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Challenges and difficulties in implementing and adopting isolation and quarantine measures among internally displaced people during the COVID-19 pandemic in Mali (161/250)

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A R T I C L E I N F O

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A B S T R A C T

Introduction: Isolation and quarantine are among the key measures that protect internally displaced people (IDPs) against COVID-19. This study aims to identify the challenges encountered by humanitarian actors, and health, political, and administrative stakeholders in implementing these measures. It also describes the difficulties faced by IDPs when adopting them, and the local initiatives developed to overcome those difficulties.
Method: We conducted a qualitative survey consisting of individual interviews and focus groups among IDPs, humanitarian actors, and health, political, and administrative stakeholders. The data was collected between November and December 2020 in the Bamako and Ségou Regions of Mali. Interviews were recorded with audio recorders, then transcribed and thematically analyzed using the NVivo 13 software.
Findings: The study involved 36 individual interviews and eight focus groups with 68 participants of whom IDPs represented 72.3%. The main challenges reported on IDP sites included difficulties in contacting positive cases, a lack of facilities for quarantine and isolation, a lack of physical space for building new facilities, and a lack of financial resources to support IDPs during isolation and quarantine. The difficulties reported included: changes in social behavior and practices, fear of stigma, a poor level of literacy, and language barriers. To address those difficulties, the local initiatives developed by IDPs included strengthening the awareness of IDPs on COVID-19, early warning of sites' leaders about positive and suspected cases, and setting up a toll-free number to facilitate access to appropriate information on COVID-19.
Conclusion: The findings of this study could be used as evidence to guide policy, adjust current strategies and take into account with more focus IDPs, a group with increased vulnerability, in COVID-19 response, more precisely during the implementation of isolation and quarantine measures. By doing so, they will help improve the response to COVID-19, IDPs health, and population health.

1. Introduction

Viral diseases with pandemic potential are rising and gravely impact population health. Within the past twenty years, multiple viral diseases with pandemic potential have surfaced. Notable among them is the severe acute respiratory syndrome (SARS-CoV) which surfaced in 2002 and 2003, the H1N1 influenza virus in 2009, and the Middle East respiratory syndrome (MERS-Cov) in 2012. Since December 2019, the world has been confronted with COVID-19 because of an extremely contagious virus belonging to the coronavirus family of viruses (Cov). The pandemic started in Wuhan, China, and quickly spread around the world (Chen et al., 2020; Li et al., 2020; Lu et al., 2020). In Africa, the

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first case of COVID-19 was registered in Egypt in February 2020. As of January 1st, 2021, all 54 countries of the African continent were impacted, with over 2 728 602 confirmed cases and 64 790 deaths (Millimouno et al., 2021; WHO, 2020; AFP, 2021). In Mali, the first cases were reported on March 25th, 2020, and on January 20th, 2021 the country was counting 7897 confirmed cases and 318 deaths with disease transmission being mostly community-based (MSDS, 2021). Although the numbers appear significant, they seem to underestimate the true rate of transmission of the disease and the real magnitude of the deaths due to poor detection of the virus in the community (Ag Ahmed et al., 2020; Nachega et al., 2020a, 2020b). Today, the impact of the disease is unknown in many countries, especially fragile ones like Mali, where vaccinating most people could be delayed (AlKhaldi et al., 2020). Since 2012, Mali has also been trapped by a political and security crisis characterized by the armed occupation of the northern area of the country and by the progressive increase of killings and crimes of all sorts in its center region which drove thousands to be internally displaced (Ataullahjan et al., 2020).

