# COVID-19 VACCINATION AMONG SOCIO-HEALTH PERSONNEL IN THE ANSONGO DISTRICT, MALI

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**Résumé**

*Depuis son émergence en début décembre 2019 à Wuhan, (province du Hubei, Chine), le virus à l'origine d'une nouvelle forme de Syndrome Respiratoire Aigu Sévère (SARS-CoV-2) appelée COVID-19 a mobilisé le monde scientifique. Cependant on assiste à une faible adhésion à la campagne de vaccination, surtout au Mali. L'objectif de cette étude était d'étudier la situation du personnel socio-sanitaire du district d'Ansongo sur la COVID-19. Il s'agissait d'une étude transversale descriptive réalisée du 1er juillet au 31 décembre 2021. Au total 95 personnels socio-sanitaires ont été enquêtés, 65% des personnels socio- sanitaires avaient reçu au moins la première dose d'un vaccin contre la COVID-19.*

*Dans la population d'étude, 92,6% connaissaient le vaccin en usage au Mali, 25% ne croyaient pas à l'existence de la COVID-19, pendant que 16,8% de celle-ci ne faisaient pas confiance au vaccin. Au vu de ces résultats, le ministère de la santé doit renforcer les campagnes de sensibilisation et travailler en étroite collaboration avec les leaders communautaires et religieux pour encourager l'adhésion à la campagne de vaccination contre la COVID-19.*

***Mots-clés**: vaccination, COVID-19, Personnel socio-sanitaire, Ansongo, Mali.*

**ABSTRACT**

*Since its emergence in early December 2019 in Wuhan, (Hubei province, China), the virus causing a new form of severe acute respiratory syndrome (SARS-CoV-2) called COVID-19 has mobilized the scientific world. However, there is a low adherence to the vaccination campaign, especially in Mali. The objective of this study was to study the perception of socio-health personnel in the Ansongo health district on COVID-19. This was a descriptive cross-sectional study carried out from July to December 2021. A total of 95 socio-health personnel were surveyed, 65% of socio-health personnel had received at least the first dose of a vaccine against COVID-19.*

*In the study population, 92.6% knew the vaccine in use in Mali, 25% did not believe in the existence of COVID-19, while 16.8% of them did not trust the vaccine. In view of these results, the Ministry of Health should strengthen awareness campaigns and work closely with community and religious leaders to encourage adherence to the COVID-19 vaccination campaign.*

**Keywords**: *vaccination, COVID-19, Socio-health worker, COVID-19, Ansongo, Mali.*

## 1 INTRODUCTION:

Since its emergence in early December 2019 in Wuhan, Hubei Province, China, the virus behind a new form of Severe Acute Respiratory Syndrome (SARS-CoV-2) called COVID-19 has mobilized the scientific community. The exponential growth of COVID-19 cases led the World Health Organization (WHO) to declare it an international public health emergency on January 30, 2020. Since then, the number of people affected by COVID-19 has continued to rise worldwide with devastating effects. The evolution of this disease has been marked by the emergence of new, more contagious variants such as Alpha (English), Delta (Indian), Omicron (South African), etc., leading to several waves of mass infections in many countries worldwide (WHO, 2020).

In Mali, the Ministry of Health and Social Affairs declared the coronavirus disease (COVID-19) an epidemic on March 25, 2020. As of September 24, 2021, there have been 15,130 cases of COVID-19 with 547 deaths in the country (Ministry of Health and Social Development, 2020). Ansongo (Gao region), due to its geographical position as the "city of three borders" and with unique security implications, is more exposed. The city recorded its first case in November 2020, and from that date until June 2021, there were 11 deaths out of 81 cases (suspected and confirmed). In addition to the actions taken by the WHO and its partners, a race to develop vaccines began (Ministry of Health and Social Development, 2020).

