Redefining the role of green open space through the challenge of COVID-19 (Case study: Blang Padang, Banda Aceh)

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Abstract. Under the government regulations to prevent the spread of COVID-19, namely the emergency public activity restriction (micro PPKM), Blang Padang square has experienced a transformation from a large, open, urban space in Banda Aceh full of multi-function activity to only allowing sports activity and vaccine facilities. Therefore, the aim of this study is to explore whether Blang Padang square has fulfilled the necessary functions during a pandemic and to investigate what kind of transformation or adjustment occurred in the space. This study used qualitative descriptive approach with observation, interview and documentation as data collection tools. Shirvani’s criteria of urban open space became the main framework to answer the investigation of this study. The study confirmed that the transformation of Blang Padang square has benefited Banda Aceh residents to continue with a healthy lifestyle during a pandemic and has provided health facilities in a green square.

1. Introduction

Urban open space has a dynamic definition and function across countries. S.Takahara [1] defines open space as emphasizing the green space of the city. However, Heckscher [2] believes that open space includes not only the natural environment in the city, such as green spaces and water, but also artificial grounds such as squares and roads. Similar to Heckscher, Shirvani [3] states that open space includes all garden landscapes, hard landscapes, parking lots, and recreational facilities in the city. In terms of functions, urban open spaces have social, structural, economic, as well as ecological uses [4]. Many researchers have studied urban open space and the roles they play in the city, typologies, purposes and transformations. It has been found that the role of urban squares as a social space is seen as crucial currently and also in the past. It is important to look closer at each square in relevance to their local setting, socially and physically [5].

Blang Padang is an urban square: a place where citizens gather together for various reasons and activities. Blang Padang square is located in the heart of Banda Aceh, comprising of 9.7 hectares with 60% of green space (trees and grass area) [6]. It is important historically as well. In 1962, it represented as “Kerukunan Rakyat Aceh” (meaning the harmony of Aceh society) which is closely linked to the peace concept of Aceh. Before the 2004 Indian Ocean tsunami, Blang Padang square functioned for formal and informal activities. Formal events such as Indonesian Independence Day
ceremonial events were held annually in Blang Padang square, as well as many other formal and religious events. It was heavily reconstructed after the tsunami, as it was badly damaged. Blang Padang square is currently managed by the Indonesian Army. Besides formal government activities, the present Blang Padang square is largely used for various informal activities and is a social, economic as well as ecological space for Banda Aceh residents and visitors of the city. Blang Padang has sports facilities such as a jogging and walking track, courts for badminton, tennis, volleyball, football, and basketball. Other facilities include culinary stalls and children’s parks. The square has become an attraction for Banda Aceh residents as it provides various affordable leisure activities. Thus, it is normally crowded during the weekend with more than a thousand people in the green square.

When COVID-19 became a global pandemic, most countries chose to lockdown as a policy to keep their citizen safe. Most urban open spaces were empty and the city of Banda Aceh no longer seemed well populated [7]. Everyone stayed home and if they could, worked from home. Everyone was looking at the world through their window. Outdoor physical activities were no longer allowed. Many workers switched to working from home, and the higher education conducts their classes on Zoom. Health protocols were imposed, such as using face mask, social distancing, and hand washing or using hand are imposed. During the first year of COVID-19, Blang Padang square functioned normally. The low case count in Banda Aceh caused residents to be mostly uncompliant to COVID-19 health protocols. Instead of closing, Blang Padang square became a place to distribute information about COVID-19 protocols and put signs at every entrance to educate. There is also hand washing equipment at four access points, as seen in Figure 6. In July 2021, the second wave of COVID-19 occurred and the President of Indonesia announced that there would be a micro public activity restriction (this is shortenened to micro PPKM in Indonesian) in some localities. Banda Aceh was one of the cities under this status, and as a consequence since June 14th, 2021, Blang Padang square has been closed to the public. Because of this restriction, the square has transformed to only function for sport activities and as a health facility. People are allowed to come either to stay active or to receive their vaccine. This study aims to explore whether Blang Padang square has functioned properly under the threat of the pandemic. The second purpose is to investigate what kind of transformation occurred in Blang Padang square under the current situation.

