Sarcouncil Journal of Medical Series

ISSN(Online): 2945-3550

Volume- 03| Issue- 04| 2024

Research Article **Received:** 02-02-2024 | **Accepted:** 12-03-2024 | **Published:** 01-04-2024

The Impact of the COVID-19 Pandemic on Children and a Description of the General Complications

Dr. Mohammed Ridha Hussein[1], Dr. Sulaiman Dakheel Oudah[2] and Dr. Hasan Hadi Hasan Al-Musawi[3]

[1]M.B.Ch.B., F.I.B.M.S. \ (Paediatrics), Iraqi Ministry of Health, Al-Najaf Health Directorate, Al-Zahraa Teaching Hospital for Maternity and Children, Al-Najaf, Iraq.

[2]M.B.Ch.B., M. Sci. \ (Respiratory Physician), Iraqi Ministry of Health, Thi-Qar Health Office, Al-Nasiryah Teaching Hospital, Thi-Qar, Iraq

[3]M.B.Ch.B., D.C.H. \ (Paediatrics), Iraqi Ministry of Health, Babylon Health Directorate, Al-Imam Al-Sadiq Teaching Hospital in Hilla, Babylon, Iraq

Abstract: Background: The pandemic caused by coronavirus 2019 has had an impact on the world's health systems as it affects children. **Objective:** This study aimed to analyze and assess clinical outcomes associated with COVID-19 and its impact on children, as well as determine the common complications for children with COVID-19. **Patients and methods:** This study recruited 120 child patients infected with COVID-19, and their ages ranged from 1 to 12 years. The patient's clinical data were collected from all hospitals and centers in different hospitals in Iraq for the period that extended from February 6, 2022, to September 19, 2023. This study recorded COVID-19 case data, which examined the severity of COVID-19 on children, the type of admission they experienced, the prevalence of complications, and the identification of risk factors. **Results:** Our results were shown clinical outcomes of COVID-19 who had children aged 1-4 years had the highest prevalence; males were a higher rate of COVID-19 with 65% than females (35%); the rate of comorbidities was 35%; the most common diseases were HIV (11 cases) and malnutrition (6 cases), the severity of COVID-19 had shown included mild (60 children), moderate (36 children), and severe (18 children), the rate of children admitted to the emergency room was 1.67%, the pediatric ward was 88.33%, and the PICU was 10.0%, the mortality rate was two children, the length of stay in the PICU was 3–8 days, and the and the length of stay in the hospital was 3–6 days, rate of complications was 15 cases, physical function was 79.56 ± 8.94, daily activity was 84.92 ± 2.68, and emotional function was 81.24 ± 3.57. **Conclusion:** The current study proves that the Covid – 19 can cause a decrease in the quality of life of pediatric patients, but the death rate is very low and makes children less susceptible to long-term complications.

Keywords: Covid – 2019; Children; Complication; HIV; PICU; Severity classification of Covid -19; and Quality of life (QOL).

INTRODUCTION

While children are not considered an at-risk group from a medical perspective, they are greatly impacted through the continuing COVID-19 epidemic [WHO, 2022]. The purpose of this publication is to compile important concerns and suggest first measures that governments might implement to alleviate the adverse effects on children, particularly those who are most susceptible [Wu, Z. *et al*., 2020]. The immediate policy should prioritize mitigating the hazards in physical and psychological damage, guaranteeing access to nutritious food, promptly addressing the needs of underprivileged children, and minimizing the educational setbacks experienced by a significant proportion of the most impoverished children. The clustering of disadvantages often indicates poverty, inadequate housing, and limited access to essential services that subsequently shape individual accomplishments throughout infancy and later phases of life [Ludvigsson, J. F. *et al*., 2020 – Dong, Y. *et al*., 2020].

