Abstract

This paper investigates the determinants of protective behaviours during the COVID-19 pandemic in Benin. We use data from online and phone surveys collected during the period 13 September 2020 – 1 October 2020 among Benin citizens aged 18 years and older. Trust in government, beliefs about others' compliance and employment status are significant determinants of compliance with the precautionary measures such as handwashing and social distancing. We also document significant association between trust in government and media use. These findings, therefore, suggest that the Government of Benin's messages should
focus on developing and maintaining trust among the public by providing transparent, coherent, clear, timely, and accurate information that reduces people’s uncertainty and enhances compliance. Two-way communication between the government and citizens can act as bridge to ensure public engagement and disseminate information.

Introduction

The COVID-19 (Corona Virus Disease 2019) has been tied to the province of Hubei in China and rapidly progressed to the level of a global pandemic, with multiple countries in the world reporting increasingly numbers of cases (World Health Organization [WHO], 2020). The first case in Benin was reported on 16 March 2020 (Staff, 2020), followed by a series of governmental decisions to invite population for adopting protective behaviours (such as handwashing, face covering, and physical distancing) to avoid infection and then to slow the spread of the virus. However, the success of these risk measures is particularly critical in the case of COVID-19 due to its high transmissibility, even in the absence of symptoms (Wise et al., 2020). The protective measures rely largely on rapid changes in population behaviours, which are dependent on individuals’ ability to perceive risks associated with the virus and adapt their behaviour accordingly. In fact, in the case of a pandemic where the primary responsibility of risk management is not centralized within institutional actors but defused across society, trust can become a double-edged sword (Wong & Jensen, 2020). Under these conditions, public trust based on a perception of government competence, fairness, care, and openness may in fact lead people to underestimate risks, and thus reduce their compliance with government risk management measures (Poortinga & Pidgeon, 2003).

This paper investigates the determinants of protective behaviours in response to the COVID-19 pandemic in Benin. In the case where there will be multiple waves of the pandemic, findings from this paper may guide the Benin Government to identify the groups of the population that needs targeted communications to limit the spread of the virus. To reach the research objectives, we use data from online and phone surveys that have been run during the period 13 September 2020 – 1 October 2020 in Benin. Each survey consists of using the snowball sampling approach to reach the eligible respondents who are invited to fill a Google form questionnaire. To deal with the self-selection issue, related to the fact that sample from online survey may mostly include educated respondents, we constrain surveyors running the phone survey to mostly reach people who are less educated. The final sample (for both online and phone surveys) consists of 2,070 respondents (where 239 are from the online survey and 1,831 are from the phone survey). The survey has four parts: the first ask respondents’ opinions about the current situation and risks surrounding the COVID-19; the second part addresses the health measures recommended by the government to limit the spread of the virus; the third part collects sociodemographic information about respondents; and the fourth part assesses the socioeconomic impact of the pandemic.
We rely on the baseline strategy that uses the ordered logit model to document the determinants of protective behaviours. We find that individuals with low trust in government are less likely to comply with handwashing and social distancing measures. Knowing someone who has contracted the coronavirus in the past increases respondents' likelihood to follow the face covering recommendation. These effects are heterogeneous with respect to education and place of residence. We also document that part-time workers are more likely to comply with the COVID-19 precautionary measures. However, perceived risk of contracting the virus soon does not significantly predict individuals' compliance with the health measures. We also study heterogeneous effects for subgroups, defined by sociodemographic characteristics, to enrich the discussion and interpretation of the results. We find that the positive association between trust in government and compliance with the COVID-19 precautionary measures is driven by high-skilled individuals and those living in rural areas.

We contribute to the literature on compliance with COVID-19 precautionary measures by addressing the following research gaps. First, we document that trust in government and health authorities plays a crucial role in compliance with COVID-19 precautionary measures. Current research findings have been mixed. Some studies find that trust in government encourages compliance behaviour (Goldstein & Wiedemann, 2020; Murphy et al., 2020; Raude et al., 2020). In contrast, Guglielmi et al. (2020) indicated that trust in governmental institutions might actually reduce an individual's willingness to follow COVID-19 recommendations and accept the corresponding restrictions. Similarly, Clark et al. (2020) find that trust in government is relatively unimportant in predicting COVID-19 compliance behaviour. We address these inconsistencies and shed light on the importance of public trust. We argue that trust in government and health authorities enhances awareness of the COVID-19 pandemic by encouraging people to be more attentive to COVID-19-related information released by the government. Such heightened awareness increases the likelihood of compliance with government-backed COVID-19 precautionary measures.

