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**Submission date:** 19-May-2020 07:33PM (UTC+0700)

**Submission ID:** 1327702780

**File name:** Prosiding ADICS PHS.pdf (2.32M)

**Word count:** 3095

**Character count:** 16913

# Risk Management for Healthier and Safer Tourist Destination (Case Study at Parangtritis Beach, Special Region Yogyakarta, Indonesia)

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**Abstract**—Increasing number of visitors to Parangtritis Beach affect to increases the health and safety risk. Data of Tourism and Cultural Office Bantul Regency, more than 30 tourists are victims due to rip current and 220 tourist stung by Jellyfish in 2019. This study aimed to: 1) identify potential hazards, 2) risk assessment, 3) describes the hazards controls that have been applied. This research use qualitative approach with a case study. The data was collected by observation, interview and documentation method. The object of the research is environment and tourist activity, subject of the research head of the Administration office whom responsible for managing the Parangtritis Beach, a person at Bantul Regency tourism and culture office, a chairman of Community Based Tourism at Parangtritis Beach, two personnel from coastal guide (search and rescue team) and 2 tourists. The method used was the Hazard Identification, Risk Assessment, and Risk Control (HIRARC), risk analyzed by AS/NZS 4360 standard in 20041. The research found four tourism activity, one environment factor and one man made factor. Safety problems that occurred were people dragged into the middle sea when tourist bathing, riding a horse-drawn carriage, riding an ATV at sand dune, riding a jeep and potentially being affected by the tsunami. Health problems that can occurred caused stung by jelly fish and diarrhea or poisoning at culinary tourism activities. The control efforts that have been carried out by the tourism authorities were made artificial swimming pools for children, building tourist monitoring posts, installing water trough signs, and personal protective equipment for coast guard. We recommend to tourism authorities to make operational procedure standard rescue, safety induction to tourist at the entrance of the beach and disaster training to all their staff periodically.

**Keywords**—safety and health, risk management, tourist destination, beach.

## I. INTRODUCTION

High & increasing visitors similar with increases the health, safety and security risks. Tourism increases potential disease transmission and potential hazards that can endanger human life. Travelers are vulnerable to health, safety, security & environment (HSE), such as diarrhea & other disease outbreaks, sanitation, disaster environmental degradation, such as tsunamis, earthquakes, high waves, rip current, sea troughs, dangerous sea animals, and terrorism. Tourists who were injured result of terrorist attacks in Bali 2005, and tsunamis on Pangandaran coast in West Java in 2018, sinking

ships carrying South Korean tourists in Budapest Wednesday May 29th, 2019 or died because global outbreak of SARS from a hotel in Hong Kong may never have guessed that their tours would be end to the death. The risk of accidents to tourists will increase, when tourists ignore the procedures determined by the tour authorities [1]–[7]. Based by some studies, the tourist generally have less awareness, careless and inqurate perception about probability to be expose by hazard and health risk [8], [9]. Different to international travelers, Pennington-Gray and Schroeder revealed tourist will turn to social media to seek information about crisis when they are travelling [10]. More over according to Kapuściński and Richard found that media influenced to the way tourists attend to risk message [11].

Discussion about health and safety tourist must include an appreciation of risk management as a concept. Occupational health and safety risk management is a concept risk management applied to health and safety. Its steps required to prevent and address potential problem systematically. Most of the risks actually can be minimized by taking into account the steps before, during and after traveling and anticipating them in the form of prevention efforts [12], [13].

Yogyakarta Special Region is one of the popular tourist destinations in Indonesia. Visitors consist of local and foreign tourists. Total number visitor reached to 4.103 240 people in 2018[14]. Parangtritis Beach, Bantul is one of the natural attractions in the Special Region of Yogyakarta. The number of tourist visits on Parangtritis Beach has always increased every year, from 1,999,870 people in 2015, raise to 2,229,125 people in 2016 and reached 2,996,204 people in 2017 [15].

Parangtritis beach, located in the south of the island of Java, and adjacent to the Indian Ocean, is one of tourist destination in Yogyakarta. The uniqueness of Parangtritis Beach that distinguishes it from the other beach is sand dune. The one and only sand dune in Indonesia and the largest in Southeast Asia. So that the sand dune on the beach of Parangtritis has become a world heritage by United Nation (UN) [16]. However behind its natural beauty, Parangtritis beach is also accompanied by the phenomenon of accidents that are often encountered on Parangtritis Beach, when tourists play sand and bathing tourists, they dragged by the rip current. Data of Tourism and cultural office at Parangtritis-Depok shows that more than 30 tourists are victims at Parangtritis