From a purely medical perspective, initial findings suggest that children aren't the demographic most impacted by the COVID-19 pandemic. Children had the potential to acquire the illness and manifest modest symptoms of COVID-19 upon exposure to the coronavirus. [Ahmed, M. *et al*., 2020 - Kapoor, D. *et al*., 2021]. The COVID-19 pandemic exacerbates the vulnerabilities associated with insufficient nutrition, abuse, and exposure to intimate partner violence [Kapoor, D. *et al*., 2021 - Islam, N. *et al*., 2021]. It is crucial to acknowledge that these policies will have varying effects on different cohorts of children [Shioji, N. *et al*., 2021]. The vulnerable populations with kids involve those living in impoverished conditions, those with impairments, those in out-of-home care, and those in detention facilities. Additionally, refugees and individuals under low risk for child labor are also included in this category [Chaziya, J. *et al*., 2021]. Furthermore, the pandemic had the capacity to generate novel forms of susceptibility in children, necessitating governments to make arrangements to address the escalating need for assistance [Klingenberg, C. *et al*., 2020, Arous, R. *et al*., 2021]. The COVID-19 problem is undergoing transformation within the framework of extensive digitization. The majority of youngsters, particularly in OECD nations, dedicate

***Corresponding Author:** Dr. Mohammed Ridha Hussein

DOI- https://doi.org/ 10.5281/zenodo.

a significant amount of time to web surfing. Hence, the presence of digital technologies has the potential to alleviate certain consequences of the crisis. Children, parents, authorities, as well as caregivers may use digital gadgets and Internet connection as important tools to further their education and instruction. [Abebe, W. *et al*., 2021]

In contrast, digital technologies provide opportunities for engaging in leisure activities, as well as accessing psychological and social assistance from international sources, which play a role in promoting social relationships among youngsters and, in a broader sense, enhance their online intelligence [Van der Zalm, M. M. *et al*., 2021]. The growing use of digital resources had drawbacks, where the educational standards in home and social interactions may be inferior to those acquired in a traditional school setting as well as via personal connections., which children can get also on an equal footing when it comes to coping with the economic and social effects of COVID-19. Some factors are the growing inequality in parents' resources and the quality of children's home environment, which creates a persistent gap in opportunities between the favored and the disadvantaged children. [Ghisolfi, S. *et al*., 2020; Zar, H. J. *et al*., 2020]

PATIENTS AND METHODS

This study conducted an analysis and evaluation of the clinical outcomes of pediatric patients infected with COVID-19, which included 120 patients whose ages ranged from 1 to 12 years. Clinical data for pediatric patients infected with COVID-19 was collected from all hospitals and centers in different hospitals in Iraq for a period that lasted from February 6, 2022, to September 19, 2023. These data included age, sex, ASA classification, comorbidities, use of immunosuppressive medications, smoking status at home by parents, education level, and income of the parents. Also, this study distributed the clinical symptoms related to COVID-19 patients admitted to the COVID-19 treatment center as well as determined the World Health Organization's risk classification for children infected with COVID-19, which was classified into asymptomatic, mild, moderate, and severe.

This study recorded clinical outcomes related to COVID and pediatric data, which included the admission status in terms of the emergency room, pediatric ward, and pediatric intensive care unit, the type of treatment the pediatric patients received, the mortality rate, and the length of stay in the hospital and in the pediatric intensive care unit.

In addition, this study determined the clinical results of laboratory tests related to children infected with COVID-19, which parameters included white cell count, neutrophil, lymphocyte, platelet, aspartate transaminase, and Alanine transaminase. Regarding the results of the questionnaire, this study conducted more than one questionnaire that was conducted for the purpose of measuring the quality of life of pediatric patients in terms of the physical, psychological, and emotional aspects and daily activity.

We also determined the parameters of children's and parents' satisfaction with the quality of health care and described the clinical results related to complications related to children and their impact on their quality of life and mental health. This study evaluated and analyzed all clinical data of patients and outcomes for children using SPSS software, version 22.