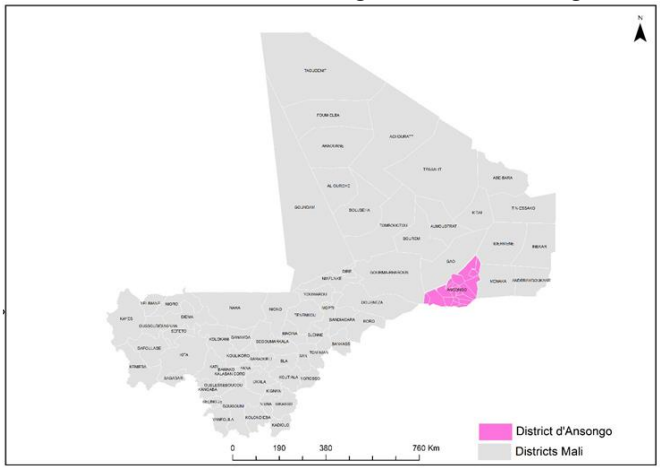
In Mali, the vaccination campaign was launched on Wednesday, March 31, 2021, by the Minister of Health and Social Development following the initial acquisition 396,000 doses of the AstraZeneca vaccine. This was followed 6 months later by 79,200 doses from the COVAX Facility and 151,200 doses of the Johnson & Johnson vaccine on August 5, 2021, followed by SINOVAC (Ministry of Health and Social Development, 2021). However, the success of any vaccination program depends on the acceptance of the vaccine by the public (Lin C et al, 2020). Global guidelines initially recommended prioritizing healthcare professionals, the elderly, and those with pre-existing conditions that increased their risk of severe illness until supplies allowed for widespread vaccine use (WHO, SAGE 2020). This was the case in Mali, but the success was not at the level expected. Thus, we initiated this study among the socio-health personnel of the Ansongo district, a first of its kind in this city of three borders.

The objective was to study the socio-health personnel at the Ansongo Reference Health Center (CSRéf) to better understand the situation around vaccination efforts.

## 2 Methods:

### 2.1 Study Location:

This study took place at the reference health center of Ansongo located in the neighborhood




known as "Ansongo 1st Quarter." Ansongo is situated in the north of Mali, in the Gao region.

The reference health center of Ansongo consists of several departments, namely: the administrative department, the outpatient consultation rooms (3 medical rooms and 01 dental care room), the emergency service, the laboratory service, an operating block, a neonatology service, a pediatrics service, a unit for intensive nutritional recovery and education (URENI), an internal medicine/hospitalization service, a maternity service, a pharmacy service, a laundry service, a meeting room, and a kitchen. Each department has socio-health personnel ranging from doctor-pharmacists to nursing assistants.

**2.2. Type and duration of the study:**
This was a cross-sectional study conducted at the reference health center of Ansongo, "city of three borders," from July 1, 2021 to December 31, 2021.

**2.3. Study population:**
The study population consisted of socio-health personnel working at the reference health center of Ansongo.

**2.4. Sampling:**
We conducted a comprehensive sampling of 95 socio-health personnel who voluntarily agreed to participate in the study.
Inclusion Criteria

- Socio-health personnel of the Reference Health Center of Ansongo,
- At least 18 years old agreeing to participate in the study.

Non-Inclusion Criteria

- Socio-health personnel of the Reference Health Center of Ansongo who did not consent to the study.

**2.5. Tools and Techniques for Data Collection:**

- We used a questionnaire to collect information from the socio-health personnel.
- We also used the following data sources: Vaccination registers, COVID-19 Case Management Register.
- Technique: collective dissemination of information about the study, each personnel wishing to participate in the study was interviewed to explain the objectives and the aim of the study to obtain their consent and to give them a survey form that covered: sociodemographic characteristics (age, sex, profession, level of education, comorbidity), contact with the sick, knowledge about COVID-19, knowledge of infectious status, application of standard prevention measures against COVID-19, the role of vaccines in the fight against the pandemic, the intention to get vaccinated, hesitancy towards vaccination, influencing factors. Data was entered into Excel and then analyzed with SPSS software version 25.

