



# Journal of Health and Medical Sciences

**Almawazini, M.A, Alghamdi, A. O., Alsharkawy, A., Sehemi, M., Alghamdi, M. A., Abdulaziz, N. A., Alghamdi, K. M., Alsakka, L. M., Alghamdi, N. A., Almawazini, H., & Almawazini, M. (2022), Outcomes of COVID-19 in Children After Wide Distribution of COVID Vaccine, Albaha, Saudi Arabia. *Journal of Health and Medical Sciences*, 5(3), 52-55.**

ISSN 2622-7258

DOI: 10.31014/aior.1994.05.03.229

The online version of this article can be found at:  
**<https://www.asianinstituteofresearch.org/>**

Published by:  
The Asian Institute of Research

The *Journal of Health and Medical Sciences* is an Open Access publication. It may be read, copied, and distributed free of charge according to the conditions of the Creative Commons Attribution 4.0 International license.

The Asian Institute of Research *Journal of Health and Medical Sciences* is a peer-reviewed International Journal. The journal covers scholarly articles in the fields of Medicine and Public Health, including medicine, surgery, ophthalmology, gynecology and obstetrics, psychiatry, anesthesia, pediatrics, orthopedics, microbiology, pathology and laboratory medicine, medical education, research methodology, forensic medicine, medical ethics, community medicine, public health, community health, behavioral health, health policy, health service, health education, health economics, medical ethics, health protection, environmental health, and equity in health. As the journal is Open Access, it ensures high visibility and the increase of citations for all research articles published. The *Journal of Health and Medical Sciences* aims to facilitate scholarly work on recent theoretical and practical aspects of Health and Medical Sciences.



ASIAN INSTITUTE OF RESEARCH  
Connecting Scholars Worldwide

# Outcomes of COVID-19 in Children After Wide Distribution of COVID Vaccine, Albaha, Saudi Arabia

Abdulmajid Mustafa Almazazini<sup>1</sup>, Ahmed Obaidalla Alghamdi<sup>1</sup>, Ali Alsharkawy<sup>1</sup>, Matar Ahmed Al Sehemi<sup>2</sup>,  
Mohammed Ahmed Alghamdi<sup>3</sup>, Njood Abdulaziz Alghamdi<sup>3</sup>, Kholoud Mohammed Alghamdi<sup>3</sup>, Lara Muaffak  
Alsakka<sup>3</sup>, Nouf Abdullah Alghamdi<sup>3</sup>, Hazem Almazazini<sup>4</sup>, Mohammad Almazazini<sup>5</sup>

<sup>1</sup> Consultant pediatrician, KFH Albaha

<sup>2</sup> Consultant pediatric Neurologist, KFH Albaha

<sup>3</sup> Medical student, Albaha University

<sup>4</sup> GP, Cairo University

<sup>5</sup> Pharmacist, Albaha, Saudi Arabia

Correspondence: Dr Abdulmajid Almazazini, Consultant pediatric cardiologist. Email: amawazini@gmail.com.  
Tel: 00966508294471

## Abstract

**Background:** The WHO announced COVID-19 as a pandemic on 12 March 2020, and has become a major public health around the world. **Objectives:** The study aimed to evaluate clinical presentation and outcomes of COVID-19 cases after wide distribution of COVID vaccine. **Methods:** Cross sectional study, retrospective file review of the children aged less than 14 years, and confirmed by positive swab test to have COVID 19, from May 2021 to May 2022. **Results:** A total of 125 patients with positive tests were included in this study. Males made up 52.8% (66/125) of the population, while females made up 47.2% (59/125). The age group of 5–10 years was the most affected, with 46.2%. The common symptoms noted were fever 90.4%, followed by abdominal pain 45.6%, vomiting 44%, diarrhea 41.6%, running nose 39.2%, cough 36%, and headache 25%. Conjunctivitis (4%) and skin rash (1.6%) were the least common symptoms. Only four patients needed PICU admission. No mortality was reported in this study. **Conclusions:** The study concluded that the COVID severity became less with a short hospital course after wide distribution of the COVID vaccine. Male patients were more affected than female patients in the age group 5-10 years. Severe cases were associated with comorbidities.

