Environmental Health Assessment of Tourism Area After the Covid-19 Pandemic

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ABST RACT

The closure of tourist attractions during the Covid-19 pandemic makes the facilities unmaintained and damaged so that it can endanger visitors. Safety and comfort are very important conditions in the tourism industry. Swimming pool is one of the tourist attractions that are found and visited by various age groups. Monitoring and assessment of the environmental health of the swimming pool area is very necessary to avoid the danger and risk of disease transmission to visitors. The study aimed to assess environmental health of the swimming pool after the Covid-19 pandemic. The assessment was conducted in Tirta Nirwana swimming pool. Environmental health assessment is carried out using a tourist attraction environmental health examination form. The assessment form consists of general environmental conditions and sanitation facilities which include clean water, public toilets, waste disposal, health promotion, and health facility. The environmental health assessment showed that the Tirta Nirwana swimming pool was declared healthy with good general condition and sanitation facility.

I. Introduction

During the Covid-19 pandemic, the government imposed restrictions on community activities to speed up the handling of the pandemic. The government has used the term Large-Scale Social Restrictions (PSBB) to break the chain of the spread of Covid-19 in a number of parts of Indonesia. This is stated in Government Regulation No. 21 of 2020 concerning PSBB in the Context of Accelerating the Handling of Covid-19. The implementation of the PSBB stipulates that school, work, worship activities are carried out at home, while entertainment, tourism and shopping centers are closed. In addition, only places of business that provide basic necessities are allowed to open by implementing health protocols (President of the Republic Indonesia, 2020). This has a negative impact on tourism in Indonesia due to regulations requiring the closure of tourist attractions (Mursalina et al., 2022). This does not only have an impact on the economic sector, but also on the condition of tourist attractions that are damaged because they are not managed (Handayani et al., 2021).

In early 2022, tourist attractions are allowed to open with a number of provisions stipulated in the Instruction of the Minister of Home Affair Republic Indonesia No 9 (2022). The Ministry of Communication and Information of Kediri Regency said that tourism in Kediri Regency was reopened while still adhering to health protocols. The reopening of tourism in Kediri Regency is expected to stimulate the economy, especially tourism actors who have been affected by the pandemic (Department of Communication and Information of Kediri Regency, 2022).

The closure of tourist attractions during the pandemic makes the facilities unmaintained and damaged so that it can endanger visitors. Safety and comfort are very important conditions in the tourism industry. Damage and lack of maintenance of a number of to urist facilities not

only interfere with comfort and satisfaction but also endanger visitors (Handayani et al., 2021; Khalik, 2014).

The swimming pool is one of the tourist attractions that are found and visited by various age groups. Environmental sanitation and swimming pool water quality are important aspects that must be considered to prevent disease transmission and health problems (Rozanto, 2015). Monitoring and assessment of the environmental health of the swimming pool area is very necessary to avoid the danger and risk of disease transmission to visitors. Therefore, the study aimed to assess environmental health of the swimming pool after the Covid-19 pandemic.

II. Methods

The study was conducted in Tirta Nirwana swimming pool has received approval from the manager. Environmental health assessment is carried out using a tourist attraction environmental health examination form (Sujarno & Muryani, 2018). The inspection was done by observing and interviewing the manager. The environmental health assessment consists of general environmental conditions and sanitation facilities which include clean water, public toilets, waste disposal, health promotion (posters), loudspeakers, and first aid kits.

Tabel 1. Environmental Health Assessment Form

No	Variable	Weight	Assessment Component	Score	Total Score: Weight x Score
(1)	(2)	(3)	(4)	(5)	(6)
I	**General**				
1	Environment	8	Clean	4	
			No stagnant water	3	
			Wastewater flows smoothly	3	
II	**Sanitation facility**				
1	Clean water	16	Available in sufficient quantity	4	
			Meet the physical requirements	3	
			Public faucets are available in sufficient quantities (min 1 faucet for each 20m radius)	3	
			Clean and well maintained	3	
			The toilet is connected to the septic tank	2	
2	Public Toilets	16	The number of toilets is as follows: 1 latrine for every 80 female visitors. 1 latrine for every 100 male visitors	2	
			The toilet for men and women are separated	2	
3	Wastewater disposal	16	Self-processing or urban processing	5	
			Channeled through closed channels, watertight, and smooth	5	

