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Research Article

The Most Common Cause of Fever in International Travelers Visiting Kasih Ibu Hospital Denpasar for the 2019-2020 Period

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ABSTRACT

Background: Fever is one of the most common symptoms that international travelers complain of due to various causes. Fever is associated with mild to severe illnesses, such as Coronavirus Disease 19, typhoid fever, dengue fever, malaria, chikungunya, or gastrointestinal infection. **Purpose:** This study aimed to determine the most common cause of fever in international travelers visiting Kasih Ibu Hospital Denpasar from 2019 to 2020. **Methods:** This cross-sectional study using medical records of international travelers with chief complaints of fever uses purposive sampling. **Result:** The age of the subject was dominated by the adult age group in 2019 (77.3%) and 2020 (77.1%), with more females in 2019 (50.8%) while more males in 2020 (57.8%), 2019 the most common cause of fever was dengue infection (50.8%) while in 2020 the most common cause of fever was COVID-19 (53.5%). **Conclusion:** Dengue was the most common cause of fever in 2019, and COVID-19 was the most common cause of fever in 2020.

Keywords: bali, dengue, fever, travelers

INTRODUCTION

According to The United Nations World Tourism Organization (UNWTO), in 2019 there were 1.4 billion international travelers' arrivals (1). Of this amount, about 47% of travelers travel to developing countries such as Indonesia. In the same year, the number of international travelers' arrivals to Indonesia was 15.5 million to 16.1 million (2,3). Around 6.2 million, or 38% of these international travelers visit Bali (4). The number of international travelers continues to increase yearly (1,2). However, due to the lockdown effect of the Coronavirus Disease (COVID-19) pandemic, in 2020, all international travel decreased drastically; this can be seen from the decline in the number of international travel arrivals, which only reached 403 million or 72.5% from the previous year (4). However, the trend of increasing international travel arrivals has begun since 2021 due to the relaxation of COVID-19 policies in international travel (5).

Based on data, about 70% of international travelers visiting developing countries, including Indonesia, report health problems. Although most of these diseases are self-limiting, about 8% to 15% of these cases still require medical treatment while in the country where they are traveling or when they have returned to their home country. Fever is the most common health problem travelers complain about internationally, especially in developing countries (6).

Diseases that can cause clinical manifestations in the form of fever, especially in Southeast Asia, include but are not limited to chikungunya, cholera, dengue fever, hepatitis A, Japanese encephalitis, malaria, typhoid fever, and COVID-19 (7–9). Several factors, such as age, gender, and a person's immune status, can increase the risk of experiencing fever and worsen the prognosis if doctors are late in diagnosing the disease, causing it to increase morbidities and mortalities (10). Previous research shows that patients aged 50-59 are predominantly female inpatients with confirmed COVID-19 (11) .

Kasih Ibu Hospital is one of the international hospitals in Bali that international travelers visit. Determination of common causes of fever in international travelers is essential to give epidemiological reports that can be useful for health decisions and hospital management to prepare logistics that are primarily used in fever patients. Therefore, the author wants to research to determine the most common cause of fever in international travelers visiting Kasih Ibu Hospital Denpasar period 2019-2020.

METHODS

This research is a descriptive cross-sectional study with a retrospective approach. The research was conducted from May 2022 to July 2022 at Kasih Ibu Hospital, Denpasar. The study population is all international travelers who come with complaints of fever in outpatient and inpatient installations at the Kasih Ibu Hospital in Denpasar for the 2019-2020 period. Samples were selected by purposive sampling. All medical records of international travelers with fever who met the inclusion criteria were selected as samples. The inclusion criteria for this study are international travelers who come with complaints of fever to the Kasih Ibu Hospital Denpasar during the visit period from January 2019 to December 2020. The exclusion criteria for this study were incomplete medical records and unspecified fever diagnosis.

