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Participatory Approaches in Creating a Concept of Healthy Public Transport Facilities Toward Healthy Community

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ABSTRACT

The demand for public transport in developing countries nowadays is very high. Ironically, most of the public transport facilities including transit facilities in developing countries are often inconvenient, uncomfortable, and dangerous. Therefore, a proper guidance in developing public transport facilities is urgently needed. The study aimed to create a new concept of healthy passenger station based on stakeholder ideas and participation.

The study applied mixed methods with a sequential exploratory approach which used qualitative and quantitative approach respectively. The study consists of 3 phases; exploring the stakeholder's perceptions, forming a new concept of the healthy station, and applying the new concept. The healthy station must meet two main indicators; environmental indicators and social indicators. The concept consists of 4 classifications of the healthy station; Paripurna, Mandiri, Madya, and Pratama, respectively from the best to the worst condition.

Keywords: *Healthy Station, Healthy Setting, Healthy Concept, Transport, Healthy Community*

INTRODUCTION

The rapid growth of population demands the sufficient transport systems and facilities. The demand for public transport in developing countries nowadays is very high. The majority of inhabitants still prefer to use road based transport such as buses, taxies, and passenger cars to get their destination. Ironically, public transport facilities including transit facilities and station in developing countries are commonly inconvenient, uncomfortable, and dangerous. This fact currently brings the developing countries into serious issues in transportation system including air pollution, accidents, environmental damage, and lack of accessibility.[1]

In developing facilities, many aspects must be considered including economy, health, environment, and social. In 1987, World Health Organization (WHO) launched a program called "Healthy City" which emphasized in healthy setting.[2,3] WHO describes the healthy setting as "*Health is created and lived by people within the settings of their everyday life; where they learn, work, play, and love* (Ottawa Charter, 1986). Healthy setting aims to maximize the prevention efforts with holistic approaches (whole system). This system is very important to boost a holistic approach model of health.[4] The healthy setting pays more attention to determinant factors of health-related to daily life of society.[5] The healthy setting can also be defined as the arrangement of places or social context where people do their daily activities in which environment, organization, and individual factors interact to influence people health and prosperity.[6]

Healthy setting concept purely appeared from the concept of the important role of local government in shaping and developing public health condition.[7] The setting approach requires four principles including participation, equivalence, partnership, and sustainability and the healthy setting is characterized by three related

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dimensions; public health ecology model, perspective system, and whole system focus.[4] The healthy setting must be applied in all sectors including transportation system because it plays an important role in creating healthy community.

Numbers of studies showed the impact of transport system facilities to both human health and environmental quality. Good public transport facility can attract the society to take public transports which increase their physical activities and reduce air pollution from their private cars. Therefore, the study aimed to find or create a new integrated concept in developing good public transport facilities based on stakeholders' ideas and perceptions. The transport facility in the study focuses on passenger station or transit facilities as an important part of the transport system.

METHOD

The study applied mixed methods with a sequential exploratory approach which used qualitative and quantitative approach respectively. The study consists of 3 phases; exploring the stakeholder's perceptions, forming a new concept of the healthy station, and applying the new formed concept. The data was collected trough observation, in-depth interview, focus group discussion (FGD), and the study tested the new concept in 24 stations in South Sulawesi. The data collection started from December 2016 to September 2017. The participants of the study came from different backgrounds including governmental sectors, Non Governmental Organizations, users/ passengers of the stations; and sellers. The qualitative data was analyzed by using software called "NVIVO" and the quantitative data were analyzed using statistical software "SPSS".

RESULT

Phase 1

The stakeholders or the participants of the study agreed that the healthy passenger station must meet two main indicators; environment (environmental design) and social. Environmental aspects including the availability of the smoking room, nursery room, disable support facility, vehicle check-up service, health service/ onsite clinic facility, good sanitation, and the existing of green spaces/ park. Social indicators cover safety and comfort. Both indicators aim to create healthy, comfort, and safe terminal for users, workers, and communities. Good environmental structure of the station indirectly shapes good social condition.