RESULTS

Table 1: Clinical and demographic characteristics outcomes related to children with COVID–19

Characteristics	Number of patients [120]	Percentage [%]
Age, N (%)		
1 – 4	66	55.0%
5 – 8	30	25.0%
9 - 12	24	20.0%
Sex, N (%)		
Males	78	65.0%
Females	42	35.0%
Comorbidities, N (%)		
Yes	42	35.0%
No	78	65.0%
HIV	11	31.43%

Publisher: SARC Publisher

Diabetes	5	14.29%
Kidney disease	8	22.86%
Malnutrition	6	17.14%
ASA (%)		
I	12	10.0%
II	36	30.0%
III	54	45.0%
IV	18	15.0%
In-house smoking		
Yes	36	30.0%
No	84	70.0%
Use of immunosuppressive medication		
Yes	18	15.0%
No	102	85.0%
Parents education		
Primary	14	11.67%
Secondary	35	29.17%
College/university	71	59.17%
Income status, $		
< 800	57	47.5%
800 – 1000 $	32	26.67%
> 1000 $	31	25.83%

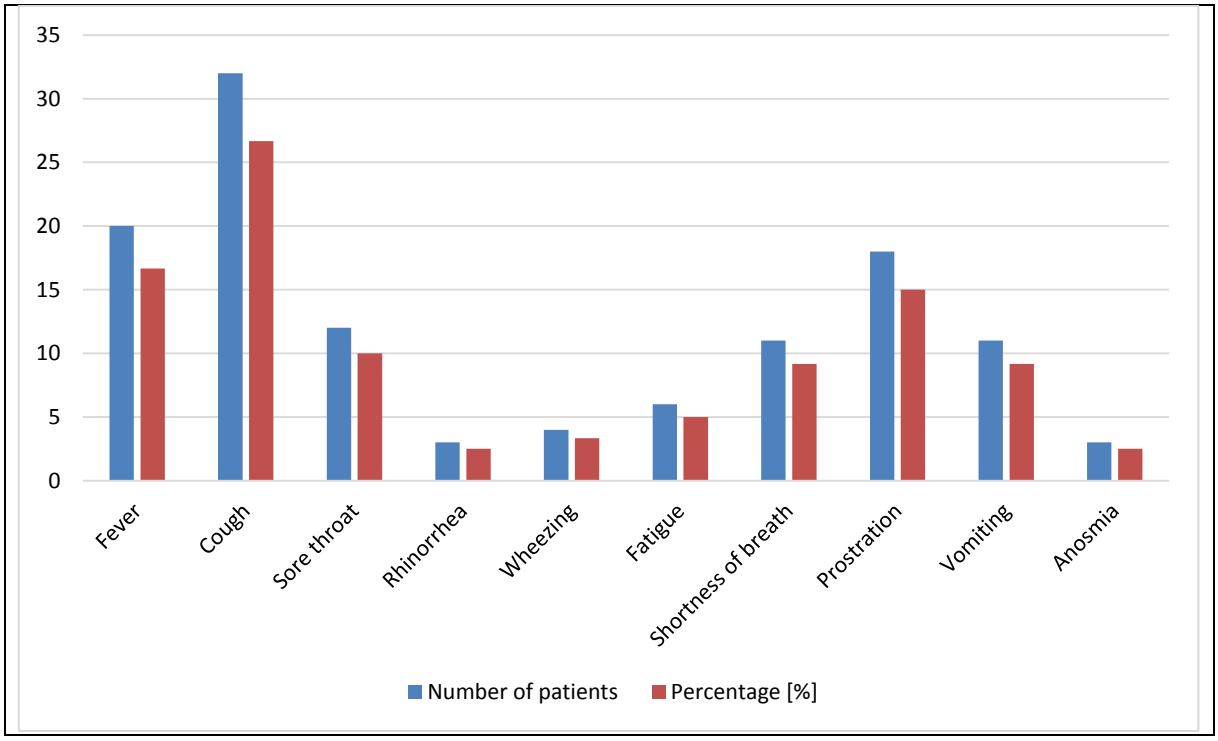

Figure 1: Determine clinical symptoms related to COVID-19 Patients admitted at COVID-19 treatment center

