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Infectious Disease in Foreign Tourism: A Case Study in Tourism Area Ubud 1 Public Health Center - Gianyar, Bali

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Abstract: ***Based on data from the Bali Tourism Office, tourists who came directly to Indonesia and Bali for the January-August 2017 period totaled 8.212 million and 3.997 million people. About 15-20% of tourists who return from tourist trips suffer from infectious diseases and 2-10% of deaths are due to infectious diseases. Infectious diseases that are quite common among tourists are cholera, typhoid, and Japanese encephalitis (JE). The method used in this research is descriptive with a cross sectional study as the research design. The research sample was all foreign tourists who checked themselves at Toya Medika Clinic, Ubud Care Clinic, Taruna Clinic, and Ubud 1 Public Health Center (consecutive sampling) in the period January - August 2017. Data analysis used descriptive analysis with frequency distribution of patients based on age, gender. , continent origin, and type of infectious disease according to ICD X. The results showed that the average percentage of female foreign tourists experienced more incidence of infectious diseases with the number of 268 (59.2%), followed by men with the number of 185 (40.8%). Most patients were in early adolescence and late adolescence 12-25 years, namely 165 cases (36.4%) followed by the age range of 26-45 years with 126 cases (27.8%). Most of the sufferers came from the continent of Europe with 249 people (55.0%), followed by America with 97 people (21.4%), Australia 59 people (13.0%), Asia 43 people (9.5%), and Africa. with 5 people (1.1%). Acute diarrhea is an infectious disease with the highest frequency of 308 patients (68.0%), followed by ARI 60 patients (13.2%), typhoid with 52 patients (11.5%), UTI 10 patients (2.2%), OMA 8 patients (1.8%), conjunctivitis 5 patients (1.1%), herpes zoster 3 patients (7%), Japanese encephalitis, tuberculosis, and other groups (stomatitis, fungal infections) namely 2 patients (4%), and finally dengue fever in 1 patient (2%). The conclusion of this study is that recorded cases of infectious disease were dominated by acute diarrhea in adolescents from Europe, and more women than men.***

Keywords: Infection, foreign tourists, tourism

1. Introduction

Tourism is a trip to go outside the region or abroad carried out by a person or group with a stay of no more than one year.[1] According to statistical data from the World Tourism Organization, international tourism activities are estimated to reach 1 billion in 2018 and are estimated to increase by 1,6 billion in 2020.[2] Based on data from the Bali Tourism Office, tourists who came directly to Indonesia and Bali for the January-August 2017 period totaled 8,212 million and 3,997 million people.[3]

Bali with cultural, natural, and marine tourism spread across eight districts, is able to attract local and foreign tourists and has become one of the favorite tourist destinations.[4] Ubud is a sub-district in Gianyar Regency which is seen as the center of Balinese arts and culture.[5] This Ubud has become an attractive tourist attraction for many tourists. Based on the records of the Gianyar Regency Tourism and Culture Office, in the 2016 period, tourists visiting Ubud reached 2 million people.[6] This shows that there are still many tourists who care and are interested in Balinese culture, considering that in Bali there are other tourist objects such as tourist objects natural and nautical.

Apart from the large number of tourists who come to Bali and Ubud in particular, tourism activities can cause various health risks, depending on the physical condition of the tourists and the location of the trip. According to the Centers for Disease Control and Prevention (CDC) about 20–70% of people who travel on tour experience health problems. Overall, on international tourism trips, it is found that 1–5% of tourists need medical attention, and 0.01–0.1% require emergency medical evacuation.[7] One of the important health risks associated with travel is the risk of disease transmission and the spread of epidemics that can occur with very fast. Even though it is not the main cause, infectious diseases also contribute to the death of someone who travels.[8]

Statistics show that around 15-20% of tourists who return from tourist trips suffer from infectious diseases and 2-10% of deaths are due to infectious diseases.[7] These infections are mainly caused by viruses as well as by mycoplasma, parasites and chlamydia. Infectious diseases that are quite often experienced by tourists include cholera, typhoid, and Japanese encephalitis (JE).[8]

By noting that infection is one of the concerns that occur on travel, researchers want to know the description of infectious diseases in foreign tourists visiting the tourist clinic in the Ubud 1 Public Health Center and its area. The results of this study are expected to be useful academically and practically. academic, which can be used as a theoretical basis in the field of travel medicine to improve knowledge of infectious diseases in foreign tourists and the dangers they can cause. Whereas practically it can be used as a guideline for Ubud I Public Health Center in preparing development programs related to the Ubud area, which is the location of research and the number of Ubud tourists is quite large every year.

2. Method

This study used descriptive design with cross sectional approach where measurements and observations were only carried out once which was carried out from September to October 2017 in the Ubud 1 Public Health Center area.

