

## Health and safety risks behavior among local and international tourists at Borobudur Temple before COVID-19 pandemic

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### ABSTRACT

Tourists are vulnerable to certain diseases and health-related issues, including experiencing danger during their visit to a destination. This study aims to compare the health and safety behavior of local and foreign tourists during their visit to Borobudur Temple, Indonesia from September to November 2019. Additionally, it was carried out quantitatively with a cross-sectional approach. The sample consisted of 200 foreign and 200 local tourists visiting Borobudur Temple; they were selected using convenient sampling. The data were analyzed using the frequency distribution and the Chi-square test. The results showed that health risks related to food and beverage hygiene were the most experienced by foreign tourists (p-value 0.030), and solar radiation effects were experienced by both foreign and local tourists (p-value 0.006). Tourists' knowledge to prevent health and safety risks was categorized as moderately adequate, and foreign tourists have more understanding than their local counterparts. This study reported no difference in health and safety behaviors between foreign and local tourists. It was suggested that tourism managers should provide information to the visitors concerning health and safety risks prevention by delivering leaflets, booklets, and brochures to minimize danger, sunburn, and food as well as beverage-related diseases.

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## 1. INTRODUCTION

Tourism is a social, cultural, and economic phenomenon, which entails the movement of people, agencies, organizations, associations, or groups of people to countries or places outside their usual environment for personal or business/professional purposes [1]. This activity may facilitate an individual's effort to maintain good health by avoiding, preventing, or curing health disorders, either physically or psychologically, which need immediate intervention, medicine, or care [2], [3]. It is the fastest growing industry internationally, and according to the United Nations of World Tourism Organization (UNWTO) statistics, international tourists in global markets estimate the growth of 5.4% each year. Tourists mostly traveled for leisure, recreation, and holiday, as well as for visiting friends, relatives, and religious or health reasons, which may include business, and professional purposes and unspecified reasons.

The Indonesian Center for Statistics (Badan Pusat Statistik) reported that the number of tourists has increased in 2019 from 14,279 in 2017 to 17,079 in 2018. These data showed that the tourism industry in Indonesia, including Central Java, has continued to develop [4]. This study was carried out at Borobudur

Temple, one of the top ten most popular tourist destinations in the country, inducted into the UNESCO World Heritage List [4].

In terms of health-related issues, tourism also deals with food safety. Approximately 20-60% of the tourists visiting developing countries suffer from acute diarrhea [5]–[7]. According to WHO statistics, it was reported that as more people travel internationally and arrive in developing nations, 1-2% of traveler's experiences upper respiratory infections and 60% experience diarrhea. A previous study also showed that one-third of Eastern European tourists visiting developing countries suffered from illness, specifically diarrhea and cold [8], [9]. There are ways to prevent health-related issues that could arise when traveling to their destination, and a serious effort is needed by those involved in tourism activities, such as the government, tourism administrators, local people, and tourists themselves [9]–[11]. Hence, this study aims to identify and compare the health and safety behavior of local and international tourists visiting Borobudur Temple Indonesia. Therefore, there is a need for a follow-up plan to accelerate the health and well-being of tourism development, particularly related to health.

## 2. RESEARCH METHOD

### 2.1. Study site description

In Indonesia, Borobudur is also known as the Buddhist temple, located in Central Java Province. The temple consists of nine stacked platforms, six square, and three circulars topped, on a central dome surrounded by 72 Buddha statues in a perforated stupa. The temple is decorated with 2,672 relief panels and a total of 504 Buddha statues. According to history, Borobudur was restored with the help of UNESCO in the 1970s and is considered one of the seven wonders. The temple is one of the most popular tourist attractions and a famous icon of Indonesia's cultural heritage [12].