Second, we explain the mechanism through which trust in government contributes to compliance with COVID-19 precautionary measures by investigating the sources of news used by respondents to follow the spread of the pandemic. We find that individuals who trust the government are more likely to use traditional media (TV, local radio, newspaper, etc.). In other words, trusted sources such as traditional media would increase awareness of the severity of the pandemic, which would in turn motivate people to comply with the COVID-19 precautionary guidelines. For example, Park et al. (2021) find that, awareness of the severity of COVID-19 is an essential determinant of individuals' engagement in COVID-19 preventive behaviours. Understanding the severity of the pandemic encourages people to behave in a way that is consistent with the precautionary measures, which helps protect public health as well as avoid penalties.
Third, we document that people’s neighbourhood and risk perception are essential drivers of compliance. Indeed, strong attachment or belonging to local neighbourhoods would increase prosocial motivations as well as increasing the likelihood that individuals would be aware of—and pay attention to—injunctive social norms to comply with guidelines (Wright & Fancourt, 2021). On risk perception, findings from previous research conducted during the first global outbreak of severe acute respiratory syndrome in 2002 and those relating to swine flu a few years thereafter indicate that the public’s perceptions about the outbreak may be a significant factor in determining the degree to which individuals elect to adhere to the official recommendations. Specifically, individuals appear to be more likely to comply with official government mandated regulations relating to health-protective behaviours if: (i) they perceive that the respective behaviours are likely to be effective in preventing infection (Lau et al., 2003; Tang & Wong, 2004), (ii) they believe themselves to be at increased risk of being negatively affected by the pandemic (Chan-Yeung & Yu, 2003; Tang & Wong, 2004), and (iii) the illness is perceived as being impervious to vaccination and/or treatment and is therefore unlikely to abate in the near future (Lau et al., 2007). Moreover, most studies on compliance behaviour have been conducted in countries characterized by well-developed health systems and high-income economies (e.g., Falcone et al., 2020; Margraf et al., 2020). Our study expands the discussion on the determinants of compliance behaviour by focusing on Benin, a developing country with less-developed health system.

Finally, our study provides rich data set to assess people’s attitudes toward health measures in developing countries. Given COVID-19’s ongoing rampant nature, having these data may have global value to the medical community, government leaders, and society more broadly. Moreover, several studies suggest that various policies adopted in each country in the world have reduced social interactions and slowed down the spread of COVID-19 infections (Abouk & Heydari, 2020; Courtemanche et al., 2020; Hsiang et al., 2020; Pei et al., 2020; Wright et al., 2020). However, an important outstanding issue is how much of the observed slowdown in the spread is attributable to the effect of policies as opposed to a voluntarily change in people’s behaviour out of fear of being infected. This paper explicitly recognizes that policies, not only directly affect the spread of COVID-19 (e.g., social distancing requirement), but also indirectly affect its spread by changing people behaviour. It also recognizes that people react to new information on COVID-19 cases and deaths, and voluntarily adjust their behaviour (e.g., voluntarily handwashing).

COVID-19 situation in Benin

On 16 March 2020, Benin confirmed the first COVID-19 case, and the disease has since continued to spread in the country with new infections reported every day (see Figure A1 in Appendix A). As at 13 September 2020, the starting date of our data collection, Benin had reported a total of 2,267 confirmed cases of COVID-19, and 40 deaths (Ritchie et al., 2020). Following the initial outbreak of the virus, the Government of Benin (thereafter, GoB) has swiftly implemented containment and social distancing measures, including
the partial lockdown (the so-called “cordon sanitaire”) around the cities most exposed to the virus in order to contain the spread of the virus (International Monetary Fund [IMF], 2021). The GoB has also (i) limited overland travel to approved cases of extreme necessity and in coordination with neighbouring countries; the land border with Togo was closed. (ii) restricted the issuance of entry visas to the country; (iii) introduced a systematic and compulsory quarantine of all people coming to Benin by air; (iv) suspended all public gatherings; and (v) made wearing face mask in public compulsory. Air travellers arriving in Benin are required to take up to three COVID-19 tests at their own expense. At least two of these tests must be taken upon arrival at Cotonou Cadjehoun Airport. Travelers must also complete a health form available at the Ministry of Health’s Surveillance Centre website before departure for Benin.

The GoB has announced measures to gradually start reopening the economy, with the cordon sanitaire lifted on 6 May 2020. Middle schools, high schools, and universities resumed their activities on 11 May 2020. Public transportation, places of worship and bars resumed their activities on 2 June 2020. International flights resumed on 15 July 2020, accompanied by strict protocols for testing and quarantine for new arrivals. The gradual reopening is subject to continued social distancing guidelines and mandatory use of masks, among other measures.