2. Literature review

2.1. The government policy on COVID-19

According to the World Health Organization (WHO) [8], COVID-19 is an infectious disease caused by the Coronavirus. Entering the second year of the pandemic, some countries have experienced a second wave of COVID-19, or a spike in the number of positive cases after a decrease following the initial surge of infections. This second wave of positive cases is caused by a newly mutated variant of the COVID-19 virus that is more deadly than the original [9]. This variant spread in India, where the death toll and the case number reached three hundred thousand people daily [10]. Indonesia has also experienced a similar increase in infections, reaching thirty thousand positive cases. Thus, on July 3rd, 2021 Indonesian President Mr. Joko Widodo decided to apply the micro PPKM policy [11]. At this time the caseload in Aceh is also increasing in a similar way with the national caseload, and it reaches 20,135 cases since the beginning of COVID-19 until now [12]. Banda Aceh and Aceh Tengah were considered “red zones”, which is a zone that has a high infection rate.

Another regulation was applied to businesses: operational hours were restricted to 8am to 5pm. People’s mobility was restricted: people entering or leaving Banda Aceh must have a vaccine card. Entering another province requires a vaccine card and a rapid antigen (swab test) evidence. Protocols implemented for the first wave of COVID-19 remain the same, only the implementation has been strongly safeguarded. The provincial regulations stated that gatherings are limited to ten people. The government also encouraged people to have a healthy life style to boost their immunity. Vaccines are
required for doctors and medical staff, government officials and state-owned agencies (BUMN). Mass vaccine has been conducted in all regencies. Aceh province carried out free mass vaccinations for the public, which started on June 21st and is ongoing at the Convention Hall Building in Banda Aceh [13].

In many Aceh residences, however, there is a lack of discipline to COVID-19 protocols. Tourism destinations, beaches, and the like are crowded with people who are not following COVID-19 health protocol like wearing masks, physical distancing, hand-washing, and reducing their travel. Under micro PPKM all tourism destination were closed and as a result, Banda Aceh residents who were exhausted of having restricted movement flooded onto Blang Padang square. Following this, there was a restriction for Blang Padang square for any other function but sports. Visitors who are not wearing sport attire are not allowed to enter the location.

2.2. Functions and elements of urban open space
Urban open space is an open-space areas reserves as a park that can be used by individuals and can hold various activities [14]. According to Shirvani [3], urban open space must consider some elements in shaping urban space, so that they can build good characteristics for the urban space. Those elements are land use, building form and massing, circulation and parking, open space, pedestrians, signage, supporting activity, and historical conservation. These elements will be then used as a main framework to analyze the urban open space under study.

Additionally, Darmawan [15] defines urban open space as a city element that can give identity and function as a means of social interactions for the city residents (such as sports activities, children’s playground, etc.), economic activities and cultural activities (such as exhibition, religious events, and cultural events). Darmawan [15] claims that the functions of urban open space are as follows:

1. Formal and informal activities. Formal activities such as Independence Day Ceremony, Idul Fitri Prayer, etc. and informal activities such as sports, playgrounds, and recreation.
2. As a connection between the surrounding buildings
3. The center of street vendors
4. The “lung” of the city, which provides green space and means for evacuation.

2.3. An approach to understand the relation between human and the built environment
Environmental psychology focuses on operations between individuals and their physical settings. In these operations, individuals change the environment, and likewise, their behaviour and experiences are changed by the environment [16]. Bell et al. [16] states that an individual’s interactions with their built environments can be divided into two types. The first type of interaction is an “adaptation” that alter an individual’s behaviour and their physical responses to fit in their physical setting. The second is known as “adjustment”, that is to change the physical setting in order to fit the new required behaviour pattern.

MacArthur & MacArthur [17] claim that coping strategies are attempts (that are either behavioural or psychological) to minimize the effect of events. Coping also refers to tactics used to make adjustments to the degree of their individual resources to accommodate the demands of the charged environment [17]. Baron and Byrne [18] claim that an individual’s reaction might be categorised as ‘coping’ if it draws in thinking process to overcome pressure in affected individuals. Another way of coping is to alter the behavioural adaptation. Adaptation is a condition where an ideal level of stimulation is presented. In addition to a view of environmental stress as a result from conditions of excessive deviation from such optimal levels, the specific reference to differences in intensity, diversity, and patterning of the stimulus input.

