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PREVALENCE OF COVID-19 SUDANESE ASYMPTOMATIC TRAVELERS

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ABSTRACT
Corona viruses belong, to the *Coronaviridae* family, from which the current *Covid-19* virus pandemic strain developed, causing worldwide health and economics crises. **Material and methods:** This was a health facility based descriptive active surveillance study involve 1000 asymptomatic *COVID-19* Sudanese travelers in period between June to December 2020. **Results**: The Prevalence of *COVID-19* Sudanese asymptomatic travelers was estimated at 6.8% with a very significant P – VALUE of (0.05).

KEYWARDS: *Covid-19, Corona virus.*

INTRODUCTION AND LITERATURE REVIEW
The *COVID-19* pandemic, also known as the Corona virus pandemic, is an ongoing pandemic of *Corona virus* disease 2019 (*COVID-19*), caused by severe acute respiratory syndrome *Corona virus 2* (*SARS-CoV-2*).[1] The outbreak was first identified in Wuhan, China, in December 2019.[2] The World Health Organization declared the outbreak a Public Health Emergency of International Concern on 30 January, and a pandemic on 11 March.[3] As of 7 June 2020, more than 6.89 million cases of *COVID-19* have been reported in more than 188 countries and territories, resulting in more than 399,000 deaths; more than 3.08 million people have recovered.[4] *Corona viruses* are a group of related RNA viruses that cause diseases in mammals and birds. In humans, these viruses cause respiratory tract infections that can range from mild to lethal. Mild illnesses include some cases of the common cold (which is also caused by other viruses, predominantly *rhinoviruses*), while more lethal varieties can cause *SARS*, *MERS*, and *COVID-19*. Symptoms in other species vary: in chickens, they cause an upper respiratory tract disease, while in cows and pigs they cause diarrhea. There are as yet no vaccines or antiviral drugs to prevent or treat human corona virus infections *Corona viruses* constitute the subfamily *Orthocoronavirinae*, in the family *Coronaviridae*, order *Nidovirales*, and *realm Riboviria*.[5] They are enveloped viruses with a positive-sense single-stranded RNA genome and a nucleocapsid of helical symmetry.[5] The genome size of corona viruses ranges from approximately 26 to 32 kilo bases, one of the largest among RNA viruses.[5-6] They have characteristic club-shaped spikes that project from their surface, which in electron micrographs create an image reminiscent of the solar corona, from which their name derives.[6] The virus is primarily spread between people during close contact, most often via small droplets produced by coughing, sneezing, and talking. The droplets usually fall to the ground or onto surfaces rather than travelling through air over long distances.[5-6] Less commonly, people may become infected by touching a contaminated surface and then touching their face.[6] It is most contagious during the first three days after the onset of symptoms, although spread is possible before symptoms appear, and from people who do not show symptoms. Common symptoms include fever, cough, fatigue, shortness of breath, and loss of sense of smell.[6] Complications may include pneumonia and acute respiratory distress syndrome The time from exposure to onset of symptoms is typically around five days but may range from two to fourteen days.[17] There is no known vaccine or specific antiviral treatment.[9] Primary treatment is symptomatic and supportive therapy.[7] The WHO has published several testing protocols for the disease. The standard method of testing is real-time reverse transcription polymerase chain reaction (rRT-PCR). The test is typically done on respiratory samples obtained by a nasopharyngeal swab; however, a nasal swab or sputum sample may also be

used. Results are generally available within a few hours to two days.[8] Blood tests can be used, but these require two blood samples taken two weeks apart, and the results have little immediate value.[7-8] Chinese scientists were able to isolate a strain of the *Corona virus* and publish the genetic sequence so laboratories across the world could independently develop polymerase chain reaction (PCR) tests to detect infection by the virus. As of 4 April 2020, antibody tests (which may detect active infections and whether a person had been infected in the past) were in development, but not yet widely used. Antibody tests may be most accurate 2–3 weeks after a person's symptoms start.[8] The Chinese experience with testing has shown the accuracy is only 60 to 70%.[9] The US Food and Drug Administration (FDA) approved the first point-of-care test on 21 March 2020 for use at the end of that month.[9] The absence or presence of *COVID-19* signs and symptoms alone is not reliable enough for an accurate diagnosis. Different clinical scores were created based on symptoms, laboratory parameters and imaging to determine patients with probable *SARS-CoV-2* infection or more severe stages of *COVID-19*.[9-10] Diagnostic guidelines released by Zhongnan Hospital of Wuhan University suggested methods for detecting infections based upon clinical features and epidemiological risk. These involved identifying people who had at least two of the following symptoms in addition to a history of travel to Wuhan or contact with other infected people: fever, imaging features of pneumonia, normal or reduced white blood cell count, or reduced lymphocyte count.[11] A study asked hospitalized *COVID-19* patients to cough into a sterile container, thus producing a saliva sample, and detected the virus in eleven of twelve patients using RT-PCR. This technique has the potential of being quicker than a swab and involving less risk to health care workers (collection at home or in the car).[12] Along with laboratory testing, chest CT scans may be helpful to diagnose *COVID-19* in individuals with a high clinical suspicion of infection but are not recommended for routine screening.[13] Bilateral multilobar ground-glass opacities with a peripheral, asymmetric, and posterior distribution are common in early infection.[14-15] Subpleural dominance, crazy paving (lobular septal thickening with variable alveolar filling), and consolidation may appear as the disease progresses.[14-15] In late 2019, the WHO assigned emergency ICD-10 disease codes U07.1 for deaths from lab-confirmed *SARS-CoV-2* infection and U07.2 for deaths from clinically or epidemiologically diagnosed *COVID-19* without lab-confirmed *SARS-CoV-2* infection.[16-17]

