

# SARS-COV-2 B.1.1.529 (OMICRON) VARIANT OUTBREAK: CASE SERIES PRESENTATIONS AND RESPONSE TO TREATMENT AT THE ISLAMIC UNIVERSITY IN UGANDA HEALTH FACILITY

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## ABSTRACT

**The object of research.** The study, investigated the clinical presentations of patients who tested Positive for Covid-19 (Omicron Variant), their response to treatment, and the levels of transmissibility of the infection.

**Investigated problem.** As the globe, continent, and nation are struggling with the emergency of the new COVID-19 omicron Virant outbreak there's not much information known about the behavior of this new threat to enable clinicians, and public health specialists, and policymakers to curb the problem.

**The main scientific results.** The study found that headache, cough, fevers and, general body weakness was the commonest presenting complaints, 3 of the cases reported difficulties in breathing. None of the cases required admission. There was no difference in the severity of the illness and the response to treatment between the vaccinated and the non-vaccinated cases. Cases that did steaming as an adjuvant/supplementary treatment reported a shorter duration of symptomatic relief than those that did not.

**The area of practical use of the research results.** The findings will act as a practical guide to clinicians, public health specialists, and policymakers in the management of the COVID-19 Omicron Variant.

**Innovative technological product.** The use of steaming as an adjuvant to symptomatic relief management of respiratory tract infections.

**Scope of the innovative technological product** Omicron Variant produces a less severe illness than earlier variants of COVID-19. The study also reveals that vaccination alone was not effective in the prevention of contraction of the Omicron Variant and other newer variants. However, vaccination may have been advantageous in protecting the cases from progressing to severe disease. Thus, other IPCs measures must be maintained and booster doses of COVID-19 vaccinations should be encouraged. Large-scale on the effectiveness of steaming and other locally made remedies for symptomatic management of respiratory tract infections should be done.

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## 1. Introduction

The Corona Virus disease 2019 (COVID-19) was first identified in Wuhan City in December 2019 and became a disease of a public health concern due to its highly infectious nature [1, 2]. Just like other viruses, Corona Virus disease also keeps on changing its genetic composition through mutations [1]. Currently several mutations have occurred leading to several variants. These variants have been categorized by the USA center for diseases control (CDC) into four classes including; variants being monitored (VBM), variants of interest (VOI), variants of high consequence (VOHC), and variants of concern (VOC) [1].

The B.1.1.529 (Omicron) variant of SARS-CoV-2 (the virus that causes COVID-19) was first detected in specimens collected on November 11, 2021, in Botswana and on November 14 in South Africa [2, 3] This was followed by a declaration by the World Health Organization (WHO) to be a variant of concern (VOC) on November 25, 2021 [3].

The omicron variant harbors a high number of mutations including 15 mutations in the receptor-binding divisions (RBD) of the spike. It also shares several mutations with previous variants of concern (VOC) including Alpha, Beta, and gamma variants [3, 4]. Uganda confirmed its first

cases of the Omicron variant on the 29<sup>th</sup> of November 2021 according to the Uganda Virus Research Institute (UVRI) and the Ministry of Health (MoH). The samples were mainly from travelers from Nigeria, the United Arab Emirates, South Africa, the Democratic Republic of Congo, and the Netherlands [4]. Following the first pronouncement of the outbreak in Uganda, several people started presenting at various health facilities within the Ugandan Communities. Mbale District and specifically at Islamic University in Uganda (IUIU) Health Center the situation was the same. As the nation, continent, and the globe was struggling with the emergency of the new COVID-19 omicron Virant outbreak there's not much information about the behavior of this new threat to enable Clinicians, public health specialists, and policymakers to curb the problem.

### 1. 1. The object of research

The current study, therefore, looked at the characteristic presentation of patients who tested Positive for Covid-19 at the Islamic University in Uganda (IUIU) health center, their response to various medications, and forms of management given. The study also assessed the levels of transmissibility of the infection.

### 1. 2. Problem description

As the globe, continent, and nation were struggling with the emergency of the new COVID-19 omicron Virant outbreak there's not much information known about this new variant. The behavioral characteristics, clinical presentations, and response to treatment were all not known. This would therefore make it difficult for clinicians' public health specialists and policymakers to handle the threat.

