

Family Case Study on COVID-19 in Correlation with Blood Groups and Rate of Infection

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Abstract The correlation between ABO blood group and the infection of corona virus disease 2019 (COVID-19) and rate of infection and spread of the disease has been investigated in several studies. Previous studies exhibit a contentious acclamation of evidence thus the objective of the present study was to assess the relationship between different blood groups and the rate of infection at family institution level. The study was conducted on a family after the mother developed a sore throat which led to testing of infection on all the family members. The family comprised of six members whose distribution of blood group were as follows; Father AB+, Mother O+, first born son A+, second born son B+, and two little twins a daughter and son who were both A+. The COVID-19 test results tested positive on the mother who was blood group O+ and their second born son with blood group B+. All the other family members with blood group A+ and AB+ tested negative despite sharing same locality and household facilities. The test results thus indicated some extent of correlation as pertains blood groups and rate of infections. The study used Swab Test and Nasal aspirate accredited Covid 19 test Laboratory results analysis methodology. This is a standard qualitative research method for comparing blood types and its laboratory test results in relation to positivity or negativity to Covid 19 infections. The aim of this study is thus to investigate whether there exists a relationship between the blood groups of family members sharing same household facilities and the risk of SARS-CoV-2 infection and the laboratory results in COVID-19 test.

Keywords: family level, rate of infection and blood group and Covid 19 test results

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1. Introduction

The skeptical pneumonia like virus disease characterized by high fevers, dry cough, and fatigue, loss of smell, sore throat, diarrhea, and occasional gastrointestinal symptoms occurred in a seafood wholesale wet market in Wuhan, Hubei, China.

The deadly Corona virus SARS-CoV-2, disease-2019 (COVID-19), is currently spreading quickly globally and has been declared as a pandemic by the World Health Organization (WHO) 2020. Recent clinical scrutiny proposes that a patient's age, gender, and certain underlying long-term medical conditions such as diabetes, cardiovascular disease and COPD, seem to characterize a risk for the infection of SARS-Cov-2 and higher disease severity according to Wang, B., et al 2020.

The scope of this study entirely focused on family case study which was motivated by close contact among the victims of circumstances who could not afford better livelihood due to financial constraints. The objective of the study was purely to scientifically progress remedial precautions on different household levels for future protection. Further studies can better and improve policy

implementation in all agencies to give priorities to any conditions which livelihoods with their little facilities can't be able to handle during serious crisis.

The World Health Organization (WHO) declared COVID-19 infection caused by SARS-CoV-2 virus as a pandemic on March 2020. The virus has continued to spread all over the world causing havoc and panic particularly among the less privileged in the society. The family case study was therefore motivated due to lack of funding needed to enable family members to commit themselves into isolation after testing for the disease. This was witnessed in this study after the mother and son in the family of six tested positive for the deadly virus. This could be attributed to fact that economic imbalance and low levels of poverty amongst the less privileged households remains high in most developing countries thus few could afford paid isolation. This household case study of six family members in particular shared single rooms and sanitation facilities due to their financial constraints.

While blood types are hereditary, environmental factors can potentially have an effect on which blood types in a population will advance often to the next generation. This fact correlates also with the type of the diet and body capability to respond to gene mutation according to LCD Mattos, H.W. Moreira 2004. There are a few scientific studies

examining the relationship between SARS-CoV-2 and the blood groups. The aim of this study is thus to investigate the correlation between blood groups amongst family members at household level and the COVID-19 rate of infection.

In a previous study which examined ABO blood groups and vulnerability to SARS in 2005, 45 hospital members of staff came into contact with a patient without any PPE were checked and tested for SARS-CoV IgG antibody according to Cheng, Y. et al. 2005. The results showed that individuals with blood group O were less prone to SARS infection. However, the results were not statistically significant for blood group B. Likewise, the results were also uncertain for blood groups A and AB which also correlate to the current study.

2. Material and Methods

The present study comprised of six family members living in a rented apartment in Lavington, Nairobi Kenya between July 7, 2020 and July 21, 2020. The COVID-19 infection tests showed that two family members tested positive for the SARS-COV-2 RNA. The tests were conducted through PCR from the mouth swab and nostrils of the family members who were also closely monitored by ministry of health officials in Kenya. The medical results of the six family members were analyzed and the mother who was blood group O+ had developed mild symptoms like lack of smell, sore throat and some headache while the second born son who was blood group B+ had no symptoms.

