this breach to violate the right to food and health. A journalist from the online website "*gabonmediatime.com"* noted this overzealousness on the part of some police officers during an investigation he conducted at certain checkpoints in Libreville[14].

With regard to corruption, part of the Gabonese police force is notoriously prone to corruption, as is often reported in the press[15] and byroad haulage associations. According toTransparency International's 2019 report on corruption, the police are the most corrupt institution in Gabon[16].Some police officers that are currently deployed on the ground to enforce the total confinement of Libreville are reportedly continuing to do so[17]. Unfortunately, this behavior may be a vector for the propagation of COVID-19 as we show in section 3 below.

Lastly, with regard to non-compliance with the barrier measures, the Gabonese authorities claim to have provided all the necessary protective equipment to the police officers deployed on the ground to enforce total containment in Libreville.

However, it is observed that not all police officers comply with the barrier measures on the ground. Indeed, some do not wear masks and gloves, and do not respect social distancing at certain checkpoints. Some even hang the masks on their faces, without protecting their nose and mouth. In this context, they can transmit the virus, if they

[5]https://www.gabonactu.com/covid-19-les-controles-policiers-desormais-eriges-en-fonds-de-commerce/
[6]https://www.facebook.com/GabonMediaTime/videos/2343354735961633
[7]https://www.gabonmediatime.com/confinement-du-grand-libreville-controle-systematique-pour-les-vehicules-libre-circulation-pour-les-pietons/?fbclid=IwAR0TyXWvaozvarXWvRLvHu8F2cyXEBQC8nQ3dL9Ue7XWXFIAw2Hy5Cstcpk
[8]http://www.msn.com/fr-xl/afrique-centre-et-est/gabon-actualite/covid-19-en-plus-des-rackets-routiers-les-contr%C3%B4les-policiers-d%C3%A9sormais-%C3%A9rig%C3%A9s-en-fonds-de-commerce-au-gabon/ar-BB12hgW2?li=AADNyR0and https://www.gabonactu.com/covid-19-raymond-ndong-sima-malmene-a-un-point-de-controle/
[9]https://www.facebook.com/GabonMediaTime/videos/2343354735961633
[10]https://www.gabonactu.com/covid-19-les-controles-policiers-desormais-eriges-en-fonds-de-commerce/
[11] Steering Committee for the monitoring and response plan against the coronavirus pandemic in Gabon
[12]https://www.gabonmediatime.com/confinement-du-grand-libreville-les-precisions-du-ministere-de-linterieur/
[13]https://www.gabonmediatime.com/confinement-au-grand-libreville-mafia-autour-des-laissez-passer/
[14]https://www.gabonmediatime.com/confinement-du-grand-libreville-controle-systematique-pour-les-vehicules-libre-circulation-pour-les-pietons/?fbclid=IwAR0TyXWvaozvarXWvRLvHu8F2cyXEBQC8nQ3dL9Ue7XWXFIAw2Hy5Cstcpk
[15]https://www.gabonactu.com/racket-des-policiers-pris-en-flagrant-delit-grace-a-une-video-relayee-sur-les-reseaux-sociaux/and https://www.gabonmediatime.com/gabon-deux-policiers-vereux-poursuivis-pour-racket-a-libreville/
[16]https://www.transparency.org/files/content/pages/GCB_Africa_2019_Full_report_FR_WEB.pdf
[17]https://7joursinfo.com/actualites/le-confinement-total-un-business-pour-qui-les-forces-de-lordre/?fbclid=IwAR1tYCkfMUdjt_vHvzdrMMFgYsrgP1oz3uPkU-SNCBDW5dXN-_UhLeIUIXk

are carriers, during verbal exchanges[18]with the population, or be infected if their interlocutor is a carrier of the virus. They can also transmit it to motorists by touching their vehicle papers during checks or be infected at the same time.

Consequently, it seems justified to assume that there is a possible risk of propagation of COVID-19 in Libreville during the period of total containment, a propagation that would be carried by the police officers involved.

2.2. ***" The Corrupt Cop Model"***

The "***corrupt cop model***" presents a theoretical situation in which the actions of a corrupt police officer are at the origin of the propagation of COVID-19 in period of total confinement in Libreville.

