

## EXPLORING THE SIGNIFICANT IMPACTS ON WALKING BEHAVIOR OF THE URBAN POPULATION

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### ABSTRACT

*Walking is an important diurnal mode of travel and key parts of our urban transport systems. People start and end with a walk from the bus stop or train station to the final destination. Walking sometimes recognized to as active travel or active transport for healthy living. Getting more people in walking results to increase capacity, and reduce congestion, in the overall transport network. Besides, it would reduce environmental impact, improve public health and reduce healthcare costs, improve community well-being as well as social cohesion. The objective of the research was to depict the leading causes, which were responsible for declining the walking behavior of the Dhaka Metropolitan's dwellers. Total 400 survey data were collected from various points of Dhaka Metropolitan. Approximately 89% pedestrians believed that walking environment was unpleasant, nearly 82% thought the surface quality was poor and 86% believed they were unsafe at night. Although 66% preferred walking for short trip up to 1 km for traffic congestion. Traffic congestion could be reduced if authority takes the necessary steps to improve walking environments and safety.*

**Key Words:** *Walking behavior, Traffic congestion, Environment, Safety*

### 1. INTRODUCTION

None of the world's megacities arises adjacent to Dhaka's population density, nearly 45,000 people are living per square kilometer with worst traffic congestion (Newgeography, 2012.). Being highly dense capital city, Dhaka is one of the slightest motorized cities in the world, only 2,630 vehicles per 100,000 population. The remarkable thing is that Dhaka has just 16.53% motorized vehicle, although it has a vast population(Rahaman, 2006). Dhaka continuing its unplanned growing with 7% roads, while a standard city has the least road requirement is 25%. Nearly 30% of 7.5% road is occupied by the hawkers, salesman, and shopkeepers. A substantial portion is also held by construction materials and waste-containers of the City Corporation which are responsible for the long queue of the vehicles (Habib, 2005).

Walking is a primary mode of transportation used for many purposes like going to work, going to school, recreation for most individuals. Walking is the sole means of conveyance in building interiors, public transit transfer stations, or shopping malls as short trips(National Household Travel Survey, 2009).A travel survey report for the city of Chicago depicts that the walking mode share was about 15% and 26% of total trips, respectively, for North Chicago and Central Chicago in 2008, which represents that walking demand becomes significant, especially in populated communities (Travel Inventory, 2010). Inappropriately designed walking amenities may fail to operate at acceptable levels when pedestrian demand exceeds the walkway capacity and reduce walkability(Zhang, 2012). Urbanites of Dhaka are greatly depended on foot about 60% of the total trips, while almost half of the remaining trips are on non-motorized vehicles(Rahman, 2006). The deficiencies of the significant crossing facility were responsible for nearly 77% of fatal pedestrian accidents in Dhaka Metropolitan in recent years(Pervaz, 2016). The objective of the research is to depict the significant causes, which have noticeable impacts on walking behavior of the Dhaka

Metropolitan’s dwellers and suggest possible measures to improve walkability for healthy city livings.

## 2. METHODOLOGY

The main theme of this study is to find out the impacts of environmental, operational and behavioral deficiencies on walking behavior of the city dwellers. Shahbag the junction of new and old Dhaka, New Market, and Dhanmondihave beenselected as study area.

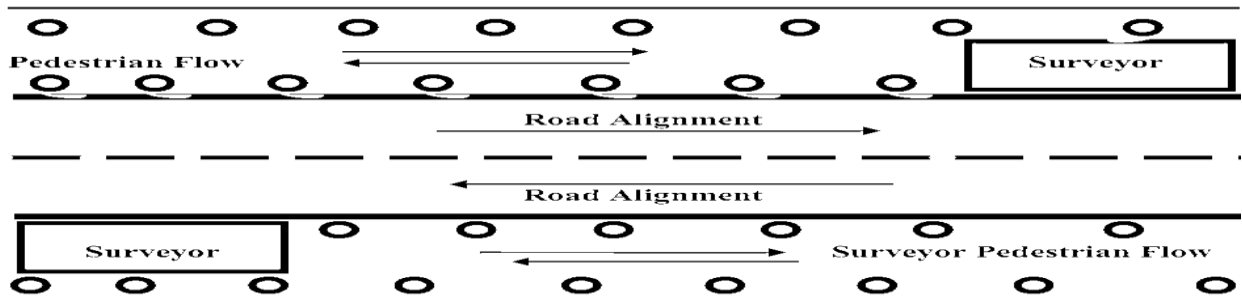


Figure 1: Surveyor location selection for each major roads

In order to conduct this research, necessary data have been collected through face to face questionnaire survey. A questionnaire containing both close-ended and open-ended was prepared to collect data. The questionnaire was pretested before final data collection. Necessary suggestions from transportation experts had also been taken during the preparation of questionnaire. Data were collected at different timetable throughout the month of January 2017 to include various aging groups of the city. The target sample was 600 according to the demography and standard sample size practice. However, random data samples were restricted to 480 due to the unwillingness of the commuters, rush hour office/home movement, and other impending situations. After filtering the anomalies, the remaining final sample size was 400.

