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Travel related infection among international travellers visiting clinics at Ubud Bali

KT Sumadewi*, A Narendrakomaranatha, E Lalita, W Rusni, A E Pratiwi, N P D Witari, and S Masyeni

Faculty of Medicine and Health Sciences, University of Warmadewa, Jl. Terompong 24 Denpasar-Bali, 80235, Indonesia

*trisna_sumadewi@yahoo.com

Abstract. Bali has been a prominent tourist destination in the world and attracting millions of travellers year after year. As a tropical region, Bali possesses a billion unpredictable infectious diseases that may hazard for travellers. Hence, a retrospective study provided at the clinics around the magic-peaceful village Ubud Bali, in order to assess profile of the illness affecting the travellers. This study was a retrospective study based on the medical record of the patients visiting ToyaMedika Clinic, Ubud Care Clinic, Taruna Clinic and Puskesmas Ubud during January – August 2017 was conducted. The clinics classified the patient's diagnostic according to ICD X criteria. The incomplete medical records were excluded from the study. Various data such as demographic, nationality were also collected and presented descriptively. A total of 453 complete medical record were enrolled to the study. The most age group was 12-25 year age group (36.4%) and the minority age group was 75 years (1.1%). The top 5 of the patient nationality was Europe (55,5%), American (21,4%), Australian (13%), Asian (9,5%) and African (1,1%). Acute diarrhea was the most disease (68%) affecting the travellers, in which 62% of the cases were female. According to the age group, acute diarrhea mostly found at the age group 12-25 years old. Upper tract respiratory infection was found as high as 13.2%. The others diagnosis were typhoid fever and urinary tract infection accounting for 11.5% and 2.2% respectively. From this study, acute diarrhea was the most common infectious disease in adolescence travellers.

1. Introduction

Bali with its cultural, natural, and marine tourism which spread across eight districts, has become one of the favorite tourist destinations and able to attract both local and foreign tourists. [1] Ubud, one of sub-district of Gianyar Regency, considered as a center of Balinese art and culture. [2] Based on the record of *Dinas Pariwisata Kebudayaan Kabupaten Gianyar*, in year 2016 period, about 2 million tourists visiting Ubud. [3] According to statistics record from the World Tourism Organization, foreign tourist activities are estimated to reach 1 billion by 2018 and estimated to increase by 1.6 billion in 2020. [4] Based on data from Bali Tourism Office, the direct visiting tourist that come to Indonesia and Bali from January to August of 2017 aggregate 8.212 million and 3.997 million people [5].

Travellers who going abroad may be exposed to many bacterial, viral, parasitic and fungal infection. Those are related with different climate, sanitation and hygiene practices of the destination area. According to the Centers for Disease Control and Prevention (CDC) about 20-70% of travellers



have health problems. Overall on international travel tours, 1-5% of travellers require medical attention, and 0.01-0.1% require emergency medical evacuation. One of the important health risks associated with travel is the risk of disease transmission and the spread of epidemics that can occur very quickly. Statistics show, about 15-20% of travellers return from travel are infectious and get 2% to 10% of deaths due to infectious diseases. [6] These infections are mainly caused by viruses and also by mycoplasma, parasites and chlamydia. Infectious diseases that are often experienced by tourists include cholera, typhoid, and Japanese encephalitis (JE). This study aimed to assess profile of the illness affecting the travellers at the clinics around the magic-peaceful village Ubud Bali.

2. Methods

This research uses descriptive design with cross-sectional approach took place in tourism clinic such as Toya clinic, Ubud clinic, Taruna clinic, and Ubud 1 Public Health Center from September 2017 up to October 2017. The clinics classified the patient's diagnostic according to ICD X criteria. The incomplete medical records were excluded from the study. Various data such as demographic, nationality were also collected and presented descriptively. A total of 453 complete medical record were enrolled to the study.

3. Results

This research found that female foreign tourist get more infection disease with 268 case (59,2%), followed by male foreign tourist with 185 case (40,8%).

Table 1. Distribution sample based on age

Age (year)	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
Total	453	100

From the table above, showed that the most patients age are in early and the edge of adolescence by 12-25 years old are 165 cases (36,4%) followed by the age range of 26-45 years old with 126 cases (27,8%). The under 75 years old cluster of age is a range of age with the least sufferers with 5 cases (1.1%).

