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**Review Article****AN ANALYSIS OF SAFETY PERCEPTION IN THE STREET OF KUALA LUMPUR**Suhaila Abdul Rashid <sup>1</sup>, Mohammad Hussaini Wahab <sup>\*2</sup>, Wan Nurul Mardiah Binti Wan Rani <sup>3</sup><sup>1</sup>Universiti Teknologi Malaysia, [suhaila77@gmail.com](mailto:suhaila77@gmail.com)<sup>2</sup>Universiti Teknologi Malaysia<sup>\*</sup>Corresponding author: [hussaini.kl@utm.my](mailto:hussaini.kl@utm.my)<sup>3</sup>Universiti Teknologi Malaysia, [wnurul.kl@utm.my](mailto:wnurul.kl@utm.my)

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**Abstract**

Urban safety is an important focus area of Sustainable Development Goals (SDG) and New Urban Agenda (NUA) were developed. Safe City Programme were introduced in Malaysia in 2004 in parallel with DG 11 that aiming on making cities inclusive, safe, resilient and sustainable for the citizens. Safe street contributes to a better quality of life and have been identified as important factor in contributing to a walkable and sustainable city. A safe, vibrant life initiate an active public realm where streets re seen as urban spaces. Pedestrian are encourage to walk when the environment is safe and accessible. Safety perception is the main focus of this research where case study approach is adopted. A mixed method was designed in order to fully evaluate and assess the phenomenon. 150 questionnaires were distributed randomly among pedestrian at Jalan Tuanku Abdul Rahman, Kuala Lumpur and structured observation were performed. Triangulation of both statistical and thematic analysis were conducted and findings from this study revealed that both physical and social elements does contribute to safety perception. Findings demonstrate that as far as sustainable city is concerned, all aspect are crucial and need to be addressed. The aim of this paper is to assess the characteristic of a street in contributing to safety perception.

**Keywords:** Perception, Safety, Street Design, Sustainability, Urban Form, Quality of Life

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**SUSTAINABLE DEVELOPMENT AND SAFE STREET**

Sustainable development is a continuous approach that has been initiated in order to create balance in environment, social and economic. According to M.Dali et al (2017), quality of life is determined by economic development, social, psychological and environmental improvement. UN Habitat produced National Urban Policy in 2015 with five phases to ensure the quality of the policy; feasibility, diagnosis, formulation, implementation and monitoring, and evaluation. It is claimed as an important tools for national government and comprises of three thematic area which are; urban legislation, urban economy and urban planning and design. The 11<sup>th</sup> Goal of Sustainable Development is to: make cities inclusive, safe, resilient and sustainable (Department of Statistic Malaysia, 2018).

Public space especially street has been given attention with rising awareness on making street safer. There are many initiatives and strategies that were design to enhance the street that could achieve sustainability and inclusivity. According to UN Women (2011), planning and design requires constant attention to physical and social characteristics of space. According to Lynch (1960) street is a path. A functional and safe street contributes added opportunity to the public and benefit the economy (Jacobs, 1993; Jacobs, 1961; Gehl, 2001)

**SAFETY PERCEPTION**

Safety is a basic need in human life (Maslow, 1964) and safety perception is a feeling which derived from many factors around us. Human being perceived the environment through five senses which include hearing, sight, smell, sound and touch. City life provides many opportunity and threats for its dwellers. For marginalised group of people such as women, children and elderly, safety is much needed as they are more fragile compared to men. According to Sideris et al (2009) perception of fear is as significant as the reality.

In urban design, perception is one of the elements that is addressed as important. People perceived the city, the spatial environment, the street and square daily. Lynch (1960) demonstrated that perception is a mixed of both physical and non-physical things around us and Rashid et al (2017) study on

Malaysian street reveals that physical elements on the street does affect safety perception among women. Jacobs et al highlighted that to achieve a good urban environment, one of it is liveable street and neighbourhood. Rapoport (1977) established that perception is the key process to connect people within the surrounding environment related to man and environment.

