Pediomaternal Nursing Journal

Original Article

Hospitalized children with COVID-19 confirmed: A pilot study

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ABSTRACT

Introduction: The number of children confirmed with COVID-19 in Indonesia remains high compared to other countries (12.2%). 13.6% of all cases are hospitalized in quarantine rooms. This study aims to describe children with confirmed COVID-19 who have been hospitalized in Makassar, Indonesia.

Methods: This pilot study was conducted in Makassar City, one of the cities in Indonesia with a high number of COVID-19 cases, in October 2021. A total of 25 children participated through consecutive sampling. This study consisted of children hospitalized in January-August 2021 who had confirmed COVID-19 and were admitted to quarantine or non-quarantine rooms. Inclusion criteria were children under 18 years old and parents who volunteered to complete the questionnaire based on COVID-19 prevention and control guidelines. The questionnaire focused on child and parent characteristics, COVID-19 symptoms, and the number of confirmed cases.

Results: Of the 25 children hospitalized with confirmed COVID-19, 76% were hospitalized in quarantine rooms, 72% were boys, and their ages ranged from 0 to 13 years. The average number of siblings was 2.64±1.63, and the average length of hospital stay was 7.88±3.03 days. The most common symptoms were fever (68%), cough (44%), and diarrhea (28%). The majority of children had two symptoms (40%), were confirmed with COVID-19 once (84%), and were hospitalized one time (95%).

Conclusions: The main characteristics of hospitalized children with confirmed COVID-19 are non-school age and boys. They have multiple symptoms, and fever is the most common. A holistic approach to treating all children hospitalized with COVID-19 should be taken. This study can be used as a baseline for formulating strategies and guidelines for preventing prolonged effects and treating hospitalized children with COVID-19.

Keywords: COVID-19 in children; confirmed children; COVID-19 symptom; hospitalized children

INTRODUCTION

COVID-19 is an infectious disease caused by a novel coronavirus first identified in late 2019 (World Health Organization, 2021). The number of COVID-19 cases continues to increase monthly globally. As of May 2021, there have been 143,435,889 cases reported worldwide, with Indonesia ranking 18th among all countries (Worldmeter, 2021). South Sulawesi ranks 6th in Indonesia, with 61,137 reported cases (3.8%) as of May 2021, and Makassar city has the highest number of cases. COVID-19 can affect all age groups, including children from 0 months to 18 years. In April 2021, 17,499,178 cases (12.2%) of COVID-19 in Indonesia were reported among children under 18 (Satgas Covid Indonesia, 2021).

According to data from December 2020, around 13.6% of 2,302 cases of COVID-19 in children resulted in hospitalization in quarantine rooms (Satuan Tugas Penanganan COVID-19., 2021). Of these cases, there were 1,901 cases among children aged 10-19 years, 165 cases among children aged 5-9 years, and 236 cases among children aged 0-4 years. These data indicate that the percentage of children affected by COVID-19 is relatively high (Sulawesi Bisnis, 2020).

Most children who suffer from COVID-19 do not show symptoms or mild symptoms, but some cases show severe symptoms. Children without symptoms or mild symptoms require supportive treatment and self-isolation, but children with severe symptoms require treatment in the hospital (Venturini et al., 2020). Child care in the hospital will impact both the child and the parents. Hospitalized children will show hospitalization reactions such as separation anxiety indicated by crying, shouting, attacking strangers, and being less interested in the environment, to expect their parents to always be physically beside them. Child care in hospitals will also impact parents through helplessness, fear, uncertainty, and questioning the caregivers' skills to pay attention to the details of their child's care (Perry et al., 2014). Until now, limited research in Indonesia describes the characteristics and history of COVID-19 in children hospitalized due to confirmed COVID-19. Therefore, this study focuses on describing the child's characteristics, the parent's characteristics, the COVID-19 Symptoms, and the number of COVID confirmed children with COVID-19 confirmed who have been hospitalized in the hospital Makassar, Indonesia.

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Volume 9 (1): 13-18
http://dx.doi.org/10.20473/pmnj.v9i1.38172

e-ISSN: 2355-1577 | p-ISSN: 2656-4629

Article History
Received:August 09, 2022 | Revised: January 18, 2023| Accepted: February 08, 2023 | Published : March 16, 2023

METHODS

Design

This study employed a pilot design to describe children with confirmed COVID-19 hospitalized in Makassar. This approach was undertaken to inform a future substantive study to develop interventions for COVID-19 in children.