**2.6. Data Processing and Analysis:**
The data were entered into Excel and then analyzed with SPSS software version 25.

**3 Results:**
**3.1. Sociodemographic Characteristics:**
The average age of the participants in this study was 39.5 years ± 18 years. Among the respondents, the 18-39 age group represented 88.4%; the more men participated in this study than women (60% vs. 40%); 31.6% had a higher level of education, and 32.6% had at least one comorbidity at the time of the survey. (Table I).

**Table I:** Sociodemographic Characteristics of the Population

| **Variable** | **n = 95** | **%** |
|---|---|---|
| **Age Range** | | |
| 18-39 | 84 | 88.4 |
| 40-59 | 10 | 10.5 |
| 60 and Older | 1 | 1.1 |
| **Gender** | | |
| Male | 57 | 60.0 |
| Female | 38 | 40.0 |
| **Level of Education** | | |
| No Education | 6 | 6.3 |
| Primary | 19 | 20.0 |
| Secondary | 40 | 42.1 |
| Licenced | 22 | 23.2 |
| Doctorate | 8 | 8.4 |
| **Comorbid Condition(s)** | | |
| No | 64 | 67.4 |
| Yes | 31 | 32.6 |
| **Direct contact with the COVID -19 Sick** | | |
| Yes | 69 | 72.6 |
| No | 26 | 27.4 |

Among the categories of socio-health personnel, nurses were the most represented making up 35.8% of the study population, followed by nursing assistants at 11.6%. Doctors represented 8.4% of the participants (figure 1).

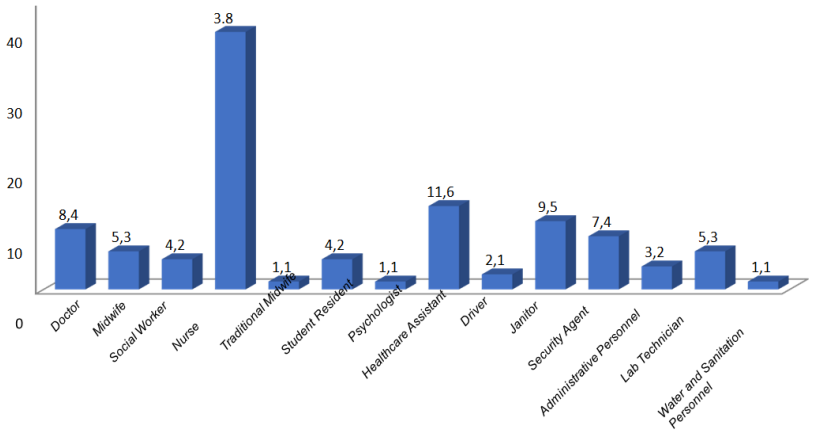



***Figure 1:*** *Distribution of socio-health personnel according to their category.*

In the study population (n=95), 92.6% were aware of the vaccines in use in Mali, while 54.8% knew of at least one other COVID-19 vaccine apart from those used in Mali. (figure 3).

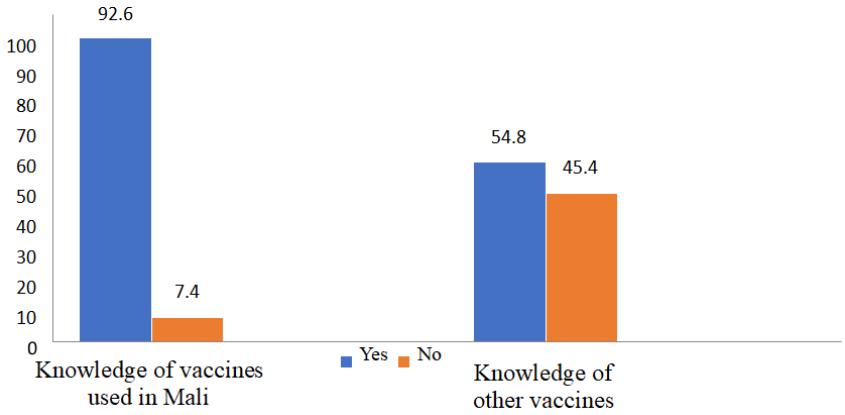



***Figure 2:*** *Distribution of personnel according to their knowledge of COVID-19 vaccines.*

In our study, 83.2% of providers believed in the means of prevention (Table II).