Internally displaced people (IDPs) are individuals who have been forced to leave their usual place of residence for another place in the same country (AlKhaldi et al., 2020; Ataullahjan et al., 2020; Nachega et al., 2020c). In 2019, 45.7 million out of 50.8 million internally displaced people worldwide moved due to violence and armed conflicts (Rapport Mondial sur le Déplacement Interne, 2020). As of March 2020, the number of internally displaced people (IDPs) in Mali was estimated to be 239 484 by the Office of the United Nations High Commissioner for Refugees (UNHCR) (UNICEF, 2020). Such displacements are highly tragic for individuals, disrupt socio-economic stability, and increase vulnerability to diseases such as COVID-19 by affecting access to health care which can additionally be degraded when conflicts are prolonged (Casey and Tshipamba, 2017). In most cases, health care systems are unable to offer help to internally displaced people, especially in critical and severe cases (Hoummadi et al., 2020; Hien, 2020).

The best preventive option against COVID-19 for these individuals is the respect of public health policies, specifically isolation and quarantine measures (Openshaw and Travassos, 2020). Respecting these measures is thought to be effective against inter-human transmissions of the virus (Openshaw and Travassos, 2020). **Isolation measures** aim to separate infected people from non-infected individuals (Wilder-Smith and Freedman, 2020). **Quarantine** measures, on the other hand, serve to restrict the mobility of infected peoples' close contacts and are ideally combined with medical observation over an incubation period that can last up to 14 days (Wilder-Smith and Freedman, 2020). Both measures have been used as part of the response to various pandemics (Tognotti, 2013) and their efficiency has been often evoked (Ebrahim et al., 2020a, 2020b) although dependant on their successful implementation by communities (Nachega et al., 2020b). In Mali, isolation and quarantine measures have been considered efficient despite noted challenges and difficulties regarding their adoption by IDPs. These challenges and difficulties are scarcely documented, and their nature and extent are unknown. This study aims to (1) identify the challenges faced by humanitarian actors and health, administrative, and political stakeholders when implementing isolation and quarantine measures targeting the spread of COVID-19 among IDPs; (2) explore the difficulties encountered by IDPs when adopting isolation and prevention measures; and (3) identify local initiatives developed by IDPs to adapt these measures to local conditions.

2. Methods

2.1. Study population

An exploratory qualitative research involving individual and group interviews has been conducted between November and December 2020 with health stakeholders (head physicians of Reference Health Centers (CSRéf), administrative and political stakeholders in charge of the implementation of public health measures (Leaders of the committee for coordinating COVID-19 response and representatives from the Ministry of Health and Social Development); national and international humanitarian actors working to support IDPs, as well as IDPs themselves. The research took place in Bamako, the capital city of Mali, and Ségou, one of the largest cities in Mali located 235 km from Bamako. The choice of the two sites was due to their large numbers of IDPs inhabitants, their security, and easy access compared to other areas of the country.

2.2. Sampling

The study included 68 participants using the snowball technique, the principle of saturation and that of diversity. The snowball technique relied on participants experience with public health measures among IDPs and the support from the representatives of associations, non-governmental organizations and the Ministry of Social Development, Solidarity, and the Elderly. These representatives were selected using target sampling and according to their involvement in the implementation of public health measures among IDPs.

By doing so, (1) Five political and administrative stakeholders (two members of the committee for coordinating COVID-19 response and three agents from the Ministry for Social Development, Solidarity and the Elderly (MSDSE); (2) two health stakeholders (A CSRef head physician from Bamako and one from Ségou); (3) Eleven humanitarian actors representing six different associations and organizations, including International Solidarity, Islamic Relief, AMSOD, Mali Red Cross, Educo, and TDH; and (4) Fifty IDPs were selected.

Among the Fifty IDPs, 18 participated in individual interviews and 32 in focus group interviews of four people each. Humanitarian actors and political, administrative and health stakeholders were involved in individual interviews. According to Guest and his colleagues, saturation can be reached with the first 12 participants (Guest et al., 2006). With the large diversity among our study participants, we decided to include all 68 participants to increase emerging themes (Mayer et al., 2000). The following table shows the distribution of the study participants by site and type of interview (Tables 1, 2).