Sample and Setting

This study's population comprised children hospitalized in a hospital in Makassar from March to August 2021. Consecutive sampling was employed, with the inclusion criteria being children with a confirmed history of COVID-19 who were hospitalized in the hospital and were below 18 years old. After obtaining ethical approval and permission to access the medical records of children hospitalized in the hospital during the specified period, the researcher recruited the sample. The researcher collected the phone numbers of potential participants from the medical records and contacted them via telephone or social media to arrange a time for data collection. Before completing the questionnaire, the researcher explained the study's objectives, procedures, confidentiality, and the participant's right to withdraw.

Instruments

We evaluated the outcome variable in this study using a questionnaire. The questionnaire assessed the characteristics of the children (age, number of siblings, length of hospital stay, gender, school status, and hospital room) and the parents (age, education, occupation, and family income), as well as the number of confirmed COVID cases and symptoms in hospitalized children. The questionnaire was developed based on the COVID-19 prevention and control guidelines from the Ministry of Health of the Republic of Indonesia (2020). It included all symptoms of COVID-19, such as fever, cough, difficulty breathing, congestion/runny nose, anosmia, diarrhea, nausea/vomiting, abdominal pain, fatigue, headache, joint pain, loss of appetite, and other symptoms.

Procedure

The data collection was conducted from October to November 2021. The research team explained the study objectives, benefits, procedures, and confidentiality to the respondents. The respondents then provided informed consent by completing an online form and proceeded to answer the questionnaire, which included questions about the children's demographic data, the parents' demographic data, and the history of COVID-19. A total of twenty-five samples participated in the study.

Data Analysis

The data were analyzed using a statistical analysis program. The children's and parents' demographic characteristics were presented as frequencies and percentages for categorical variables such as the children's sex, hospital room, school status, parents' educational background, occupation, and family income. Numeric variables such as age, length of hospital stay, and the number of siblings were presented as mean, standard deviation (SD), minimum, and maximum values. The history of COVID-19 was described using figures.

Ethical Considerations

The Medical Faculty of Hasanuddin University, Indonesia's ethical review board, approved the study. The number of the ethical review was 472/UN4.6.4.5.31/PP36/2021.

RESULTS

Data were collected through a monthly recruitment process from 25 parents who had children with confirmed COVID-19 and had been hospitalized. The mean age of the children was 5.64 ± 3.97, with the range of the number of siblings being one to seven, and the mean length of stay in the hospital while suffering from COVID-19 was over one week (7.88 ± 3.03). Among the children with confirmed COVID-19 in this study, the majority (76%) were hospitalized in a COVID quarantine room. Most were not attending school (13.52%), and most