**Table II:** Distribution of participants according to their belief in COVID-19

| Variable | n = 95 | % |
|---|---|---|
| **Perception of socio-health personnel on COVID-19 vaccination** | | |
| Yes | **80** | **74,7** |
| **No** | **15** | **25,3** |
| **Belief in Prevention Techniques** | | |
| Yes | 79 | 83.2 |
| No | 6 | 6.3 |
| Unknown | 10 | 10.5 |
| **Number of people already infected with COVID-19** | | |
| Yes | 6 | 6.3 |

| | | |
|---|---|---|
| No | 89 | 93.7 |
| **Respect for barrier measures** | | |
| Yes | 88 | 92.6 |
| No | 7 | 7.4 |
| **Advice on control of the pandemic via vaccinations Belief in prevention methods** | | |
| Yes | 79 | 83.2 |
| No | 6 | 6.3 |
| **Advice to receive the vaccine** | | |
| Yes | 71 | 74.7 |
| No | 24 | 25.3 |

Among the participants, 34.7% were not afraid of COVID-19 vaccines, and 58.9% had hesitations about getting vaccinated, while 41.1% had no hesitation (Table III).

Long-term side effects were the main reason for hesitancy towards COVID-19 vaccination as mentioned by the personnel, accounting for 28.6% of the hesitancy rationale. This fear was either isolated or associated with other reasons for hesitation (lack of trust, contradictions in the media, rapid vaccine production) (figure 3).

**Table III:** Distribution of socio-health personnel according to their level of concern or fear regarding COVID-19 vaccines and hesitation to receive the COVID-19 vaccine.

| | **n** | **%** |
|---|---|---|
| **Level of fear of the COVID-19 vaccinations** | | |
| Do not know | 16 | 16.8 |
| No fear | 33 | 34.7 |
| A little fear | 17 | 17.9 |
| Fear | 4 | 4.2 |
| Lots of fear | 18 | 18.9 |
| Extreme fear | 7 | 7.4 |
| **Hesitations to receive the vaccine** | | |
| Yes | 56 | 58.9 |
| No | 39 | 41.1 |

In the population (n=95), 67.4% had confidence in the vaccines while 16.8% doubted the effectiveness of the vaccines, and 7.4% did not trust the storage/preservation (figure 3).

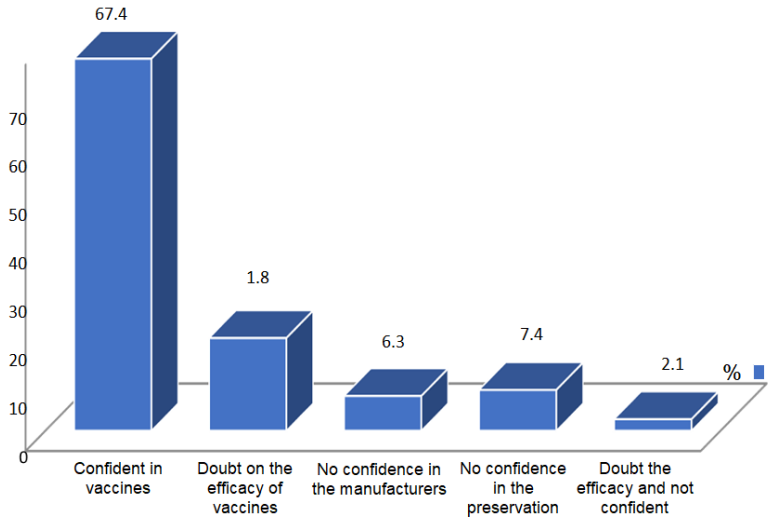



***Figure 3:*** *Distribution of personnel according to their feelings on the COVID-19 vaccines*

The socio-health personnel believe that debate sessions and awareness campaigns on television would improve public adherence to vaccination according to 42% of the participants. 22% of participants believed that direct information sessions with the population would be more effective and 20% suggested information on local media would be most effective (figure 4).