### 1. 3. Suggested solution to the problem

This current study, therefore, intended to assess the characteristics, clinical presentations, transmissibility and the response to treatment of the cases that tested positive during the COVID-19 Omicron variant outbreak in Uganda.

## 2. Materials and Methods

The study was carried out between the 15<sup>th</sup> of December 2021 to 15<sup>th</sup> of January 2022. The study site was Islamic University in Uganda Health Center (IUIU HC). IUIU HC is a private not for Profit (PNFP) Health facility. The facility serves both the University community and the surrounding areas of Nkoma, Buyonjo, Bujoloto Wagagayi, Wanambwa, and beyond within the Northern Division of Mbale City in Mbale District Eastern Uganda. The Facility offers both Out-Patient and In-Patient services. On average seeing about forty clients daily [5–7].

Patients who presented with signs and symptoms of COVID-19 and tested positive using the COVID-19 RDT Ag Test were consented and recruited into the study. Using a well-structured Questionnaire, the patient's data on the following parameters were obtained including Demographics, Vaccination status, Clinical presentations; Physical Examinations; Laboratory findings, Medical Treatment, and home-based care treatments used as well as follow-up information until full recovery. Clinical information for each of the participants was obtained from the health facility's ERP-information system.

All the patient's information was categorized and tabulated accordingly and presented in frequency tables.

Permission to conduct the study was obtained from the IUIU Research Coordination Committee (RCC) under the number **RCC/UHC/21/001** and the health facility in Incharge.

All participants were made to sign consent forms before participating in the study. COVID-19 Preventing Measures were observed and maintained throughout the process.

Out of 1,698 Clients who were attended to at the IUIU health center between the 1<sup>st</sup> and 31<sup>st</sup> December 2021, 33 (2.59 %) tested positive for the COVID-19 Diagnostic Test (Ag. RDT), of these 14 participated in the study. The participants had a mean age of 36 years range (11–61 years), 9/14 were male, 10/14 were vaccinated, 4 had received one dose, and 6 had received two doses, 8/14 had received AstraZeneca 1/14 received Moderna and 1/14 received Pfizer. Summary of the cases is as shown in Table 1 below.

### 3. Results

*Presentations.* The majority of the cases (cases 1–14) presented with either dry cough, wet cough, flue, High-grade fevers, Headache, and general body weakness three (3/14) of the cases (cases no. 6, 12, 13) presented with Difficult breathing, three cases (cases 6, 7, 10) presented with abdominal symptoms. All other vitals including Blood Pressure, respiratory rate, heart rate, and normal respiratory findings (There was no involvement of the lower respiratory tract)

*Laboratory findings.* All the 14 cases tested Positive for COVID-19 Using COVID-19 Rapid Diagnostic Test 3/14 tested Positive for Malaria and 1/4 tested positive for Typhoid using IgG IgM Rapid Diagnostic Test (RDT)

*Medications.* Most of the Cases (1, 2, 3, 4, 5, 6, 7, 11, 12 and 13) used Azithromycin, Dexamethasone, Ascorbic Acid, paracetamol, and Zinc Sulphate tablets. A few of the cases (8, 8, 10 and 14) used Ampiclox, Amoxicillin, and amoxiclav instead of Azithromycin the treatment was taken for 7 to 10 days.

*Supplementary Medications.* As it is a common practice in Uganda to supplement conventional medicines with other local herbs and food supplements, the inquiry was made on whether these cases used any of the above and the responses were as follows: All cases apart from cases 3 and 4 reported using food supplements, especially fruits that included lemons, oranges, pineapples, watermelons, Ginger and garlic. Six of the cases (3, 4, 7, 11, 12 and 13) reported practicing steaming using herbal medications. Steaming is the act of inhalation of moisture or vapor from boiling or hot water often mixed with herbs.it is a common practice in Africa, some parts of Asia, and in Uganda particularly.

*Response To Treatment.* The majority of the cases had their symptoms resolve after seven (7) days. Five of the cases (4, 7, 11, 12, 13) reported having their symptoms disappear within 5 days on average from the start of the treatment i.e. (3, 3, 7, 5, 7, 7 days respectively)

Cases that supplemented their medical treatment with steaming repeated a shorter duration of symptom relief compared to those that did not.