No	Variable	Weight	Assessment Component	Score	Total Score: Weight x Score
(1)	(2)	(3)	(4)	(5)	(6)
4	Waste disposal	14	There are sufficient number of trash cans (min 1 trash can for every 20 m radius)	3	
			strong, rust-resistant, water-resistant and covered trash can, smooth and flat surface	3	
			Availability of suitable waste disposal facilities	2	
			Garbage transportation from the final disposal site at least every 3 days	2	
III	**Other**				
1	Health promotion	12	There are signs of sanitation/ health promotion (slogans, posters, etc.)	6	
			There are loudspeakers available to provide information	4	
2	Health facility	12	There is health clinic	6	
			There is a first aid kit that contains simple medicines	4	
3	Fire extinguisher	8	There is a fire extinguisher that works well and is easily accessible	6	
			There is an explanation of how to use fire extinguisher	4	

Procedure for filling out environmental health assessment forms:

1. If the assessment in the field does not meet the requirements in accordance with the assessment component then it is given a value of 0 (zero), if it meets the requirements it is given a value equal to the value in column 5
2. Total score is the multiplication between weight (column 3) and score (column 5)
3. A tourism object is declared healthy if it gets a score of at least 65% of the overall score with a minimum score for each of the following variables:
   a. Variable I: General (70%)
      The total score in variable I if all components meet the requirements is 80, then the minimum total score (70%) that must be achieved is 56

   b. Variable II: Sanitation Facility (65%)
      The total score in variable II if all components meet the requirements is 604, then the minimum total score (65%) that must be achieved is 393

c. Variable III: Others (60%)
The total score in variable III if all components meet the requirements is 320, then the minimum total score (70%) that must be achieved is 192

4. The overall score is 1004 so it will be declared healthy if the Final Score is at least 653. Final score was the sum of Variable I + Variable II + Variable III.

III. Results and Discussion

The assessment on environmental health of the Tirta Nirwana swimming pool consist of 3 variables: general condition, sanitation facility, and other.

Table 2. Assessment Result

No	Variable	Weight	Assessment Component	Score	Total Score: Weight x Score	Information
(1)	(2)	(3)	(4)	(5)	(6)	(7)
I	**General**					
1	Environment	8	Clean	4	32	Qualify
			No stagnant water	3	24	Qualify
			Wastewater flows smoothly	3	24	Qualify
	Total Variable I				80	Qualify
II	**Sanitation facility**					
1	Clean water	16	Available in sufficient quantity	4	64	Qualify
			Meet the physical requirements	3	48	Qualify
2	Public Toilets	16	Public faucets are available in sufficient quantities (min 1 faucet for each 20m radius)	3	48	Qualify
			Clean and well maintained	3	48	Qualify
			The toilet is connected to the septic tank	2	32	Qualify
			The number of toilets is as follows: 1 latrine for every 80 female visitors. 1 latrine for every 100 male visitors	2	32	Qualify
			The toilet for men and women are separated	2	32	Qualify
3	Wastewater disposal	16	Self-processing or urban processing	5	80	Qualify
			Channeled through closed channels, watertight, and smooth	5	80	Qualify
4	Waste disposal	14	There are sufficient number of trash cans (min 1 trash can for every 20 m radius)	3	42	Qualify
			strong, rust-resistant, water-resistant and covered trash can, smooth and flat surface	3	0	Not Qualify

No	Variable	Weight	Assessment Component	Score	Total Score: Weight x Score	Information
(1)	(2)	(3)	(4)	(5)	(6)	(7)
			Availability of suitable waste disposal facilities	2	28	Qualify
			Garbage transportation from the final disposal site at least every 3 days	2	28	Qualify
Total Variable II					562	Qualify
III	**Other**					
1	Health promotion	12	There are signs of sanitation/ health promotion (slogans, posters, etc.)	6	72	Qualify
			There are loudspeakers available to provide information	4	48	Qualify
2	Health facility	12	There is health clinic	6	0	Not Qualify
			There is a first aid kit that contains simple medicines	4	48	Qualify
3	Fire extinguisher	8	There is a fire extinguisher that works well and is easily accessible	6	0	Not Qualify
			There is an explanation of how to use fire extinguisher	4	0	Not Qualify
Total Variable III					168	Not Qualify
Final Score = Variable I + II + III					810	Qualify

The results of the environmental health assessment showed that the Tirta Nirwana swimming pool was declared healthy because the final score was more than 65%. General conditions and sanitation facilities have met the requirements of the assessment component even though other variable do not meet the requirements.