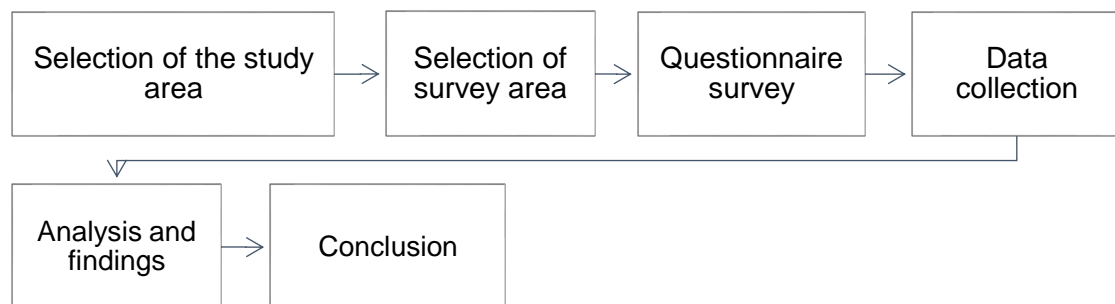


Figure 2: Flow diagram of methodology

## 3. FINDINGS AND ANALYSIS

Qualitative and graphical analysis imparting the pedestrian behavior was carried out which substantially represented as below amongst at least 400 people.

### 3.1 Mode of Transport and Purpose of Walking

The gender distribution of pedestrian which takes part during the field survey was about 76% of male and 24% of female. For smaller distance up to 1km traveling people of all ages relevantly like walking about 66%. Nearly 26% people preferred rickshaw as their mode of transport, and 8% favored other options for short distance.

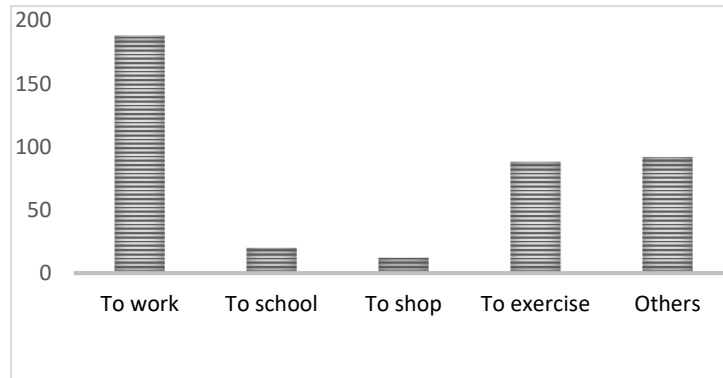


Figure 3: Purpose of walking

Most of the people took walking to go to work about 47% since at that time they inured with extreme traffic congestion and it is a knotty problem to get into public transports as it is overcrowded. In the cases of the vehicular traffic jam, most of the people choose to walk on feet as it is time-saving. In addition to, inadequate traffic regulation also bound people to be pedestrian. Mainly walking is mostly liked by the adult aged people about 22% as they find it a useful exercise. However, 3% and 5% people choose walking in the time of shopping and schooling. Nevertheless, the female pedestrian is on the increase as well as male.

### 3.2 Surface Quality and Width of Footpath

People would love to walk when its ambient is good enough. The rough surface of walking lane discourages people to walk which is a typical scenario in Dhaka. According to the survey, 82% pedestrian believed that the surface condition in Dhaka is poor. Undulating surface often leaves pedestrian to get injured during walking. In few areas, there was no pavement on the footpath, covered by debris.

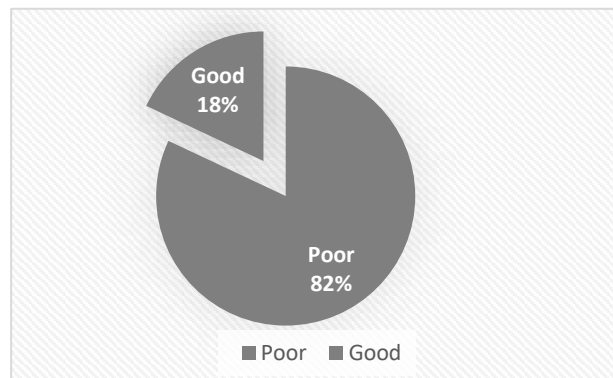


Figure 4: Surface quality of walkway

The width of the footpath is enough to move toward quickly if there is no non-pedestrian activity take place. Nearly 55% width was good enough for footpath users to walk freely. Although in some locations about 10%, the width was narrowed that they need to use the primary carriageway of roads. Surface quality and width of the footpath plays an eminent role to decrease walking habit of the users.