Such inquiry grants a framework for a consideration of behavioural adaptation to the setting by reference to the concept of adaptation level. Stages of adaptation relate to specific environmental dimensions, set up as a function of past experience. They are exposed to act as strong determiners of the individual's evaluation of their environment, as well as representing a plausible basis for the optimal level of stimulation principle itself. “Therefore, adaptation is conflicted with a substitute mechanism and adjustment is active alteration of the environment by the individual” [19].
3. Methodology

3.1. Qualitative approach
According to Yin [20], a research design is a sequence of the logic that bridges the empirical data to the research questions. The qualitative descriptive method was chosen because it is most appropriate for the issues investigated in this study. A qualitative study is an inquiry that gathers in-depth descriptions of the focus under investigation [20], and involves gaining an understanding of how people in real-world situations make sense of their environment and of themselves [21].

The data collection involved in-depth interviews, direct observations and participant observations, and the use of archival material of documents as data resources. This multiple-method approach offers an understanding into how the data collection process builds up an enriched picture of the phenomenon under investigation [22], as well as providing a ‘triangulation’ process for data verification. The methods chosen were intended to obtain a comprehensive understanding of urban open space, namely Blang Padang square, in the context of the COVID-19 threat. Accordingly, the physical as well as non-physical aspects of Blang Padang square were observed. This included tracing changes in the environment, as well as the attitudes of people to the COVID-19 protocol. There were several phases of inquiry, such as recording the elements of urban open space under changes in the form of maps and photographs, observation, and in-depth interviews with management and visitors.

A systematic observation can also be described as a structured observation, which includes factors and criteria needed for investigation [23]. Structured observation has been designed to have a certain frequency and interval for application in a study. In the case of this study, the time for observation was set for 7am – 10am and 3pm – 6pm. The observation was conducted on weekdays and weekends during the mornings and evenings. The weather also played an important role in the results of observation, since Banda Aceh was in the rainy season when the researchers collected data. During the observation, notes and photos were taken and put directly in the word file by the end of the day.

4. Results and discussion

4.1. Blang Padang square before the micro PPKM threat
Blang Padang square is located strategically in the prime location of Banda Aceh (Figure 1). The square is surrounded by offices, schools, hospital and official residences for many high officials such the commander chief of Army, the head of provincial police, vice governor, mayor, vice mayor, etc.

Figure 1. Blang Padang Square is located from google maps.
Blang Padang square holds an important role in Banda Aceh for its strategic location. It has become the most popular place for gathering, for formal and religious events as well as informal events. Blang Padang square provides a place for leisure (including sports), recreational space, culinary space. During the first period of COVID-19, the square was overcrowded by Banda Aceh residents as well as visitors from surrounding area of Banda Aceh (Figure 2).

**Figure 2.** The situation of Blang Padang square during early period of COVID-19.

Before COVID-19, Blang Padang square was very lively. People flock there because it provides various attractions and affordable entertainment activities. The highest number of visitors can be found on Saturday evenings and Sundays. More than a thousand visitors come at these times. Culinary areas as seen in Figure 3 provide affordable drinks and foods of many varieties. On Sundays, many non-permanent street vendors sell their goods in Blang Padang square.

**Figure 3.** Economic area. (a) Layout of Blang Padang square; (b) culinary stalls in north part of Blang Padang square.

Blang Padang square has three main functions: ecological, social and economic. The social function of Blang Padang square can be seen in the pictures below, where families squat on the grass, enjoying family picnic time with homemade food and drink. Blang Padang square is mainly used to hold government events such as the Indonesian Independence Day ceremony, religious events such as Eid prayer, etc. Blang Padang fulfills the ecological function of the city lung; there are big leafy trees that surround the square, adjacent to the walking track. Thus, people who are walking feel comfortable, protected by the trees. The trees and green space are sixty percent of the space.
Figure 4. Activities on Blang Padang square before COVID-19. (a) Sports area; (b) Families squat enjoying family picnic on the grass; (c) Local event; (d) Indonesian Independence Day ceremony; (e) People enjoying food in culinary stall area at night.