The general condition of the Tirta Nirwana swimming pool is very good, clean water is available and there is no stagnant water. At the sanitation facility, there are adequate number of trash cans but they are not covered and some of the trash cans are damaged. Tirta Nirwana swimming pool does not have a health clinic and fire extinguisher. The health facilities owned are health posters and first aid kits.

Clean environmental conditions and no stagnant water make visitors feel safe and comfortable because they don't have to worry about the risk of health problems that arise. Due to Covid-19, people tend to have good awareness about hygiene and sanitation. Therefore, the clean environment including no stagnant increase the trust and comfort of visitors (Loehr et al., 2021). Stagnant water increases the risk of slipping which can result in injury (Kurniawati et al., 2012). In addition, Covid-19 increases public awareness about hand washing behavior, therefore the availability of clean water is very much needed, including in tourist areas (Alzyood et al., 2020; Khalifa & Bidaisee, 2018).

Toilets are a part of human need including in public place such as tourist area. Nevertheless, toilets and latrine contribute to the transmission of the disease. Therefore, clean

and well maintained toilets can reduce the risk disease transmission such as diarrhea and typhoid (Sunarsa & Andiani, 2019; WHO, 2022). Alongside with public toilets, waste disposal and wastewater disposal are still challenge in public places (Singer et al., 2019). Trash cans that are often found in tourist area are not covered and the material is easily exposed to rust and water and is not strong. The uncoverred trash cans will attract flies that pose a risk of carriage and transmission of bacterial pathogens (Neupane et al., 2019).

Health promotion at tourist area is needed to ensure visitors behave in a healthy manner such as washing hands with soap, disposing of garbage in its place, or not smoking in non-smoking areas. This health promotion can be in the form of posters, announcements, or written information (Neupane et al., 2019).

Health facility in tourist area needed due to the probability of getting injury in tourist area such as swimming pool fall or slip accident and drowning (Franklin et al., 2021). Tirta Nirwana don't have health clinic but provides the first aid kits. Beside health facility, fire extinguisher are also needed in tourist area even in swimming pool. Swimming pool chemical such as chlorine agents are oxidizer and release oxigen during reaction with other chemicals. This condition creates an explosive environment dan can accelerate fire. Therefore the process of storing and handling swimming pool chemical material are very important (Franklin et al., 2021). The manager of the Tirta Nirwana stated the installation of fire extinguishers is not necessary because the risk of fire is very low and the availability of water is guaranteed because of the swimming pool.

IV. Conclusion

The environmental health assessment showed that the Tirta Nirwana swimming pool was declared healthy with good general condition and sanitation facility. Nevertheless, there is no health clinic, fire extinguisher, and the condition of the trash can is not good. Therefore, the manager should improve the condition of the trash can and health facility.

V. References

Alzyood, M., Jackson, D., Aveyard, H., & Brooke, J. (2020). COVID- 19 reinforces the importance of hand washing. Journal of Clinical Nursing, 29(15–16), 2760–2761. https://doi.org/10.1111/jocn.15313.

Department of Communication and Information of Kediri Regency. (2022). Wisata di Kabupaten Kediri kembali di buka. https://berita.kedirikab.go.id/baca/2022/02/wisata-di-kabupaten-kediri-kembali-di-buka.

Franklin, R. C., Miller, L., Watt, K., & Leggat, P. A. (2021). Tourist Injury. In Tourist Health, Safety and Wellbeing in the New Normal (pp. 189–218). Springer Singapore. https://doi.org/10.1007/978-981-16-5415-2_8.