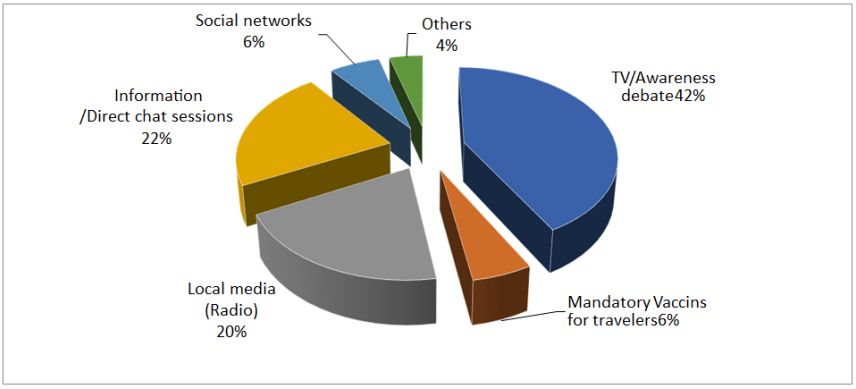



***Figure 4:*** *Distribution of personnel according to their opinion on the appropriate avenues of communication for adherence of agents and the population to vaccination against COVID-19*

**4 Discussion**:

Study Limitations:

Our study was solely quantitative and involved a total of 95 socio-health personnel who voluntarily agreed to participate through a questionnaire. To avoid further sensitivities about COVID-19 vaccination and given the unfavorable security context, we did not conduct focus groups or structured interviews. A qualitative study would have provided more information about the vaccine perceptions of these providers, but was not feasible. This limitation does not undermine the results of this study, which can greatly help to improve COVID-19 vaccination in

Ansongo and in Mali in general.

Sociodemographic Characteristics:

The average age of our respondents was 39.5 years ± 18 years, and the 18-39 age category represented 88.4% of the study population. This average age is comparable to that found by Sako D et al., who found the average age in their cross-sectional study, “Perception of socio-health personnel and the population of Commune IV of the Bamako district on the COVID-19 vaccine,” to be 37.8 years ± 13 years (Sako D, 2021). Slight differences between their and our data could be explained by the study sample, which was composed of both the population and health personnel in the Sako study.

However, the average age of socio-health personnel in this study is lower than that found by Bono SA et al., who found an average of 45.1 years ± 15 years in 2021 in a cross-sectional study titled "Factors Affecting COVID-19 Vaccine Acceptance: An International Survey among Low and Middle-Income Countries". This difference in average age could be explained by the income difference between the countries in the sample of Bono SA et al.'s study (Bono SA et al., 2021). In our study, 31.6% had a higher level of education, with 8.2% being doctors. This result is lower than that found by Sacko D (Sako D, 2021), who found that 62% of their study participants (also socio-health personnel) had attained a higher level of education, and also different from that of Abdel Wahed WY et al., who found 51.4% had attained a higher level of education, with 31.2% being doctors (Abdel Wahed WY et al., 2020). These differences could be explained by the geographical location of Ansongo and its unique security context which limits some human resources. Additionally, many health professionals are in the larger cities.

It also emerged from our study that almost one-third of the socio-health personnel, 32.6%, had at least one comorbidity. This result is higher than that of Faez NA et al. 2021 who found, in their 2021 study: "Peoples’ attitude toward COVID-19 vaccine, acceptance, and social trust among African and Middle East countries," that 12.98% of their study’s participants had at least one comorbidity (Faez NA et al., 2021). Similarly, this result is higher than that of Sacko D et al. who found 14% of their study participants had at least one comorbidity (Sako D, 2021).