Suppose that Libreville has a single market where the entire population supplies itself during a one-month period of total containment decreed by the Government. On the road leading to this market, there is a check-point where a corrupt police officer who does not respect the barrier measures of hygiene and social distancing, known as a "***corrupt cop***", operates.

In times of confinement, taxis no longer circulate in Libreville. Public transport is not sufficiently developed. There are not enough buses available to the population and they do not circulate in all the districts of Libreville, especially those with dilapidated roads[19]. In this context, only private vehicles venture there. To get supplies, people living in these neighborhoods with a lack of public transport can go there on foot. However, the market is miles away from their homes, which makes it difficult to get to the market without a means of transport.

As a result of the above, we assume that a clandestine transport activity is developing with the complicity of the "***corrupt cop***". Five (**5**) motorists decide to use their personal vehicles every day to transport people who do not have access to public transport. A person engaged in this activity is usually called a "***clando***" in Libreville. To enter and leave the market, the "***clandos***" go through the check-point held by the "***corrupt cop***". They pay the "***corrupt cop***" a sum of money each time they pass through the checkpoint. However, since we assume that, like the "***corruptcop***"**,** the "***clandos***" also do not comply with hygiene and social distancing measures, the monetary transaction between the two parties can serve as a vector of contagion[20]in the event that one of the parties is initially a carrier of the virus. In addition, it is assumed that the "***clandos***" carry people who are not yet infected and are not immune either. Thus, the latter may be infected by the "***clandos***" who are asymptomatic carriers of the virus. Therefore, we model a theoretical situation of social interactions between the "***corrupt cop****"*, the "***clandos****"* and the passengers that could lead to the propagation of COVID-19 between these three actors in a period of total containment.

We start from the situation where one of the five "***clandos***" would be a carrier of the virus, asymptomatic but contagious at the beginning of total containment. Each "***clando***" makes four (**4**) passages per day between the market and the passengers' homes. For the sake of simplification, it is assumed that it infects only one passenger per around. Passengers carried on the outward journey by a specific "***clando***" are not always the same passengers that the "***clando***" carries on the return journey. Under the theoretical conditions of the "***corrupt cop model***", the propagation process of COVID-19 is as follows:

- **Day 1**: Five "***clandos***" travel back and forth between the passengers' homes and the market. The "***clando***"carrying the virus infects the "***corrupt cop****"* during the monetary transactions they have on **Day 1** and also infects four passengers. This brings the total to **5** people infected on **Day 1**.
- **Day 2**: the policeman contaminated on **day 1** becomes contagious from **day 2**. Since the four "***clandos***" still remaining uninfected at the beginning of **Day 2**and the "***corrupt cop***" do not respect hygiene and social distancing measures, it is assumed that these four "***clandos****"* will all be contaminated by the "***corrupt cop****"* during their monetary transactions that day. Thus, the number of people contaminated in

[18]Bourouiba, L. (2020): "Turbulent Gas Clouds and Respiratory Pathogen Emissions Potential Implications for Reducing Transmission of COVID-19", JAMA Published online March 26, 2020. doi:10.1001/jama.2020.4756.
[19]https://www.gabonreview.com/ouverture-des-marches-les-premiers-couacs-du-confinement-du-grand-libreville/
[20]Angelakis, E., Azhar, E. I., Bibi, F., Yasir, M., Al-Ghamdi, A. K., Ashshi, A. M. Elshemi, A. G. &Raoult, D. (2014): "Paper money and coins as potential vectors of transmissible disease", FUTURE.
Assoumou-Ella, G. (2020): "Transactions and risk of propagation of COVID-19: a model based on the velocity of money in Gabon", GAE Working Paper N° 4.

social interaction on **Day 2** is **8**. That is, the four "***clandos***" contaminated by the "***corrupt cop***" and the four other passengers contaminated by the "***clando***" initially carrying the virus on that day.

