

Pedestrian Comfort in Hong Kong: A Pilot Study

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Abstract

This study investigated pedestrian comfort in Mongkok (a residential and commercial district), Hong Kong. A questionnaire survey on four aspects of pedestrian comfort including physiology, ease to move, safety and security and amenities was conducted in summer 2010. Generally, pedestrians were pleased with the pedestrian environment. It was discovered that the major discomforts were air pollution, crowded surrounding and car traffic volume. Younger pedestrians were more satisfied with the pedestrian space than older ones. It was also noted that pedestrians' impression of the walking trip was related to physiology, ease to move; and safety and security. Findings of the present study provided knowledge of pedestrian comfort needs that help create pedestrian friendly space.

Keywords: pedestrian comfort, questionnaire survey, Hong Kong

1. Introduction

Walking is not only a physical activity as identified by researchers in the field of public health and medicine, but also a mode of transport that can help accomplish recreational or utilitarian trips (Sakar, 1993). It is important to provide pedestrians a comfortable environment that makes the journey on foot pleasurable.

Comfortable environment improves the quality of experience of a walking trip, and also determines the distance walked. A proper pedestrian space can improve pedestrian movement, enhance the area for shopping and leisure, and elevate the image of the place (Shelley, 1976); and thus the creation of comfortable walking environment has gained increasing attention by urban and transport planners (Batty, 2001).

Comfortable walking is essential for pedestrian movement particularly in congested urban areas. Knowledge of pedestrian comfort needs is valuable in the planning and design of pedestrian space; and these needs can be revealed by studying pedestrians' perception of comfort.

Perception of comfort depends on individual and quality of social interaction (Unternamm, 1984; Jacobs, 1993; Øvstedal and Ryeng, 2004). Comfort, a part of subjective well-being, is affected by people's basic needs including physiological, safety, cognitive and aesthetic needs (Øvstedal and Ryeng, 2004).

This pilot study aimed to explore pedestrian comfort in Hong Kong by examining the pedestrians' comfort perception of the walking environment in the aspects of physiology, ease to move, safety and security and amenities.

2. Study area

Mongkok is a district located in the heart of Kowloon, Hong Kong. It is a commercial and residential district characterized by a mixture of old multistory and new high-rise buildings and pedestrian crowds. It is a well-known shopping area that attracts both the locals and tourists.

Sai Yeung Choi Street South (the section between Nelson Street and Dundas Street) and the junction of Nelson Street and Tung Choi Street were selected for the present study (Figure 1). Scenes of the three selected sites were showed in Figure 2. These streets are the hot spot for the retails of electronics and telecommunication products, cosmetics and clothing. Three sites were chosen for the survey.

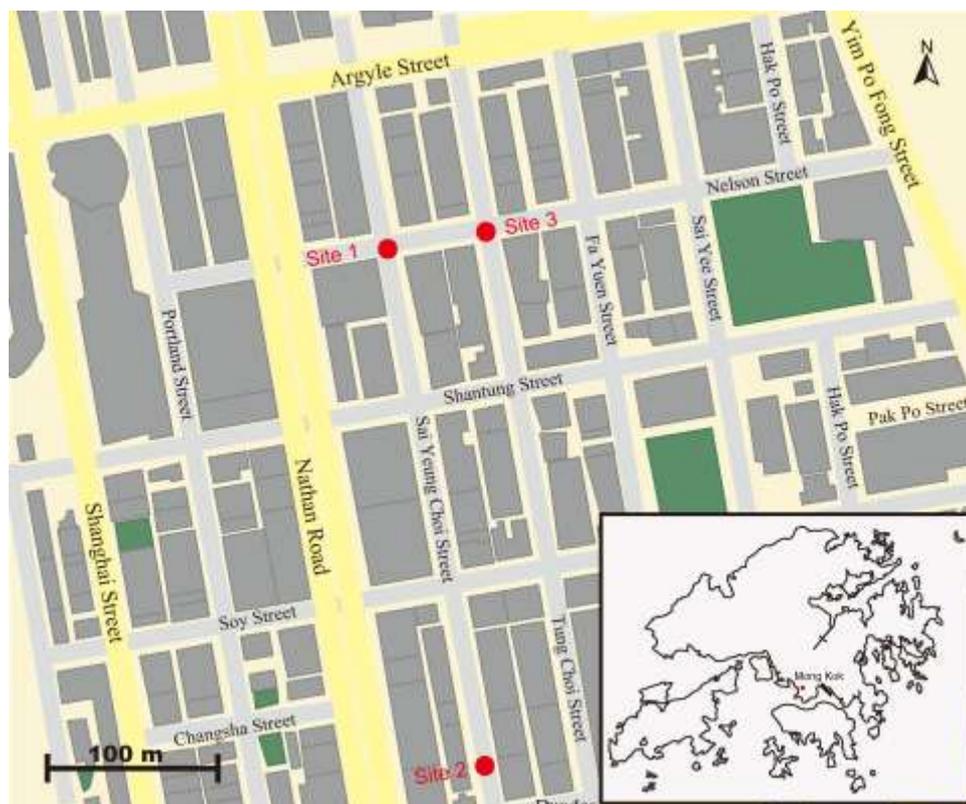


Figure 1 Location of selected sites in Mongkok, Hong Kong.



Figure 2 Scenes of the three selected sites.

3. Methods

Questionnaire survey was conducted to explore pedestrians' comfort perception of the walking environment. Survey responses were collected through a convenience sample in the three selected sites during weekdays between 1 pm to 4 pm in July-August 2010. In the process of conducting the survey, a trained interviewer arbitrarily handed out the questionnaires to 400 pedestrians, who were informed about the survey's objective, methods and confidentiality. A total of 119 individuals (29.8%) agreed to participate in the study and completed the questionnaires via face-to-face interviews.