Rational

As its clearly approved that *COVID-19* Pandemics represent a serious challenges to the entire word population, in that it have a very high mortality and morbidity rate comparing with the other corona virus species ever. The transmission rate is usually around 4 and its airborne spread ,represent a potential danger in local community as well as entire world throw travelers, those are showing no *COVID-19* related symptoms that make the transmission proportional increase as traveler move from a focal point to another. This study was focus on detecting the frequency of the *COVID-19* asymptomatic travelers in Khartoum – Sudan by estimating the rt-PCR positive results among travelers.

OBJECTIVE

To detect *COVID-19* in asymptomatic Sudanese travelers using rt - PCR techniques.

MATERIAL AND METHODS

This was a health facility based descriptive active surveillance study involve asymptomatic *COVID-19* Sudanese travelers.

Study aria: this study was conducted in Khartoum state – Sudan.

Study Population: Sudanese traveler, those were screened from *COVID-19* in AL- Shaheed Abd almoez Atay Molecular biology laboratory in the period between June to December 2020.

Inclusion criteria: asymptomatic Sudanese travelers.

Exclusion Criteria: Non Sudanese or non travelers.

Sample size: the sample size was estimated at 1000 travelers.

Data collection: Date will be collected by direct interviewing using a well instructed questioner.

Date analysis: Data was analyzed using SPSS and Microsoft Excel.

Ethical Consideration: Verbal concept was toke from all participants as well as the written approved that was obtained from the laboratory Mangier.

Laboratory work: Sudanese travelers admitted to the laboratory were subjected for nasopharyngeal swab that obtained according to the Sudan COVID-19 national protocol (Appendix - A), Then the samples were transported using Viral transport medium (VTM), all the safety and transportation warning was optimized based on the Sudan COVID-19 national protocol (Appendix – A).

Sample sorting and extraction: All the samples were sorted out and the RNA genome was extracted, amplified and detected according to the Sudan COVID-19 national protocol (Appendix – A).

Briefly: Sample collection: By using sterile swab under good light, nasopharyngeal and or oropharyngeal swab samples randomly were collected and preserve in virus transport media, for RNA extraction and rRT-PCR.

RNA extraction (DAAN GENE, China)
Kit component
-RNA carrier.
-Lysis Buffer.
- Protienase K (P K).
-Elution Buffer.
-Inhibitor Buffer.
-Deionizer water.

Assay Procedure
50 ul of PK will be added to sterile eppindorf tube, then 200 ul from sample and 200 ul of working solution will be added to the tube, and centrifugation in 12000/10 sec, then incubation at 72 C for 10 min, 250 ul of absolute ethanol will be added and transfer the whole volume to spin column tube, and centrifugation at 12000/1min, replace the collection tube with anther sterile one, and 500 ul from inhibitor solution will be added and centrifugation at 12000/1min, then replace the collection tube with anther sterile one, and 500 ul from Deionizer water will be added and centrifugation at 12000/1min, then repeat the previous step and centrifugation at 14000/3min, and transfer to new sterile eppendorf tube, incubation at 72 C for 2min, and 50 ul of elution buffer will be added and centrifugation at 14000/1min, then preserve the RNA in -20 for further use.

Reverse Transcriptase Real Time Polymerase Reaction Chain (rRT-PCR China)
Kit Component
- Supper Mix.
- Internal Control
- RT enzyme.
-Negative Control.
-Positive Control.

Assay Procedure 19 ul from supper mix will be added tosterile eppendorf tube, then 1.0 ul of internal control and 1.0 ul of RT enzyme will be added to the tube, and 20 ul from the whole mixer will be added to sterile PCR tube and 5.0 ul of the extracted RNA will be added and subjected to thermo cycler machine (Optical Thermocycler).

Calculation of results: Positive and negative results will be calculated according to (qPCR 3.1) software program.

RESULTS: Demographic data

Gender	Frequency	Percent
Male	615	61.5%
Female	385	38.5%
Total	**1000**	**100%**

Age group	Frequency	Percent
Less than 20	135	13.5%
20-40	311	31.1%
40-60	301	30.1%
More than 60	253	25.3%
Total	**1000**	**100%**

Rt – PCR Results

Results	Frequency	Percent
Positive	68	6.8
Negative	932	93.2
Total	**1000**	**100%**

DISCUSSION AND RECOMMENDATION
Worldwide attention was concentrated on the travelers because they are the main source of new infection as well as the transmission of new strains. This study obey that the prevalence's of corona viruses among travelers is 6.8 % which is reflecting a wide spreading among the a symptomatic patients which is relatively related to the study done by altowfig et al in KSA in 2020 which estimate the prevalence's at 4.0%.[18]. And it's closely related to world date published by Russell in 2020 which correlate this study with many world countries.[19] This study recommend that the Sudan national surveillances must be start to estimate the exact prevalence's among asymptomatic peoples to update the prevention controls.

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