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# Prevalence of SARS-COV-2/COVID-19 in Guinea among travelers to foreign countries in the period from April 1 to June 30, 2021

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## Abstract

**Introduction**: Severe acute respiratory syndrome coronavirus (SARS-CoV-2) is the cause of COVID-19 which is a global pandemic, since its appearance in 2019 in China, is associated with hundreds of millions of deaths in across the world, and the numbers continue to increase overnight with the appearance of new variants.

The objective of this study was to determine the prevalence of SARS-CoV-2 among travelers received at the Laboratory of the National Institute of Public Health.

**Material and methods**: This was a prospective, descriptive cross-sectional study lasting three months from April 1 to June 31, 2021, focusing on travelers aged 2 and over received at the Laboratory of the National Institute of Health Public during our study.

**Results**: The prevalence of SARSCoV-2 among travelers was 1.6% (17/1037). The sex ratio was 1.83 in favor of the male sex. The average age was 43 years with a standard deviation of more or less 15 years with the extremes of 2 years and 88 years.

The age group under 18 years old and those between 46 and 65 years old are the most affected by the disease with 2.04% and 2.08% respectively.

Ratoma was the municipality where there were more travelers screened but with only 1.02% of positive cases for COVID-19 on the other hand the prefecture of Dubréka with 31 travelers screened, we noted 6.45% (2/31) of positive cases for COVID-19 which makes this prefecture the most affected during our study followed by the commune of Matam with 2.59% (2/77).

Retirees and housewives were the groups most affected by the disease with respective frequencies of 5% (1/20) and 4.08% (2/49). Note, however, that 2.67% (3/112) of patients were pupils and students while 1.67% (10/598) represented the informal sector.

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**Conclusion**: Our results show a low prevalence of positive cases for COVID-19 detected among travelers compared to results found elsewhere in the world.

The eradication of this pandemic in the world will require everyone's effort to raise awareness and educate the population, monitor positive cases and respect with all due rigor the barrier measures decreed by the world health organization.

**Keywords:** Prevalence; SARS-COV-2/COVID-19; National Institute of Public Health; Guinea.

## 1. Introduction

Coronaviruses are a group of zoonotic RNA (ribonucleic acid) viruses that cause upper respiratory tract infections in humans [1]. In December 2019, Coronavirus Disease 2019 (COVID-19) first appeared in Wuhan in Hubei Province of China [2].

It represents a global health emergency [3], Its spread has been ubiquitous in populations around the world [4]. This disease was declared a pandemic by the World Health Organization (WHO) on March 12, 2020 [5] . Transmitted very easily, even in asymptomatic patients, it remains viable in respiratory droplets [6]. Its incubation period ranges from 6 to 8 days and patients can develop symptoms such as fever, cough, myalgia, pneumonia and even respiratory failure [7]. Unpredictable evolution [8]. We witness additional complications, including death in the most serious cases [6]. However, a portion of patients are asymptomatic carriers, diagnosed on the basis of a positive viral nucleic acid test and showing no symptoms of COVID-19 [7]. Disease severity is associated with older age and comorbidities such as chronic obstructive pulmonary disease, diabetes, hypertension (hypertension) and coronary heart disease [2]. The final diagnosis is based on real-time reverse transcriptase-polymerase chain reaction (RT-PCR) positivity for the presence of coronavirus [9]. These accurate diagnostic tests are essential, but false negative results persist with current COVID-19 tests, particularly during the early stages of infection before symptoms appear. Additionally, the viral load of SARS-CoV-2 (Severe Acute Respiratory Syndrome Coronavirus) varies throughout the course of a patient's illness [3].

Doctors often treat patients with COVID19 with corticosteroids. This practice is, however, controversial [10]. During the first cases detected in the EHPAD (Accommodation establishment for dependent elderly people) the coordinating doctor was able to treat the residents with the combination of hydroxy chloroquine (HCQ, Plaquenil), azithromycin (AZT, Zithromax® and generics) [1].