The survey instrument was an anonymous questionnaire that was developed based on the study by Øvstedal and Ryeng (2004). The questionnaire included questions on factors that might influence pedestrian comfort in four aspects:

- (a) Physiology: 4 questions on thermal comfort, acoustic comfort, smell and air pollution
- (b) Ease to move: 3 questions on whether the surrounding was spacious, whether there were a comfortable number of people around and whether the pedestrians could choose their own speed
- (c) Safety and security: 5 questions on whether the pedestrians felt safe to walk there and confident to walk alone, whether car traffic was bothersome, whether the pavement surface was nice to walk; and whether the pedestrians were confident to get help when needed
- (d) Amenities: 2 questions on whether there were places to be protected from weather and whether it was easy to meet requirements for rest, food and toilet when needed

In addition, interviewees were also asked the general impression of the trip by the question-'How comfortable do you feel it is to walk here just now?'. Respondents were asked to assess these factors that affected pedestrian comfort and general impression of the trip on a 5-point scale, with 5 as the best value. Further, the questionnaire also comprised questions on respondents' demographic characteristics (gender and age) and purpose of the trip.

Responses to each individual item in the four aspects affecting pedestrian comfort were summed to produce scores indicating the overall assessment of the pedestrian environment. Higher score represented the more comfortable the pedestrian environment.

Descriptive statistics were employed to describe the demographic characteristics and comfort perception on the pedestrian environment of the respondents. To determine whether there were differences in the comfort perception among the respondents, ANOVA was used. Correlation coefficients were employed to evaluate the association of comfort perception of pedestrian environment and the general impression of the trip. All relationships were determined to be statistically significant at 95% confidence levels.

4. Results and Discussion

4.1 Demographic characteristics

A total of 119 pedestrians, including 76 males (63.9%) and 43 females (36.1%) participated in the survey. Majority were aged below 20 (44.5%) and 21-30 (34.5%). Only 5% were aged above 41. Most respondents had the walking trip for shopping (37.0%) and leisure activities (31.1%), followed by going to/from work/school (27.7%). The remaining 4.2% were going to services.

4.2 Perception of comfort of the pedestrian environment

The scores of respondents' perception of the pedestrian environment were presented in Table 1. The mean physiology score was 11.41 and this indicated that respondents felt neutral

regarding thermal and acoustic comfort, odor and air pollution. However, 74.8% of the interviewees reported they were bothered by air pollution.

The mean score of ease to move was 9.93 showing that respondents felt fairly comfortable, particularly 63% stated that they could move at their own speed. Nevertheless, 27.7% of the respondents stated the surrounding was not spacious.

Respondents were pleased with the aspects on safety and security and amenities, that had mean scores of 20.08 and 8.55 respectively. The major negative feeling was the huge volume of car traffic with 24.4% rated feeling uncomfortable.

Table 1 Scores of respondents' comfort perception of the pedestrian environment

	No. of questions	Total scores	Mean	Standard deviation	Maximum score	Minimum score
Physiology	4	20	11.41	1.61	15	6
Ease to move	3	15	9.93	1.23	13	7
Safety & security	5	25	20.08	1.65	24	16
Amenities	2	10	8.55	0.88	10	6

Regarding the general impression of the trip, 35.3% reported the walking trip was comfortable. Near half of the respondents (48.7%) rated neutral and only 16.0% felt uncomfortable relating to the trip.

Results of ANOVA revealed that comfort perception did not differ between genders although females were found to feel more uncomfortable than males because of their exquisite sense and focus on details (Tan et al., 2007). Age was discovered to differ significantly with the aspects of physiology ($F= 5.75$; $p<0.001$) and ease to move ($F= 3.24$; $p<0.025$). The younger the pedestrians, the more comfortable they felt physiologically and easy to move around. The plausible reasons for these findings are that young adults are more satisfied with sound and odors (Øvstedal and Ryeng, 2002); and also adults tend to walk more slowly with increasing age (Boles, 1981; Bowman and Vecellio, 1994). Thus younger pedestrians can choose their own speed and move around more easily even in a less spacious walking environment.

To examine the relationship between the general impression of the trip and comfort perception, correlation coefficients were used. It was detected that impression of the trip was related to physiology ($r=0.338$; $p<0.001$), ease to move ($r=0.338$, $p< 0.001$) and safety and security ($r=0.202$, $p<0.027$). These findings are consistent with those in some previous studies that air pollution, wider footpath or more spacious surrounding and traffic volume are important factors affecting pedestrian comfort (Øvstedal and Ryeng, 2002; Hung et al., 2010; Kaparias et al., 2012).

5. Conclusion

The present study is a pilot investigation that explores pedestrians' comfort perception in Hong Kong. Generally pedestrians were pleased with the pedestrian environment. The prominent discomforts were air pollution, crowded surrounding and volume of car traffic. Younger pedestrians felt more comfortable than the older ones.

There are several shortcomings that should be kept in mind when interpreting the findings of the current study. The sample of 119 participants was small and the majority was young adults. In addition, the survey was conducted in a well established urban area with pedestrian crowds. Thus the results cannot be generalized to all the pedestrians in Hong Kong.

Pedestrian comfort requirements vary spatially. Further studies should be carried out in different locations not only to validate the findings of the present study but also to provide better understanding of pedestrian comfort needs that help create pedestrian friendly environment.

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