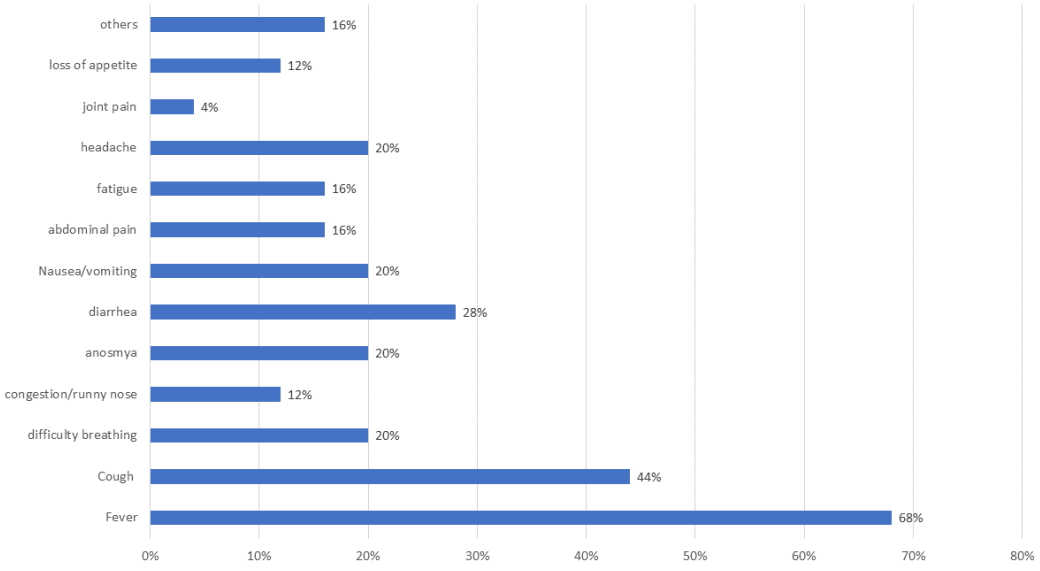

Figure 1. Symptom of COVID-19 on hospitalized children with COVID-19 (N=25)

Table 1. The characteristic demographic of parents and hospitalized children with COVID-19 confirmed (N=25)

Variables	f (%)	Mean ± SD	Min - Max
Child characteristic			
Ages (years)		5.64 ± 3.97	0 - 13
Number of siblings		2.64 ± 1.63	1 – 7
Length of hospital stay		7.88 ± 3.03	1-12
Gender			
Male	18 (72)		
Female	7 (28)		
School ststus			
None	13 (52)		
Primary - junior high	12 (48)		
Hospital's room			
COVID-19 Quarantine room	19 (76)		
Non-quarantine room	6 (24)		
Parents characteristic			
Father's age (years)		37.00 ± 5.31	27 - 47
Mother's age (years)		34.00 ± 5.49	26 - 47
Father's education			
Primary - junior high	3 (12)		
Senior high	6 (24)		
Diploma	1 (10)		
Bachelor	8 (40)		
Magister	4 (16)		
Doctor	3 (12)		
Mother's education background			
Primary - junior high	4 (16)		
Senior high	7 (28)		
Diploma	0 (0)		
Bachelor	13 (52)		
Magister	1 (4)		
Doctor	0 (0)		
Father's occupattion			
Labor	5 (20)		
Enterpriser	6 (24)		
Professional	5 (20)		
Civil servant	8 (36)		
Mother's occupation			
Housewife	13 (52)		
Employee/professional	8 (36)		
Family's income			
< 1 million	3 (12)		
1-2 million	4 (16)		
2-3 million	3 (12)		
3-5 million	7 (28)		
>5 million	8 (32)		

were boys (18.72%). The detailed characteristics of the children in this study are described in Table 1.

Table 1 describes the demographic characteristics of parents with a child confirmed with COVID-19 and hospitalized. The mean age of the fathers was 37.00 ± 5.31, while the mean age of the mothers was 34.00 ± 5.49. The educational background of the majority of parents was a bachelor's degree (40% of fathers and 52% of mothers),