As for the prevalence, the statistical data changes overnight, as of January 23, 2021, worldwide, the current covid-19 pandemic has caused 99301242 confirmed cases including 54843869 Recoveries and 2131532 death.

In the United States, 2,517,7522 confirmed cases including 419,207 deaths

IN France, 3,053,617 confirmed cases with 73,049 deaths [12].

Still on the same date, the African continent recorded 3,438,133 positive cases including 85,278 deaths and 2,903,296 recoveries [13]. In South Africa 1412986 confirmed cases including 1230520 recoveries and 40874 deaths. In Mali, 7983 confirmed cases including 5717 recoveries and 323 deaths [12].

In Guinea, the first case of covid-19 was recorded on March 12, 2020 in the capital Conakry [14] and as of January 23, 2021, 14,319 confirmed cases including 13,694 recoveries and 81 deaths [12]. The overnight increase in positive cases confirmed by Polymerase Chain Reaction (PCR) diagnosis in Guinea and the rarity of previous studies on this subject, motivated the choice of this theme entitled “Prevalence of SARS-COV-2/COVID-19 at the laboratory of the National Institute of Public Health (INSP) from April 1 to June 30, 2021. The main objective of this work was to determine the prevalence of COVID-19 in travelers tested at the laboratory of the National Institute of Public Health (INSP).

## 2. Material and methods

The laboratory of the National Institute of Public Health served as our setting for this study.

Nasopharyngeal fluid samples were taken using sterile swabs. Data collection was carried out using a Smartphone containing survey sheets

This was a prospective, descriptive cross-sectional study, lasting 3 months from April 1st to June 31st, 2021. The target population consisted of travelers abroad who had come to be tested at the INSP laboratory and the study population consisted of all travelers screened whether they were positive or negative for PCR.

The inclusion criteria took into account all travelers aged at least two or more during the study period and whether they were positive or negative for SARS-COV-2 by PCR. However, we excluded from the study travelers whose SARS-COV-2 PCR results were invalid or requiring a repeat and those for whom certain information was missing.

Concerning the size of the sample, we carried out exhaustive recruitment and after applying our selection criteria a size N = 1037 was obtained. For the statistical analysis and presentation of the data, the data were collected using the Kobocollect v1.14.0 application and sent to the KoBoToolbox server where they were recorded in the database then downloaded as an Excel file and we analyzed them using SPSS version 21 software. Proportions were calculated for the qualitative variables. Quantitative variables were expressed as Mean or Median. The entry and presentation were carried out using the Word, Excel and PowerPoint software from Pack Office 2013. For bibliographic management, we used the Zotero software with Vancouver as a reference system.

Ethical considerations: After approval of the research protocol by the thesis director, a letter was sent to the INSP managers for their agreement to proceed with the investigation. Thus all data were obtained with the free and verbal consent of the respondents. Confidentiality has been a principle. The data was collected anonymously and used only as part of the study.

