HEALTHCARE UTILIZATION FOR ACUTE RESPIRATORY INFECTIONS DURING THE COVID-19 PANDEMIC AND ASSOCIATED FACTORS: A CROSS-SECTIONAL STUDY IN SOUTH DENPASAR, INDONESIA

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HEALTHCARE UTILIZATION FOR ACUTE RESPIRATORY INFECTIONS DURING THE COVID-19 PANDEMIC AND ASSOCIATED FACTORS: A CROSS-SECTIONAL STUDY IN SOUTH DENPASAR, INDONESIA

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Abstract

Background: Acute respiratory infections (ARIs) are the leading cause of morbidity and mortality among children globally, and require early diagnosis and intervention. During the COVID-19 pandemic, ARI healthcare utilization has been a challenge.
Objectives: This study aimed to determine healthcare utilization for ARI during the COVID-19 pandemic, and the associated factors among children aged under five years.
Methods: A cross-sectional study was conducted in South Denpasar District, Indonesia. It involved 221 mothers of children aged under five years with ARIs, selected using probability proportional to size. Data were collected through a questionnaire and analyzed using descriptive statistics to measure frequency and proportion, along with multiple logistic regression to determine the factors associated with healthcare utilization of ARI.
Results: Among 221 respondents, the majority (65.6%) utilized ARI healthcare in the health centers. Mother's age (OR: 0.21; p=0.041), number of children (OR: 4.79; p=0.001), occupation (OR: 0.38; p=0.002), and distance traveled (OR: 2.37; p=0.008) were associated with utilization of ARI healthcare.
Conclusion: The healthcare utilization for ARI during the COVID-19 pandemic was low. Therefore, improved utilization is needed by using local health centers, mobile services, and home visits.

Keywords: ARI healthcare; COVID-19 pandemic; Indonesia; utilization

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INTRODUCTION

Acute respiratory infections (ARIs) are major causes of morbidity and mortality for children globally (WHO, 2021), (Sultana et al., 2019). Acute Respiratory Infection (ARIs) is one of the causes of death. The WHO stated that ARI, especially pneumonia which is generally caused by bacteria or viruses, can threaten all ages and is also the single largest infection that causes death in children globally. WHO reports that pneumonia causes the death of more than 800,000 children aged

than five years, and ARIs contribute to the deaths of children aged under five years and 15% of total child deaths (WHO, 2021).

Indonesia is one of five countries contributing to more than 54% of pneumonia cases worldwide (McAllister et al., 2019). In Indonesia, ARI incidence was 3.89 per child year of observation (Oktaria et al., 2021), the prevalence rate was 3.55%, and the crude fatality rate (CFR) was 0.12%, with a low case finding (52.9%) compared to the national target (80%) (MoH, 2020).

Bali Province, the famous province with a tourism world destination, is still facing ARI. The prevalence was 2.05%, and the CFR was 0.45% in 2019 (MoH, 2020). The case finding in Denpasar (44.7%) was lower than the national target (MoH, 2020) and South Denpasar had the highest number of ARIs with 521 cases (HOBP, 2020), (HODC, 2020). Meanwhile, the COVID-19 pandemic has challenged access of healthcare services.

Andersen mentions that access is classified into two types such as actual access (utilization of healthcare services) and potential access (affordability, availability, and acceptability) (Swarjana, Chansatitporn, Suwannapong, Lapvongwatana, & Amnatsatsue, 2020). Furthermore, utilization to healthcare in pneumonia is influenced by many varied factors. A study in the Philippines found that low costs, availability, accessibility of transportation and good perceptions of service quality influence their decision making to utilize healthcare services (Kim, Capeding, & Kilgore, 2014). Meanwhile, a study (Sule, Olawuyi, Afolabi, Onajole, & Ogunowo, 2013) in Nigeria found that other factors such as education, occupation and knowledge of caregivers were associated with the use of curative care services among children less than five years old. Furthermore, another study (Sultana et al., 2019) in Bangladesh showed that the utilization of healthcare services was less frequent in children from low-income families than in high-income families.

Based on the literature review and survey studies of ARI in Indonesia, mostly about the incidence of ARI, and the factors associated with the incidence of ARI. The high incidence of ARI, limited information about the factors that influence utilization of healthcare for ARI among children, as well as the results of studies in several countries that are still very varied about ARI. Therefore, a study of factors related to the utilization of healthcare among children with ARI at the South Denpasar Health Centers was conducted, and the results are useful as a consideration in formulating policies, so that utilization of ARI healthcare can be improved during the Covid-19 pandemic.