Consecutive sampling was carried out on all foreign tourists who checked themselves at the Toya Medika clinic, Ubud Care clinic, Taruna clinic, and Ubud 1 Public Health Center in the period January - August 2017. Inclusion Criteria: (1) Foreign tourists with a diagnosis of infectious diseases; (2) Recorded in medical records. Exclusion Criteria: (1) foreign tourists with a diagnosis of non-infectious diseases; (2) Foreign tourists who have visited before, come back with the same diagnosis.

The study data were taken from medical records with patient characteristics (age, gender, country of origin) and disease diagnosis was based on ICD 10 classification. Data analysis used descriptive analysis which is presented in tabular form.

3. Results

Female foreign tourists experienced more incidence of infectious diseases with the number of 268 (59.2%), followed by men with the number of 185 (40.8%).

Table 1: Patient Distribution Frequency Based on Age Group

Age (year)	Total (n)	Percentage (%)
0-4	13	2.9
5-11	42	9.3
12-25	165	36.4
26-45	126	27.8
46-59	62	13.7
60-74	40	8.8
≥75	5	1.1

Observing the table above, it appears that most patients are in early adolescence and late adolescence 12-25 years, which is 165 cases (36.4%) followed by the age range of 26-45 years with 126 cases (27.8%). Age range ≥75 years is the age range with the least number of sufferers were 5 cases (1.1%). Most of the sufferers came from the continent of Europe with 249 people (55.0%), followed by America with 97 people (21.4%), Australia 59 people (13.0%), Asia 43 people (9.5%), and Africa. with 5 people (1.1%).

Infectious diseases based on gender shows that diarrheal disease has the highest incidence of female foreign tourists with 191 cases (62.0%), typhoid affects the same frequency between male and female foreign tourists with 26 cases (50%). UTI was mostly suffered by women with 8 cases (80%), ARI was mostly suffered by women with 34 cases (56.7%), Japanese enchepalitis had 2 cases (100%) suffered by men, tuberculosis there were 2 cases respectively - 1 case (50%) of both male and female foreign tourists each, for infectious diseases in other categories (stomatitis, fungal infections, AOM, conjunctivitis, herpes zoster, dengue fever) is mostly suffered by male with 11 cases (72.3%).

Table 2: Proportion of Infectious Diseases by Age

Diagnosis		Age (year)							Total
		0-4	5-11	12-25	26-45	46-59	60-74	≥75	
Diarrhea	Amount (n)	6	29	115	85	45	26	3	308
	Percentage (%)	1.9	9.1	37.3	27.6	14.6	8.4	1.0	
Typhoid	Amount (n)	0	4	21	11	9	7	0	52
	Percentage (%)	0	7.7	40.4	21.2	17.3	13.5	0	
UTI	Amount (n)	0	0	7	2	1	0	0	10
	Percentage (%)	0	0	70.0	20.0	10.0	0	0	
Respiratory tract infection	Amount (n)	7	9	14	20	2	6	2	60
	Percentage (%)	11.7	15.0	23.3	33.3	3.3	10.3	3.3	
Japanese encephalitis	Amount (n)	0	0	0	1	1	0	0	2
	Percentage (%)	0	0	0	50.0	50.0	0	0	
Tuberculosis	Amount (n)	0	0	2	0	0	0	0	2
	Percentage (%)	0	0	100.0	0	0	0	0	
Other	Amount (n)	0	1	6	7	4	1	0	19
	Percentage (%)	0	50.0	0.0	50.0	0.0	0.0	27.7	
Total	Amount (n)	13	42	165	126	62	40	5	453
	Percentage (%)	2.9	9.3	36.4	27.6	13.7	8.8	1.1	

From the table above shows that diarrheal disease affects all age groups with the highest incidence frequency in the adolescent age range (12-25 years), typhoid is the highest in the adolescent age range (12-25 years), UTI with 7 cases is the most common in the range. adolescence (12-25 years), most ARIs in the adult age range (26-45 years), Japanese encephalitis 1 case each in the age range (26-45 years and 46-59 years), and tuberculosis only 2 cases in adolescence (12-25 years).

Table 3: Proportion of Infectious Diseases by Country of Origin

Diagnosis		Country					Total
		US	Europe	Afrika	Asia	Australia	
Diarrhea	Amount (n)	64	176	1	34	33	308
	Percentage (%)	20.8	57.1	3.0	11.0	10.7	
Typhoid	Amount (n)	13	26	1	4	8	52
	Percentage (%)	25.0	50.0	1.9	7.7	15.4	
Herpes zoster	Amount (n)	1	1	1	0	0	3
	Percentage (%)	33.3	33.3	33.3	0	0	
UTI	Amount (n)	2	6	1	0	1	10
	Percentage (%)	20.0	60.0	10.0	0	10.0	
Respiratory tract infection	Amount (n)	14	29	1	2	14	60
	Percentage (%)	23.3	48.3	1.7	3.3	23.3	
Japanese encephalitis	Amount (n)	0	0	0	2	0	2
	Percentage (%)	0	0	0	100.0	0	
Conjunctivitis	Amount (n)	1	2	0	1	1	5
	Percentage (%)	20.0	40.0	0	20.0	20.0	
AOM	Amount (n)	1	6	0	0	1	8
	Percentage (%)	12.5	75.0	0	0	12.5	
Tuberculosis	Amount (n)	1	0	0	0	1	2
	Percentage (%)	50.0	0	0	0	50.0	
Other	Amount (n)	0	2	0	0	0	2
	Percentage (%)	0	100.0	0	0	0	
Total	Amount (n)	97	249	5	43	59	453
	Percentage (%)	21.4	55.0	1.1	9.5	13.0	