### 2.2. Study design

In this study, an observational design was used with a cross-sectional approach. During the survey, young people the age of  $\geq 17$  were among the tourists who visited Borobudur Temple. A Lemeshow equation was used for determining the minimal sample size. There were 400 respondents, consisting of 200 local and 200 foreign tourists who participated in the survey. Convenient sampling was used for the selection of respondents who were willing to participate.

$$n = \frac{\text{Foreign tourist}}{0.1^2 \times (75000 - 1) + 2.58^2 \times 0.5(0.5)} = \frac{75000 \times 2.58^2 \times 0.5(0.5)}{0.1^2 \times (75000 - 1) + 2.58^2 \times 0.5(0.5)}$$

$$n = 166,043 \rightarrow 200 \text{ samples}$$

$$n = \frac{\text{Local tourist}}{0.1^2 \times (221557 - 1) + 2.58^2 \times 0.5(0.5)} = \frac{221557 \times 2.58^2 \times 0.5(0.5)}{0.1^2 \times (221557 - 1) + 2.58^2 \times 0.5(0.5)}$$

$$n = 166,2859 \rightarrow 200 \text{ samples}$$

$$N=296557 \alpha=99\% p=0.5 q=0.5 d=0.1$$

Due to the restricted tour itinerary and language barrier, only tourists who can speak English (particularly from Asian and South American countries) participated in this study. The local tourists preferred using face-to-face interviews, while the foreign counterparts were more comfortable with a self-completed questionnaire. The questionnaire was presented to the respondents in the presence of an 'interviewer' and used both in Bahasa and English languages. The interviewer's presence ensured a high response rate, which can be used to reassure the respondents, by helping out in answering their questions or editing their completed questionnaires. After explaining the aim of this study and the confidentiality of the data, informed consent was obtained from each respondent. This study was approved by the Board of Ethics at the Faculty of Public Health Diponegoro University No. 161/EC/FKM/2019. The data were collected from September-November 2019.

The questionnaires were adapted from the National Tourism Best Value Management Group (NTBVMG) England, which was specifically designed to provide the data necessary for quality perception condition indicators for use in quality physical education (QPE). The questionnaires of knowledge consist of a set of statements with the answer choice "true" for score 1 and "false" for score 0. The probability of a total score was ranging from 0-15. Whilst, several statements of attitudes used a likert scale ranging from agree to disagree, with the possibility of a total score was 0-30. In addition, the behavior variable consists of 12 questions with the answer ranging from always to never, and the maximum score was 36. The pilot test of the questionnaire has been done on 30 foreign and 30 local tourists at Sam Po Kong Temple and Lawang Sewu Building in Semarang. All data were analyzed using frequency distribution and the Chi-Square test to compare foreign and local tourists to examine a correlation and different perceptions among both groups.

### 3. RESULTS AND DISCUSSION

#### 3.1. Results

##### 3.1.1. Respondent characteristics and health and safety experiences

Table 1 shows the description of respondent characteristics. The characteristics of them are consisting of age, gender, education level, and length of stay. Foreign and local tourist characteristics were also distinguished by the frequency of visits.

European and American dominated foreign tourists (81.50%) with higher education levels (75.5%) compare to local counterparts (47.50%). In terms of gender, local tourists have more females (65%), mainly from Java (80.50%). There are no statistically significant differences in terms of age, gender, and education for both groups of tourists. Most foreign tourists (90%) were for the first time visit the Borobudur, and local tourist more than 60% have experienced visiting Borobudur.

Table 1. Tourist characteristics

Variables	Foreign tourists (n=200)		Domestic tourists (n=200)		p-value
	F	%	F	%	
Age groups					0.389
<30 years old	112	56.00%	117	58.50%	
>30 years old	88	44.00%	83	41.50%	
Gender					1.000
Male	102	51.00%	70	35.00%	
Female	98	49.00%	130	65.00%	
Education					0.361
Low	49	24.50%	105	52.50%	
High	151	75.50%	95	47.50%	
Length of stay					0.824
<24 hours	105	52.50%	130	65.00%	
≥24 hours	95	47.50%	70	35.00%	
Frequency of visit					0.847
One	180	90.00%	79	39.50%	
More than one	20	10.00%	121	60.50%	

The local and foreign tourist experiences related to health and safety risks during visiting Indonesia can be seen in Table 2. Tourists could potentially experience risks to health and safety during activities. Tourism activity is vulnerable to disease transmission and hazards such as diarrhea and other diseases, including accidents [13]. Identifying tourists' risk experiences related to diseases and hazards during the trip is necessary to develop appropriate prevention programs to improve health tourism and well-being.