4.2. The transformation of Blang Padang square in response to the global pandemic
The adaptation of urban green space has been found in many places throughout COVID-19. Urban Habitat [24] explains that in response to the pandemic, green spaces were repurposed for medical as well as social use. The evidence can be seen in Wuhan, China, where temporary care facilities were erected or alternatively in New York City, where an emergency field hospital was set up in Central Park (Figure 5) [25]. A similar change has occurred in Blang Padang square, but to a different degree. As mentioned in the above literature review, Shirvani [3] indicates that urban green space is constructed from several elements that will be detailed below.

Figure 5. Repurposing urban space: in March 2020, an emergency field hospital was set up in Central Park, New York City.

4.2.1. Land use. Blang Padang square is located in central business district (CBD) area and is developed to be an urban green space [26]. It plays a very important historical role in Banda Aceh. It is close to Baiturrahman Mosque and many other historical sites. The square is surrounded by offices,
high officials houses and the Tsunami Museum (Figure 6). Despite the fact that there is a need for a larger square as the consequence of population growth, the space could not be expanded. The existing site that has 60% of green space support the comfort for pedestrian as well as providing thermal comfort for surrounding area. Before the micro PPKM policy was applied, the square could not hold anymore visitors, especially during weekends. The requirement for distance needed for COVID-19 standards could not be provided by the square (Figure 2).

Figure 6. Site Plan of Blang Padang square and the surrounding area.

4.2.2. Building form and massing. Overall building form and massing in the Blang Padang square area and surrounding can be seen as homogenous. The surrounding buildings have formal façade as they are mostly official buildings and they are one or two story buildings. The square is dominated by green space (as can be seen in Figure 6) and the only building form located in the square is the grand stand, erected in the centre of the square. The function of the grand stand is to provide roofed space for VIP guests when events take place.

While gatherings, cultural events and entertainment were restricted during the COVID-19 pandemic, the need for sports, leisure and outdoor activity increased. People are aware that outdoor space is relatively safe compared to indoors. Therefore, the number of visitors to Blang Padang square significantly increased until it reached a worrying situation. Banda Aceh was then labelled as “red COVID-19 zone” and the government applied the micro PPKM policy. The regulation was applied and restricted the use to sports only. Then, additionally, the management also provide a centre for vaccines which is quite effective as the square strategic location. Many visitors who came for sports, then decided to bring their family to get the vaccine (Interview 2) (Figure 7).
Figure 7. (a) A sign designating Blang Padang square as a red zone and restricting activities to only sports; (b) The centre for vaccines is announced in signage at every entrance.

4.2.3. Circulation and parking. Blang Padang square has a relatively good traffic circulation system. The width of the main road is 6 meters, and with heavy traffic at peak hours, it is difficult for people to cross the road and there are few crosswalks available. Visitors’ vehicles are often parked on the street which contribute to traffic jams. Since November 11th, 2020, a new regulation was imposed to restrict the parking on the street, resulting in significantly fewer traffic jams in the area. In terms of parking, there are three clusters provided in the square, two for motorcycles and one area for car parking. The capacity for cars is a hundred and one thousand motorcycles can be parked there (Interview 3). The traffic problem cannot be avoided when any big event is held, when the road and the parking space cannot provide enough space for parking.

In terms of accessibility, the main entrance to Blang Padang square is at the north and south gates, whilst the east access is for pedestrian users only and the west access leads directly to motorcycle parking (Figure 8). During emergency public activity restriction for COVID-19, only one point of access was allowed, which was the north entrance, where officials took each visitor’s temperature. There was a portable sink at every entrance or access point, complete with soap and running water. However, not many people used the hand washing facility.