## 3. Results

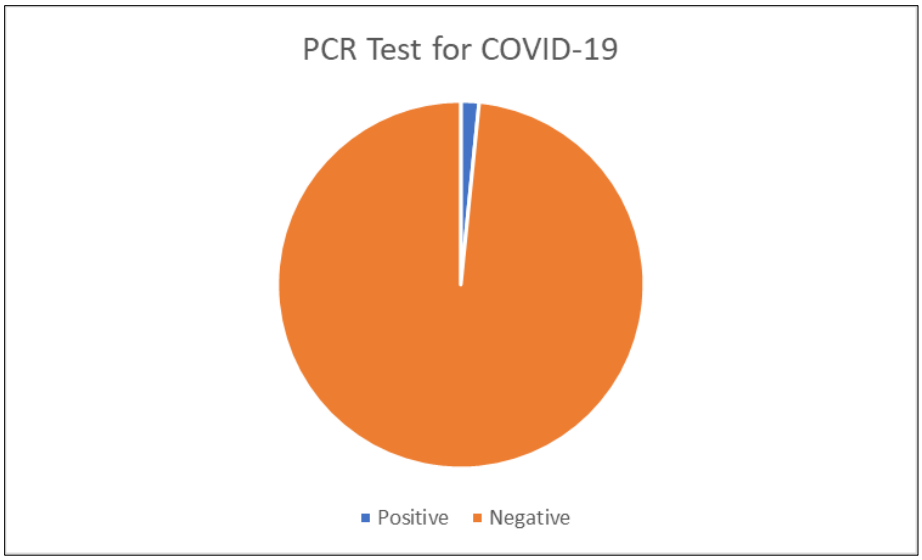


**Figure 1** Distribution of travelers according to COVID-19 terst result by PCR

**Table 1** Prevalence of SARCoV-2 according to each sociodemographic data.

| Variables | N | Positives | % [IC] |
|---|---|---|---|
| Sexe | | | |
| Male | 643 | 11 | 1 ,71 [0,9-2,5] |
| Female | | 6 | 1,52 [0,7-2,2] |
| Age Groups (years) | 394 | | |
| [2-17] | 49 | 1 | 2,04 [1,1-2,8] |
| [18-45] | 564 | 8 | 1,41 [0,5-1,7] |
| [46-65] | 335 | 7 | 2,08 [0,7-2,1] |

| | | | |
|---|---|---|---|
| ≥66 | 89 | 1 | 1,12 [1,1-2,8] |
| **Résidence** | | | |
| Kaloum | 130 | 2 | 1,53 [0,7-2,2] |
| Matam | 77 | 2 | 2,59 [1,5-3,4] |
| Dixinn | 152 | 3 | 1,97 [1-2,7] |
| Ratoma | 486 | 5 | 1,02 [0,4-1,6] |
| Matoto | 153 | 3 | 1,96 [1-2,7] |
| Outside of Conakry | 39 | 2 | 5,12 [4,9-7,8] |
| **Profession** | | | |
| Health workers | 76 | 0 | 0 |
| Pupils/Students | 112 | 3 | 2,67 [1,6-3,5] |
| Civil servants | 133 | 1 | 0,75 [0,2-1,2] |
| Informal | 598 | 10 | 1,67 [0,8-2,3] |
| House workers | 49 | 2 | 4,08 [2,8-5,1] |
| Retired | 20 | 1 | 5 [3,6-6,3] |
| No Profession | 49 | 0 | 0 |

## 4. Discussion

To limit transmission and reduce morbidity and mortality from COVID-19, countries around the world have implemented public health and social measures to combat the outbreak. One measure being considered by many countries and transport industry stakeholders is screening international travelers for SARS-CoV-2 (the virus that causes COVID-19) before travel, at points of entry or after travel [5].

The International Air Transport Association (IATA) is pushing governments to make data-driven decisions to manage COVID-19 risks when reopening borders to international travelers. Strategies without quarantine measures can allow international travel to restart with little risk of introducing COVID-19 into the destination country [15].

Before travel, screening for SARS-CoV-2 infection by RT-PCR is often required and raises the problem of detecting residual viral RNA in a person distant from the acute infection. The majority of countries adopted extraordinary health measures to limit the transmission of SARS-CoV-2 on their territory as soon as the pandemic was declared in March 2020. In addition to the containment measures within the countries, the control of borders with limitations on air traffic and international travel [16]. During the summer of 2020, countries adjusted measures and some required negative screening for SARS-COV-2 infection by reverse transcription polymerase chain reaction (RT-PCR) before departure to limit travel. importing cases. In the current epidemiological situation, with the threat of a third wave in the majority of European countries, the arrival of new variants and the relative slowness of vaccination, pre-travel screening remains relevant. With the use of the RT-PCR test, we are faced with the detection of viral RNA weeks after the acute episode in people who are no longer contagious [16].