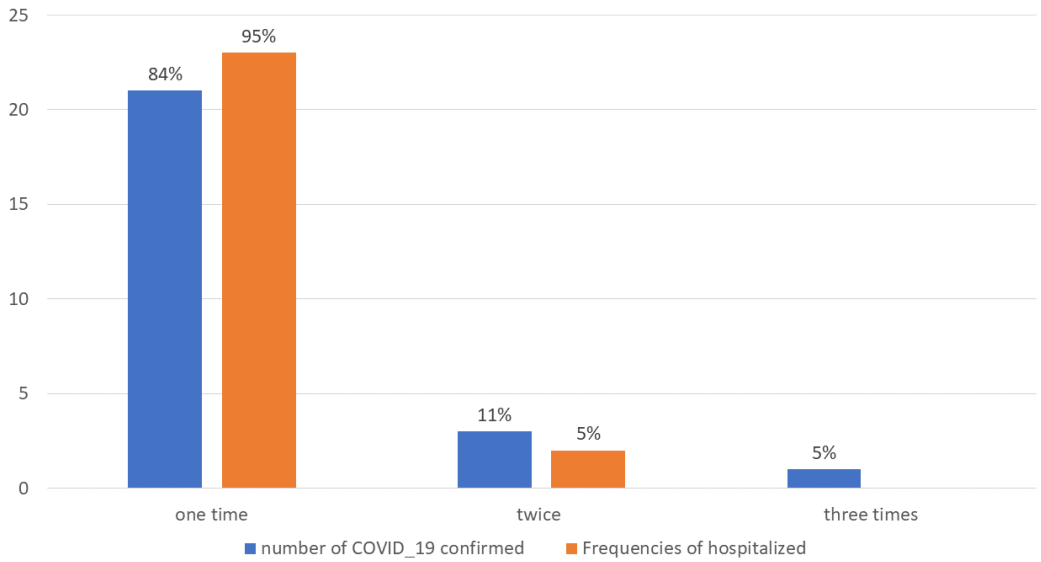

Figure 2. Number of symptom of COVID-19 on hospitalized children with COVID-19 (N=25)

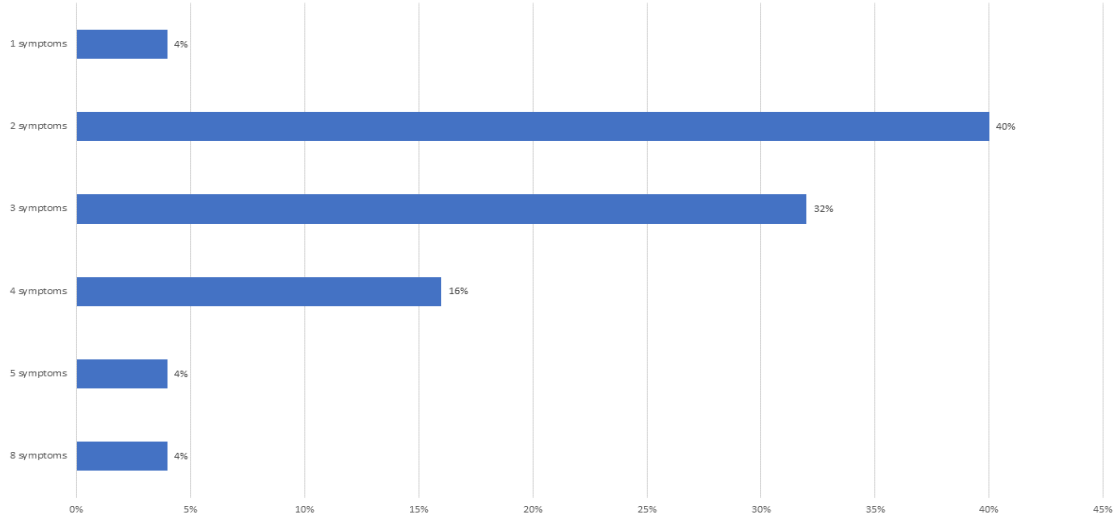

Figure 3. Distribution of the number of COVID confirmed and frequencies of hospitalized (N=25)

while most fathers were civil servants/state-owned enterprises (36%), and most mothers were housewives (52%). Most parents had a family income of over five million rupiahs (32%).

The COVID-19 symptoms among the children in this study are shown in Figure 1. The third most common symptom among the children was fever (68%), followed by cough (44%) and diarrhea (28%). Figure 2 illustrates that most children experienced more than one COVID-19 symptom. Figure 3 describes the highest COVID-19 symptoms as two (40%). The range of confirmed COVID-19 cases among the children was one to three times, with the majority being confirmed once (84%). The range of hospitalizations among the children with confirmed COVID-19 was one to two times, with the majority being hospitalized once (95%).

DISCUSSION

The percentage of children who have confirmed COVID-19 is lower than adults. However, some children can become seriously ill from the disease and may require hospitalization (Venturini et al., 2020). In 2021, reports showed that 1.7%-4.2% of all hospitalized children had confirmed COVID-19 cases (Pediatric, 2021). This study found that the average age of hospitalized children with COVID-19 in this hospital was school-age. COVID-19–associated hospitalization rates in school-age children were approximately twice as high among unvaccinated individuals (Shi et al., 2022). However, a different study in Indonesia found that most hospitalized children with confirmed COVID-19 were under-five years old (Indriyani et al., 2021). In the US, different results were found where the most significant percentage of hospitalized children with confirmed COVID-19 were teenagers (Preston et al., 2021). School-age children are less important drivers of SARS-CoV-2 transmission than adults (Lee & Raszka, 2020). Obesity and asthma are the main factors for school-age children hospitalized during the COVID-19 pandemic, particularly in the Omicron variant (O'Neill & Chumbler, 2022).