Table 2: Identify severity classification of WHO for pediatric with COVID-19

Variables	Number of patients [120]	Percentage [%]
Asymptomatic	6	5.0%
Mild	60	50.0%
Moderate	36	30.0%
Severe	18	15.0%

Publisher: SARC Publisher

Table 3: Clinical outcomes of children during Covid – 19 period

Variables	Number of patients [120]	Percentage [%]
Admitted status		
Emergency room		
Yes	2	1.67%
No	118	98.33%
Paediatric ward		
Yes	106	88.33%
No	14	11.67%
PICU		
Yes	12	10.0%
No	108	90.0%
Treatment received		
Supportive	96	80.0%
Other interventions	24	20.0%
Ventilator	3	2.50%
Dexamethasone	4	3.33%
Hydroxychloroquine	12	10.0%
Combination treatments	5	4.17%
Mortality rate		
Discharged	118	98.33%
Death	2	1.67%
Hospitalization outcomes		
Length of stay in PICU, days	3 - 8	
Length of stay, hospital, days	3 - 6	
Exposure to SARS-CoV-2		
Family cluster	78	65.0%
Contact with other suspected case	6	5.0%
Unidentified source of infection	36	30.0%

Table 4: Determining clinical outcomes of laboratory investigations related to children with COVID-19

Laboratory Test	Frequency	Percentage [%]	Mean ± SD
White cell count (WCC), (x10^9/L)			9.23 ± 4.32
Normal	98	81.67%	
Increased	12	10.0%	
Decreased	10	8.33%	
Neutrophil, (x10^9/L)			3.86 ± 3.85
Normal	88	73.33%	
Increased	7	5.83%	
Decreased	25	20.83%	
Lymphocyte, (x10^9/L)			2.31 ± 1.49
Normal	85	70.83%	
Increased	14	11.67%	
Decreased	21	17.50%	
Platelet, (x10^9/L)			284.6 ± 124.5
Normal	100	83.33%	
Increased	15	12.50%	
Decreased	5	4.17%	
Aspartate transaminase (AST), (U/L)			52.36 ± 29.87
Normal	97	80.83%	
Increased	23	19.17%	
Alanine transaminase, ALT, (U/L)			20.14 ± 15.68
Normal	112	93.33%	
Increased	8	6.67%	

Publisher: SARC Publisher

Table 5: Clinical outcomes of complications for patients with Covid – 19

Complications	Number of patients [120]	Percentage [%]
Acute respiratory distress syndrome	3	2.5%
Acute cardiac injury	2	1.67%
Acute kidney injury	1	0.83%
Shock	2	1.67%
Secondary infections	6	5%
Others	1	0.83%

Table 6: Assessment of quality of life related to children with COVID–19

Items	QOL scores
Physical function	79.56 ± 8.94
Psychological function	74.68 ± 4.32
Emotional function	81.24 ± 3.57
Daily activity	84.92 ± 2.68

Table 7: logistic regression evaluation of risk factors which affect children with COVID–19

Variables	AOR	95 % CI	P -value
Age [9 – 12] years	2.21	0.76 – 9.85	0.34
Severity of Covid – 19	9.36	2.75 – 52.45	46.23
Sex [males]	0.35	0.0089 – 2.78	1.56
Comorbidities			
HIV	0.29	0.088 – 2.46	1.49
Malnutrition	4.38	2.62 – 10.89	0.28
Symptoms			
Cough	5.68	1.83 – 14.69	0.392
Prostration	1.04	0.77 – 3.84	1.75
Fever	3.69	1.48 – 6.75	1.384

DISCUSSION

Our demographic outcomes showed that children aged 1-4 years had the highest prevalence, which included 66 cases, followed by children aged 5–8 years, who had 30 cases; males had a higher rate of COVID (19) with 65% than females (35%); the rate of comorbidities was 35%; the most common diseases were HIV (11 cases) and malnutrition (6 cases); use of immunosuppressive medication (15%); common clinical symptoms were fever (20 cases), cough (32 cases), and prostration (8 cases).