We chose to work on the prevalence of COVID-19 among travelers with the aim of making our contribution to knowing to what extent air transport is a risk factor for the spread of the virus. We have adopted a methodology that a priori allows us to achieve our objectives.

Among all travelers included in our study (N = 1037) the majority tested negative (N = 1020, 98.4%) and a minority of 17 (1.6%) tested positive. From February 21 to March 24, out of 86,613 air travelers tested only 1,289 (1.5%) were positive. 1.3% of non-exempt travelers tested positive on arrival and 1% tested positive on day 10. However, there is not enough information to understand how many chains of transmission have been initiated by these travelers and the contribution of travel to the overall burden of disease in Canada at this time [63]. The prevalence of infection per flight ranged from 0 to 1.9% and of the 2433 passengers tested immediately on arrival, 13 people tested positive, giving a combined infection prevalence among returnees of 0 .44% [17].

Data from the UK National Heath Service on international travelers arriving in the UK demonstrates that the vast majority of travelers pose no risk of introducing COVID-19 after arrival. Between February 25 and May 5, 2021, 365,895 tests were carried out on passengers arriving in the UK. They had negative PCR test results before the trip. Only 2.2% tested positive for COVID-19 infection during the universal quarantine imposed on arrival. Of these, more than half arrived from countries on the "red list", which were considered high risk. If we exclude them from the statistics, we obtain a positivity of 1.46%. Of the 103,473 passengers arriving from European Union countries (excluding Ireland), 1.35% tested positive. Three countries, Bulgaria, Poland and Romania accounted for 60% of positive cases [18].

We find a male predominance of positive cases, the average age of travelers was 43.22 years with 54.4% of travelers whose age varied between 18 and 45 years and 32.3% whose age varied between 46 and 65 years old [19]. Katchunga et al., [20] in their study concerning the seroprevalence of anti-SARS-COV-2 antibodies among travelers screened at the Saint Luc clinic in Bukavu (Democratic Republic of Congo) reported a male predominance of 59.4% and the average age of patients was 39.6 years with 66.8% of patients under 40 years old.

Informal workers and pupils/students were the groups most affected by the disease with respective frequencies of 58.8 and 17.6%. Note, however, that 11.7% of patients were housewives while retirees and executives all represented 5.8%. On the other hand, Greffe et al., [15] in their study relating to the evaluation by RT-PCR of nasopharyngeal carriage of SARS-COV-2 among health personnel in a university hospital in the Paris suburbs, these were mainly doctors, seniors or in training (n = 138/519 or 27%), nurses and health managers (n = 107/519 or 21%) and caregivers (n = 90/519 or 17%). The RT-PCR positivity rate was 38% overall (195/519), with no significant difference according to profession.

The distribution of cases according to the municipalities showed that the municipality of Ratoma was the most affected during this study period. Indeed, out of the 1037 surveyed, the Municipality of Ratoma had 5 (29.4%) positive cases of COVID-19, followed by the two municipalities including Dixinn and Matoto which each had 3 cases of positive COVID-19, i.e. 17.6 %. Mukemo et al., in their study on the prevalence of SARS-COV-2 at the Gécamines-Sud response center in Lubumbashi, Democratic Republic of Congo, the commune of Kamalondo recorded high seropositivity (66.7%) compared to other municipalities, but there was no statistical difference in seropositivity between the different municipalities of patient residence [21].

## 5. Conclusion

COVID-19 is an emerging infectious disease of global public health concern. Like other countries in the world, Guinea has been facing this health crisis since March 12, 2020.

Our results note a low prevalence among the travelers surveyed, which sufficiently proves that, after several months of fighting this pandemic, the strategy adopted by Guinea seems to be bearing fruit. However, we must still continue to require the PCR test for travelers in order to limit the spread of the virus in the world until its eradication.

## Compliance with ethical standards

### *Disclosure of conflict of interest*

No conflict of interest to be disclosed.

### *Statement of informed consent*

Informed consent was obtained from all individual participants included in the study.

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