UNIVERSITAS ISLAM AL-AZHAR

JURNAL KEDOKTERAN
MEDIA INFORMASI ILMU KEDOKTERAN DAN KESEHATAN
ISSN 2460-9749 e-ISSN 2620-5890

Disease Mapping in Foreign Travelers Visiting Ubud Village, Bali

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Date of Submission	Date of Acceptance	Date of Publish
21 June 2023	17 August 2023	25 December 2023

ABSTRACT

Most tourists who visit Bali are looking for a tourist attraction in the countryside, because of the natural beauty, the beautiful atmosphere, and local wisdom. To maintain the security, safety, and health of tourists visiting rural areas, we consider it necessary to map out diseases affecting tourists visiting tourist villages. Based on the location of the place to stay, it was found that the Ubud sub-district is the location of the most disease occurrence among tourists because it is the center of tourism in Gianyar Regency. The map of the distribution of the 7 most common diseases shows that the highest prevalence of the disease among foreign tourists visiting Ubud is acute gastroenteritis (AGE) in as many as 305 (43.93%) people; followed by upper respiratory tract infections (URTI) in 101 (14.55%) people; injuries in 75 (10.8%) people, fever in 64 (9.2%) people, gastritis in 59 (8.5%) people; ear, nose, and throat problem (ENT) in 48 (6.9%) people; and allergies in 42 (6.05%) people. In conclusion, disease mapping among tourists is concentrated in the Ubud sub-district with the most common disease being acute gastroenteritis.

Keywords: Travelers; Diseases; Mapping; Ubud.

INTRODUCTION

Indonesia is a country with various cultures and ethnicities as well as several groups of islands (Jay Keystone, 2018). Therefore, Indonesia is the main attraction as a tourist destination. The tourists know the Province of Bali because of the customs and culture that are still maintained until now. Various tourism promotions have been carried out by the government to invite foreign tourists to come to Bali Province. (Torresi et al., 2019) According to data from the Bali Tourism Office, since the COVID-19 pandemic, foreign tourists (tourists) who came directly to Bali Province in June 2020 were recorded as 32 visits. (Wibowo et al., 2020) The number of foreign tourists who came through I Gusti Ngurah Rai airport was 10 visits and the seaport was 22 visits. The number of foreign tourists to Bali Province in June 2020 decreased by -11.11 percent compared to the record in May 2020. When compared to June 2019, the number of foreign tourists to Bali was recorded to have decreased by 100 percent (-99.99 percent). Even though amid the pandemic the number of Balinese tourists has fallen considerably, in fact, there are still foreign expatriates who have been living in Bali for a long time. (Wirawan et al., 2020)

Increasing the risk of getting infectious diseases and predominant travel-related syndromes among long-term expatriates living in low-and middle-income countries must be considered based on the geographical distribution (Kitro et al, 2022).

DOI: https://dx.doi.org/10.36679/kedokteran.v9i1.56

The risk of falling ill is a mandatory concern for tourists who travel. Although the incidence of illness suffered by tourists can be prevented or treated with simple measures, the risk of falling ill during a trip can limit or even hinder the tour. (Budiapsari et al, 2023) Research conducted in South America in 2009 showed information about the incidence of disease experienced by foreign tourists during their trips (CDC, 2020). The most common types of diseases reported were diarrhea, altitude sickness, upper respiratory tract infections, sunburn, fever, traffic accidents, and sexually transmitted diseases (Riasa et al., 2020). Previous research by Sumadewi, et al 2018 conducted on foreign tourist patients in Ubud Bali using 453 records. The age groups that had the complete treatment were 12-25 years (36.4%) and 75 years (1.1%). The top 5 patient nationalities were European (55.5%), American (21.4%), Australian (13%), Asian (9.5%) and African (1.1%). Acute diarrhea is the most common disease (68%) suffered by tourists, of which 62% of cases are female. According to age group, acute diarrhea was mostly found in the 12-25-year age group. Upper respiratory tract infections were found in 13.2%. Other diagnoses were typhoid fever and urinary tract infection at 11.5% and 2.2%, respectively (Sumadewi et al, 2018). According to this study, acute diarrhea is the most common infectious disease among adolescent tourists. (Waskito et al., 2018)