Beach due to Rip current and according to Detik News, an online news on Thursday June 12, 2019, a total 220 tourist were stung by jelly fish on June 3-12, 2019 on Parangtritis Beach. Rip Current is a backflow that is concentrated on a path that breaks the wave zone until it passes through the breaking wave zone. This current is formed if a wave comes and crashes the coastline in the form of a basin [17]. The protection of tourists from problems occurring in areas directly related to tourism is responsibility of tourism authorities at destination and relevant sectors of local government. Problems in this area are not necessarily the 'fault' of the tourism industry, but can have a dramatic and negative effect on a destination's image [1], [18], [19]. Indonesia, especially Yogyakarta has made tourism the mainstay of its development. There for it is important to realize healthy and safe tourism. This has not been widely considered by tourism authorities and the government. Risk management is an important issue related to tourist security in carrying out travel. This can be used as a basis for conducting preventive and promotive monitoring for elimination or reducing risk when travelling. This research aims to analyze the risk management of tourist safety and health on Parangtritis Beach, Special Region Yogyakarta.

**II. RESEARCH METHODS**

This research use qualitative approach with a case study. The data was collected by observation, interview and documentation method. The method to identify potential

hazards and assess the level of risk was Hazard Identification, Risk Assessment, and Risk Control (HIRARC). The process of identifying potential hazards begins with determining the type of activity by observing surrounding environment which risked causing problems of safety and health and tourist's behavior according to the type of activity. The results of observations obtained the risk value qualitatively. In-depth interviews were conducted as a confirmation of the observations. Informants were selected by purposive sampling. The key informant were head of the Administration office whom responsible for managing the Parangtritis Beach and his staff, a chairman of Community Based Tourism at Parangtritis Beach, two personil from coastal guide (search and rescue team) and 2 tourists. Risk assessment analyzed by AS/ NZS 4360 standard in 20041 [13]. Risk value was calculated based on likelihood multiplied by consequence. Multiplication produce a risk matrix risk level that was categorized as extreme, high, medium and low risk [12].

**III. RESULTS AND DISCUSSION**

The table 1 expresses four tourist activities, one environment factor and one man made factor. Similar to study of Wirawan and friend in Bali, potential hazard found at all activity were biological hazard, chemical hazards, physical hazard, mechanical hazard. Different to at Bali that found dog as biological hazard on beach, at Parangtritis Jelly fish are animals that can itching on the skin, even can die [20].

Risk level shows at matrix on Table 1. Matrix are resulted by multiplied of likelihood and consequence.

**TABLE I. POTENTIAL HAZARDS IDENTIFICATION AND RISK ASSESSMENT**

No	Activity	Hazard	Risk	Likely hood	Severity	Risk Level	
1	2	3	4	5	6	7	
1.	Playing sand and bathing	Rip current dragged people by sea wave into the middle of the sea	Sinking	A	5	Extreme	
		Water trough	Sinking	A	5	Extreme	
		Hot sun	Burnt skin irritation	C	3	High	
		Stung by jellyfish	skin irritation	B	3	High	
2	Riding a horse-drawn carriage	Uncontrolled-horse	Wounds, Psychological trauma	C	2	Medium	
3	Driving jeep at track on the beach	Riding ATV at sand dune	Hit and fall	Wounds, fractures, Psychological trauma	C	3	High
		Vehicle fumes	Dizziness, coughing, shortness of breath	B	1	Medium	
		Accident, crashing	Wounds, fractures, concussions Psychological trauma	C	3	High	
4	Culinary	Food expires	Poisoning, diarrhea, Cholera, dysentery, Hepatitis A	C	3	Medium	
		Lack of hygiene of cutlery	On fire	C	3	Medium	
		Leaked LPG gas cylinders		D	2	Low	
5	Environmental factors of natural disasters / human factors	Tsunami	Wounds, fractures, concussions Psychological trauma, Death	A	5	Extreme	

		Theft, pick-pocketing deception	Economic loss, psychological trauma	B	I	Medium
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Generally, accidents caused by unsafe tourist behavior and unsafe conditions at Parangtritis Beach. Tourist unsafe behavior was not pay attention to the appeals that have been given by coastal guard officials through loudspeakers so that they bath into the middle of the beach, and most tourists cannot swim so that tourists sink/be swept away by the waves. Unsafe conditions was rip current and high the sea wave at Parangtritis Beach cause tourists to sink/be dragged by the waves of the sea, even die.

The highest risk (extreme) of accidents and health problems occurred in activities playing sand and bathing. risk assessment found three very high (extreme) hazard: 1) sink in the sea, 2) high waves dragged tourists to the middle beach, 3) being dragged by the waves of the tsunami. The risks posed by natural conditions and the environment can be individual risk, not because of the desire to take risks but because of the readiness of tourists to avoid critical situations such as natural disasters, infectious diseases or poisoning arising from the physical environment [20].