From the table above, most of the people with infectious diseases were foreign tourists who came from the European continent, except for Japanese encephalitis which was mostly suffered by 2 tourists from the Asian continent.

4. Discussion

The incidence of infection in tourists when considering the distribution based on age, and country of origin that in this study it appears that most cases are teenagers, namely 12-25 years as much as 36.4%, and come from the European Continent where according to data from the Gianyar Regency tourism office, foreign tourists Most of those who visited the Ubud area were in the range of adolescents and adults, and the highest visits came from the European Continent, so that it also affected the results of the analysis of infectious diseases on the age distribution.[6] Adolescents have a high curiosity and appetite so they often try food carelessly and as a result are more susceptible to infection, and one of the risk factors for infectious diseases is hygiene.[9] Tourists can be exposed to a number of infectious diseases, the exposure depends on the presence or absence of an underlying cause in the area visited. The risk of infection varies depending on the purpose of the trip and itinerary, accommodation standards, hygiene and sanitation and the conditions of previous travelers. [9]

Infectious diseases with the highest number of foreign tourists visiting tourist clinics in the Ubud 1 Public Health Center area were diarrhea as much as 68%. In theory, there are several risk factors for diarrhea in tourists, namely the level of cleanliness of the country of origin and destination country as well as the type of trip, food and drink consumed. Areas that have a high risk of developing diarrhea cases are developing countries in Latin America, Africa, Asia including Indonesia, and parts of the Middle East. In these areas it has been reported that the incidence of traveler's diarrhea ranges from 20 - 75%. [10] Tourists who live with local residents, backpacking, and camping also suffer from diarrhea more frequently. Meanwhile food and drinks purchased by tourists at street vendors are very risky for causing diarrhea. [9] Diarrhea is more common in teenage tourists, because ordinary teenagers have a high curiosity and appetite so they often try food carelessly.[10] Apart from diarrhea, typhoid also occurs with an incidence rate of quite a lot affecting foreign tourists in the tourism clinic of Ubud 1 Public Health Center, which is 11.5%. In theory, in developing countries the incidence is 3 - 30 cases per 100,000 tourists who arrive. Typhoid is transmitted through food or drink contaminated with feces.

Another infectious disease with a high incidence rate of tourists visiting the tourism clinic in the Ubud 1 Public Health Center is respiratory infection. According to previous studies, statistics show that travel has a high risk of being exposed to pathogens that cause respiratory tract infections. It is reported that 1 - 2% of tourists who return from tourist trips suffer from acute respiratory infections. In the study, 62 foreign tourists experienced respiratory infections and only 2 of them suffered from tuberculosis (TB), although it is known that TB is the largest cause of respiratory tract infection in the world. [11]

In the category of UTI in the study, it was found that female foreign tourists who were in the adolescent age range (12-25 years) and were recorded as coming from Europe experienced the highest incidence of infection. This is in accordance with the theory, basically UTI is more common in women because women have a shorter urinary tract (urethra) than men, so that women are more susceptible to this infection. In several studies, it was mentioned that one way for bacteria to enter the urethra is through sexual intercourse, which according to 2015 statistical data is prone to occur in adolescents (12-25 years). [12]

In the study, it was found that the incidence of Japanese

enchepalitis amounted to 2 cases, each of which was suffered by male and female citizens of Japan (Asian Continent). This is in line with the theory, where the World Health Organization (WHO) and the Center for Disease Control (CDC) state that the Asian continent is still an endemic area for the Japanese encephalitis virus. This virus belongs to the flavivirus group and humans can contract the Japanese encephalitis virus when bitten by a Culex mosquito. If you look at the country of origin of the study sample, there are 2 possibilities of transmission, namely the patient who was infected while still in Japan, or when he was in Bali, because the high incidence of Japanese encephalitis in Bali is related to the large number of rice fields and pig farms.[13,14]

5. Conclusion

Taking into account the results of the analysis of other infectious diseases (stomatitis, fungal infections, herpes zoster, dengue fever, conjunctivitis, AOM) does not have a high incidence rate. If we compare it with the average number of tourists who come to Ubud each year.

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