Phase 2

The study set an observational questioner of 70 questions as a tool and instrument in evaluating the existing stations whether the station is a healthy station or unhealthy station. The questioner is based on the indicators of the healthy station which was created in phase 1. The questioner used the Likert scale. There are 3 answers; a, b, and c. The answer is worth 3 for a, 2 for b, and 1 for c.

Number of questions : 70

The highest score : 70x3= 210

The lowest score : 70x1= 70

The highest percentage : 210/210 x 100%= 100%

The lowest percentage : 70/210 x 100% = 33.3%

The average 100-33.3%= 66.7%

The study then created 4 categories of the healthy station; Paripurna, Mandiri, Madya, and Pratama, respectively from the highest score to the lowest score based on the range of their value from the questioner. The higher score is the healthier terminal.

$$\text{Scale Range} = \frac{\text{The averge}}{4} = \frac{66.7\%}{4} = 16.67$$

a) Paripurna = 100-16.67
= 83.32
>83.32 is classified as Paripurna terminal (the best terminal) (Class 1)

b) Mandiri = 83.32-16.67
= 66.65
66.65- 83.32 is classified as Mandiri terminal (Class 2)

c) Madya = 66.65-16.67
= 49.98
49.98-66.64 is classified as Madya terminal (Class 3)

d) Pratama = 49.98-16.67
= 33.31
33.31-49.97 is classified as Pratama terminal (Class 4)

Phase 3

From 24 stations evaluated in South Sulawesi, there are only 5 Madya terminals (Class 3) and 7 Pratama terminals (Class 4), while the rest of the stations are uncategorized table 1 reveals that the stations in South Sulawesi are in poor condition.

Table 1. The result of measurement and evaluation of the passenger stations in South Sulawesi, Indonesia

Class	Number	Percentage (%)
Paripurna	0	0
Mandiri	0	0
Madya	5	20,8
Pratama	7	29,2
Uncategorized	12	50

DISCUSSION

Environmental Indicators

Supporting facilities for people with disabilities

A good station must be accessible and friendly for all including the person with a disability. The right of people with disability has been protected and recognized internationally through "Convention on the rights of persons with disabilities" conducted by United Nations. The convention addressed all issues related to disabled including communication, discrimination, reasonable accommodation, and universal design.[9] Indonesia has also put disability issues as a serious concern by passing the Law of the Republic Indonesia No. 8 in 2016 on Disability. Good transportation system allows people with disabilities to be more active, explore their self-potential, and advanced their personal skills. A study literature of the relationship between health and employment conducted by Ellie showed that productive and active people (working people) have better functional status and better self-related health; the study also reviewed the links between employment and health among people with disabilities which revealed that of the 47.377 adults (25 to 64 of ages) with disabilities across the United States who work had less frequent mental health (18%0 than those did not work (40%).[10] The high number of unemployment among person with disabilities are caused by many factors including lack of universal access in the structural building, lack of special need facilities such as accessible toilets and wheelchair pathway.[11,12]

Nursery room

Exclusive breastfeeding is very important and highly recommended for a mother. Exclusive breastfeeding is that the infant only receives breast milk without any additional food or drink for the first 6 months of baby age.[13] A study conducted by Cesar and team showed that infants exclusively breastfeed have only 12% risk of death compared those without breastfeeding.[14] Breast milk is the best food for the infants and the strongest antibodies.[15] Supporting breastfeeding program means creating a bright future generation and healthy community. Therefore, all public facilities must provide comfortable, safe, and private rooms for the mother to breastfeed and look after their baby. According to the stakeholders, the availability of nursery room will attract passengers with a baby to take public transportation.

Smoking room

Smoking activity is always a hot debate between health and human right concerns. The smokers have right to smoke, on the other hand, all people have right to inhale fresh air without contamination from the smoking activity. To solve this problem, some countries take a pathway by providing smoking policy control such as establishing smoking room facilities in the public area. The smoking room allows the smokers to get their right to smoke and at the same time protect non-smokers from the exposure of effects of smoking.

Secondhand smoking has been known as very dangerous exposure. The Secondhand exposure is strongly linked to coronary heart disease, stroke, dementia, breast cancer, chronic respiratory illness, depression, and mental illness.[16] The concentration depends on the intensity of smoking, dilution by ventilation, and other processes removing smoke from the air. Moreover, the concentrations are highly determined by design and operation of a building.[17] Therefore, a specific room for smoking is needed to restrict the wider spread of contaminants from smoking.