Mapping in the health sector has been widely applied for various purposes and can describe the spatial distribution of related phenomena. Many studies on health in the individual aspect of the environment have been carried out, however, making a spatial model for the study of tourism health geographically is expected to be able to explain the where, why, and what are the implications for the health of tourists. (Kent, 2020)

Most tourists who visit Ubud are looking for tourist attractions such as *barong* and *keris* dance in the countryside, because of the natural beauty, the beautiful atmosphere, and local wisdom. To maintain the security, safety, and health of tourists visiting rural areas, we consider it necessary to map out diseases affecting tourists visiting tourist villages. (Mertha et al., 2019)

RESEARCH METHOD

The design of this research is cross-sectional analytic, the tourists who are used as subjects are foreign tourists according to the identity listed in the passport who visit the tourist village. This study uses secondary data, namely medical records and identification in the form of a passport. Medical records are obtained by first applying for permission to borrow medical records and letters of ethics to the clinics and private practice doctors in Ubud which will be the research location. 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/V/2021.

Research Location and Time

This research occurred at the Ubud Tourism Village clinic, Ubud Health Care, Toya Clinic, and dr Bagiada and Associates. These locations were chosen because of the large number of foreign tourists visiting for treatment with a wide variety of cases. This research was conducted in May-July 2021.

Data Collection Method

Data were collected using medical records of subjects who visited clinics in tourist villages, in this case Ubud Village. Based on the results of the initial examination of the doctor who handled the clinic. The results of the assessment will then be recapitulated in a table. Medical records were obtained by first applying for permission to borrow medical records and letters of ethics to the hospital that was the location of the study.

Data analysis

The data collected in the form of patient demographic data was analyzed using a frequency distribution table. Characteristic data will be analyzed using cross-tabulation. Patient location data will be mapped using a GIS application to

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determine the distribution of the disease based on the location of the tourist's residence.

RESULTS

We surveyed 800 tourists who visited the clinics in Ubud Bali, and only 694 subjects met the inclusion criteria. After that, we identified the location of the stay as the basis for the mapping, then we mapped the distribution of the 7 most common diseases as shown in table 1. The results are outlined in the table and figure below.

Table 1. The Prevalence of disease in foreign tourists visiting Ubud Bali

Disease	Frequency	Proportion (%)
URTI	101	14.55
Injury	75	10.82
AGE	305	43.94
Gastritis	59	8.50
Fever	64	9.23
ENT problem	48	6.97
Allergy	42	6.05
Total	**694**	**100%**