Table 2. Distribution sample based on continent

Origin continent	N	Percentage (%)
Amerika	97	21,4
Europa	249	55,0
Africa	5	1,1
Asia	43	9,5
Australia	59	13,0
Total	453	100

The table above showed that the majority of patients come from Europe with 249 people (55.0%), followed by Americans 97 people (21.4%), Australia 59 people (13.0%), Asia 43 people (9.5 %), and Africa with 5 people (1.1%).

Table 3 showed that the distribution frequency of diagnoses experienced by foreign tourists, found that 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 with 10 patients (2.2%), tuberculosis, and other classes (stomatitis, fungal infections, OMA, conjunctivitis, herpes zoster, dengue fever) 21 patients (4.6%).

Table 3. Proportion Infectious Diseases Based on Gender

Diagnose		Gender		Total
		Male	Female	
Diarrhea	N	117	191	308
	%	38,0	62,0	100,0
Typhoid Fever	N	26	26	52
	%	50,0	50,0	100,0
Urinary Tract Infection	N	2	8	10
	%	20,0	80,0	100,0
URTI	N	26	34	60
	%	43,3	56,7	100,0
Tuberculosis	N	1	1	2
	%	50,0	50,0	100,0
Etc	N	13	8	21
	%	61,9	38,1	100,0
Total	N	185	268	453
	%	40,8	59,2	100,0

The table above showed that the proportion of infections disease based on gender, found that in diarrheal diseases the highest occurred rate is in female foreign tourists with 191 cases (62.0%), typhoid suffered by the same number of frequency between both male and female foreign tourists, each of 26 cases (50%. UTI was suffered mostly by women with 8 cases (80%), ISPA was suffered mostly also by women with 34 cases (56,7%), tuberculosis were found 2 cases which suffered by both male and female foreign tourists. And other infections disease categories such as stomatitis, fungal infections, OMA, conjunctivitis, herpes zoster, dengue fever, were mostly suffered by males with 13 cases (61.9%).

Table 4. Proportion Infectious Diseases Based on Age

Diagnose		Sex							Total
		0-4	5-11	12-25	26-45	46-59	60-74	75	
Diarrhea	n	6	28	115	85	45	26	3	308
	Percentage (%)	1,9%	9,1%	37,3%	27,6%	14,6%	8,4%	1,0%	100,0%
	(%)								
Typhoid fever	n	0	4	21	11	9	7	0	52
	Percentage (%)	0%	7,7%	40,4%	21,2%	17,3%	13,5%	0%	100%
	(%)								
UTI	n	0	0	7	2	1	0	0	10
	Percentage (%)	0%	0%	70,0%	20,0%	10,0%	0%	0%	100%
	(%)								
URTI	n	7	9	14	20	2	6	2	60
	Percentage (%)	11,7%	15,0%	23,3%	33,3%	3,3%	10,0%	3,3%	100%
	(%)								
Tuberculosis	n	0	0	2	0	0	0	0	2
	Percentage (%)	0%	0%	100%	0%	0%	0%	0%	100%
	(%)								
Etc	N	0	1	6	8	5	1	0	21
	Percentage (%)	0%	4,8%	28,5%	38,1%	23,8%	4,8%	0%	100%
	(%)								
Total	n	13	42	165	126	62	40	5	453
	Percentage (%)	2,9%	9,3%	36,4%	27,6%	13,7%	8,8%	1,1%	100%
	(%)								

4. Discussion

Travelers could be exposed to a number of infectious diseases, depends on availability of germs in the area visited. The risk of infection varies depending on the aims and the schedule of the journey, accommodation standards, hygiene and sanitation as well as previous tourist conditions [7].

Considering the occurrence of infection in the tourist by age and the origin of the country, this study found that most cases are adolescents, i.e. 12-25 years old by 36.4%. This is in line with the tourism official data of Gianyar regency, which stated the largest group of foreign tourists who visit the Ubud area are in the range of adolescence and adulthood and comes from Europe. This fact affects the results of the analysis of infectious diseases on age distribution as well. [3] Furthermore there is also probability of a relationship between infectious diseases with the age factors. Adolescents have a curiosity and appetite which is high, so they often try food carelessly and consequently more susceptible to infectious diseases, and one of the risk factors of infection is less hygiene [7].