Table 2. Health and safety risks experiences in the tourist destination

Variables	Foreign tourist				Domestic tourist				p-value
	Yes		No		Yes		No		
	F	%	F	%	F	%	F	%	
Intoxication	69	35.4	131	64.6	98	49.0	102	51.0	0.437
Food/beverage-transmitted diseases	131	67.2	69	32.8	113	56.5	87	43.5	0.030
Endemic diseases	76	39.0	124	61.0	114	57.0	86	43.0	0.996
Sexually-transmitted diseases	82	42.3	118	57.7	112	56.0	88	44.0	0.621
Accidents	137	70.3	63	29.7	120	60.0	80	40.0	0.171
Respiratory disorder due to pollution	81	41.5	119	58.5	119	59.5	81	40.5	0.966
Allergy	95	48.7	105	51.3	58	29.0	142	71.0	0.465
Radiation	39	20.0	161	80.0	83	41.5	117	58.5	0.006
Noise disturbance	89	45.6	111	54.4	99	49.5	101	50.5	0.186

Table 2 shows that foreign tourists have a greater chance (67.20%) of suffering from diseases transmitted through food/beverage, such as diarrhea and hepatitis than local counterparts (56.5%). Meanwhile, local tourists experienced greater sensitivity to solar radiation (41.50%). The table also shows that sexually transmitted diseases were not significantly different for both groups, only for local tourists, which show a little higher risk (56%) than foreign (42.3%). It is perhaps that the foreign tourists were more compliant in using condoms consistently when doing sexual interactions at the destination.

##### 3.1.2. Tourist knowledge, attitudes, and behaviours towards personal health and safety during the trip

Each variable of knowledge, attitudes, and practices related to personal health and safety risks was divided into two categories. The mean was used as the cut-off point. The knowledge score  $\leq$ mean was categorized as inadequate and  $>$ mean as adequate. Likewise, for the attitudes and behavior variables, the

score  $\leq$ mean was classified as poor attitudes and negative behavior and  $>$ mean as good attitudes and positive behavior. Understanding the travelers' knowledge, attitudes, and behavior related to disease prevention and safety could provide crucial information to public health policymakers and managers to plan an educational intervention for tourists [14]. Sources of information also could assist public health policymakers to design interventions to improve knowledge and appropriate behavior to prevent diseases and safety risks among tourists [14]. Table 3 shows tourists' knowledge, attitudes, and behavior related to disease prevention and safety. It shows that foreign tourists had better knowledge (69.5%) than local ones (40.30%), about using a condom, or masker to prevent tuberculosis, anti-mosquito protection, and choosing hygienic foods. However, this study could not find any differences in general health knowledge between both groups. Local tourists had a better attitude towards personal health, food selection, smoking, waste disposal, and personal protective devices (86.5%) than foreign tourists (20.00%).

Table 3. Tourist's knowledge, attitudes, and behaviour towards personal health and safety risks

Variables	Foreign tourist (n=200)		Domestic tourists (n=200)		P-value
	F	%	F	%	
Knowledge	Mean (11.92±2.96)		Mean (10.13±1.56)		0.176
Inadequate	61	30.50	106	63.50	
Adequate	139	69.50	94	36.50	
Attitudes	Mean (0.27.47±4.22)		Mean (24.7±2.43)		0.001
Poor	160	80.00	27	13.50	
Good	40	20.00	173	86.50	
Behaviors	Mean (26.11±4.41)		Mean (30.29±2.89)		0.293
Negative	105	52.50	117	58.50	
Positive	94	47.50	83	41.50	

Concerning health and safety behaviors, foreign tourists always admitted practices, such as handwashing, toothbrushing, alcohol consumption, condom use, and adherence to wearing protective devices and applying safety procedures. Unfortunately, they practice smoking habits and drug use more than their local counterparts. However, there is no statistically significant difference between both groups (p-value 0.293) for general behaviors. The frequency distribution also shows that more local tourists demonstrated negative behaviors (58.5%) than their foreign counterparts (52.50%).