As living in a city involves with a complex issues, the other aspect that affect safety perception is social factor which include presence of people, over-crowding, incivilities such as homeless, beggars, drug addict and mentally ill. Some physical quality of environment attract unwanted people and this situation does affect safety perception especially at night. Both physical and social aspect are inter related. This study is focusing on safety perception of the street and the following section will discuss methodology that were designed.

**METHODOLOGY**

Urban issues are a wide perspective with urban form and social political influences it, therefore in order to assess and understand the complex problem of safety in Kuala Lumpur and dealing with many evidence, a mixed method study were conducted with case study approach (Yin, 2003). Questionnaire survey and observation were designed according to the objective and focusing on women as unit of analysis. Data were collected through 150 questionnaire and variables were derived from theoretical framework. Respondents were asked on both feeling: safe and unsafe from the physical and social elements. This is important in order to gain information for further improvement of the street. Data were analysed in SPSS Version 25 with analysis on frequency and percentage.

In order to study the relationship between pedestrian and the built environment, structured observation was performed. Gehl (2001) focuses on observation of human activity in public space with a designed toolkits. Similar approach was adopted where pedestrian movement and physical environment were observed and count. Observation of the street were performed for a period of one week and at a particular timeframe. This technique is important to understand the usage of some space or otherwise. A systematic observation was designed, consist of

physical elements and activities to observe. Survey was done manually where moving and stationary pedestrian were counted and photo documentation were used to accompany.

Selection of nodes or location were based on the following criteria: distance to train station, adjacent to parking area, building use and surrounding activities.

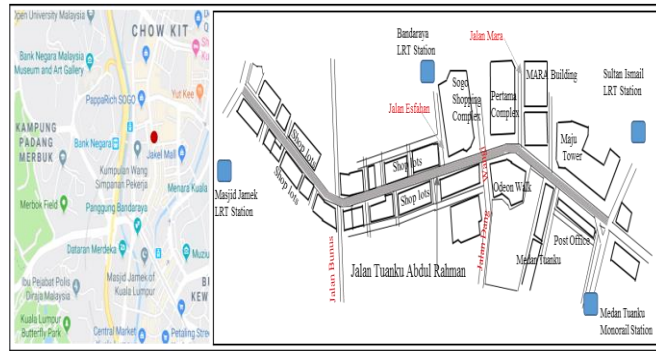


Figure 1. Case Study: Jalan Tuanku Abdul Rahman, Kuala Lumpur

**FINDINGS AND ANALYSIS**

Findings from questionnaire survey are discussed and followed by observation. Pedestrian were questioned about whether the physical elements and social elements affect their safety perception.

**Physical characteristic**

Physical elements include; street pattern, accessibility, enclosure, connectivity, legibility, building orientation, mixed use, maintenance, lighting, landscape and street furniture.

Table 1. Physical elements that affect safety perception

Physical Elements	Percentage
Street pattern	92.6
Accessibility	93.3
Enclosure	86.7
Connectivity	91.4
Legibility	90.7
Building orientation	97.4
Mixed Use	94.7
Maintenance	88.0
Lighting	85.3
Landscape	78.7
Street furniture	76.0

Table 1 represent analysis from questionnaire survey where respondents were asked about physical elements that affect safety perception. Building orientation has been identified as the most important with 97.4% and building which are facing the street creates livelier ambience as observed during the survey. As this is one of traditional street, the footprint and orientation still remain as it was designed earlier. It is followed by mixed use of building where there are shops, restaurants, hotels and offices which attract more pedestrian throughout the day and therefore the street will not be empty. 94.7% agreed that mixed use area makes them feel safer. When there are various type of building use, it allows loner and different operating hours, therefore the street will be occupied and makes its safer for those who walk at night.

Accessibility (93.3%) is important from both physical and visual aspect where it ease linkages. The street is connected to many side lanes but at some point, it is obstructed by construction hoarding and temporary road signage, which affect pedestrian’s walkability. Street pattern which is one of the characteristic which could not be appreciate at ground level, however it affects the accessibility. 92.6% agreed with this variable. Street connectivity is where the main street connected to the other path such as the side lane. There are many side lane and street that connected to Jalan Tuanku Abdul Rahman and allow better accessibility where 91.4% respondent agreed.