According to clinical outcomes of COVID-19, our findings identified the severity of COVID-19, which included mild (60 children), moderate (36 children), and severe (18 children). The rate of children admitted to the emergency room was 1.67%, the pediatric ward was 88.33%, and the PICU was 10.0%. Treatment received was supportive (80.0%), while other interventions were 20%. The mortality rate was two children, the length of stay in the PICU was 3–8 days, and the length of stay in the hospital was 3–6 days.

In addition, our results determined labrotoray test outcomes, which include a white cell count (WCC) of 9.23 ± 4.32, neutrophils of 3.86 ± 3.85, lymphocytes of 2.31 ± 1.49, platelets of 284.6 ± 124.5, aspartate transaminase of 52.36 ± 29.87, and alanine transaminase of 20.14 ± 15.68.

Our outcomes enrolled rate of complications was 15 cases, where the most factors found secondary infections had 6 cases and acute respiratory distress syndrome had 3 cases. The most dominas of quality of life who had high access to success were physical function was 79.56 ± 8.94, daily activity was 84.92 ± 2.68, and emotional function was 81.24 ± 3.57. The common risk factors affected by COVID-19 were the severity of COVID-19, HIV, malnutrition, and symptoms.

Last studies agreed which the effect of the coronavirus on the quality of life and death rate in children has been a cause for concern since the pandemic began; that can children have shown higher recovery rates than adults when infected with the virus, that found children who contract COVID-19 experience mild symptoms and are asymptomatic, where the recovery rate for children generally high, with the majority for cases resolving without severe complications, nevertheless children are less likely to develop severe illness about COVID-19, there have been

Publisher: SARC Publisher

reported incidents involving severe complications in terms of Multisystem Inflammatory Syndrome to Children (MIS-C), where MIS-C can be presented as a rare but serious condition which can affect multiple organs in children who have been infected with the virus. [UNICEF, 2022 – Alene, K. A. *et al*., 2021]

A study conducted in the United States has clarified that the enduring consequences of COVID-19 upon children are now under investigation, given the continuing nature of the pandemic, where got a worth noting that some kids who have recuperated from the virus may encounter persistent symptoms or health complications referred to as protracted COVID, which mentioned symptoms encompassed weariness, breathing complications, and cognitive impairments. [Jain, A. *et al*., 2020]

Several studies have observed that the mortality rate for children is generally lower than that of adults [Jolly, T. S. *et al*., 2020]. Children are less prone to severe illness or death from COVID-19 in comparison to older age groups, where it was essential to recall that children aren't immune from the virus, and there have been reported cases of severe illness, which underlying medical conditions and access for healthcare can impact the result for children who contract the virus.

The virus had diverse impacts on children in terms of their quality of life. On the one hand, a significant number of youngsters have encountered disturbances in their daily routines, including the closure of educational institutions, social isolation from loved ones, and restricted availability of activities and resources [Jolly, T. S. *et al*., 2020-WHO, 2022]. These disturbances might adversely affect their psychological well-being, growth, and general state of being. In addition, it is worth noting that children who have pre-existing health concerns may have a greater susceptibility of suffering severe sickness in the event of acquiring the virus, therefore exacerbating the impact on their overall well-being. [Nachega, J. B. *et al*., 2022; Irfan, O. *et al*., 2021]

CONCLUSION

Although the Corona virus has a significant impact on children's quality of life, it poses negative effects on children's general health in terms of physical aspects, psychological aspects, and daily activity. However, COVID-19 shows a very low mortality rate in children due to the presence of a weak immune system and poor hospital care. This study noted that children are less likely to develop complications and have a higher recovery rate.