### 3.3 Support Facility and Lighting Condition

Pedestrian support facilities were in the very worst condition at Shahbag and New Market. Enough sitting is very important especially for aged people so that they can take some rest while they are walking. But such kind of amenities was absent. There were no potable water facilities for a thirsty pedestrian. About 77% people thought that pedestrian support facilities were inferior concerning other developing countries.

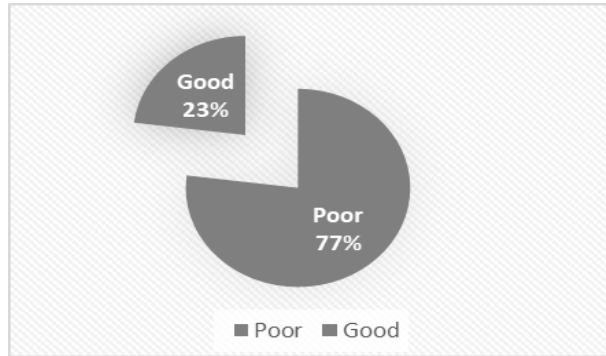


Figure 5: Support facility for pedestrian

Most of the road lamps were not working properly at night. Nearly 79% footpath users said that the lighting system enormously poor to walk safely. Both male and female felt unsafe at night. Larceny was very trite with pedestrians at night because of the deficiencies of the proper lighting system. According to their opinion, adequate installment of the lighting system and adequate safety measures is very crucial for users' safety.

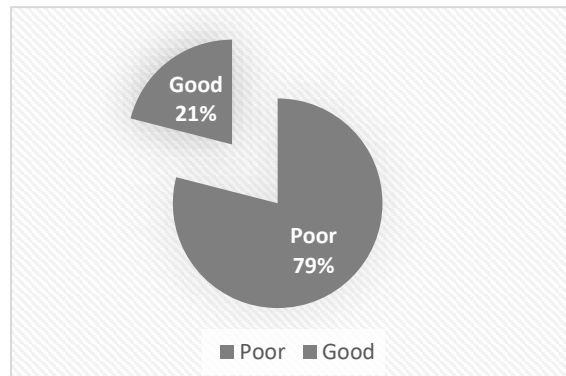


Figure 6: Lighting system of footpath

### 3.4 Comfortableness During Walking

Most of the footpaths are align with main roads, and the height of the walkways concerning carriage is shallow. Sometimes drivers drive their vehicles over the pathway when they fail to control that makes users' to feel uncomfortable.

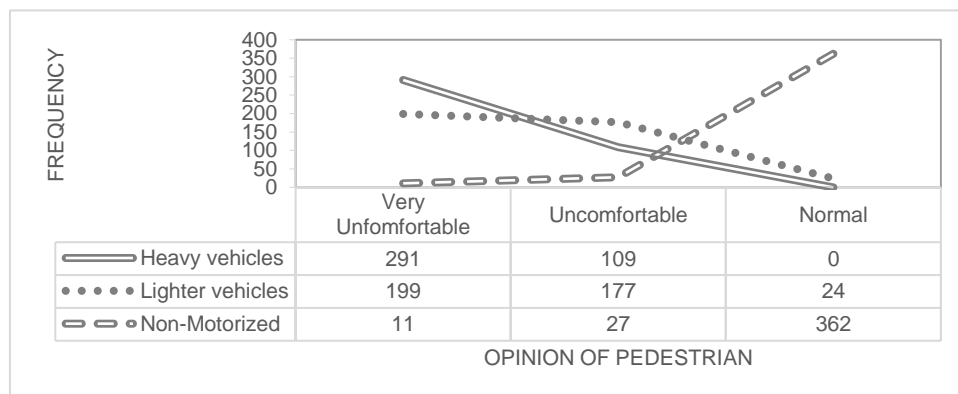


Figure 7: Comfortableness during walking

When heavy vehicles (Bus, Truck, etc.) moves parallel with a pedestrian, nearly 73% felt highly uncomfortable because the conflict between heavy vehicles and the pedestrian was a

typical scenario in Dhaka. Not a single rambler felt comfortable with heavy vehicles. Furthermore, 50% felt also extremely uneasy with lighter cars. On the other hand, 91% pedestrian felt comfortable with non-motorized vehicles because of its less vulnerability. Lane changing mostly occurs in Dhaka city in which people always cannot use the underpass or overpass, especially for time management. Intersections are readily available in Dhaka city where congestion become more responsible for hazardous accident substantially.