Figure 8. Parking facilities in Blang Padang square.
4.2.4. **Open space.** Open space in Blang Padang square is the most common use of the square, comprising of an area for sports (basketball, volleyball, badminton, walking/jogging track, and football), an area for green space (trees and grassy area), and an area for food stalls. In addition, there is a children’s playground. The square is divided into road pavement and greeneries. The green area has functioned as the lung of the city as well as a place for evacuation when disasters happen.

During emergency restriction activity for COVID-19, the only activities allowed were sports and health activities, including the center for the vaccine. There is also a time restriction: Blang Padang is open only from 7am to 10am and 3pm to 6pm. The maximum capacity of the entire square is five thousand people.

4.2.5. **Pedestrian ways.** Pedestrian walkways or sidewalks surround the entire square. The quality of the walkways is relatively good since they have been renovated. The drainage along the square is covered, allowing even more room for pedestrians to walk (Figure 9). The pedestrian walkway has optimum use since there are no street vendors allowed to do business there. There is no signage and street furniture available such as benches.

![Figure 9](image_url)

**Figure 9.** (a) Pedestrian walkway condition before renovation; (b) Pedestrian walkway condition after renovation.

4.2.6. **Signage.** There are some signs found in Blang Padang square. The first signage is related to the restriction to dating activity; that is a manifestation of Aceh employing Islamic Law. The ‘restriction to dating activity’ signage can be found on the column of main gates and are placed every so often along the jogging track. The second signage found is related to COVID-19, which is a billboard stating the COVID-19 protocols for public activity. In addition to the emergency response to the current status, billboards for information on the vaccine is also provided.

4.2.7. **Activity support.** Blang Padang square, before emergency COVID-19 restrictions on activity, had lively, dynamic action. During the weekend, it attracted many street vendors who were neatly located along the jogging track. There have also been educational and economic activities which are conducted at the food stalls located on the north side of the square. The distance between stalls is five meters and the stalls are surrounded by chairs and tables for customers. All of this economic activity is restricted during the COVID-19 threat. The latest activity provided is the centre for vaccination, which is managed by the army.

4.2.8. **Historical conservation.** There are some historical sites to be conserved in Blang Padang square. The first is the replica of the first Indonesian plane, is known as Seulawah 001 Aircraft. This monument is the evidence for the role of Aceh people in the struggle against the Dutch colonization during the second military aggression in 1948 (Figure 10b) [27]. The second historical site in the square commemorates the 2004 tsunami. Banda Aceh was heavily destroyed by tsunami. Blang Padang square was a silent witness of how destructive the tsunami was. After the tsunami, many dead
bodies were found on the square among the destroyed houses and wreckage found there as well. The historical markers are stones with a gold plate on it, labelled with the name of a country which had helped during the tsunami recovery. This series of markers is known as the Thank You Monument to the World. These plaques of gratitude are erected along the jogging track (Figure 10a).

![Figure 10. Situses around the jogging track. (a) Thank you monument to the world; (b) Seulawah 001 Aircraft.](image)

4.3. *A transformation from leisure to healing space*

COVID-19 has changed the way we interact with urban built environment and urban landscape. There is a significant transformation in the way people conduct their daily activity and their lifestyle. Indonesia’s situation as of July 2021 has the highest daily confirmed positive COVID-19 cases, reaching 40,427 [28]. Despite the fact that the government has released many policies to control the spread of COVID-19, such as applying the “emergency public activity restriction” (micro PPKM), the spread of this disease has not yet slowed down. Thus, people need a quick change to adapt to the new norm that is needed to prioritize health above anything. Individual discipline may affect the health of others.

The impact of COVID-19 can be seen in both physical and psychological health. The COVID-19 outbreak has had a damaging effect, however, the prospect of getting out into nature has offered some relief and escape during a challenging year. The concept for the public green space for “the health of the nation” was highlighted by the UK housing, communities and local government minister, Robert Jenrick, who declared that parks and public green spaces should be kept open [29].

A green space, like Blang Padang square, has a large role as a healing space for the global pandemic. With its green space nearly 60%, many trees are mature and offer good shade. Blang Padang square has become a reliable source of oxygen in the city and it offers a source of relaxation just like nature outside the city.