The family consulted the Ministry of Health officials for assistance but was advised to undergo home based care which most victims of COVID-19 underwent. However due to financial constraints the family continued to share the available rooms and sanitation facilities. The affected received home-based care by eating a balanced diet and taking homemade concoctions made of lemon and hot

water. The family also took Vitamins C and Zinc which was administered through drinking water mixed with natural honey and lemon daily.

The Covid 19 laboratory results were analyzed randomly through Meta-analysis to compare with earlier studies if really there exist any correlation between blood group and rate of covid-19 infections.

3. Results and Finding

The Covid-19 test results for the family were obtained from a government testing center where most Covid-19 tests were taken on a daily basis. The mother who was 41 years of age with blood group O+ remained in doors together with her second born son aged 12 years who had blood group B+ for close monitoring. The other occupants of the house namely their father 46 years of age and with blood group AB+ took care of the remaining three siblings. The three siblings included their firstborn son aged 15 years and lastborn twins aged three years all of whom had blood group A+. The children had earlier interacted closely with their mother because of age as most children sleep together with their mother at tender age.

The family undertook isolation and quarantine in the same locality and frequently interacted for the duration of the quarantine which lasted for about fourteen days. Owing to fewer resources available to fully isolate the already affected mother and second born son, their father who was diabetic as well as hypertensive remained adamant on the prevailing circumstances and made frequent interaction to provide necessary support to his immediate family.

The process went on for about fourteen days and the two who were sick were again retested for Covid 19 at Nairobi hospital in Kenya. The results of the test were good and all tested negative hence family reunion ensued immediately.

Table 1. TABULATION OF FAMILY COVID 19 TEST RESULTS, AGE, GENDER, AND BLOOD GROUPS

FAMILY MEMBERS	BLOOD GROUPS	GENDE R	AGE IN YEARS	UDERLYING CONDITION	COVID 19 TEST RESULTS
FATHER	AB+	MALE	46	YES	NEGATIVE
MOTHER	O+	FEMALE	41	NO	POSITIVE
FIRST BORN SON	A+	MALE	15	NO	NEGATIVE
THIRD BORN SON	B+	MALE	12	NO	POSITIVE
FOURTH BORN DAUGHTER	A+	FEMALE	3	NO	NEGATIVE
LAST BORN SON	A+	MALE	3	NO	NEGATIVE

4. Discussion

According to the study blood group O+ positive owned by the mother and blood group B+ owned by the second born son remained vulnerable to infection of Covid-19 unlike other blood groups A+ and AB+ which showed considerable resistance to infection bearing in mind that all the family members interacted freely and on a daily basis despite their father having underlying medical conditions like diabetes and hypertension.

The study showed that the mother's blood group O+ developed some mild symptoms although it never led to admission or severe symptoms. The study further revealed

that her son's blood group B+ developed no symptoms at all which may have been attributed to body immune system and age since he was 12 years of age. This observation thus connects age with the fight against serious attack from Covid-19 virus since youngest people remain more resistance to diseases because of strong anti-bodies according to Zhao, J. et al.2020 on vulnerability.

In the study no fumigation was done even after the healing since the family could not afford the disinfection. This observation shows that the virus dies at some point since the sharing of household facilities continued with little precaution. Further investigation to ascertain how the family contracted the virus was entirely thrown to

recycling of face masks which are always contaminated and can easily carry the virus for a long duration.

Previous studies have compiled evidence with convergence results that people with Type O blood were less susceptible to SARS and even after infection patient's exhibit less complications according to Zhao, J. et al 2020. This study was echoed by similar research which was conducted in Hong Kong by Cheng, Y. et al 2005.

5. Conclusion

In this meta-analysis it was established that blood group O+ and B+ is a partial risk factor for COVID-19 rate of infection and blood group A+ and AB+ is a resistance element in the category. Blood groups A+ and AB+ were not significantly connected directly with COVID-19 infection. The scientific study showed some extent of correlations between blood groups in relation to Covid 19 rate of infection. However, this study need to be studied further and correlated with other studies done in order to produce credible evidence to support the imminent evidence of possible correlation.

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Competing Interests

The author confirms he has no competing interests.

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Ethical Considerations

Ethical issues (Including plagiarism, Informed Consent, misconduct, data fabrication and/ or falsification, double publication and/ or submission, redundancy, etc) have been completely observed by the author.

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