Key policy responses: To cushion its population against the adverse economic effects of the pandemic, the GoB announced various policy guidelines and financial stimulus packages, which include: (i) a health preparedness and response plan for 2020 (representing 0.9% of GDP) and 2021 (0.7% of GDP); and (ii) a socioeconomic response plan to support formal sector companies (0.9% of GDP) and vulnerable households. For the poor households, cash transfers, electricity and water bills, and urgent social projects were subsidized, representing 0.2% of GDP. In addition, a public guaranteed plan (1.0% of GDP) and credit lines and refinancing measures (0.7% of GDP) were established to foster access to finance for micro, small, and medium enterprises. These measures amounted around CFAF 323 billion (i.e., 3.7% of GDP). The majority of this plan has already been executed in 2020 (IMF, 2021). Other monetary and macro-financial policies have also been implemented by the regional central bank, Central Bank of West African States (BCEAO).

Measurement of government actions: To quantify the GoB’s response to COVID-19 led crisis, we rely on the Stringency index computed by Hale et al. (2020). The Stringency index records information on social distancing policies, and is coded from nine indicators including school closures, workplace closures, cancel public events, restrictions on gathering size, close of public transport, stay at home requirements, and restrictions on international travel. The index is a simple additive score of the underlying indicators and is rescaled to vary from 0 to 100 (100=strictest). Figure A2 of the Appendix A shows different GoB’s stringencies to ensure social distancing across the country during the pandemic. March 29 – May 31, 2020, is the period of firm stringencies. However, since June 2020, the country has experienced a softer level of stringencies, which has probably resulted in an increase of new cases in January 2022.
Data source

Data come from phone and online surveys that cover the period 13 September 2020 – 1 October 2020, with a sample of Beninese adults aged 18 years and older. We run these surveys in collaboration with a Master student at African School of Economics in Benin who championed the data collection. We use the snowball sampling approach to reach the eligible respondents for the online survey. We sent a Google form questionnaire link to Benin citizens, who currently live in Benin and have a WhatsApp account. We then invited each of them to do the same with their neighbourhood and to all members of the group to which they belong in Benin. Through this process, we sent the questionnaire link to 510 Beninese, but only 239 of them replied. However, given the Internet is more commonly used by literate people in Benin, one can think that only educated people will participate to the online survey. To deal with this sample selection issue, we recruited ten surveyors to run a phone survey with the aim of reaching both non-educated and educated respondents. These respondents came from the “2019 Benin Micro Credit Mobile” database. The participants from this database had provided phone numbers and expressed willingness to participate in future surveys. We had approximately 4,000 phone numbers through this process. In some instances, we could not locate the original respondent through the phone number(s) provided, but we found a new participant willing to take the survey and administrated it to him/her. Once we have tried every phone number and successfully completed the survey, we stop data collection. We have a response rate of about 46% through this process. This low response rate is mainly due to the difficulties of phone surveys and reliability of phone number over time. Finally, 1,831 respondents participated to the phone survey, leading our final sample size (for both online and phone surveys) to 2,070 respondents.

The survey has four parts: the first asks respondents' opinions about the current situation and risks surrounding the COVID-19 pandemic. Two main questions have been asked for this purpose:

**Question 1:** On a scale of 0 to 100, where 0 indicates you are sure you have not contracted the COVID-19 and 100 you have contracted the virus, what is your risk of having contracted the COVID-19 in the past?

**Question 2:** Given your current situation, on a scale of 0 to 100, what will be your risk to contract the COVID-19 during the next 3 months?

The second part of the survey addresses the health measures recommended by the government and the ministry of health to slow the spread of the virus. Since the objective of this paper is to investigate whether respondents' risk perception drives their protective behaviour, we asked the following health measures questions:

**Question 3:** Do you regularly wash your hands with soap and water when you come back home?
Question 4: When you go out, do you wear a face mask?

Question 5: Do you respect the social distancing when you are in the public?

For each of these health measure questions, possible answers are: never, a few times, almost always, and always. Each respondent was also asked to express the source of information they find the most helpful when practicing the recommended ministry of health measures: television, social media, radio, etc. We also elicit respondents' perception regarding the seriousness of the COVID-19 crisis by asking whether they are unworried about either getting or transmitting the virus, and the generalized trust: trust toward neighbours, and trust towards local government. The third part of the survey collects sociodemographic information about respondents; and the fourth part assesses the socioeconomic impact of the pandemic.

Table 1 presents the summary statistics of the data. It shows that 42% of the respondents are female, and 51% are between 25 and 35 years old. Approximatively, 21% has no education level and 42% live in urban areas. Only 17% of respondents know at least someone who has contracted the COVID-19.