Whereas all cases reported self-isolation, both at home and workplace, there were still some transmissions of the infection to some of the family members. The summary of response to treatment is also as shown in **Table 1** below.

**Table 1**  
Summary of the presentation of cases

Case No.	Age	Gender	Vaccination status	No of Doses	Vaccine brand	Major Presenting complaints	Lab findings	Medical treatment	Supplementary treatment	Response to treatment	Transmission to other people
1	2	3	4	5	6	7	8	9	10	11	12
1	37	F	Yes	2	As-trazene-ca	No chronic illness, headache, joint pains, dry cough, later wet cough, G.B. W	–	Azithromycin, Zn sulphate, vitamin A, Paracetamol, Dexamethasone tablets	Fruits juice	After a week still had a cough (headache and GBW)	Did isolate but one member tested positive
2	31	M	Yes	2	As-trazene-ca	Headache, fevers, joint pains, GBW	B/s-ve Typhoid IgG IgM-ve BAT-ve COVID-19	Azithromycin, Dexamethasone, Ascorbic acid, Paracetamol	Citrus fruits, oranges, lemons	All symptoms disappeared gradually within one week	There are no complaints after a week. No repeat tests were done. Isolated, no family transmission
3	61	M	Yes	2	As-trazene-ca	Known hypertensive, headache, fevers, joint pains, mild DIB	B/S-ve IgG IgM –ve COVID-19 RDT+Ve	Azithromycin, Zn sulphate, vitamin A, Paracetamol, Dexamethasone tablets	Steaming with local herbs	Symptoms disappeared in 3–5 days. No repeat tests	No complaints after 5 days. Isolated from work and at home. No close contact transmission

Continuation of Table 1

1	2	3	4	5	6	7	8	9	10	11	12
4	23	M	Yes	1	Moderna	Headache	COVID-19 RDT -ve	Ampiclox, Covidex drops	Steaming with hot water.	Symptoms disappeared within 3 days	No more complaints after 5 days
5	39	M	Yes	1	Astra-Zeneca	Headache, fevers, wet cough, flue	COVID-19 RDT +ve, B/S -ve IgGIgM -ve	Zinc sulfate, vitamin C, Covidex drops	Ginger	Symptoms still present after a week (flue). A repeat test is done -ve.	Isolated from work and home. Had a close contact that tested positive
6	34	M	Yes	1	Astra-Zeneca	Headache, fevers, general body weakness, abdominal pain, passage of loose stool, loss of test and smell	B/s for -ve Typhoid IgG IgM Negative	Azithromycin, Dexamethasone, Paracetamol, Dexamethasone, Amoxicillin, Mucoclex syrup	Citrus fruits, oranges, lemon, passion fruits	Beyond one week. Cough flue and bitter smell persisted some more days	Isolated but remained working while maintaining social distance. No close person transmission
7	56	F	Yes	2	Astra-Zeneca	Headache, joint pains, flu, abdominal symptoms, dizziness, general body weakness.	COVID-19 RDT +ve	Azithromycin, ascorbic acid, Ampiclox Dexamethasone	Ginger, lemon, oranges, steaming, herbs	Symptoms disappeared in one week. Gets episodes of cough and flue, heavy chest	No contact transmission used face mask while isolating
8	55	M	Yes	2	Astra-Zeneca	Headache, dry cough, flue	COVID-19 RDT +ve	Ampiclox, Zinc sulfate, vitamin C, Dexamethasone	Fruits, oranges, lemons, watermelon, passion fruits.	Persistent flue after one week.	Isolated, two more family members tested positive
9	14	M	No	N/A	N/A	Headache, fevers, flue	COVID-19 +ve	Amoxicillin, Dexamethasone, vitamin C, Zinc sulphate	Fruits, oranges, lemons, watermelon, passion fruits	All symptoms have disappeared in four days	Developed malaria symptoms later
10	11	F	No	N/A	N/A	Headache, fevers, flue, vomiting	B/s +ve COVID-19 RDT +Ve	Amoxicillin, Dexamethasone, vitamin C, Zinc sulphate	Fruits, oranges, lemons, watermelon, passion fruits	All symptoms have disappeared in four days	Developed malaria symptoms later
11	48	M	Yes	1	Pfizer	Headache, fevers, joint pains, flue, GBW, loss of appetite	COVID-19 RDT +ve	Azithromycin, Dexamethasone, Paracetamol, Dexamethasone	Oranges, steaming	All symptoms disappeared in 5 days	Isolated from work, observed S.O. Ps at home. No transmission
12	34	F	No	N/A	N/A	Fevers, dry cough, wet cough, flue, DIB, GBW	-	Zinc, vitamin C, Paracetamol, Azithromycin	Fruits (pineapples, watermelon, oranges), steaming, (mango, guava, lemons), ginger and garlic tea, black seeds and honey), ginger black seeds and honey	All symptoms disappeared within 5 days	Isolated itself, but had some