COVID-19 has changed the structure of society, including how people use the space around them, like in a city. Because of the micro PPKM regulations, activity in Blang Padang square has significantly decreased. The only activity allowed is sports and a centre for vaccines. The head of District Military Command of Iskandar Muda (KODIM) 0101 BS stated that sports are the best solution for COVID-19 prevention to keep our immune system healthy.

Based on the above facts, the four functions of urban space stated by Darmawan [15] are social, economic, cultural and ecological. During COVID-19, those four functions were reduced to two functions: social (including sports) and ecological function. Both functions are needed for their role to help people boost their immune system. Doing sports outdoors links a person to other people as a part
of society and helps avoid loneliness. When the immune system is built up, it can prevent the virus spread in the individual and aids the healing process.

In addition to the healing concept of open space, there is a prospective function for disaster response that has been practiced in many places such as in Central Park, New York, where an emergency field hospital was set up [25]. In Wuhan, China, some temporary hospitals were built to increase the city’s hospital capacity. The existence of open space is crucial during the pandemic, and many countries chose to open green space while imposing a physical distancing requirement. In Indonesia’s case in general, and in Banda Aceh’s case more specifically, the discipline for implementing COVID-19 protocols was lacking. People sat on the public benches eating and drinking after sports without distancing (Figure 11) and people watched football competitions after doing sports in a large group without social distancing or wearing masks (Figure 11).

![Figure 11. People sit in public eating and drinking after sports without social distancing or wearing masks.](image)

The idea of green space for the healing process as well as providing space for disaster responses needs to be prioritised in the urban planning for the future for Banda Aceh’s future to be able to build a sustainable urban plan. Thus, in order to reduce overcrowding in main urban space, there is a need to provide open spaces in smaller communities.

In terms of behaviour’s coping process to live with COVID-19, namely adaptation and adjustment, both processes are visible at the study site[17f]. The adaptation process has not been a success in Blang Padang square, since visitors mostly lack discipline in distancing, wearing masks as well as handwashing. The number of people coming to the square has reduced significantly, from more than 1,000 visitors during Sundays to 200 people with 50 people using the vaccine facility. People who want to use the facility must wear sport shoes and people who are not wearing sport shoes are not allowed to enter. Therefore, it seems that the behaviour of Acehnese people might be difficult to change or to accept a new concept.

While the need to cope with our current needs remains a priority, COVID-19 is increasingly being viewed as an opportunity to go beyond a ‘return to normal’, and to re-think urban life as one that is more connected, healthy, and equitable.

5. Conclusions
This paper concluded that Blang Padang square functioned to meet expectations before COVID-19, although there were some limitations in providing satisfactory elements such as a lack of parking space during exhibitions, concerts, religious events, and so on. During COVID-19, these elements to open space work appropriately with additional elements such as providing hygiene measurement (handwashing facilities, thermometer gun), reducing accessibility to examine visitors, utilizing
appropriate signs, which are in strategic locations with eye-catching designs. However, there is a room for improvement, such as putting a sign to encourage social distancing in the bench area as well as green area (a good example of this is shown in Figure 12). Since most people are easier to learn through visuals, thus putting sign for distancing will serve as a reminder. These findings showed that while population density might be a factor in the spread of COVID-19, there were many other factors that also determined the spread of the virus. However, cities are well reserved to deal with recovery measures as well as curative health responses.

![Figure 12. Between adjustment and adaptation. (a) Social distancing 2m or 6ft between two people; (b) Putting markers for social distancing in green area.](image)

The second conclusion of this study concerns what kind of transformation took place in Blang Padang square. Both adjustment and adaptation were utilized. Although the level of adjustment had not yet reached satisfactory as the above pictures where adjustment (arrangement of bench, sign for distancing) strengthened by the level of people’s adaptation so that their behaviour was acceptable to requirement for stopping the spread of COVID-19 in green spaces. Finally, while COVID-19 continues to produce painful lessons on the shortcomings and failures of many cities to protect their own citizens, it was revealed that the city open space was highly resilient when it was under pressure and it had a flexible function to support and protect residents. Understanding the relationship will point the way forward for a better, more sustainable urban future.

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