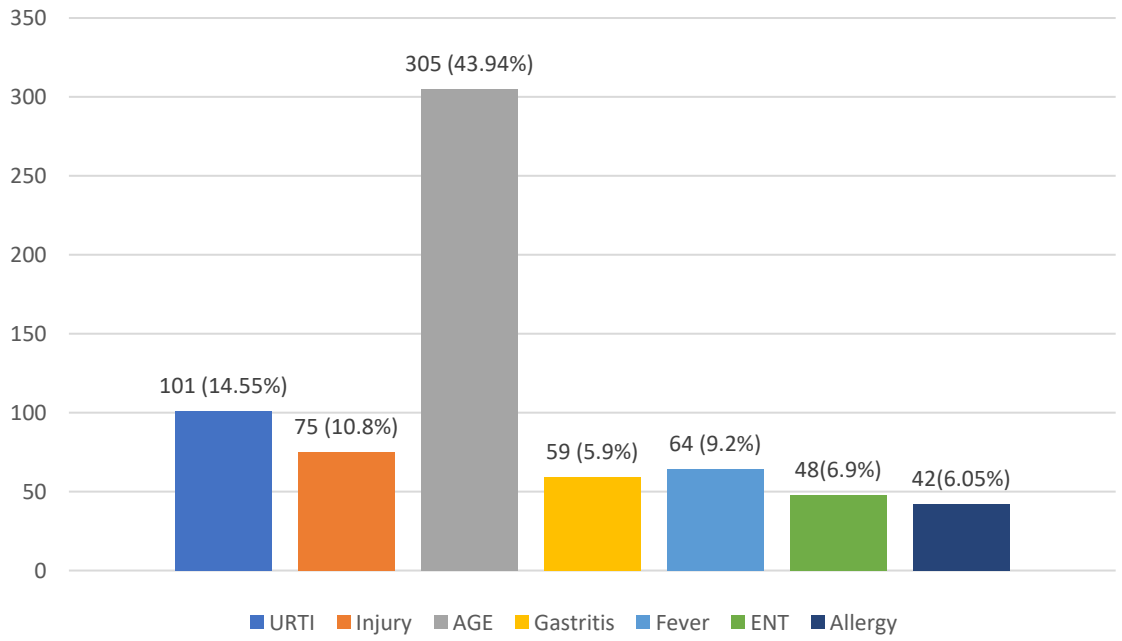

Figure 1. The Prevalence of disease in foreign tourists visiting Ubud Bali

As shown in figure 1, the highest prevalence of disease in foreign tourists is AGE as many as 305 (43.93%) people, followed by URTI as many as 101 (14.55%), injuries 75 (10.8%), fever 64 (9.2%), gastritis 59 (8.5%), ENT 48 (6.9%), and allergies 42 (6.05%). The location with the highest number of cases, as well as the most AGE cases, was a local resort.

We also mapped the distribution of travelers' diarrhea, injury, and URTI cases in Gianyar Regency. It was shown in Figures 2, 3, and 4 that Ubud has the highest number of those cases compared to other sub-districts in Gianyar Regency.

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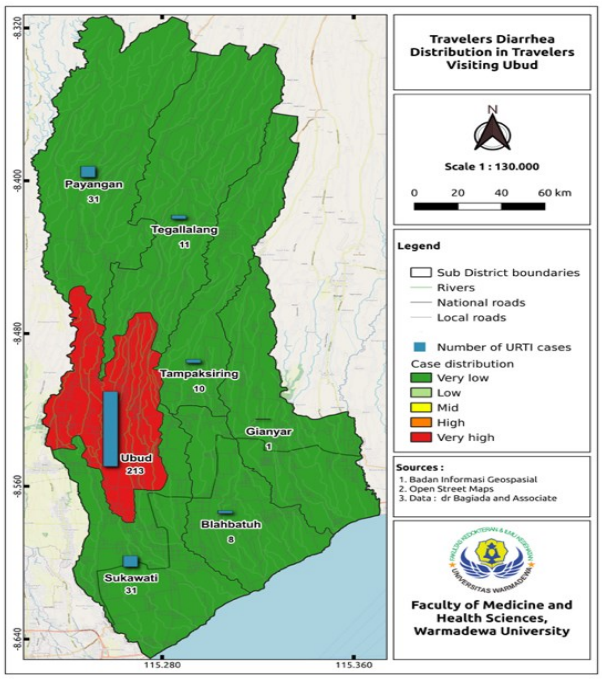

Figure 2. The distribution of travelers' diarrhea is concentrated dominantly in the Ubud District.