Continuation of Table 1

1	2	3	4	5	6	7	8	9	10	11	12
13	32	M	yes	2	As-tra-Zene-ca	Headache, fevers, joint pains, dry cough, GBW, difficulty in breathing	Covid-19 RDT +ve	Zinc, vitamin C, Paracetamol, Azithromycin tablets	Steaming, ginger garlic, black seeds, fruits	Most of the symptoms disappeared apart from dry cough. After the first week	Isolated but good a positive lose contact person
14	29	F	yes	2	As-tra-Zene-ca	Dry cough, sore throat, general malaise	B/S Mps +ve COVID-19 RDT Positive	Zinc sulfate, vitamin C, Dexamethasone, Amoxiclav	Warm hot water with honey-ginger and lemon	All symptoms disappeared within one week. Repeat test done was negative	Isolated. No family transmission

Note: RDT – Rapid diagnostic test, B/s MPs – Blood slide for malaria parasites, -ve – Negative, +ve – positive, GBW – general body weakness.

#### 4. Discussion

The study found headache cough fevers and general body weakness as being the commonest presenting complaints this was similar to findings in the Nebraska United States of America in a study done to investigate clusters of omicron variants and their characteristics [8] the findings were also in agreement with the same study still in the fact that none of the cases required hospitalization and with another study in southern California where 0.5 % of the cases studied required hospital admission [9]. This, therefore, meant that the current variant (Omicron) produces a less severe infection compared to the original COVID-19 infection.

The study did not find a significant difference in terms of severity of symptoms, the response to treatment, and the duration of full recovery between the vaccinated and the non-vaccinated cases. This finding was also in agreement with the findings of the study in Nebraska. [8] and other similar studies are done to assess the effectiveness of the vaccines against the omicron variants [3]. However the findings were different from the study done in Hong Kong China that reported a much milder illness among the vaccinated patients compared to the non-vaccinated patients [4]. This was also in agreement with the UNICEF facts study findings about the effectiveness of covid 19 vaccination against Omicron variant [10, 11].

The study found a shorter recovery time among the cases that used steaming with herbal remedies compared to those that did not suggest a better possible adjuvant for management of acute upper respiratory tract infections if well studied and well regulated in terms of composition, usage, application, and exposure time.

*Limitation of the study.* The main study limitation was that only 14 participants participated in the study because of the limited number of positive cases at the time. It was also difficult to tell the individual active ingredients in the steaming solutions for those that practiced steaming.

*Prospects for further research.* Large-scale studies on the effectiveness of steaming and other locally made remedies on symptomatic management of respiratory tract infections should be done. Further studies on the effectiveness of COVID-19 vaccination on the prevention of contracting the diseases especially the different variants should also be done.

#### 5. Conclusions

Conclusions made from this study are limited by the small sample size, but they indicated that whereas the Omicron Virant spreads at a higher rate than earlier variants it produces a less severe illness. Vaccination alone may not be very effective to prevent the contraction of the Omicron and probably other new variants. This, therefore, means that other infection, prevention, and control (IPC) measures should be maintained all the time and probably the need for vaccination booster doses. Large scale studies on the effectiveness of the vaccination to prevent the spread of newer

variants of COVID-19 as well as the effectiveness of steaming in the symptomatic management of respiratory tract infections should be done.

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