2.3. Data collection

Data collection was carried out by two teams, each composed of a research professional and two investigators specialized in qualitative interviews. The Bamako team was supported by a representative from the National Directorate of Social Development (DNDS) and the Ségou team by a representative from the Regional Directorate of Social Development (DRDS).

Data was collected through individual and group interviews that lasted each 45 min to an hour. Each group interview included four participants in order to respect COVID-19 physical distancing measures. Interviews involving IDPs took place on 6 sites including 4 in Bamako and 2 in Ségou. The Bamako sites included Mabilé, Senou, Niamana and Faladié and the Ségou site comprised Zogofina et Bougounina. Interviews involving agents from the MSDSE were conducted at their offices. Those involving head physicians took place at their CSrefs' offices, and interviews with humanitarian actors similarly took place at their

Table 1
Distribution of participants by site and type of interview.

	Bamako		Ségou		Total
	II	GI	II	GI	
IDPs	10	16	8	16	50
Humanitarian actors	5		6		11
Health stakeholders	1		1		2
Administrative and political stakeholders	3		2		5
Total	**19**	**16**	**17**	**16**	**68**

II: individual interview; GI: group interview.

Table 2
List of key interview questions.

N^{O}	key interview questions
1	**Challenges faced by stakeholders and humanitarian actors**
	o In your opinion, what are the challenges faced by stakeholders and humanitarian actors in implementing isolation measures among IDPs?
	o In your opinion, what are the challenges faced by stakeholders and humanitarian actors in implementing quarantine measures among IDPs?
2	**Difficulties encountered by IDPs**
	o In your opinion, what are the difficulties encountered by IDPs in adopting isolation measures?
	o In your opinion, what are the difficulties encountered by IDPs in adopting quarantine measures?
3	**Ajustements made by IDPs**
	o In your opinion, what are the adjustments made by IDPs to overcome the difficulties encountered in adopting isolation measures?
	o In your opinion, what are the adjustments made by IDPs to overcome the difficulties encountered in adopting quarantine measures?

respective associations or organizations.

Participants were interviewed on the challenges faced by humanitarian actors and health, administrative, and political stakeholders when implementing isolation and quarantine measures in Mali during the COVID-19 pandemic. They were also interviewed on the difficulties faced by IDPs when adopting the measures. Finally, they were asked about the adaptation strategies used by IDPs to address difficulties related to the adoption of isolation and quarantine measures. The following table shows the list of key interview questions.

Before answering our questions, participants were asked about their experience with COVID-19: testing and contact with positive case.

2.4. Data analysis

Content analysis was preferred since it facilitates the interpretation of written material extracted from interviews. Furthermore, thematic analysis was used because it is one of the most efficient and well-known techniques of content analysis (UNICEF, 2003, 2008). With this technique, all interviews were transcribed integrally in verbatim using audio recordings before being imported to the NVivo 13 software for a three-part process consisting of coding, theming, and analyzing (UNICEF, 2008). To increase precision, verbatim transcriptions were examined line by line and paragraph by paragraph to generate codes labeled under units of varied sizes. Next, close codes were grouped by sub-themes then themes. The analysis was then completed inductively and deductively, taking into account the inductive and pre-existing themes in the research objectives (Gale et al., 2013). A thematic tree was built by classifying the themes according to their principal or peripheral role in answering our research questions and their recurrence allowed us to have a synthetical representation of the content.

2.5. Administrative and ethical considerations

This study's research proposal was approved by the ethics committee (CE) of the Faculty of Medicine, Pharmacy and Odontostomalogy (FMPOS) of the University of Sciences, Techniques and Technologies of Bamako (USTTB) (Letter N^{O} 2020/175 /CE/FMOS/FAPH dated August 26th, 2020), and the Scientific Advisory Committee for COVID-19 (Letter No 005 P/CoS dated August 5th, 2020). In addition, approval for participation was also obtained from MSDSE for its agents' participation, the Ministry of Health and Social Affairs for head physicians' participation, and various associations and organizations for their representatives' participation. Before the interviews, all participants provided written consents and the confidentiality of their information has been respected throughout the study. To guarantee confidentiality, all individual interviews and group discussions were conducted in private locations of the participants' choice. No one outside the research team had access to the data and the identity of the participants. Additionally, no identifiers were used to link participants to the information they provided.