On average, respondents perceived at 23% the risk of contracting the COVID-19 in the past. However, for the future, respondents' risk assessment falls to 13.34% on average, suggesting optimism about the health measures used to limit the spread of the pandemic around the world. Moreover, this low of risk of contracting the virus in the future may be because respondents assume there will not be multiple waves of the COVID-19 in Benin, or maybe the virus will have largely run its course in 2021, because either a vaccine or an effective treatment will be widely available by then. In fact, Table 1 reveals that 89% of respondents trust the government's orientations, and more than 50% of respondents mainly watch TV or listen to local radios to receive news about the COVID-19 pandemic. Most importantly, Figure 1 shows that at least 60% of respondents always observe the three health measures recommended by the government to fight against the virus: social distancing, hand washing, and face covering.

We turn next to examining protective behaviours across different age groups. During outbreaks, older groups are considered to be at high risk for medical complications and mortality (Pasion et al., 2020). Although all age groups can contract COVID-19, individuals aged 65 and more face more risks of developing severe illness, especially due to cumulative health conditions that are likely to come with aging (Eurostat, 2020). It is, therefore, crucial to investigate the extent to which elderlies feel more susceptible to being affected by COVID-19, and how this perception affects their commitment with protective behaviours. Although it is commonly assumed that older adults are more risk-averse than their young counterparts, Figure 2 reveals that people aged 50 years and more perceive the lowest level of risk of contracting the virus in the past compared with respondents aged between 18 and 49 years. However, they report higher levels of risk of contracting the virus in the future.
Figure 1: Distribution of protective behaviours

Source: Author’s computations based on the data used in this paper.

Figure 2: Protective behaviours by age group
Table 1: Summary statistics

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<th>Mean</th>
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Conclusion and policy implications

This paper provides insights into the determinants of protective behaviours during the COVID-19 pandemic in Benin. In this context, our findings confirm the importance of trust in government authorities, beliefs about others' compliance, and the sources of news as the factors that are relevant for shaping population compliance with the health recommendations. We also show that these findings vary depending on individual's level of education, and place of residence. These results endorse the widely held view that, providing the public with clear and consistent information is a prudent approach to follow during public health crises. To increase adherence, the Government of Benin's messages should focus on developing and maintaining trust among the public by providing transparent, coherent, clear, timely, and accurate information that reduces people's uncertainty and enhances compliance. Involving the country's political leaders from both ruling and opposition parties may also serve to maximize adherence. Furthermore, more effective implementation of policies to combat the disease may in turn build trust in government extending beyond this pandemic and then strengthen public institutions going forward. Finally, risk communication needs to be specifically tailored for various target groups, such as educated, non-educated, rural, and urban populations, with the adoption of traditional media platforms. In fact, adaptive communication strategies which engage the public will therefore be essential in dealing with the pandemic. Two-way communication between the government and citizens can act as bridge to ensure public engagement and disseminate information. This may be, indeed, one of the best ways to fight infodemics and conspiracy theories that reduce compliance with government precautionary measures (Freeman et al., 2022).

This research has important limitations. One major limitation of this study is that our dependent variables are self-reported protective behaviours. What people say about their behaviour may be different from what they really do because of social desirability, acquiescence, or inaccurate memory. However, Cowling et al. (2010), Dryhurst et al. (2020), and Hagger et al. (2020) argue that, self-report is a standard source of information in studies measuring health-protective behaviours in airborne infectious disease and the COVID-19 outbreak. Future research might measure social desirability biases to check for under- or over-reporting. Another limitation is that our data (particularly, respondents with primary and university levels) is not representative of Benin population. Thus, the results should be interpreted with caution. This motivates us to explore heterogeneity with respect to education levels, such that our results can provide insights into respondents' characteristics. Thus, we can make targeted conclusions for participants from no-education and secondary education groups. Finally, we rely on correlational and not experimental data. All findings presented are therefore associations and we cannot claim causality (or directionality). We do not know, for example, whether
The determinants of protective behaviours during the COVID-19 pandemic in Benin

Trust in government drives behaviour or vice versa (or both), especially because we did not repeatedly survey the same individuals. In addition, we do not model the transmission mechanism of the effect of sources of information on compliance. Indeed, source of information creates awareness, which in turn influences people by motivating them. When people are motivated, they would comply. There is, therefore, transmission mechanism of the effect of sources of information on compliance. Further research could collect information on awareness and consider a model that includes an interaction variable by interacting sources of information and level of awareness. Moreover, future researchers are encouraged to adopt longitudinal and experimental designs to address the causal relationship between trust in government and compliance with precautionary measures.

References


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