The majority of hospitalized children in this study were male. This finding is consistent with another study conducted

in Indonesia, which found that most hospitalized children were male. Previous research in the US, Northern Iran, and Saudi Arabia has also shown that male children are more likely to suffer from COVID-19 (Alharbi et al., 2021; Graff et al., 2021; Shahbaznejad et al., 2021). Age and gender contribute to the prognosis of COVID-19 patients, with males and susceptible age groups at a higher risk of lethality (Mangia et al., 2020).

In this study, the mean length of hospital stay for children confirmed to have COVID-19 was under ten days. However, a study in another province in Indonesia in 2020 found that the mean length of hospital stay for children with confirmed COVID-19 was over ten days (Indriyani et al., 2021). This difference can be attributed to the different periods during which the data were collected, as COVID-19 treatment policies may have changed between 2020 and 2021. Children with moderate symptoms had more extended hospital stays, averaging 18.8±10.3 days (Indriyani et al., 2021). Fever and cough were the main symptoms of COVID-19 observed among children in this study and other studies conducted in countries such as the US, Saudi Arabia, and Iran (Alharbi et al., 2021; Graff et al., 2021; Shahbaznejad et al., 2021). However, a different result was found in West Nusa Tenggara, Indonesia, where cough was the most common first symptom among hospitalized children (Indriyani et al., 2021). Another study conducted in London found that the most common symptoms among children with COVID-19 were headache and fatigue (Molteni et al., 2021). The hospitalized children in this study experienced an average of over one COVID-19 symptom, with the highest number of symptoms being eight. The number of symptoms can be affected by the duration of COVID-19. While COVID-19 in children typically has a short duration with few symptoms, some children experience a long illness. The symptom burden did not increase; most children recovered by day 56. However, some children who tested negative for SARS-CoV-2 still had persistent and aggravating diseases, indicating the need for a holistic approach to treating all children hospitalized with confirmed COVID-19 (Molteni et al., 2021).

The status of COVID-19 in children and their follow-up is carried out through two approaches: based on the transmission history (traveling abroad or local transmission areas in Indonesia) or based on the history of contact with underage patients, supervision, suspected cases and confirmed cases, as outlined by the Indonesian Pediatric Society (2020) (Indonesian Pediatric Society, 2020). Hospitalization during the COVID-19 pandemic has become more complex due to the need to protect families and healthcare workers from infection. Many children's hospitals have implemented a one-visit policy with varying degrees of restrictions, such as allowing one parent to accompany the child in the hospital or requiring families to choose a single parent to be admitted to the hospital during the stay (Indonesian Pediatric Society, 2020; Kementrian Kesehatan RI, 2020; Raphael et al., 2021). However, family-centered care (FCC) should be the central philosophy of discharge preparation by enhancing mother-children interaction, which can improve children's health during hospitalization (Hariati et al., 2021, 2022). Therefore, the care of children with COVID-19 needs to continue prioritizing FCC.

CONCLUSION

In conclusion, the COVID-19 pandemic has significantly impacted children's health and hospitalization. Male children are more susceptible to COVID-19 and have a higher risk of hospitalization. The main symptoms of COVID-19 in children are fever and cough, which can vary across different countries and regions. The length of hospital stay also varies depending on the severity of symptoms and the policy of COVID-19 treatment. Hospitalization during the pandemic has become more complex due to the need to protect families and healthcare workers. Therefore, a family-centered care approach should be prioritized to enhance mother-children interaction and improve children's health during hospitalization. Follow-up for children with COVID-19 should be conducted through two approaches, based on transmission history or history of contact with patients. Overall, a holistic approach is required to care for children with COVID-19, and more research is needed better to understand the pandemic's impact on children's health.

Declaration of Interest

The authors declare that there is no conflict of interest.

Acknowledgment

We are thankful to the mothers of children with a history of COVID-19 confirmed who participated in this study.

Funding

We want to thank the faculty of nursing at Hasanuddin University for funding this research.

Data Availability

The datasets generated during and/or analyzed during the current study are available from the corresponding author on reasonable request.

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