The results of this observation are reinforced by the results of interviews with key informants as follows:

"...accidents that are often occur to visitors ...drowned, sink, bring the current into the middle to the sea..."(Key Informant 1).

"...stung by jellyfish; visitor have ever felt down when riding a horse-drawn carriage; hit by an ATV..."(Key Informant 2).

The coastal region of Yogyakarta is located in the southern of Java. The beach is open to the south facing the Indian Ocean. The morphology of the beach will affect the wave conditions that radiate from the sea. Waves that break due to differences in depth then throw a mass of water to the shore. The mass of water on the coastline will then return to the sea by forming a gap between the breaking waves. The part between the waves and the beach is an attractive place for tourists who play or swim on the beach. The occurrence of accidents or disasters on the beach is usually caused by weak coastal security and the absence of early warning for tourists who play or swim on the beach. Accidents that often occur on the beach are dragging or drifting tourists into the high seas by the pull of the movement of the mass of water returning to the sea. The current that drags tourists to the open sea is rip current. Rip current is a current that moves from the coast to the sea that can occur every day with conditions ranging from small, slow and harmless, to currents that can drag people to the middle of the sea and are built by the connection between waves that come to the coast and conditions coastal morphology. Rip currents are concentrated through narrow paths (rip channels) that flow strongly towards the ocean from the crash zone across broken waves until they are in the offshore [8].

Parangtritis Beach also habitat for jellyfish during the summer which can cause tourists to get poison jellyfish stings. Stung of jellyfish can cause skin irritation to death if

they did not get first aid immediately from the Search and Rescue Team/coastal guide/health care worker. Jellyfish poisons caused an itchy effect immediately after being stung, will make tourists seek treatment at the location. Different to diarrhea, cholera, Hepatitis A, dysentery or wounds, dizziness, concussions and trauma, although key informant said that there have ever an accident in driving or riding a vehicle, there was no record about tourists who injured and sick after culinary at Parangtritis Beach. Perhaps the visiting of Parangtritis Beach generally were local tourists, they were immediately returned to their homes after vacation. So, if anyone ill after vacation, they will record in the health services at their homes.

Risk control was carried out to reduce the risk of accidents required in each tourist activity at Parangtritis Beach. The results of interviews with informants, the control efforts that have been made by the tourism authorities are by substitute swimming pool for children to bath and play water, built a monitoring post on beach.

"...we always urge when tourist swim too far from the beach. Coastal guide always ready to serve tourist..."(informant 5).

"...Built swimming pool for the children..."(Informant 1).

"...yes, there are some signs...periodically team SAR walk on the beach and use whistles and loudspeakers to warn tourist..."(Informant 7).

Although Hermawan who studied at Mount Nglanggeran, safety are not proven to affect the loyalty of tourist, but treated security and safety issues is an element of supply in tourism. Tourist manager need made the standard operating procedures for Search and Rescue Team and hold training courses 1-2 times a year, providing uniform clothes and life jackets for Search and Rescue Team members. Whereas, General of the World Health Organization stated all nation are vulnerable (at risk), electronic transparency has made difficult for any country to hide an outbreak. News will always seep out and be picked up [1], so manager of tourism destination should be a concern to international or local tourists's health problems by strengthen public health capacity, tourism resilience. Strengthen public health program, can benefits to tourist health that includes all aspect of medicine (both curative and preventive) [2], of wide range of public health topics, e.g. by improve safety and environmental sanitation in accordance with HSE standard, promote health and well-being of visitor and locals, disease surveillance monitoring and response, advanced food safety capacity, reduction in illness, spread and disease outbreak and healthier safer populations [14], [15]. Healthier safer tourism product, impact enhance reputation and competitiveness marketability [7], because safety and healthy guarantee will affect the individual's perception of the uncertainty and negative consequences of buying a product or service [16]–[18].



#### IV. CONCLUSION

Identified four activities and an environmental factor and natural disaster, 13 types of hazards and 17 types of risks that can threaten the safety and health of tourists on Parangtritis Beach. Based on risk assessment found four extreme level, four high level and five Medium level of risk. Risk Management efforts carried out by authorities tourism are not fully in accordance with the regulations set by OHSAS 18001 related to 5 K3 hierarchy of risk control.

#### ACKNOWLEDGMENT

The funding for this project was made possible through the research grant obtained from rector and head of Research Institution and Community Service (LPPM) Ahmad Dahlan University.

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