We collect variables from medical records such as age, gender, use of insurance, and diagnosis. The diagnosis is based on history taking, physical examination, and laboratory examination conducted during hospital visits. COVID-19 diagnosis was determined by throat swab sampling examined by PCR cut-off CT values 40; clinical findings characterized by fever, cough, dyspnea, and Chest X-ray show infiltrate unilateral or bilateral (12). Typhoid Fever determined by IgM anti-salmonella. Dengue fever was determined by NS1 protein examination. Upper respiratory tract infection was determined by physical examination and laboratory findings. Acute gastroenteritis was determined by fecal analysis. The data was processed descriptively using cross-tabulation and distribution frequency tables. The data was analyzed with Statistic Package for the Social Science (SPSS) Version 26 (13). This study has been approved by the Health Research Ethics Committee, Faculty of Medicine and Health Sciences, Universitas Warmadewa (letter number 280/Unwar/FKIK/EC-KEPK/VIII/2022).

RESULTS

The data needed in this study was taken from the Kasih Ibu Hospital in Denpasar in May 2022. This data is the medical record of foreign tourist patients who came to the Kasih Ibu Hospital in Denpasar from January 2019 – December 2020. According to the inclusion and exclusion criteria, the total sample obtained for this study consisted of 325 samples in 2019 and 101 subjects in 2020. The profile description of the research subjects can be seen in the

following table. Based on subject characteristics (Table 1), it was found that most patients were adults (age 19-65 years old), with a total of 248 (77.3%) subjects in 2019 and 80 (79.2%) subjects in 2020. A small number of elderly travelers visited the hospital for fever complaints, namely 4 (1.2%) in 2019 and 5 (4.0%) in 2020. In 2019, there were more female subjects than male subjects, which were 168 (52.3%). Meanwhile, in 2020, it was found that there were more males than females (58.4%).

Table 1. Characteristics of Subjects and Fever Diagnosis

Characteristics of Fever Patients	2019 (n=325) %	2020 (n=101) %
Age, n(%)		
Children (0-18 years old)	69 (21.5)	17 (16.8)
Adult (19-65 years old)	248 (77.3)	80 (79.2)
Elderly (> 65 years old)	4 (1.2)	4 (4.0)
Sex, n(%)		
Male	153 (47.7)	59 (58.4)
Female	168 (52.3)	42 (41.6)
Insurance Use, n(%)		
No	165 (51.4)	39 (38.6)
Yes	156 (48.6)	62 (61.4)
Diagnosis, n(%)		
COVID-19	2 (0.6)	54 (53.5)
Typhoid fever	13 (4.0)	4 (4.0)
Dengue fever	163 (50.8)	29 (28.7)
Upper respiratory tract infection (URTI)	87 (27.1)	4 (4.0)
Acute Gastroenteritis	56 (17.4)	10 (9.9)

Based on the results of tabulation of research data in Table 3, it was found that most tourists were classified as aged 19-65 years (adults) with a total of 248 (77.3%) samples in 2019 and 80 (79.2%) sample in 2020. The second largest age group is 0-18 years old (children), with a total of 69 (21.5%) in 2019 and 17 (16.8%) in 2020. The elderly age group is the age group with the least number of samples, namely 4 (1.2%) in 2019 4 (4.0%) in 2020. In 2019, dengue fever dominated the subjects' diagnoses, with 163 (50.8%) subjects. The year 2020 was dominated by the diagnosis of COVID-19 (53.5%), followed by dengue fever (28.7%). The diagnosis group with the lowest number in 2019 was COVID-19 (0.6%).

Table 2. Distribution of Diagnose based on Gender in 2019

Diagnose	Gender	
	Male n(%)	Female n(%)
COVID-19	2 (100)	0 (0)
Typhoid fever	5 (38.5)	8 (61.5)
Dengue fever	74 (45.5)	89 (54.6)
URTI	45 (51.7)	42 (48.3)
Acute Gastroentritis	27 (48.2)	29 (51.8)

p> 0.363

Table 2 shows that females mostly suffered Dengue Fever followed by upper respiratory tract infection and acute gastroenteritis. Table 3 shows that dengue Fever is mostly contracted in the 19-64 age group than in other age group, followed by upper respiratory tract infection and acute gastroenteritis. Table 4 shows that male patients mostly contracted Covid-19, followed by dengue fever. There was no significant correlation between gender and diagnosis of fever. Table 5 shows that COVID-19 mostly contracted 0-18 age group, followed by the adult group 19-64. The chi-square test indicates a significant correlation of age and fever diagnosis.