Table 4 shows that foreign tourists obtained more information about endemic diseases in the destination before visitation (73%) than the domestic one (15%). Therefore, most of foreign tourists (76.4%) prepared for prophylaxis vaccination before the trip. Due to receiving insufficient information concerning health and dehydration, food intoxication, and hypoxia at the tourist destinations, the tourism manager has not yet provided information about the emergency warnings and self-survival measures. The absence of advertising from tourism managers or tour guides has also prevented travelers from receiving health and safety services.

Foreign tourists have made more effort to find information about health service centers' availability than their local counterparts. They were aware that in the event of an accident or illness, they would be far from home. Therefore, comprehensive health information is essential for tourism activities. Most tourists need health promotion and information about endemic diseases, the threat to health, warning about dangerous/high-risk tourist areas, and health prevention.

## 3.2. Discussion

### 3.2.1. Respondents' characteristics

The characteristics of tourists were mainly young people under 30 with a higher level of education. According to the study carried out by Cooper, it was reported that early adult tourists tended to join a guided tour and seek an experience by visiting the tourist destination directly [15]. This age group was considered to be physically stronger to embark on the trip, and they tended to have difficulty in tours. Accidents occurred mainly among tourists under 30 years old, while elderly tourists mostly suffered health risks [16], [17]. Most foreign tourists were males, as Kristina's study reported that foreign tourists tend to become far away from their countries [18], [19].

Table.4. Health risks and safety information obtained by tourists before visit destination

Variables	Foreign tourist (n=200)				Domestic tourist (n=200)				p-value
	Yes		No		Yes		No		
	F	%	F	%	F	%	F	%	
Did you receive endemic disease information before visiting here?	140	73.3	60	26.7	30	15.0	170	85.0	0.00
Did you receive vaccination and prophylaxis information before visiting here?	146	76.4	54	23.2	29	14.5	171	80.5	0.00
Did you receive information about particular medicines necessary related to the geographical and medical record of the tourist spot you are visiting?	113	59.2	87	40.8	34	17.0	166	83.0	0.00
Did you receive information about particular vitamins or supplements necessary to the tourist spot's geographical and medical record?	79	41.4	121	58.6	29	14.5	171	80.5	0.00
Did you receive information about the need for condom use at the tourist spot?	110	57.6	90	42.4	22	11.0	178	89.0	0.00
Did you receive information about the emergency issue at the tourist spot?	55	28.8	145	71.2	51	25.5	149	74.5	0.56
Did you receive information about self-survival due to dehydration at the tourist spot?	85	44.5	115	55.5	31	15.5	169	84.5	0.00
Did you receive information about self-survival due to intoxication at the tourist spot?	61	31.9	139	68.1	42	21.0	158	79.0	0.02
Did you receive information about self-survival due to hypoxia at the tourist spot?	52	27.4	148	72.6	14	7.0	186	93.0	0.00
Did you receive information about basic knowledge of light diseases and first-aid kits?	126	66.3	74	33.7	33	16.5	167	83.5	0.00
Did you receive information about therapy for particular cases, such as fractures or respiratory help for tuberculosis?	69	36.3	131	63.7	8	4.0	192	96.0	0.00

### 3.2.2. Health and safety risk experiences

Tourists' level of satisfaction depends not only on their experience with specific services, but also on less tangible factors such as hospitality, safety, health services, hygiene, and cleanliness [20]. Identifying potential health and safety risks during tourism activities can be used for performing health promotive and preventive related to diseases and hazards. Most risks are predictable; therefore, effective and efficient prevention becomes a new challenge [21].

Health risks that can be transmitted through eating or drinking are becoming the most common threat to tourists during their activities at the destination. Foreign tourists were at higher risk of suffering from food and beverage-transmitted diseases due to the differences in the physical and cultural environment as well as local behaviors in food processing and storage. The transmission incidence commonly occurs when they eat or drink unclean dishes, leading to digestive disorders [22], [23].

In this study, some foreign tourists were injured by sharp objects, mainly due to ominous signs in a dangerous area. On the other hand, one-third of foreign and local tourists suffered from travel diarrhea and other digestive problems [23]. The host's unsanitary food and drink and the travelers' unhealthy eating habits were the main causes of the problems [24]. Furthermore, foreign tourists claimed that the main problem of Indonesia's tourism industry was unhealthy food and low transportation, while local tourists were only concerned about unhealthy local food.