Objective(s): to determine healthcare utilization for ARI during the COVID-19 pandemic, and the associated factors among children aged under five years.

METHODS

Study Design

The design of this study was quantitative cross-sectional study to determine healthcare utilization for ARI during the COVID-19 pandemic, and the associated factors among children aged under five years.

Setting

This study was conducted in South Denpasar District in Bali Province, Indonesia during March and April 2021.

Research Subject

The total population was 521 mothers of children aged under five years with ARIs, and sample size for estimating proportion formula (Daniel & Cross, 2013) was used to calculate the samples, and 221 samples were required for this study. In this study, the samples were selected using probability proportional to size. Meanwhile, the data were collected during April and May 2021.

The inclusion criteria were mothers who had children aged under five years with ARIs, living in South Denpasar, who were willing to participate in this study as a respondent. The exclusion criteria were mothers who were unable to read and write in Bahasa Indonesia

and mothers who were sick at the time of data collection.

Instruments

The questionnaire was developed by the researchers based on the related literature reviewed. It consisted of several parts. Part 1 included general characteristics (age, number of children, education, occupation, religion, and ethnicity). Part 2 was about healthcare utilization (utilized or not utilized). Part 3 was about knowledge (10 items with true, false, and don't know options). Part 4 was about attitudes (10 items using a Likert scale). Part 5 was about availability (four items on the availability of information and health services). Part 6 was about the ability to pay for the services (four items). Part 7 was about waiting time. Part 8 was about distance. Finally, part 9 was about health status (with and without health complaints). Parts 3 to 6 were categorized based on Bloom's cutoff points of poor (<60%), fair (60–79%), and good (80–100%). The questionnaire was tested for content validity and involved 30 respondents for the reliability test. All parts of the questionnaire were found reliable, with a Cronbach's alpha ≥0.7. The eligible respondents were given written informed consent, and the researchers explained the purpose of the study and how to complete the self-administered questionnaire.

Data Analysis

The research data was entered and analyzed using Statistical Package for Social Sciences (SPSS) version 20. The data were analyzed using univariate analysis (frequency and proportion) to assess utilization of ARI healthcare, followed by bivariate analysis (to select the independent variables that were included in the multivariate analysis (multiple logistic regression) to determine the factors associated with utilization of ARI healthcare.

Ethical Consideration

This research was approved by the Ethical Clearance Committee of Research of the Institute of Technology and Health Bali (No.04.0231/KEPITEKES-BALI/III/2021), and obtained permission from the Government of Denpasar (No.070/322/BKBP).

RESULTS

Out of the total 221 respondents, most were ≤35 years old (93.2%), with children aged >1 year (51.1%) and a total ≤2 children (87.8%). Most had a high school education (62.9%) and were employed (65.6%), Hindu (74.7%), and Balinese (75.1%). (Table 1)

Table 1. Demographic characteristics of respondents (n=221)

Variables	n (%)
Mother's age	
≤ 35 years	206 (93.2)
> 35 years	15 (6.8)
Child's age	
≤ 1 year	108 (48.9)
> 1 year	113 (51.1)
Number of children	
≤ 2	194 (87.8)
> 2	27 (12.2)
Education	
No school	2 (0.9)
Primary level	3 (1.4)
Secondary level	20 (9.0)
High school level	139 (62.9)
Bachelor and above	57 (25.8)
Occupation	
Unemployed	76 (34.4)
Employed	145 (65.6)
Religion	
Muslim	40 (18.1)
Christian	16 (7.2)
Hindu	165 (74.7)
Ethnicity	
Balinese	166 (75.1)
Javanese	43 (19.5)
Others	12 (5.4)

Considering for their children with ARIs, most respondents (65.6%) utilized ARI

healthcare provided by the health centers in South Denpasar District. (Figure 1)

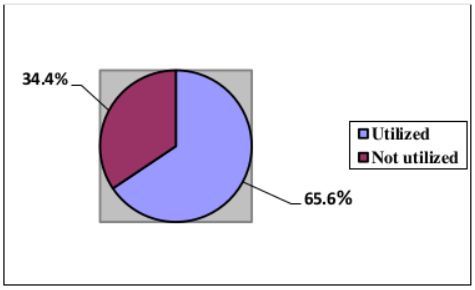

Figure 1. Utilization of ARI healthcare (n=221)