REFERENCES

1. World Health Organization. WHO coronavirus (COVID-19) dashboard [Internet]. *Geneva: World Health Organization* (2022). https://covid19.who.int/.
2. Wu, Z. and McGoogan, J. M. "Characteristics of and important lessons from the coronavirus disease 2019 (COVID-19) outbreak in China: summary of a report of 72,314 cases from the Chinese Center for Disease Control and Prevention." *JAMA*, 323.13(2020): 1239–1242.
3. Ludvigsson, J. F. "Systematic review of COVID-19 in children shows milder cases and a better prognosis than adults." *Acta Paediatrica*, 109.6 (2020): 1088–1095. PMID: 32202343; PMCID: PMC7228328.
4. Roberton, T., Carter, E. D. and Chou, V. B, *et al*. "Early estimates of the indirect effects of the COVID-19 pandemic on maternal and child mortality in low-income and middle-income countries: a modelling study." *Lancet Global Health*, 8.7(2020): e901–e908. PMID: 32405459; PMCID: PMC7217645.
5. Simba, J., Sinha, I. and Mburugu, P, *et al*. "Is the effect of COVID-19 on children underestimated in low- and middle-income countries?" *Acta Paediatrica*, 109.10(2020): 1930–1931. PMID: 32557761; PMCID: PMC7323043.
6. Dong, Y., Mo, X. and Hu, Y, *et al*. "Epidemiology of COVID-19 among children in China." *Pediatrics*, 145.6 (2020): e20200702.
7. Ahmed, M., Advani, S. and Moreira, A, *et al*. "Multisystem inflammatory syndrome in children: a systematic review." *EClinicalMedicine*, 26 (2020): 100527.
8. Son, M.B.F., Murray, N. and Friedman, K, *et al*. "Multisystem inflammatory syndrome in children - initial therapy and outcomes." *N Engl J Med*. 385.1 (2021):23–34. 9.
9. Alemayehu, T., Karibian, A. and Mekonnen, D. "A first case of Pediatric Inflammatory Multisystem Syndrome Temporally associated with SARS CoV 2 (PIMS-TS) from Ethiopia: case report and a review of the literature." *Ethiop Med J*. 59.2 (2021):177–180. 10.
10. Kapoor, D., Kumar, V., Pemde, H. and Singh, P. "Impact of comorbidities on outcome in children with COVID-19 at a tertiary care