Table 3. Distribution of Diagnose based on Age in 2019

Diagnose	Age		
	0-18 n(%)	19-64 n(%)	>65 n(%)
COVID-19	1 (50)	1 (50)	0 (0)
Typhoid fever	1 (7.7)	12 (92.3)	0 (0)
Dengue fever	30 (18.4)	130 (79.8)	3 (1.8)
URTI	28 (32.2)	59 (67.8)	0 (0)
Acute Gastroentritis	9 (16.1)	46 (82.1)	1 (1.8)

p>0.242

Table 4. Distribution of Diagnose based on Gender in 2020

Diagnose	Gender	
	Male n(%)	Female n(%)
COVID-19	36 (66.7)	18 (33.3)
Typhoid fever	1 (25.0)	3 (75.0)
Dengue fever	14 (48.3)	15 (51.7)
URTI	4 (100)	0 (0)
Acute Gastroentritis	4 (40)	6 (60)

p> 0.145

Table 5. Distribution of Diagnose based on Age in 2020

Diagnose	Age		
	0-18 n(%)	19-64 n(%)	>65 n(%)
COVID-19	79 (13)	44 (81.5)	3 (5.6)
Typhoid fever	1 (25)	3 (75)	0 (0)
Dengue fever	2 (6.9)	27 (93.1)	0 (0)
URTI	2 (50)	1 (25)	1 (25)
Acute Gastroentritis	5 (50)	5 (50)	0 (0)

p< 0.002

DISCUSSION

The results indicated that the adult group dominantly visits Kasih Ibu Hospital with fever complaints. A previous study on the same subject of international travelers who came to Bali stated that most of the patients with fever were aged 15-78 years, with an average age of 37

years (14). In 2019, female patients dominated the visiting than male patients. Meanwhile, in 2020, male patients were more common than female patients. A previous study stated that most patients with dengue fever were women (15). These results are in line with the results of this study. Female patients were most common compared with males in 2019. Different results were seen in studies in other travelers' populations, which mostly found male patients (16). This is in line with the results of our research in 2020. The percentage of males was higher than females. Adult travelers tend to be mobile and try various travel destinations or adventures other than children or elderly groups that expose travelers to diseases.

According to research by Aluzaite et al., international travelers with digestive problems mostly have travel insurance, and only 32.6% do not (13). This study's results align with the results of this study, namely that most travelers already have travel insurance, 486% in 2019 and 61.4% in 2020.

The study found that international travelers who came with fever in the 2019-2020 period to the Kasih Ibu Hospital in Denpasar were most often diagnosed with dengue fever. When compared, there is a difference between 2019 and 2020. In 2020, more patients were diagnosed with COVID-19, followed by dengue fever. This trend could be predicted during that year because of the COVID-19 pandemic (17). International travelers are one of the populations affected by the disease. Positive cases of COVID-19 internationally, in this case, in the United States, Brazil, Russia, and Germany, have increased in 2020 (17–20). These results align with this study's results that showed increased COVID-19 cases in 2020. A previous study found that most patients who came with a fever to the hospital, diagnosed with dengue from 207 patients, confirmed as many as 133 (66.2%) patients diagnosed with dengue fever (16). Similar results were also obtained in studies of the incidence of infectious diseases in expatriates in low- and middle-income countries. The study stated that diseases spread by vectors, such as dengue and malaria, were 0.5-33.9% (6). This is in line with the results of this study. Namely, 163 (50.8%) patients with fever in 2019 were predominantly diagnosed with dengue fever.

The limitation of this study was that the collection data of the study was only conducted in one hospital and used only secondary data collection from medical records. We also found a considerable number of unspecified diagnoses of fever. It could happen because of many factors, such as patient preference, laboratory examination cost, or the patient's limited time for further examination.

CONCLUSION

Based on the result of the study, we concluded that in 2019, the patient was predominantly in the adult age group (19-65 years), and dengue fever mainly caused the fever diagnosis. 2020, the patient was predominantly male, and the fever was driven primarily by Covid-19 infection. Suggestions for further research are to continue this research with more complete traveler characteristics and study sites.

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CONFLICT OF INTEREST

None declared.

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