3. Findings

3.1. Sociodemographic characteristics of participants

The study counted the participation of 68 people, 36 of which were individually interviewed and 32 of which were interviewed as part of groups. The average age of the participants was 35.37 years, with a minimum of 18 years and a maximum of 61 years. Study participants aged between 26 and 30 and 31 and 35 were the most represented. Additionally, the participants were mainly IDPs who represented 73.5% of the sample. The gender ratio was 1.51 in favor of men, signifying that there were more male participants. None of the participants had been tested positive for COVID-19 and none of them had been in contact with a positive case. However, 11.76% of the participants had been in contact with a suspected case, and 7.5% with a close contact of a positive case. Table 3 describes the repartition of participants according to their sociodemographic characteristics.

3.2. Challenges faced by humanitarian actors and health, administrative, and political stakeholders

Four main challenges were reported. The first one concerns reaching out to COVID-19 positive cases. According to the participants, many people do not provide accurate telephone numbers at the COVID-19 test centers, making it difficult for health professionals to communicate and isolate them after a positive COVID-19 test result.

> « *Regarding isolation, yes, we face challenges because some positive cases do not provide us their right phone numbers. Therefore, it is very difficult for us to find them and bring them.* » *(Female health stakeholder interviewed in Bamako through an individual interview)*

According to participants, this difficulty communicating with individuals lead to losing trace of people and affects data reliability, all things that negatively impact statistics and create information bias.

Table 3
Sociodemographic characteristics of the study participants.

Characteristics	Number of participants		
	Bamako	Ségou	Total
Age			
18–20	6 (75)	2(25)	8
21–25	2(66.7)	1(33.3)	3
26–30	8 (88.9)	1(11.1)	9
31–35	4 (44.4)	5(55.6)	9
36–40	6 (75)	2(25)	8
41–45	6 (46.2)	7 (53.8)	13
46–50	7 (70)	3 (30)	10
51–55	4 (100)	0	4
56–60	1 (50)	1 (50)	2
61–65	2 (100)	0	2
65 and above	0	0	0
Gender			
Male	27 (65.9)	14 (34.1)	41
Female	19 (70.4)	8 (29.6)	27
Types of participants			
IDPs	37(74)	13 (26)	50
Humanitarian actors	5 (45.5)	6 (54.5)	11
Health stakeholders	1 (50)	1 (50)	2
Administrative and political stakeholders	3 (60)	2 (40)	5
COVID-19 antecedents			
Positive case	0	0	0
Contact with a positive case	0	0	0
Contact with a suspected case	6 (75)	2 (25)	8
Contact with a close contact	4 (80)	1 (20)	5
Total			68 (100)

« When you look at our numbers, there are great gaps. It seems like the recovery rate is low, but most positive cases are not found. We lose their trace because they do not want to go to the hospitals to get the treatments. That's it! Those are the challenges we face regarding isolation. » (Female health stakeholder interviewed in Bamako through an individual interview)

The second challenge is the lack of isolation and quarantine centers on IDP sites and in health centers. Most of the participants mentioned that there is no space for isolation and quarantine on IDP sites or health centers. This reality renders difficult the containment of the disease

« There are no quarantine nor isolation areas in our sites for displaced people. » (Female health stakeholder interviewed in Bamako through an individual interview)

The third challenge is related to the lack of space on IDP sites. According to most stakeholders, this issue disrupts the creation of new places for isolation and quarantine on IDP sites.

This lack of physical space lead to IDPs living in close proximity from one another, a factor that promotes the spreading of the disease.