**Keywords:** COVID-19, Children, Vaccine, Saudi Arabia

## 1. Introduction

The World Health Organization (WHO) declared COVID-19 as a pandemic disease in March 2020 [WHO report on COVID-19, 2020]. The disease prevalence among countries is different [R. Shekerdemian LS et al]. Children have the same risk of infection as adults but may present with mild clinical manifestations. [Tsabouri, MD, PhD. Ekaterini Siomou, Jun 2020]. The common presentation signs are upper respiratory tract infection, fever, cough,

and rhinorrhea, nausea, vomiting, and diarrhea (Riccardo Castagnoli, Apr 2020). Loss of taste and smell were reported in children, and increasing with age in children [Nallasamy K, 2021]. No significant differences have been reported between male and female children. Children can have COVID-19 through close contact with positive family members and with other students in the school [Zimmermann P, Curtis N, 2020]. Laboratory changes reported in patients include: lymphocytosis, lymphopenia, neutropenia, high liver and muscle enzymes, increased lactate dehydrogenase, elevated C-reactive protein (CRP) level, elevated erythrocyte sedimentation rate, [Chen W et al. 2020]. The presenting symptoms, severity, and outcome of COVID-19 are variable in each country. The care for the pediatric age group depends on local data, and guidelines. In children with hypoxia, the primary therapies were supportive care and oxygen administration. COVID Vaccine effectiveness over time was noted and the protection against severe disease was reported (ACS, NACI, April 2022). The hospitalization rates and the severity of the illness in vaccinated patients were lower in the pediatric age group (Oliver J. Watson et al., June 2022).

## 2. Objectives

The study aimed to evaluate the clinical presentation and outcomes of positive cases after the wide distribution of the COVID vaccine and after the local health authorities in Saudi Arabia held the strict measures applied to control COVID-19 in March 2020.

## 3. Methods

This was a hospital-based cross-sectional study carried out at King Fahad Hospital in Albaha, Saudi Arabia. Retrospective file review of the children aged less than 14 years was confirmed with a positive COVID-19 test from May 2021 to May 2022. The COVID protocols of the Saudi health authorities were applied [Abdullah A Algaissi et al. May 2020; Shen KL et al. Jun 2020]. The Declaration of Helsinki, ethical principles for medical research involving human subjects, were applied in our study [Helsinki Declaration 2013]. The diagnosis was confirmed by a positive nasopharyngeal swab PCR. All the cases admitted to COVID ward were enrolled in a structural protocol which included symptoms, signs, relevant investigation, duration of stay, and treatment. Information regarding demographic and clinical details, including age, sex, and history of contact, comorbidities, clinical features, and lab investigations, was recorded. The study was approved by the hospital's ethical research committee. There are no sources of funding. No conflict of interest. Children in an age group from birth to 14 years old, admitted with positive COVID-combined nasal and oropharyngeal swabs were included. Data was entered on a computer and analysed by Microsoft Excel 2020.

## 4. Results

A total of 125 positive cases were admitted to the Pediatric department, King Fahad Hospital, Albaha, Saudi Arabia, from May 2021 to May 2022 and were statistically analyzed. Based on the age distribution, the majority were in the age group of 6–10 years, 46.4% (58/125), followed by the 5-year age group at 33.6% (42/125), with the least being in the age group of 10–14 years, 20% (25/125), (table1). Among genders, males were more common at 52.2% (66/125), and females at 47.5% (59/125). Based on symptoms, the most common symptoms noticed were fever 90.5% (113/125), followed by abdominal pain 45.6% (57/125), vomiting 44% (55/125), diarrhea 41.6% (52/125), running nose 39.2% (49/125), cough 36% (45/125), headache 20% (25/125), and the least common symptoms noticed were conjunctival conjunction 4% (5/125) and skin rash 1.6% (2/125), (table2). Only 3.2% (4/125) of the children admitted to PICU were, one child had a known case of nephrotic syndrome, one had SCD, one had CHD, and one had cerebral palsy with spastic quadriplegia and was on ventilator support. Most of the children had a history of house and school contact. Lymphopenia was noted in the majority of admitted children with positive CRP.