Legibility is one principles which is related to the layout of the street and 90.7% agreed, this is due to a linear design of the street.

Maintenance of the street and nearby buildings do play a role where 88.0% respondents agree. It is known that in traditional setting, the enclosure is different compared to modern setting due to density and demand. 86.7% respondents agreed that it affect their feeling of safety. During observation, it reveals that the sense of enclosure at most of the case study area various with some new high rise building

A well-kept area gives que to pedestrian that the area is being maintain and safe while an unmaintained area triggers negative behaviour for offender. Lighting is important for safety perception and 85.3% agreed. Proper lighting will help pedestrian to navigate at night and increase surveillance. Landscape and street furniture has been identified as important (78.7%) but not high as the other elements. Landscape along the street has been upgraded with anti-climb fence, bench, shrubs and trees and contributes to the overall quality of the street and its sidewalk. Street furniture which includes benches, lamp post and rubbish bin were provided and scored the lowest (76%).

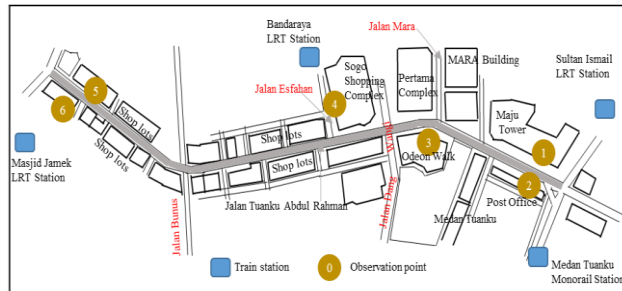


Figure 2. Lighting condition long Jalan Tuanku Abdul Rahman (source: fieldwork, 2019)

Visibility is one important aspect in perceived safety. This includes the ability to see the environment and to be seen. Figure 2 indicates the location where lighting condition need to be improve for pedestrian safety. Location number 1, 2, 4 and 6 are located where pedestrian are heading to the train station. This is a crucial area especially for women who walk alone. Building use is one the factor that affect this condition where these four location operating hour is only until 6.00 to 7.00pm. Maju Tower with vacant shops at its ground floor create an unpleasant and unsafe environment where the corner of the building towards Sultan Ismail LRT station is a crucial path for pedestrian. Location number 2 where all shops and office close at 5.00pm except for 7 Eleven is also dark and unsafe especially with homeless wandering this area. Location number 5 is a small lane which is too dark is unsafe for pedestrian. Location number 4 is dark at the corner where there are matured trees that block the light. Some of the side lane are only depending

on light from wall of the building. It was also found that the location with poor visibility is also where women use at night. Therefore it is crucial to improve visibility around these location as brighter place prevent homeless and other social incivilities.

From the above findings, it reveals that the main physical characteristic of the environment is the most important factor and affecting safety perception. The urban form which is the physical layout and design of a city is crucial as this is permanent while beautification treatment only enhanced the quality of the street.

**Social characteristic**

Respondents were asked about social factor and one of the aspect is presence of people and crowding

Table 2. Social elements that affect unsafe perception

Crowded area	Frequency	Percentage
Strongly agree	55	36.7
Agree	75	50.0
Disagree	18	12.0
Don't know	2	1.3
Total	150	100.0

Presence of people is important in livelihood and for surveillance in public space like a street, however when the street is too crowded it creates unsafe perception. Findings revealed that 50% agreed that certain part of the street is too crowded while 36.7% strongly agreed with this factor. Only small number disagreed that the presence of too many people on the street (12%) makes them uncomfortable or feeling unsafe. This is especially when the space is narrow like a side lane but when asked further, respondent even feel unsafe on a wider sidewalk where there are many male pedestrian. In order to fully assess this perception, counting of numbers of

pedestrian were performed and data of both male and female were collected from morning until night time (Figure 4). This data contradict with previous research that stated presence of people in general will gives more confident due to surveillance and makes it feel safer. When observed along Jalan Tuanku Abdul Rahman, there is a demographic changes where there are diversity of nationality especially among male pedestrian and shop keeper. It is established during random survey that presence of many male especially foreigners makes women feel uneasy and less safe.