« They are on someone else's land. Those are the limits! And garbal [IDP sites in Bamako], over there, it's a garbage dump. Today, as health care stakeholders, should we set isolation centers on garbage dumps? That's the big question. » (Female health stakeholder interviewed in Bamako through an individual interview)

The last challenge mentioned by the participants, is the lack of financial resources. In fact, without financial resources, it is difficult to build new places for isolation and quarantine and to support IDPs during isolation and quarantine.

3.3. Difficulties faced by IDPs

Among the reported difficulties faced by IDPs, we note poor living conditions characterized by proximity and the lack of an adapted setting for the isolation of positive cases and the quarantine of contact and suspected cases. It is important to remember that IDPs living on the Bamako and Ségou sites are living in tents or shelters that accommodate the entire family or sometimes multiple families, which can consequently create overpopulation.

« No, my brother! That is the message I have always tried to spread. When you go to the Mabilé center [IDP sites in Bamako], there are thousands, thousands of people. Children, women, and men are all piled up. They spend the night in the open air. So, we cannot speak of respecting the measures. » (Male humanitarian actor interviewed in Bamako through an individual interview)

« You do not have anywhere to sleep. Where three people should sleep, 30 spend the night. » (Male humanitarian actor interviewed in Bamako through individual interview)

Those conditions, as stated by study participants, make it difficult, even impossible to find on-site space exclusively dedicated to the isolation of positive cases or the quarantine of contact and suspected cases.

« It is really not easy to find an isolation area when one of our family members is confirmed positive. » (Male IDP interviewed in Ségou through a focus group interview)

The second reported difficulty concerns social habits such as mobility to visit people in their homes and for social events. In Mali, social cohesion requires that individuals mutually pay each other visits and participate in social events such as weddings, baptisms, and funerals of close relations. According to the participants, it is hard to change those habits for isolation and quarantine.

« They are very social people. With that social aspect, I am not sure if they can respect the isolation requirement. Culturally, it is going to be difficult to isolate. » (Male political and administrative stakeholder interviewed in Ségou through an individual interview)

Additionally, concerning tradition, Malians live with their relative with illnesses and support them. The study participants highlight the difficulty of breaking with this tradition for fear of potential social consequences. Additionally, to their traditional lifestyles, IDPs further mentioned that they are simply not used to sedentarism.

« In Mali, we are not used to staying alone when we are sick. Being alone itself without having anyone beside one creates many issues that aggravate disease.» (Male political and administrative stakeholder interviewed in Bamako through an individual interview)

« Yes, we find it hard because we are from the countryside. We are not used to staying in one place.» (Female IDP interviewed in Bamako through a focus group interview)

The third issue is the poor level of literacy. Notably, most of the IDPs living on sites have a low level of literacy and many of them do not speak French or Bambara (the most spoken local languages in Bamako and Ségou). According to participants, this situation complicates the understanding of the disease and related control measures. The low level of literacy also affects IDPs' beliefs regarding the disease and the related information. Therefore, a poor level of literacy can be considered a challenge for the adoption of isolation and quarantine measures.

« Educated people understand a lot of things through the news and the ads, contrary to people like me. I have not been in school. We only believe in what we see and what we're told. That is a challenge for us. » (Male IDP interviewed in Bamako through an individual interview)

Additionally, fear of stigma was reported as a factor that may contribute to keeping people from isolation, by making them hide their COVID-19 positive result to escape from a stigma that can persist even after one is recovered.

« The difficulty, there is a risk. Really, there is a risk of stigma. » (Male humanitarian actor interviewed in Bamako through an individual interview)

Precarity was also brought up by study participants who explained that someone who lives day by day cannot afford to stay at home since they are responsible for their living expenses and those of their family. These revelations highlight the difficulty for IDPs who already struggle to secure daily meals to respect isolation and quarantine measures as they cannot afford to stay home long-term.