Of the total 221 respondents, the majority had fair knowledge (55.2%), fair attitude (80.5%), good availability (74.2%), low ability to pay for healthcare (48.9%), distance to health centers <5 km (60.6%), and had experienced waiting time of ≤20 minutes (58.8%). Most were without health complaints (74.7%). (Table 2)

Table 2. Knowledge, attitude, availability, ability to pay, distance, waiting time, and health status (n=221)

Variables	n	%
Knowledge		
Poor	37	16.7
Fair	122	55.2
Good	62	28.1
Attitude		
Poor	23	10.4
Fair	178	80.6
Good	20	9.0
Availability		
Poor	4	1.8
Fair	53	24.0
Good	164	74.2
Ability to pay		
Low	108	48.9
Medium	92	41.6
High	21	9.5
Distance		
< 5 km	134	60.6
≥ 5 km	87	39.4
Waiting time		
≤ 20 minutes	130	58.8
> 20 minutes	91	41.2
Health status		
Without health complaints	165	74.7
With health complaints	56	25.3

All variables whose p value in the bivariate analysis was less than 0.25 were included in the multivariate analysis. The mothers aged ≤35 years had a 79% lower chance of using ARI healthcare compared to those aged >35 years (OR: 0.21; 95% CI 0.05–0.94: p=0.041). Respondents who had ≤2 children had a 4.79 times higher chance of using ARI healthcare compared to those with >2 children (OR: 4.79; 95% CI 1.86–12.38; p=0.001). Unemployed respondents had a 62% lower chance of using ARI healthcare than employed respondents (OR: 0.38; 95% CI 0.20–0.71; p=0.002). Respondents who had traveled <5 km had a 2.37 times higher chance of using ARI healthcare compared to those who traveled ≥5 km (OR: 2.37; 95% CI 1.25–4.49; p=0.008). (Table 3)

Table 3. Multivariate analysis of factors associated with utilization of ARI healthcare (n=221)

Variables	Utilized n (%)	Not utilized n (%)	AOR	95% CI	p-value
Mother's age					
≤ 35 years	133 (64.6)	73 (35.4)	0.21	0.05–0.94	0.041
> 35 years *	12 (80.0)	3 (20.0)			
Number of children					
≤ 2	133 (68.6)	61 (31.4)	4.79	1.86–12.38	0.001
> 2 *	12 (44.4)	15 (55.6)			

Occupation					
Employed *	41 (53.9)	35 (46.1)			
Unemployed	104 (71.7)	41 (28.3)	0.38	0.20–0.71	0.002
Distance					
< 5 km	94 (70.1)	40 (29.9)	2.37	1.25–4.49	0.008
≥ 5 km *	51 (58.6)	36 (41.4)			

*Reference group

DISCUSSION

Most respondents (65.6%) utilized ARI healthcare in the health centers for their children, making utilization relatively low. In comparison, previous studies conducted before the COVID-19 pandemic found that a higher percentage (75%) of children with suspected ARIs received healthcare (Titaley et al., 2020) with 71% healthcare utilization (private and public healthcare) (Mandlik, Haralkar, Mulaje, & Mangulikar, 2017), and other studies reported much higher proportions of healthcare utilization (79% and 82.1%) (Dagnew, Tewabe, & Murugan, 2018; Mahmood, Khan, & Saleem., 2017). However, a very low proportion of healthcare utilization among children with ARIs was found in Bangladesh (12.55% utilized public and 24.77% private health facilities) (Sultana et al., 2019). Reduced utilization can be a serious problem for children with ARIs, especially in case of signs of a respiratory problem (such as shortness of breath) (Pajuelo et al., 2018) where the mother may not understand the seriousness of the condition. Low utilization may then have fatal consequences due to the late treatment of ARIs. During the COVID-19 pandemic, children with ARIs should obtain basic health services to receive the appropriate treatment as early as possible. During the pandemic, parents should maintain their children's health, while continuing to prevent the transmission of COVID-19. The autonomy of mothers in making decisions for using healthcare is very important (Dev et al., 2021). Evidence has shown that the prevalence of ARIs was related to family history of respiratory disease (Ramani, Pattankar, & Puttahonnappa, 2016) the child's age, the mother's job, poverty index, region (Windi et al., 2021) and not utilizing healthcare (Cinaroglu, 2020).