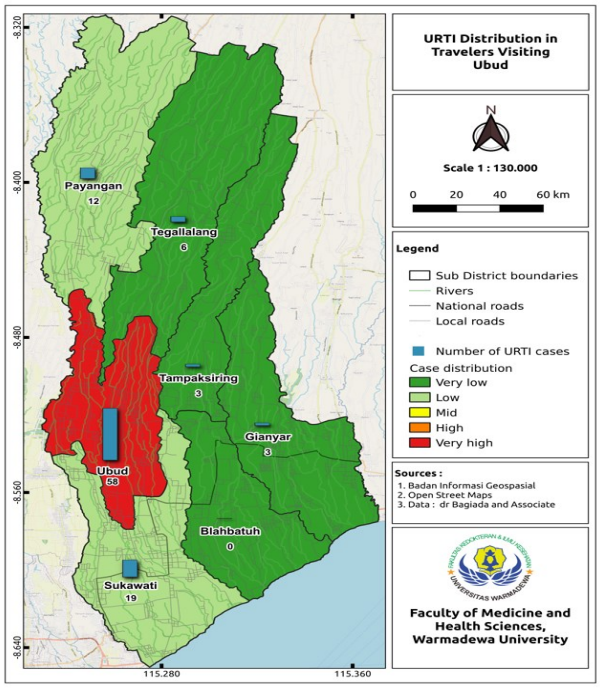

Figure 3. Upper respiratory tract infections (URTI) are concentrated in the Ubud district, followed by Payangan, and Sukawati.

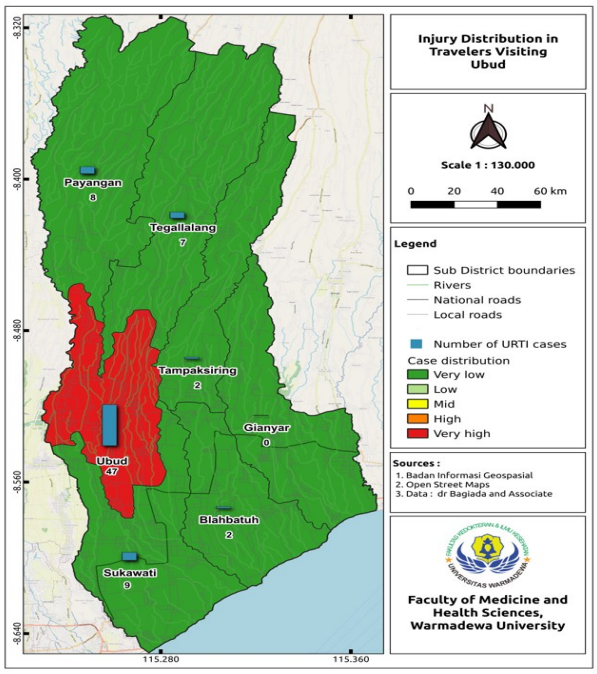

Figure 4. A very high number of injury cases is found in the Ubud District.

DISCUSSION

The result shows that AGE is still the most common problem contracting international travelers in Ubud, Bali (Aluzaite et al, 2021). Traveling cannot be separated from culinary. Travelers must be interested in trying local food to search for different tastes. The tolerability of everyone must be different especially in spicy food (Stoney et al, 2018). The risk of contracting this disease was localized near stay places such as hotels guest houses or villas where travelers live. (Rohman et al., 2021)

The second most common problem is URTI. The risk of contracting this disease was very high due to air droplets spreading easily in cold and windy weather (Suryanditha et al, 2023). Most viruses and bacteria are also spread by air droplets that could affect the upper or lower respiratory tract. (Apsari et al., 2023)

The next most common problem is injury. Previous research stated that injury was the most common cause of death in international travelers. (Sumadewi et al., 2018) The injury was caused by several factors such as older age (Budiapsari et al, 2023), motorcycle riding, high-speed riding,

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alcohol use, lack of mass transportation, and lack of understanding of the map and location, etc. (Long & Flaherty, 2018). Unintentional injury also contributes to a high prevalence of injury among travelers worldwide. (Javali et al., 2019)

CONCLUSION

In conclusion, disease mapping among tourists is concentrated in the Ubud sub-district with the most common disease being AGE.

Mapping of diseases in tourists must continue to be carried out to monitor the spread of disease to anticipate the risk of illness in tourists visiting Bali. This also encourages the attraction of tourists who come to Bali.

ACKNOWLEDGEMENT

We thank the Research Unit of the Faculty of Medicine and Health Sciences for supporting our research and giving us funding resources.

CONFLICT OF INTEREST STATEMENT

The author declares that there is no potential conflict of interest concerning the authorship and publication of this article.

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