Another health risk that could have occurred at the destination is related to exposure to solar radiation. Foreign tourists frequently expose themselves to the sun without proper protection, including for tanning purposes [24]. This means they did not consider exposure to sun radiation as a risk. Tourists should take precautions to avoid the adverse effects of prolonged sun exposure by avoiding it. On the other hand, almost half of the foreign and local tourists experienced respiratory disorders due to environmental pollution. Air pollution affects human health through inhalation, food, and drinking water, which may cause respiratory infections and inflammations, cardiovascular dysfunctions, and even cancer in long-term exposure [25]–[29].

### 3.2.3. Knowledge, attitudes, and behavior of tourists for diseases prevention

Foreign tourists had a higher level of knowledge about sexually transmitted diseases, including HIV/AIDS than local tourists. Additionally, tourists from the United States are more aware of HIV/AIDS-related issues, as they are more liberal when it comes to sex life and have adequate preparation for facing any sexually related risk during the trip to Indonesia [30]. Meanwhile, local tourists had higher knowledge about the prevention of tuberculosis (TB) transmission by wearing a mask and other prevention behavior as TB is an endemic disease. They were more familiar with the TB-related program compared to foreign tourists [31].

This study reported that foreign tourists knew more about general health and safety risks than their local counterparts because they did an investigation before traveling. They had zero tolerance for any health and safety risks. Furthermore, better education has promoted foreign tourists to think logically and rationally, including avoiding risks when traveling [32]. Positive attitudes toward health and safety were demonstrated

more by local tourists than foreign ones. Attitude is a tendency of an individual to act or behave according to their nature [33]. The study by Martiani on the correlation between tourist knowledge and attitudes toward the use of clinics at Borobudur Temple was reported to be significant. However, the attitudes did not correlate to the use of the clinic [34], [35].

According to tour operators, individuals on vacation do not always consider their health and safety responsibilities to be a priority. However, tour operators, facilities owner, and local authorities should ensure that any building used by the public has a responsibility to control hazards and prevent health risks. Many studies mentioned a direct link between individuals' behavior in their environment and the destinations they select to visit [36]. This study reported no significant difference in attitudes towards health behaviors and adherence to following hygienic food and beverage practices between local and foreign tourists. However, some of the actions were affected by the culture of foreign tourists themselves. Societal cultures in developed countries have given the proper priority to food hygiene. They used to keep the dishes clean and hygienic [37]. Local tourists were unaware of a healthy and hygienic lifestyle due to inadequate health facilities, pristine water, and waste disposal. According to the previous study carried out by Menuh, foreign tourists visiting Kuta Beach, Bali, preferred having meals at the food stalls that provided clean water for washing hands [38].

Foreign tourists drink alcohol more frequently than local ones because alcohol has become a part of their daily lives. They experience four seasons a year, and in the winter, drinking alcohol can help keep your body warm. Local tourists were mostly Muslims, and the followers are banned from drinking alcohol. Additionally, Indonesians consider alcoholic beverages to be immoral behavior, although some communities produce their traditional alcoholic beverages. Menuh added that such a habit should be considered by local people because of its social impact. Besides alcohol consumption, other habits can also cause social pathologies, such as prostitution, drugs, and other misdemeanors [38]. In the smoking habit, this study showed a significant difference between local and foreign tourists. This habit mainly was reported among the local respondents. The Indonesian Tobacco Control and Public Health Support Center reported that the national prevalence of smoking among male school-age adolescents was 24.5% of the total population in that age group. In contrast, the highest prevalence rate was reported among homeless teenagers (61%) [39]. There is a dogmatic perception that males must smoke to show their masculinity. Although smoking is unhealthy, many health personnel smokes, moreover, society, specifically adults in Indonesia, primarily practices smoking [32].