Figure 3. Example of crowded spot in the case study area (source: fieldwork, 2019)

Figure 3 shows an example of area with high number of people which is in front of Sogo Shopping Complex and along the sidewalk between Jalan Esfahan and shop lots along Jalan Tuanku Abdul Rahman.

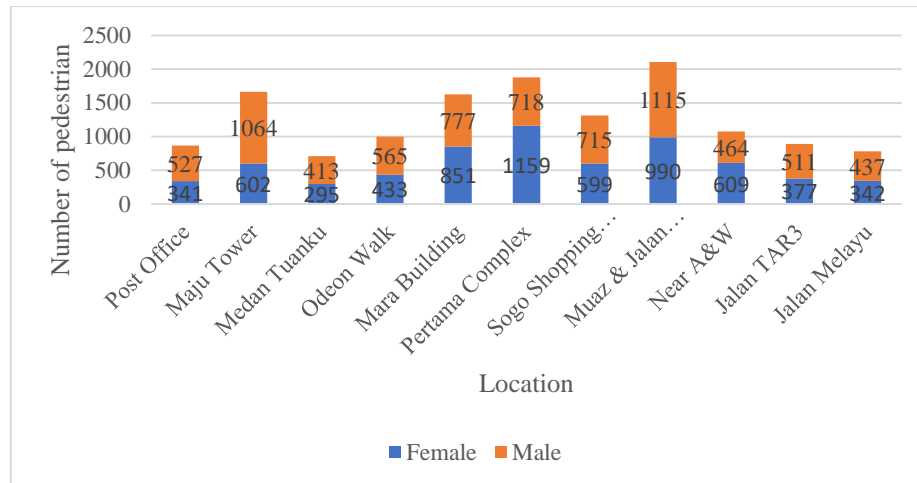


Figure 4. Comparison between numbers of women compared to men during observation

Mobile (walking) and static behaviour were observed, it was found that the number of pedestrian are high at particular location. Figure 4 reveals the total number of both female and male pedestrian during weekdays and weekend. Findings from observation reveals that high volume of female pedestrian were around Pertama Complex with 1159 people while the second highest is around Jalan Bunus 6 and Muaz Textile due to variety of shops and stalls selling goods aiming for women's market. Mara building which comprises of mixed use with shops, hotel and offices recorded 851 female pedestrian which is more than male. The lowest volume is at around Medan Tuanku where most shops only open after 8.30 am and there are less variety of shops compared to other location. When observed, most of the location provides more opportunity for pedestrian to pass by, mingle and being around due to the various types of activity (mixed use), activities along the sidewalk, longer operation hour and route to train station and bus stop.

Analysis from questionnaire survey were compared with analysis from observation and it was established that even though there are area or location with lower volume of pedestrian, the need for better lighting that affect visibility and safety measure is crucial. For example, at the Post Office area where there are social incivilities with many homeless and mentally ill people occupying the sidewalk and pedestrian bridge leading to LRT station. Due to this unpleasant condition in the environment, pedestrian need to avoid using the facilities and taking the risk crossing the main road. The other factor is mixed use where it actually allow more people to be around. Presence of people is important in public space in general where it is assumed that it will increase surveillance.

#### CONCLUSION

Base on the findings from both questionnaire and observation, it reveals that both physical and social elements in the city does affect safety perception. Urban environment that contribute to the spatial quality is important as it affect behaviour and perception. When the physical environment represent a negative que, it invites the unwanted behaviour or offender while a positive environment creates a better and safer space especially for women. This is crucial especially when the number of women on the street is quite high at night especially those who are in lower category income. Safety perception is not only important during night time but also daytime because crime happen at any time when there is opportunity. Opportunity for crime to happen could be reduce by designing a street that is sensitive to women's need. It is a complex issue to deal as research shows that presence of people is important for surveillance but when there are too many people, it create unsafe perception. When women need to avoid the area due to unpleasant and unsafe environment, it imparts that the area is not sustainable and the design does not reflect inclusivity which is the main agenda in Sustainable Development Goals. Further study should be carried out in understanding and accessing current needs of this marginalised group of people as there is a

dramatic changes in the urban environment and demographic pattern.

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