Handayani, Y., Tampubolon, B., & Adlika, N. M. (2021). DAMPAK PANDEMI COVID-19 TERHADAP PEMENUHAN KEBUTUHAN HIDUP MASYARAKAT SEKITAR OBJEK WISATA MEMPAWAH MANGROVE PARK. Urnal Pendidikan Dan Pembelajaran Khatulistiwa (JPPK), 10(6), 1–10. https://doi.org/dx.doi.org/10.26418/jppk.v10i6.46996.

Khalifa, M., & Bidaisee, S. (2018). The Importance of Clean Water. Cholar Journal of Applied Sciences and Research, 1(7), 17–20.

Khalik, W. (2014). Kajian Kenyamanan Dan Keamanan Wisatawan Di Kawasan Pariwisata Kuta Lombok. Jurnal Master Pariwisata (JUMPA), 01, 23–42. https://doi.org/10.24843/jumpa.2014.v01.i01.p02.

Kurniawati, E., Sugiono, & Yuniarti, R. (2012). ANALYSIS OF THE POTENTIAL OF A WORK ACCIDENTS ON THE PRODUCTION SPRINGBED USING BY HAZARD IDENTIFICATION AND RISK ASSESSMENT (HIRA). Media Neliti.

https://media.neliti.com/media/publications/128186-ID-analisis-potensi-kecelakaan kerja-pada-d.pdf.

Loehr, J., Dwipayanti, N. M. U., Nastiti, A., Powell, B., Hadwen, W., & Johnson, H. (2021). Safer destinations, healthier staff and happier tourists: Opportunities for inclusive water, sanitation and hygiene in tourism. Tourism Management Perspectives, 40, 100883. https://doi.org/10.1016/j.tmp.2021.100883.

Minister of Home Affair Republic Indonesia. (2022). Instruksi Menteri Dalam Negeri Nomor 09 Tahun 2022 tentang Pemberlakukan Pembatasan kegiatan Masyarakat Level 3, Level 2, dan Level 1 Corona Virus Disease 2019 di Wilayah jawa dan Bali.

Mursalina, M., Masbar, R., & Suriani, S. (2022). Impact of Covid-19 Pandemic on Economic Growth of the Tourism Sector in Indonesia. International Journal of Quantitative Research and Modeling, 3(1), 18–28. https://doi.org/10.46336/ijqrm.v3i1.261.

Neupane, Nayduch, & Zurek. (2019). House Flies (Musca domestica) Pose a Risk of Carriage and Transmission of Bacterial Pathogens Associated with Bovine Respiratory Disease (BRD). Insects, 10(10), 358. https://doi.org/10.3390/insects10100358.

President of the Republic Indonesia. (2020). Government Regulation No. 21 of 2020 concerning PSBB in the Context of Accelerating the Handling of Covid-19.

Rozanto, N. E. (2015). TINJAUAN KONDISI SANITASI LINGKUNGAN KOLAM RENANG, KADAR SISA KHLOR, DAN KELUHAN IRITASI MATA PADA PERENANG DI KOLAM RENANG UMUM KOTA SEMARANG TAHUN 2015 [Universitas Negeri Semarang]. http://lib.unnes.ac.id/22941/1/6411411212.pdf.

Singer, J., Kieu, K. T., & Pravitasari, A. E. (2019). Solid Waste Management in Tourist Destinations in Developing Nations: Case Studies in Hoi An, Vietnam, and Puncak, Indonesia. In Environmental Sustainability and Education for Waste Management (pp. 189–206). https://doi.org/10.1007/978-981-13-9173-6_11.

Sujarno, M. I., & Muryani, S. (2018). Bahan Ajar Kesehatan Lingkungan: Sanitasi Transportasi, Pariwisata, dan Matra. Kementerian Kesehatan RI.

Sunarsa, I. W., & Andiani, N. D. (2019). Tourism Perception Of General Toilet Hygiene In Objects And Tourist Attractions In Bali. International Journal of Social Science and Business, 3(1), 36. https://doi.org/10.23887/ijssb.v3i1.17162.

WHO. (2022). Sanitation. https://www.who.int/news-room/fact-sheets/detail/sanitation.