The decline of using ARI healthcare can be anticipated by using online health services such as telemedicine or telehealth that are already available, especially among people in cities who have internet access and are supported by other information technology. Changing healthcare utilization to telehealth services is very important to reduce the risk of transmission of COVID-19 both on the trip and in health facilities (Monaghesh & Hajizadeh, 2020). The COVID-19 pandemic has had a tremendous impact on all areas of life, including healthcare. The decline in general healthcare has affected both hospitals and health centers, with health service visits found to be impacted by the COVID-19 pandemic situation (Pangoempia, Korompis, & Rumayar, 2021). However, healthcare providers must not give up in the current pandemic situation. They must continue to assure the public that healthcare provided by health centers is safe for them by implementing strict health protocols, reducing the risk of COVID-19 when utilizing healthcare.

This study revealed a significant association between the mother's age and the use of ARI healthcare. Mothers aged ≤35 years had a 79% lower chance of using ARI healthcare compared to those aged >35 years. This suggests that respondents aged >35 years are more aware of the importance of using ARI healthcare at the health centers. The results of this study are in line with previous studies, which found that age was associated with the utilization of healthcare (Mandlik et al., 2017), (Dagnew et al., 2018), (Abubakar et al., 2013), (Agunwa et al., 2017). Respondents aged >35 years may understand better because of their experience in caring for their children. Therefore, they know when to go to the health center for examination or further treatment of their children.

This study found a significant relationship between the number of children and the utilization of ARI healthcare. Respondents with ≤2 children had a 4.79 times higher chance to utilize ARI healthcare compared to respondents with >2 children. Mothers with ≤2 children may have more time to pay attention to their children and sufficient time to access healthcare facilities. The finding of this study is in line with previous research that found that socioeconomic status including the number of children is related to the use of healthcare (Abubakar et al., 2013), (Agunwa et al., 2017), and another study that reported the number of family members was associated with healthcare utilization (Dagnew et al., 2018).

This study reported a significant association between distance to health centers and the utilization of ARI healthcare. Respondents with a distance of <5 km had a 2.37 times higher chance of using ARI healthcare compared to those ≥5 km. The long distance to healthcare facilities or health centers is considered a barrier to using healthcare. In addition to long distances, other things to consider are transportation or the costs needed to access healthcare services. The finding of this study is in line with the results of a previous study, which stated that distance traveled was associated with the use of healthcare (Syed, Gerber, & Sharp, 2013). Other literature has also reported that distance is related to community decisions in using healthcare (NAP, 2018). Another study conducted in East Java on the utilization of healthcare had different findings, with knowledge, attitudes, and behavior associated with access to child healthcare during the COVID-19 pandemic (Putri, 2020). In contrast, previous studies have found different factors associated with utilization of healthcare, such as economic condition, sex, kind of household floor (Sultana et al., 2019), family income (Cinaroglu, 2020), disease severity (Dagnew et al., 2018), knowledge (Adriana, Wulandari, & Duarsa, 2014), attitude (Fatimah & Indrawati, 2019), and availability (Femi, 2018).

This research was carried out during the COVID-19 pandemic, which might have affected the psychology of the community in using healthcare. The results of this study could not be generalized to all geographic areas of Denpasar. Therefore, we recommend further study to increase the sample size and involve all districts of Denpasar.

CONCLUSION

Most of the respondents (65.6%) had utilized ARI healthcare for children aged under five years in South Denpasar. However, the proportion of utilization was relatively low. Several factors were associated with the utilization of ARI healthcare, including the mother's age, number of children, occupation, and distance traveled.

SUGGESTIONS

The health centers are expected to be able to increase the utilization of ARI healthcare by bringing healthcare closer to the community. This could be through strengthening local supporting health centers, mobile health center services, and conducting home visits. Educating communities to utilize online healthcare (telemedicine) during the COVID-19 pandemic is also important.

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DECLARATION OF CONFLICTING INTEREST

None.

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AUTHOR CONTRIBUTION

Luh Putu Kartiningsih: Contributed on Conception and design of study, acquisition of data, analysis of data, and drafting the manuscript, approval for the manuscript to submit for publication.

I Ketut Swarjana: Contributed on Conception and design of study, acquisition of data, analysis of data, and drafting the manuscript, approval for the manuscript to submit for publication.

AAA Yuliati Darmini: Contributed on primary and secondary data collection and analysis, approval for the manuscript to submit for publication.

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