The highest infectious diseases of foreign tourists visiting the tourist clinic in the area of Ubud Health Center 1 is diarrhea as much as 68%. In theory, some risk factors for diarrhea in travellers are the level of cleanliness of the country of origin and destination country and the type of travel, food and beverages consumed. Areas with 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 the number of traveler's diarrhea events ranges from 20 - 75%. [8] Previous study in Bali, report about diarrhea among international travellers in Bali. From that study, the most frequently found pathogen were *Entamoeba* spp and *E.coli*. [9] Travelers who live with local peoples, backpacker, and campers also suffer more from diarrhea. Meanwhile, food and drinks bought by tourists on street vendors is very risky cause diarrhea. [8] In addition to diarrhea, typhoid also occurs with the number of events suffered by many foreign tourists at the clinic tour Ubud Health Center 1 that is as much as 11.5%. In theory, in developing countries the incidence is 3 - 30 cases per 100,000 travellers. Typhoid is transmitted through food or drink contaminated by salmonella typhi. Other infectious diseases that also with the number of events quite a lot of tourists visiting the tourist clinics of *Ubud Puskesmas* area 1 is a respiratory infection (ISPA). According to previous research, shows that high-risk tourist travel is exposed by pathogen-causing respiratory infections. About 1 - 2% of travelers returning from travel are suffering from acute respiratory infections. In this study found 62 foreign tourists had respiratory infections and only 2 of them suffer from tuberculosis (TB), although it is known TB is most common respiratory tract infection in the world. In this study, Upper Tract Infection disease (UTI) was found in adolescent female (12-25 years) and recorded came from Europe experienced the highest incidence of infection. This is appropriate with the theory, basically UTI is more common in women because women have a shorter urinary tract (urethra) than men, so women are more susceptible to this infection. In some studies, mentioned one way bacteria to enter the urethra is through sexual intercourse where according to statistical data in 2015 is vulnerable in adolescence age. Other infections found were stomatitis, fungal infections, herpes zoster, dengue fever, conjunctivitis and OMA, although in relatively low numbers. Dengue infection found in the minority (data not being shown) that is in contrast with another dengue study in international traveler conducting in Bali. [10] This discrepancy may relate to a different climate during their traveling to Bali.

5. Conclusion

The number of foreign tourists recorded with infectious diseases is dominated by Acute Diarrhea in adolescence, and women more than men. It is also known to the number of foreign tourists visiting Ubud by age, sex, and the origin of the continent.

References

- [1] Widayati A. 2012. Bali Sebagai Salah Satu Destinasi Pariwisata Favorit Wisatawan Jepang. *Journal University of Indonesia* **11**(2)
- [2] KurniaU. 2015. Analisa Highest and Best Use pada Lahan Kosong di Kawasan Wisata Ubud. *Jurnal Teknik ITS* **4**(1)

- [3] Dinas Pariwisata dan Kebudayaan Kabupaten Gianyar. 2017. *Jumlah Wisatawan yang Berkunjung ke Ubud. Gianyar*
- [4] Paynter W. 2013. *Travel Medicine Clinician Reviews*. Available at: <http://www.findarticles.com/p/articles/mi-m0BUY/is-1-10>
- [5] Badan Pusat Statistik Propinsi Bali. 2017. *Statistik Wisatawan Mancanegara ke Bali Tahun 2017*. Denpasar: BPS Propinsi Bali
- [6] Ryan ET, Kain KC. 2000. Health Advice and Immunizations for Traveler. *N Engl J Med*. **342**: 1716-25.
- [7] World Health Organization. 2008. *International Travel & Health: Infectious diseases of potential risk for travelers*; WHO
- [8] Sarayar AM and Liwang F. 2014. Pencegahan dan Penatalaksanaan Terkini Penyakit Travelerss Diarrhea Untuk Wisatawan yang Berkunjung ke Indonesia. *ISM* **1**(1): 36-40.
- [9] Masyeni, S., Sukmawati, H., Paramasatiari, L., *et al.* 2017. Diarrhea Among International Travellers in Bali-Indonesia: Clinical and Microbiology Finding. *Int Journal of Travel Medicine and Global Health*. Vol **5**(3): 84-88
- [10] Masyeni S, Yohan B, Somia IKA, *et al.* 2018. Dengue infection in travellers visiting Bali, Indonesia. *J Trav Med*; **25**(1):1-7