- **Day 3**: the four "***clandos***" infected on **day 2** all become contagious but asymptomatic, bringing the total number of contagious "***clandos***" to five. As each contaminates **4** passengers per day, the number of people infected on that day through social interaction is $\mathbf{5 \times 4 = 20}$. Indeed, assuming that the "***corrupt cop***" does not enter into social interaction with the passengers carried by the "***clandos***", the latter become the only vectors for the propagation of the virus in social interaction from **day 3** onwards. From then on, the number of people infected each day in social interaction becomes constant until the end of total containment. It is therefore shown that the number of people likely to be infected each day ($\mathbf{P_n}$), with $\mathbf{n \in N}$, from day ***3*** by thesocial interaction used in the "***corrupt cop model***" is calculated according to equation (1) below:

$$\mathbf{P_n = C \times q} \qquad (\mathbf{1})$$

C is the number of the "***clandos***" and **q** the number of people that a "***clando"***is likely to contaminate per day.

Starting from equation (1) above, the total number of people likely to be contaminated after ***n*** days from **day 3** in the "***corrupt cop model***" is defined by the sum of ($\mathbf{S_n}$) of the first ***n*** terms of $\mathbf{P_n}$*plus***13** (the sum of those infected on days **1** and **2**):

$$\mathbf{S_n = C \times q \times (n - 2) + 13} \qquad (\mathbf{2})$$

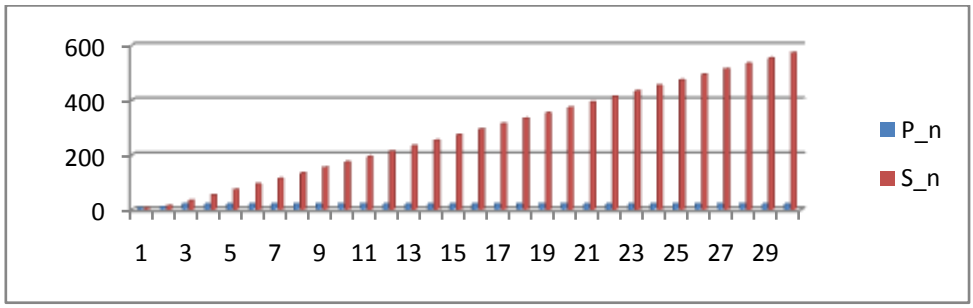
From the information we have on the contagion flows during the first two days and from equations (1) and (2), we generate the data that show a possible evolution of the propagation of the virus during the 30 days of total containment. This evolution is presented in table (1) and graph (1) below.

3. Results

Table 1: Evolution of the risk of propagation of COVID-19

Days	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
P_n	5	8	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20
S_n	5	13	33	53	73	93	113	133	153	173	193	213	233	253	273	293	313	333	353	373	393	413	433	453	473	493	513	533	553	573

Figure 1: Graphical presentation of the risk of propagation of COVID-19



The previous results, obtained from a simulation, show that in social interaction with populations in periods of total confinement, the corruption of certain police officers can be at the origin of a spread of COVID-19. Indeed, 5 people are likely to be contaminated on the first day and a total of 573 people at the end of the containment period.

4. Discussion

To prevent the actions of some police officers deployed in the field to enforce full containment from causing the propagation of COVID-19, we have two main recommendations.

Firstly, the Ministry of the Interior must set up a control team that should go round all checkpoints each dayto ensure that all police officers comply with barrier measures, which the rights of the population are respected, and above all that some do not engage in trafficking.

Secondly, during police checks, police officers should not touch the papers of motorists' vehicles. They should ask motorists to show them at a security distance. Indeed, touching vehicle papers can promote the propagation of the virus, even when the police officer respects the barrier measures. If we take the example of a police officer wearing a mask and gloves and touching the papers on which the virus of an infected motorist is deposited, the virus may stick to the officer's gloves. If, moments later, the officer forgets to clean the gloves with disinfectant before touching another motorist's vehicle papers, he or she may unintentionally endanger the motorist. He may also endanger himself by unintentionally touching his face.

Conclusion

Ultimately, the behavior of some police officers deployed in the field to enforce the Libreville total containment measure may be responsible for the increase in the number of persons infected with COVID-19. If the Gabonese authorities do not take this problem seriously, instead of stopping the propagation of the virus, there is a risk that more people will be infected after the total containment.

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Author Statements

I don't have any ethical approval, funding and competing interests. The study is a theoretical model with simulations.