Traveling can be associated with behaviors that lead to the transmission of infectious diseases and hazards, such as sexual activity, extreme exercise, and injury-prone activities that may not be considered a risk at home. A Canadian study reported that 54.3% of travelers who had sex with other travelers showed high risks of sexual activity while, up to 40.7% of travelers had sex with local partners, and 2.15% had sex with commercial sex workers [40]. Another Swedish study showed that<sup>14</sup> were reported to have intercourse with a casual partner abroad, and 48% never use a condom. About 10% had more than two partners abroad who were associated with traveling longer than a month and heavy episodic drinking [41].

#### **3.2.4. Need for health and safety information**

Local and foreign tourists should receive hygiene information to prevent health and safety risks. Saayman and Snyman maintained that the tourism industry's risks fall into two broad categories: local and international. The first deals with crime, fire, low facility, and transportation, leading to high safety risks. The latter deals with natural disasters, socio-demography, economy, politics, and diseases (such as COVID-19, swine flu, HIV/AIDS, severe acute respiratory syndrome, and ebola) [42]. In practice, the destination countries do not apply optimal warnings due to business factors, which undermined the possible decrease in the number of visits. According to the risk flow, the risk that the tourists might encounter was transmitted by epidemic diseases. Such incidence contributed to the decrease in the number of visits in a particular area [43]. Trust and loyalty may decrease when the tourism business cannot fulfill the tourists' satisfaction as they feel threatened and unsafe during their visits. The World Bank reported in 2006 that the influenza virus global pandemic incidence had cost as much as \$1.5 trillion in loss of gross domestic product. Two-thirds of the total loss was caused by tourists' hesitation to visit the countries where the influenza virus developed [44]. These data suggest that health risk is higher for foreign tourists than for their local counterparts.

This study reported that more local tourists needed information about herbal and traditional medicines because they are familiar with local medication. Similar information was inadequate for foreign tourists, and they did not know the benefit of consuming herbal or traditional medicines at tourist spots. Standardized quality Indonesian traditional/herbal medication is required to be accessible by foreign tourists. A study in Yogyakarta revealed that individuals toured to seek a particular cure for their illness, unhappiness, and recovery as well as renew their spiritual states [45]. Traditional medicines are made of herbal raw

materials, such as plants, animals, minerals, extracts, or a combination, and which have been consumed for generations. Good management will make it an added value for the local tourism industry [46].

The need for health information about endemic disease prevention should be included in the travel medical regulations kit for tourists, specifically foreign tourists. The travel medical regulations kit consisted of health promotion and disease prevention at a particular tourist spot. Every tourist should learn about the potential health risk at the destination and understand how to protect themselves from dangers during their trip. In practice, most of the tour organizers have not provided such information. Therefore, health information related to tourism activities should be provided to tourists within 4-8 months before visiting the destination [34], [35].

According to Luo [47] the elements of a travel destination are costs, attractions, amenities, traveling opportunities and arrangements, as well as information, including health and security issues in a particular destination. The study by Seyidov emphasized that internet media and friends are famous sources of information for foreign travelers with 35.2% and 38.8% accordingly while touring agencies (8.4%) and social websites (10.1%) [30]. World Tourism Organization (WTO) predicted that in the 21<sup>st</sup> century, tourism would be an antidote to “high-tech” living. The development of internet media has enabled the direct dissemination of any traveling information and reservation. Therefore, health-related information is easily accessible through the internet.

#### 4. CONCLUSION

Health risks and accident prevention in the destination play a key role in increasing tourist satisfaction. In this study, foreign tourists had better knowledge of the health risks at the destination and compliance with safety procedures as some provided health information in their own country before their visit. All tourists need information about the availability of health service facilities, specifically for emergency cases, and foreigners need more comprehensive information.

This study recommends that tourism organizers and those involved in the industry should provide a traveling book containing information about the prevention of health risks and accidents during the trip, and a briefing on safety procedures for the tourists is also necessary. The organizers should distribute leaflets, booklets, brochures, and posters, with health service information. It also recommended training in healthy food management for the food stall owners at the tourist spots, improvement of facilities, and waste management. The latter recommendation of the Indonesian Food and Drug Supervision Agency (*Badan Pengawas Obat dan Makanan/BPOM*) should establish a standardized quality.

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