Publisher: SARC Publisher

pediatric hospital." *Indian Pediatr*. 58.6 (2021):572–575.
11. Oliveira, E. A., Colosimo, E. A. and Simões, E, *et al*. "Clinical characteristics and risk factors for death among hospitalised children and adolescents with COVID-19 in Brazil: an analysis of a nationwide database." *The Lancet Child & Adolescent Health*, 5.8 (2021): 559–568.
12. Islam, N., Shkolnikov, V. M. and Acosta, R. J, *et al*. "Excess deaths associated with COVID-19 pandemic in 2020: age and sex-disaggregated time series analysis in 29 high-income countries." *BMJ*, 373 (2021): n1137.
13. Shioji, N., Aoyama, K., Englesakis, M., Annich, G. and Maynes, J. T. "Multisystem inflammatory syndrome in children during the coronavirus disease pandemic of 2019: a review of clinical features and acute phase management." *Journal of Anesthesia*, 35.4 (2021): 563–570.
14. Chaziya, J., Freyne, B. and Lissauer, S, *et al*. "COVID-19 in Malawi: lessons in pandemic preparedness from a tertiary children's hospital." *Archives of Disease in Childhood*, 106.3 (2021): 238–240.
15. Klingenberg, C., Tembulkar, S. K. and Lavizzari, A, *et al*. "COVID-19 preparedness-a survey among neonatal care providers in low- and middle-income countries." *Journal of Perinatology*, 41.5 (2021): 988–997.
16. Arous, R., Djillali, I. S. and Rouis, N. O, *et al*. "High mortality of COVID-19 in children with cancer in a single center in Algiers, Algeria." *Pediatric Blood & Cancer*, 68.6 (2021): e28898.
17. Abebe, W., Worku, A. and Moges, T, *et al*. "Trends of follow-up clinic visits and admissions three-months before and during COVID-19 pandemic at Tikur Anbessa specialized hospital, Addis Ababa, Ethiopia: an interrupted time series analysis." *BMC Health Services Research*, 21.1 (2021): 731.
18. Van der Zalm, M. M., Lishman, J. and Verhagen, L. M, *et al*. "Clinical experience with severe acute respiratory syndrome coronavirus 2-related illness in children: hospital experience in Cape Town, South Africa." *Clinical Infectious Diseases*, 72.12 (2021): e938–e944.
19. Ghisolfi, S., Almås, I., Sandefur, J. C., von Carnap, T., Heitner, J. and Bold, T. "Predicted COVID-19 fatality rates based on age, sex, comorbidities and health system capacity." *BMJ Global Health*, 5.9 (2020): e003094.
20. Zar, H. J., Dawa, J., Fischer, G. B. and Castro-Rodriguez, J. A. "Challenges of COVID-19 in children in low- and middle-income countries." *Paediatric Respiratory Reviews*, 35 (2020): 70–74.
21. UNICEF Ethiopia. "The impact of COVID-19 on Children in Addis Ababa, Ethiopia." *Ethiopia: UNICEF* (2022).
22. World Health Organization. WHO Coronavirus (COVID-19) Dashboard [Internet]. *Geneva: World Health Organization* (2022).
23. Leulseged, T. W., Hassen, I. S. and Maru, E. H, *et al*. "COVID-19 in hospitalized Ethiopian children: characteristics and outcome profile (pre-print)." *medRxiv*, (2020): 41.
24. Alene, K. A., Gelaw, Y. A. and Fetene, D. M, *et al*. "COVID-19 in Ethiopia: a geospatial analysis of vulnerability to infection, case severity and death." *BMJ Open*, 11 (2021): e044606.
25. Jain, A., Bodicherla, K. P., Raza, Q. and Sahu, K. K. "Impact on mental health by 'Living in Isolation and Quarantine' during COVID-19 pandemic." *Journal of Family Medicine and Primary Care*, 9.10 (2020): 5415.
26. Jolly, T. S., Pandian, G. S. D. B., Batchelder, E. and Jain, A. "Posttraumatic stress disorder exacerbation as a result of public masking in times of COVID-19." *Primary Care Companion CNS Disorders*, 22.6 (2020): 27191.
27. Laboe, C. W., Jain, A., Bodicherla, K. P. and Pathak, M. "Physician suicide in the era of the COVID-19 pandemic." *Cureus*, 13.11 (2021): e19313.
28. World Health Organization. "WHO case report form. [Internet]." *Geneva: World Health Organization* (2022).
29. Nachega, J. B., Sam-Agudu, N. A. and Machekano, R. N, *et al*. "Assessment of clinical outcomes among children and adolescents hospitalized with COVID-19 in 6 Sub-Saharan African Countries." *JAMA Pediatrics*, 176 (2022): e216436.
30. Irfan, O., Muttalib, F. and Tang, K, *et al*. "Clinical characteristics, treatment and outcomes of paediatric COVID-19: a systematic review and meta-analysis." *Archives of Disease in Childhood*, 106 (2021): 440–448.

Publisher: SARC Publisher

Source of support: Nil;
Conflict of interest: Nil.

Cite this article as:
Hussein, M.R., Oudah, S.D. and Al-Musawi, H.H.H. "The Impact of the COVID-19 Pandemic on Children and a Description of the General Complications." *Sarcouncil Journal of Medical Series* 34 (2024): pp 1-8.

Publisher: SARC Publisher