### 3.5 Environment of Footpath

The context of the footpath is very crucial to impress its users. But in Dhaka may present the worst scenario concerning others Megacity. Nearly 89% pedestrian felt that the footpath environment was very unpleasant not only for the deficiency of amenities but also for its milieu. In some locations, authority used footpath as their dumping site. They kept their waste container on the footpath which produces the noxious smell. Children don't prefer those footpaths to walk. Vendors covered the footpath most of the important places at Shahbag and New Market to sell their goods. It created a huge problem on the normal flows of the pedestrians. At winter it is very difficult to walk along with roadway because of the dust on air. Shahbag area has poor cleanliness with the dirty surface. The environmental effect with aesthetic view imparts predominating criteria on the pedestrians generally as dirt roads and surfaces are avoided by the general people of all classes.

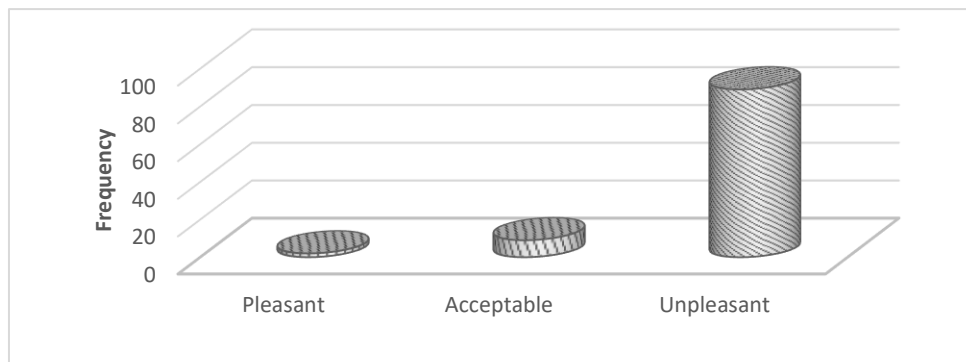


Figure 8: Environment of footpath

### 3.6 Pedestrian Safety and Security

A large number of traffic accidents, about 62 % occurred in Dhaka with the pedestrian in last few years (Pervaz, 2016). The traffic accident is not the only concern of pedestrian, their personal security is one of the major issue in Dhaka. Then female harassment is another common issue in Dhaka in the recent time. About 89% of female felt uncomfortable when they walk lonely. Nearly 86% pedestrian felt overall safety and security for them extremely poor and acceptable for 11% users. Only 3% pedestrian thought current safety and security level good to use the pathway. Even male didn't feel comfortable to walk alone at night and in the early morning because of larceny. At that time they prefer another mode of transport as they feel safe to use it. Huge casualties occurred in Dhaka city at the time of road crossing. So the improvement of crossing facility should be taken as a first priority.

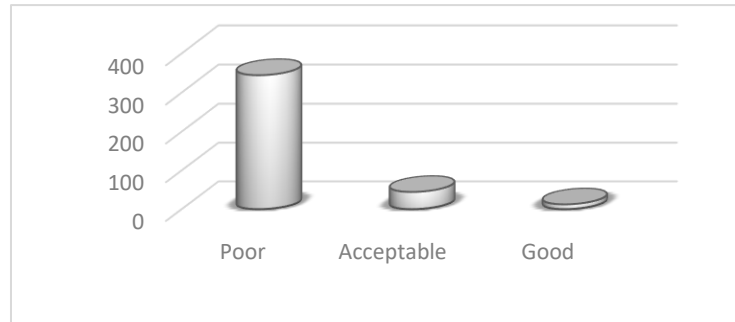


Figure 9: Pedestrian safety and security

#### 4. CONCLUSIONS

This study has made an attempt to find out the major causes that affected the walking behavior of the city dwellers and to find out the reasons behind their perceptions. According to the objective of the study, 86% pedestrian felt unsafe at night because of larceny and poor visibility. Children don't want to walk due to noxious smell from squalor spreading everywhere on the footpath. The surface quality was one of the salient reason to decline the walking habit. Besides, the ambient of the pathway was at an unpleasant level to walk willingly. Unhealthy condition discourages its users to use it. The deficiency of amenities for the pedestrian was another cause to reduce the walking propensity of citizens of Dhaka. Walking is inevitable not only for healthy living but also for an efficient transportation system. Pleasant environment, supportive walking facilities, and safety could increase the predilection toward walking and establish it as an active mode of transport in Dhaka city.

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