« I think, in our countries, it is hard to respect quarantine measures because people live day by day. If they are prevented from going out to try and feed themselves for fifteen, twenty days, or for months, it is going to be difficult.». (Male political and administrative stakeholder interviewed in Bamako through an individual interview)

The study reveals that the loss of productivity and revenue created by isolation and quarantine challenges the adoption of these measures.

3.4. Adjustments made by IDPs

To overcome the difficulties adopting isolation and quarantine measures, IDPs initiated notable adjustments to adapt the measures to their reality, including increased awareness campaigns to provide appropriate information on COVID-19. Site leaders were systematically informed of new cases that were directed to health centers or a doctor. Additional adjustments were made in terms of awareness with the support of humanitarian actors.

« If you take isolation measures, what we were able to change was all done through advising. We advised people, especially IDPs in Senou. Since there was space, we led awareness campaigns among the various administrative committees established on the sites. We encouraged people who had some influence on the sites to tell others what should be done. On other sites, regarding isolation measures, we advised on why they should stay in place or which centers they could go to, things of the sort. Without financial means though, it was hard. » (Male humanitarian actor interviewed in Bamako through an individual interview)

IDPs also promoted the use of a toll-free number by suspected cases to facilitate their referral and management at health centers. This toll-free number was implemented by health stakeholders and helped IDPs to notify the suspected cases.

« *The problem on-site is the lack of respect of barrier gestures. We have the tools, we have the kits, hand-washing stations, antibacterial gel, soap, we have the masks, but every day our volunteers have to go on the sites to spread more awareness and we notice that barrier gestures are not applied. It is a real issue, there you have it, it is not easy to create an adequate environment for isolation or quarantine in that situation. The equipment is available, but behaviors, behaviors have to change. That is why we emphasize awareness.* » *(Male humanitarian actor interviewed in Bamako through an individual interview)*

« *When we suspect someone, we send them to the hospital.* » *(Female IDP interviewed in Bamako through a focus group interview)*

Participants noted that such adjustments were useful and efficient. They believe that applying them does not create any inconvenience and risks and that they are easily adaptable on other sites.

4. Discussion

4.1. Contribution

To our knowledge, this exploratory study is the first to focus on the challenges and difficulties related to the adoption and implementation of isolation and quarantine measures in countries of the Global South and more particularly in West Africa. It is additionally, one of the first to take a purely qualitative approach and focus on this many varieties of participants to study these challenges and difficulties. It focused on isolation and quarantine measures against COVID-19 which concerned respectively positive cases and contact and suspected cases. In other words, isolation measures aimed to isolate positive cases so that they cannot contaminate non infected people. Quarantine measures aimed to isolate contact and suspected cases before they get tested and confirmed negative.

The study highlighted poor living conditions, proximity, the lack of isolation and quarantine space, difficulties related to breaking social habits, the low level of literacy, the fear of stigma, precarity, the loss or decrease in productivity, and the loss of revenue as barriers to the adoption of isolation and quarantine measures. Other researchers have similarly noticed the same difficulties by identifying stigma, loss of revenue, overpopulation of sites and shelters, the inadequacy of the sewage systems and the management of garbage, as well as the insufficiency and poor quality of water as barriers to the adoption of isolation and quarantine policies (Openshaw and Travassos, 2020; Maqbool and Khan, 2020; Wilder-Smith et al., 2020; Douedari et al., 2020; Truelove et al., 2020; Betts et al., 2021; Kassem and Jaafar, 2020). Although the data was collected in 2020, it is still relevant because to our knowledge there has been no improvement in the living conditions of IDPs in the study sites.

The results of this study will serve to increase knowledge of the difficulties faced by IDPs in the adoption of isolation and quarantine measures, provide a basis for further research, help training, and support interventions regarding the efficient implementation of isolation and quarantine measures among IDPs and in other populations such as migrants who live in similar conditions to IDPs.