## 5. Discussion

The data for this study were collected after the local health authorities in Saudi Arabia removed the strict measures applied to control COVID-19 in March 2020, to compare the spread and outcomes of the disease in children during and after the pandemic. In comparison with our previous study conducted at King Fahad Hospital before the vaccine was widespread, we found that the symptoms became milder, and the hospital course decreased

[Almawazini et al. 2022]. Symptomatic treatment is applied for positive cases only. This study found that after the vaccination was implemented in Saudi Arabia, the number and severity of COVID-19 in children were significantly reduced [Oliver J Watson Jun 2022]. Since COVID-19 was a major health issue all over the world, this study reported the clinic status of the children admitted to our tertiary centre. The most common symptoms observed were fever (90.5%), GI symptoms (50.8%), and respiratory symptoms (43.2%). This study revealed that gastrointestinal symptoms were predominant and severity of COVID 19 was less when compared to other studies [Meena et al., Jun 2020]. Only four patients, or 3.2% of the children, were severely ill and needed intensive care admission. Limited sample sizes and confounding factors may have affected this outcome in our study. Only two patients needed mechanical ventilation. One child was a known case of congenital heart disease and the second patient had cerebral palsy with spastic quadriplegia, and this outcome was less when compared to other studies [Nallasamy et al. 2021]. In our study, comorbidities were seen more in children aged 6–10 years (17.2% (10/58) followed by 11.9% (5/42) in children 5 years, while it was 8% (2/25) in patients older than 10 years. Compared to other studies, it was 10.6% for -5-year age groups and 3.7% for children aged 6–10 years. Comorbidities in children increase the risk of intensive care admission and the risk of severe disease [Ma X et al. 2021].

## 6. Conclusion

This study revealed that the number and severity of positive COVID cases were significantly decreased after the vaccination was applied in Albaha, Saudi Arabia. School and household contacts were the main risks. Comorbidities had higher risk of severe disease. Mild symptoms, short course of disease and had good outcome was reported in all admitted patients.

Age group	number	Male	Female
1-5 yr.	42 (33.6%)	20	22
6-10 yr.	58 (46.4%)	34	24
11-14 yr.	25 (20%)	12	13
Total	125	66	59

Findings	N (%)	male	female	P value
fever	113 (90.4%)	57	56	0.74
Abdominal Pain	57 (45.6%)	37	20	0.06
Vomiting	55 (44%)	25	30	0.21
Diarrhea	52 (41.6%)	28	24	0.24
Runny nose	49 (39.2%)	23	26	0.65
Cough	45 (36%)	23	22	0.67
Headache	25 (20%)	13	12	0.66
conjunctivitis	5 (4%)	3	2	0.71
Skin rash	2 (1.6%)	1	1	0.89

## References

- World Health Organization (WHO). WHO characterizes COVID 19 as a pandemic [EB/OL], Geneva, Switzerland: World Health Organization, 2020. Available at: <https://www.who.int/emergencies/diseases/novel-coronavirus-2019/events-as-they-happen>, accessed on 6 Jan, 2021.
- R Shekerdeman LS, Mahmood NR, Wolfe KK, Riggs BJ, Ross CE, McKiernan CA, et al. Characteristics and Outcomes of Children with Coronavirus Disease 2019 (COVID-19) Infection Admitted to US and Canadian Pediatric Intensive Care Units. *JAM Pediatr*. doi:10.1001/jamapediatrics.2020.1948. [PubMed].
- Sophia Tsabouri, MD, PhD. Ekaterini Siomou, MD, PhD. Risk Factors for Severity in Children with Coronavirus Disease 2019, A Comprehensive Literature Review. Published: July 30, 2020: <https://doi.org/10.1016/j.pcl.2020.07.014>. Review article, P321-338, Feb 01, 2021.
- Riccardo Castagnoli, MD; Martina Votto, MD; Amelia Licari, MD; Ilaria Brambilla, MD, PhD; Raffaele Bruno, MD; Stefano Perlini, MD; Francesca Rovida, PhD; Fausto Baldanti, MD; Gian Luigi Marseglia, MD. Severe

- Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) Infection in Children and Adolescents A Systematic Review. *JAMA Pediatr.* 2020; 174(9):882-889. Doi: 10.1001/jama\_pediatrics.2020.1467 published online April 22, 2020].
- Nallasamy K, Angurana SK, Jayashree M, Mathew JL, Bansal A, Singh MP et al. Clinical profile, hospital course and outcome of children with COVID-19. *Indian J Pediatr.* 2021;88(10):979-84. doi: 10.1007/s12098-020-03572.
- Zimmermann P, Curtis N. Coronavirus Infections in Children Including COVID-19. An Overview of the Epidemiology, Clinical Features, Diagnosis, Treatment and Prevention Options in Children. *Pediatr Infect DisJ.* 2020 May;39(5):355-368. doi: 10.1097/INF.0000000000002660.
- Chen W, Zheng KI, Liu S, Yan Z, Xu C, Qiao Z. Plasma CRP level is positively associated with the severity of COVID-19. *Ann Clin Microbiol Antimicrob.* 2020 May 15;19(1):18. doi: 10.1186/s12941-020-00362-2.
- An Advisory Committee Statement (ACS), National Advisory Committee on Immunization (NACI) Updated guidance on a first booster dose of COVID-19 vaccines in Canada Published: April 12, 2022.
- Oliver J Watson, PhD, Gregory Barnsley, MSc, Jaspreet Toor, PhD, Alexandra B Hogan, PhD, Peter Winskill, PhD, Prof Azra C Ghani, PhD. Show footnotes. Global impact of the first year of COVID-19 vaccination: a mathematical modelling study. Open Access Published: June 23, 2022. DOI:[https://doi.org/10.1016/S1473-3099\(22\)00320-6](https://doi.org/10.1016/S1473-3099(22)00320-6).
- Abdullah A Algaissi, Naif Khalaf Alharbi, Mazen Hassanain, Anwar M.Hashem. Preparedness and response to COVID-19 in Saudi Arabia: Building on MERS experience. *J Infect Public Health.* 2020 Jun;13(6):834-838. doi: 10.1016/j.jiph.2020.04.016. Epub 2020 May 11.
- Shen KL, Yang YH, Jiang RM, Wang TY, Zhao DC, Jiang Y, et al. Updated diagnosis, treatment and prevention of COVID-19 in children: experts' consensus statement (condensed version of the second edition). *World J Pediatr.* 2020 Jun;16(3):232-239. doi: 10.1007/s12519-020-00362-4.
- WMA Declaration of Helsinki, ethical principles for medical research involving human subjects. Adopted by the 18th WMA General Assembly, Helsinki, Finland, June 1964 and amended by the: 29th WMA General Assembly, Tokyo, Japan, October 1975. 35th WMA General Assembly, Venice, Italy, October 1983. 41<sup>st</sup> WMA General Assembly, Hong Kong, September 1989. 48th WMA General Assembly, Somerset West, Republic of South Africa, October 1996. 52nd WMA General Assembly, Edinburgh, Scotland, October 2000. 53rd WMA General Assembly, Washington DC, USA, October 2002 (Note of Clarification added). 55th WMA General Assembly, Tokyo, Japan, October 2004 (Note of Clarification added). 59th WMA General Assembly, Seoul, Republic of Korea, October, 2008 64th WMA General Assembly, Fortaleza, Brazil, October 2013. <https://www.wma.net/policies-post/wma-declaration-of-helsinki-ethical-principles-for-medical-research-involving-human-subjects/>.
- Almawazini, A., Alghamdi, A. O., Alnashi, S., Ahmed, M. S. A. S., Alsharkawy, A., Hassan, C. I., Alghamdi, M. A., Alshumrani, K. M., Yahya, A., Jaman, M., Nakhali, A., Alghamdi, O., Alghamdi, E., Zahrani, M. Almawazini, H., Almawazini, M., Alshumrani, M., Ata, T. Madco, M., PayonGa, A., & Kundoly, T. Review of COVID-19 in Children Admitted to King Fahad Hospital, Albaha, Saudi Arabia in 2020, *Journal of Health and Medical Sciences*, Vol.5, No.1, 2022: 18-23. ISSN 2622-7258. DOI: 10.31014/aior.1994.05.01.203.
- Meena J, Yadav J, Saini L, Yadav A, Kumar J. Clinical Features and Outcome of SARS-CoV-2 Infection in Children: A Systematic Review and Meta-analysis. *Indian Pediatr.* 2020 Sep 15;57(9):820-826. doi: 10.1007/s13312-020-1961-0. Epub 2020 Jun 24. PMID: 32583808; PMCID: PMC7498550.
- Ma X, Liu S, Chen L, Zhuang L, Zhang J, Xin Y. The clinical characteristics of pediatric inpatients with SARS-CoV-2 infection: a meta-analysis and systematic review. *J Med Virol.* 2021;93(1):234-40. DOI: 10.1002/jmv.26208.