Vehicle service facilities

According to WHO until may 2017, more than 1.25 million people die annually because of road traffic accidents. 90% fatalities on the road globally happen in low and middle-income countries. Between 20% and 50% million people suffer non-fatal injury but many of those sufferers experience disability. The risk factors of road accidents include human error, speeding, driving under the influence of alcohol and other psychoactive substances, nonuse of safety tools, distracted driving, unsafe road infrastructure, and unsafe vehicles.[18] However, vehicle condition factor can be prevented by providing regular check-up facility in the station. The

vehicle must regularly be checked up before starting the trip to reduce the potential incident in their operations.

Green Spaces

Station is an assembly point for the vehicles to stop and transit, to drop and pick up the passengers. There are high potential air pollutions from the vehicle combustion operating in the station. Air pollution can cause the inflammation of respiratory system, cardiovascular diseases, and reduce lung function.[19] According to Brauer et al. 89 percent of the population globally are exposed by air pollutants which exceeded the air quality guideline of World Health Organization. WHO estimated about 800.000 of early deaths caused by PM annually.[20] PM 2.5 is correlated with low birth weights, premature birth, and small for gestational age births, and ozone exposure was suspected to give negative effect to birth weight and neurodevelopment.[19] Moreover, a study in Canada found a strong correlation between chronic exposure to traffic-related air pollution (particularly NO2) and increasing the risk of ischemic heart diseases.[21]

Many studies had proved that the green spaces have positive effects on mental health. Beckerman et al (2012) reported positive outcomes of green spaces to mood, stress relief, concentration and memory, childhood development, and aggression. Green spaces also reduces anthropogenic noise buffering and production of natural sounds, improve pro-environmental behavior and improve sleep quality.[22]

Health service facilities and sanitation

Station is a very busy place every time; people come from and go to different areas. This condition can lead to the spread out of many diseases easily as well as traffic accidents. The stakeholders considered that the availability of health service facility in the station is very important to provide first aid service for people in the terminal. The medical service also can provide regular check up for long-distance drivers to check their health condition which can reduces traffic accidents. Development of a station also must ensure the availability of good sanitation facilities including proper waste management, toilets, drainage system, and clean water.

Social Indicators (Comfort and safety)

Public facilities must be comfortable and safe for all. The analysis showed that good environmental design makes the passengers comfortable in the stations. The comfort can depend on the availability of basic necessity such as toilets, free smoking area for smokers, nursery room for mothers with babies, green spaces for relaxing and waiting, free from odor, clean environments, and supporting facilities for person with disabilities. The security of the station is very important; everybody has to be convinced that they are secured during their time in the station. Security or safety includes no crime, safe food, safe environment, and no accidents.

The case study: The station in South Sulawesi, Indonesia

From 24 station evaluated in South Sulawesi, only 50% of the stations meet the categories formed in this study, and none of the station met the category of Paripurna (Class 1/ the best) and Mandiri (class 2). There were 7 Pratama stations and 5 Madya stations, while the value of the other 50 % of the stations had very low. Most of the stations did not have supporting facilities for person with disabilities, green spaces, health service facilities, vehicle check-up facilities, smoking room, and nursery area. There are two main factors causing this condition; 1) There is no specific guideline of the healthy station provided by the government and 2) The country has very limited resources to create a high-quality station.

CONCLUSION

The development of public facilities particularly station as part of transportation facilities must ensure that people are comfortable, convenient, and safe. The development is also required to pay attention to environmental condition. The stakeholders agreed that a station must ensure that all people get their right during their time in the station. Person with disabilities can travel easily, smokers can get their right to smoke without harming non-smoker, and children get their right to be feed by breast milk in the station. Moreover, the station also needs to provide health service facilities, vehicle service facilities, sanitation facilities, and green spaces.

Conflict Interests: There is no possibility of conflict interests.

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Ethical Clearance: The study has passed through The Health Ethic Commission of Medical School of Hasanuddin University, No. 924/H04.8.4.5.3.1/PP36-KOMETIK/2016

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