With regards to challenges faced by humanitarian actors and health, administrative, and political stakeholders, the study helped identify difficulties getting in touch with positive cases and the lack of space on IDP sites. It also helped identify the lack of isolation and quarantine centers on sites and in health centers. On one hand, these results are contrary to those found by other researchers who demonstrated the availability of isolation and quarantine centers on IDP sites (Fiddian-Qasmiyeh, 2020). On the other hand, they complement the results of researchers who indicated a lack of isolation and quarantine place on IDP sites (Arons et al., 2020). This difference could be explained by the trend of many IDP sites being spontaneously installed and developed in Mali without prior planning. Such sites were not designed to accommodate IDPs and in most cases do not have space for the construction of new isolation and quarantine places. The results thus give an insight into the problems faced by humanitarian actors and health, administrative, and political stakeholders when implementing isolation and quarantine measures among IDPs. They will allow for better odds to overcome challenges and improve the response against COVID-19. They will additionally contribute to the improvement of research, teaching, and the implementation of public health measures by humanitarian actors and health, administrative, and political stakeholders.

Researchers, humanitarian actors, and health, administrative, and political stakeholders should think of using these results to inform their plans and actions. They also should take into account the adjustments identified in the study. Human beings have always adapted and adjusted their activities to the difficulties they face as a mean of survival. Regarding the reported difficulties, adjustments were evoked and notably involved the systemic notification of suspected and positive cases to health center agents and the spreading of awareness among IDPs. Other adjustments included the promotion of the use of the toll-free number and organizing to identify suspected cases. Spreading awareness was particularly identified as an efficient means, especially when conducted by influential people in the community such as religious and community leaders. These results are complemented by other researchers who found that public awareness is an efficient mean to limit the spread of infectious diseases (Abdelhafiz et al., 2020; Akdim et al., 2021). They suggest that the role of public awareness and that of influential people should not be overlooked in the context of a pandemic such as COVID-19 (Wan et al., 2020). Additionally, the study helped highlight the need to take into account linguistic diversity when creating awareness messages. This need was evoked by researchers that were studying the importance of spreading information on COVID-19 in local languages (Fiddian-Qasmiyeh, 2020). Researchers should thoroughly examine the efficiency and feasibility of these adjustments which can guide stakeholders in the fight against COVID-19. Demonstrating their efficiency and feasibility will help humanitarian actors and health, administrative and political stakeholders to brainstorm about their actions and implications in the improvement of IDP health and more broadly population health.

4.2. Limitation

This study is first to be conducted on the ground by the research team during a pandemic such COVID19. The respect of the prevention measures against this pandemic required adjustments such wearing mask, hand washing and social distancing behavior that complicated a bit the conduct of interviews. Also, the study could be extended to more administrative regions. This was not possible because of the security context which limited the research efforts to Bamako and Segou. The security context also impeded the extension of the study to more IDPs in order to reach more diversity and more categories of displaced people such migrants and refugees.

5. Conclusion

Results of the study demonstrate that IDPs, humanitarian actors, and health, administrative, and political stakeholders are preoccupied with numerous challenges and difficulties related to the adaptation and implementation of isolation and quarantine measures among IDPs in Mali. To overcome these difficulties, IDPs have initiated some adjustments to adapt the measures to local conditions. The study gives an insight into the challenges, difficulties, and adjustments and helps advance knowledge on the barriers to the adoption and implementation of isolation and quarantine measures among IDPs. The results will contribute to the resolution of the noted challenges and difficulties and will help promote the adjustments made. They will additionally help improve the implementation of isolation and quarantine measures among IDPs and contribute to the improvement of the COVID-19 response, the health of IDPs, and the population at large.

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Supporting information

File S1

Interview guide for IDPs.

File S2

Interview guide for health, administrative, and political stakeholders, and humanitarian actors.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data availability

All relevant data are within the manuscript and its supporting information files.

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