Among the participants, 6.3% reported being previously infected with COVID-19. This result is comparable to that of Sacko D (Sako D, 2021), who reported a 4.5% prior infection rate, and lower than that of Faez NA et al. (Faez, NA, 2020), who reported a 21.7% prior infection rate. The differences between the reported previous infection rates could be explained by the fact that respondents who claimed to have presented with symptoms of COVID-19 without having undergone testing were not counted; only those whose cases of COVID-19 were confirmed in the diagnostic register were taken into account.

COVID-19 Vaccine Knowledge of Socio-Health Personnel:
In this study, it was found that 92.2% of socio-health personnel knew the names of at least two COVID-19 vaccines in use in Mali. This result is higher than that found by Sako D (Sako D, 2021) who reported 70% of socio-health personnel knew the names of at least two COVID-19 vaccines, and Iglesias-Osores S et al., who reported 61.80% of socio-health personnel knew the names of at least two COVID-19 vaccines in a study conducted in Peru (Iglesias-Osores S et al., 2020). These differences could be explained by the use of a focus group study conducted by Doctors Without Borders (MSF) to improve understanding and adherence of staff to COVID-19 vaccination.

During this study, 83.2% of participants believed that vaccines were essential to control the COVID-19 pandemic. This result is slightly higher than that of (Sako D, 2021) who reported 76% of participants believed that vaccines were essential to control the COVID-19 pandemic. This difference could be explained by a descriptive focus group study targeting health agents to improve perception and adherence to COVID-19 vaccination which was conducted in August 2021.
Perceptions and Barriers to Acceptance of the COVID-19 Vaccine:
In this study, we note that 25% of participants (n=15) did not believe in the existence of COVID-19, at least in Africa, and particularly in Ansongo, Mali. This result is different from that of (Leye, MMM et al) who found 5.2% of participants did not beliebe in the existence of COVID-19 during a study in Dakar in 2021. This difference could be explained by the fact that Dakar was one of the first cities to report cases of COVID-19 in West Africa. Its population witnessed the detrimental consequences of this pandemic and was long exposed to awareness messages which were broadcast by local authorities.

The doubt about the existence of COVID-19 could also be explained by the apparent discrepancy in cases and deaths observed between European and African countries, particularly in Mali. However, the apparently low rate of cases and deaths could likely be due to underdiagnosis of COVID-19.

58.9% of unvaccinated socio-health personnel reported hesitancy to get vaccinated. The most cited reason for this hesitancy was the fear of late-onset side effects. This translated into a lack of confidence in the vaccine of 28.6% of the study participants. This result is comparable to that of Bono SA et al who also identified fear of side effects as the main cause of vaccine hesitancy at 41.2% (Bono SA et al 2021).

According to 42% of participants, televised debate sessions and TV awareness campaigns could improve population adherence to vaccinations. This result corroborates that of Sako D who found in his study that the first source of information for 30% of socio-health personnel was the television (Sako D, 2021).

It should also be noted that the inconsistency and lack of support for measures taken by the government at the beginning of the pandemic left many people skeptical. Furthermore, the fact that virtually no administrative or religious authority set an example by getting vaccinated publicly, along with the reasons previously discussed, all led to a climate of mistrust and contempt for the COVID-19 vaccine.

**5 Conclusion:**
The introduction of a new vaccine always represents a public health challenge, regardless of the severity of the disease. This study demonstrated that doubt about the existence of COVID-19 is prevalent among socio-health personnel. It is therefore logical to see low adherence to vaccination campaigns despite good knowledge of the vaccines in use in Mali. One of the main reasons for vaccine hesitancy was fear of adverse effects of the vaccines which especially drove a lack of confidence in said vaccines. Accordingly, efforts must still be made to raise awareness of COVID-19 vaccine efficacy and safety among health personnel in Ansongo, especially given that these providers constitute the main references for health matters in the locality.

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Conflict of Interest:
All the authors who participated in the study declare no conflicts of interest.

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