An Overview of Pedestrian Service Relevant Standards and Guidelines:- Correlative Approaches of International Examples with Existing Policies of Bangladesh

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Abstract

Road safety is a major concern for sustainable transportation and urban planning. Absence of a clearly defined pedestrian system can make users suffer through unpleasant travelling as well as hazardous movement. So it's essential to serve special facilities for protecting users. This paper provides a critical review of pedestrian related standards and policies from different policies of the best performing countries. For enabling a better point of view, existing national transport policies have been assessed in detail. However all policies are discussed with certain critical problems and expected development probability has been considered. Finally, this study reflects distinct assessment of specific road elements which are correlated with pedestrian.

Introduction

A pedestrian is a person on foot, or on a contrivance equipped with wheels or revolving runners that is not a vehicle. Usually a pedestrian is any person walking, standing or in a wheelchair. Wisconsin State statutes, USA defines pedestrian as "any person on foot or any person in a wheelchair, either manually or mechanically propelled, or other low-powered, mechanically propelled vehicle designed especially for use by a physically disable person." (Sharmin, 2012). Sharmin (2012) also described that everyone uses pedestrian at some point in his or her trip, whether it is from the doorstep to public transportation, on from the parking lot to an office building or for an entire trip.

With economic growth and increased urbanization, many countries are experiencing transport-related problems as inherited transport infrastructure is unable to cope with increasing travel demand (Soathong et al., 2019). These problems include an increased likelihood of crashes and severity of injury for unprotected road users, particularly pedestrians, due to their inherent vulnerability. A high proportion of pedestrian fatality is evident on a global scale, accounting for 22% of all road tragic deaths (Soathong et al., 2019).

According to Mahmud et al, 2006, Pedestrians form the largest single user group. This is primarily because of the lack of sufficient transportation facilities and poor economic condition of the people. Besides these, day-by-day the pedestrian traffic of city is increasing rapidly due to the following reasons:

• Improvement transport facilities with other districts are generating huge number of floating people especially low income people for whom walking is must.

• Severe inadequacy of public transport services has further constrained the modal choice, especially of the low income groups and adding more burdens on walking.

• Lack of female-friendly public transport system is literally forcing many women workers, commuters to become pedestrians.

• Land use densification in the form of mushrooming of high rise buildings in the core areas is also increasing pedestrian density.

• Unplanned city development especially uncontrolled multistoried shopping complexes and autonomous residential area development are continuously changing the city's land use configuration and thereby inducing more pedestrian in the transportation system.

• Last but not the least, increasing traffic congestion is forcing many passengers to become pedestrian. (Waresh, 2011).

Pedestrians form the largest single road user and most vulnerable road user group is manifest by data from police report showing that more than 48 percent of reported road accidents and 72 percent of reported fatalities were pedestrians in the context of Dhaka Metropolitan City. In addition, pedestrian population is dramatically increased for huge number of urban migration for by the establishment of so-called labor intensive many garment industries, all head offices, business, better communication, better employment, good and higher educational opportunities, health facilities and higher income etc. But there are very lacks of pedestrian facility and which are available that are not proper use for the cause of enormous deficiency (Mahmud et al, 2006).

This study is an attempt to delineate better pedestrian standards and guidelines for constructing better transport facility as well as for the betterment of users.

Objectives and Methodology

It is necessary to emphasize existing pedestrian pattern and regarding guidelines to propose a better one which can make a difference. This study aims to bring a feasible ideology for safe, sustainable pedestrian development by assessing different guidelines and policies. From international cases, we can get a cumulative idea of policies and guidelines for pedestrian planning. Several perspectives of national level transport plans have been gathered to get a better view. Secondary based data have been used for explaining this objective

International Examples of Guidelines and Standards for pedestrian facilities

<table>
<tr><th>Case Studies</th><th>Critical Remarks</th><th>References</th></tr>
<tr><td>United Kingdom</td><td>

The Institution of Highways and Transportation is responsible for developing guidelines for journeys by foot.
The guidelines include standards for footway design, ramps and steps, kerbs, build-outs, guard rails, signage, tactile surfaces, crossing facilities – at-grade and grade-separated, surface treatments, surface drainage, trees and landscaping, street furniture and street lighting.
Five core principles have been established common to both pedestrians and cyclists and have been derived from the requirements for pedestrians included in Guidelines for providing for journeys on foot, (Connectivity, Conspicuity, Convenience, Comfort, and Conviviality).

</td><td>(IHT 2000)</td></tr>
<tr><td>Japan</td><td>

According to Road Design Requirements practiced in Japan, the minimum space (width) required for one pedestrian to walk is 0.75 m. and in the case of a wheelchair 0.9 m. For this reason the minimum width of a sidewalk should be 2.0 m.
The Japanese standard for Road Structure states minimum width of sidewalk according to road location / class as shown in following table:

<table>
<tr><th>Class</th><th>Vehicles (AADT)</th><th colspan="2">Required width of sidewalk where bicycle are allowed to pass</th><th colspan="2">Required width of footpath</th></tr>
<tr><td></td><td></td><td>A (m)</td><td>B(m)</td><td>A(m)</td><td>B(m)</td></tr>
<tr><td>1</td><td>Over 10,000</td><td>3.5</td><td>2.75</td><td>3</td><td>2.25</td></tr>
<tr><td>2</td><td>4,000-10,000</td><td>3.5</td><td>2</td><td>3</td><td>1.5</td></tr>
<tr><td>3</td><td>500-4,000</td><td>2</td><td>1.5</td><td>1.5</td><td>1</td></tr>
<tr><td>4</td><td>Less than 500</td><td>2</td><td>1.5</td><td>1.5</td><td>1</td></tr>
</table>
</td><td>http://sti-india-uttoolkit.adb.org/mod5/se4/006.html</td></tr>
<tr><td>USA</td><td>

The U.S. Department of Transportation has published a comprehensive pedestrian facilities user guide, which details out guidelines for sidewalks, buffer zones, curb ramps, crosswalks, bus stops, lighting, overpasses and underpasses, street furniture, roadway design and intersection design. It also deals with traffic calming, traffic management, signals and other measures (Federal Highway Administration 2002).Following are some major points:
Sidewalk of 15 feet.
Furnishing zone of 6-8 feet.
Typical pedestrian spacing (Desirable moving space will be 4‟-6” long by 2‟-2.5‟wide)

</td><td>WSDOT Design Manual, The Americans with Disabilities Act of 1990 (ADA), Chula Vista Pedestrian Master Plan</td></tr>
<tr><td>India</td><td>

The Indian roads congress (IRC) has stipulated standards for pedestrian facilities – both at-grade and grade-separated.

</td><td>Indian roads congress, 1998</td></tr>
</table>

- The width of sidewalks depends upon the expected pedestrian flows, subject to a minimum of 1.5 meters.
- Following table shows the capacity range of pedestrians:

Width of sidewalk(m)	Capacity in no. of persons per hour	
	All in one direction	In both directions
1.5	1,200	800
2.00	2,400	1,600
2.5	3,600	2,400
3.00	4,800	3,200
4.00	6,000	4,000

Source- Developed by author

Existing Transport Policies Resembling Pedestrian Issues:

National Land Transport Policy, 2004

The Land Transport Policy has been formulated in the light of the Government pledge to establish a transport system which is a safe, cheap, modern, technologically dependable, environment friendly and acceptable in the light of globalization.

Section 5, 7 and 9 of this policy resembles some glimpse on pedestrian guidelines. Section 5 emphasizes on main roads where there is significant activity, footways and crossing facilities will be provided on new roads and priorities for new pedestrian facilities on existing roads will also be drawn up. Section 7 focuses on creating a better environment for pedestrians. Guidelines defines that more footways will be built in urban areas, and a greater emphasis placed on pedestrian crossing facilities, especially the development of safe at-grade crossings and traffic regulations at signal-controlled pedestrian facilities will be enforced. Section 9 describes importance of creating better facilities for pedestrians; as greater safety systems for all, especially accident prone/vulnerable road users; special pedestrian schemes in Old Dhaka, and other areas where the street pattern will not accommodate unrestrained car use, will be considered.

Integrated Multi-Modal Transport (IMTP) Policy, 2013

The integrated multi modal transport policy emphasizes primarily on maintenance of existing assets and infrastructure, encouraging more investment in rail and inland water transport; adopting integrated transport strategies; improved integration and interchange between modes of transport; improving regional connectivity; fostering the role of Multi-modal transport operators (MTO‟s); setting specific targets for improving air quality, road safety, public transport provision and efficiency, and road traffic growth reduction etc. Significant features of this policy can be summarized as reallocation of road space to pedestrians, for example through wider footways and pedestrian; improvement of footway design, continuity, maintenance and

cleanliness; provision of ramps to facilitate access for the physically challenged; providing more protected pedestrian crossings, where pedestrians want to cross; reduction of waiting times for pedestrians at traffic signals and giving them priority in the allocation of time at junctions where this supports more walking, promotion of road safety; and tends to introduce traffic calming measures in residential areas. Government is intended to launch a "**Pedestrian First**" program to ensure that all concerned agencies provide sufficient footways, along with safe pedestrian crossings, and are able to remove unauthorized encroachment from footways.

Strategic Transport Plan (2004-2024)

Strategic Transport Plan seeks to develop a coherent long-term Strategic Transport Plan (2004-2024), following and updating the Dhaka Integrated Transport Study (DITS) and other transport related studies, to address projected transportation needs for future developments with special emphasis on integrating the planned land use for the future growth of the city as presented in Dhaka Metropolitan Development Plan (1995-2015) with transport issues in Dhaka Metropolitan Area (DMA) over the next 20 year planning horizon in a phased program for the 20 year period.

Despite a high preponderance of walking, suitable pedestrian facilities have traditionally been neglected and have in most cases, only been added as an afterthought to road improvements. In all, there are only about 400 kilometers of footpath within the Dhaka City Corporation area. Where footpaths have been built, frequently there are obstructions that block or otherwise reduce their overall usefulness to pedestrians. Pedestrian volumes of 10,000 to 20,000 per day are common and reach as high as 30,000 to 50,000 per day in the Old City area. During the hour of highest volume (peak hour), pedestrian counts of 1,000 to 3,000 per hour are common and reach as high as 5,000 in the Old City area.

After emphasizing all these factors, STP intends to make walking and bicycling easier, less hazardous and less stressful. For enabling sustainable pedestrian and to make users, following recommendations have been provided:

- Institute a comprehensive on-going safety awareness campaign.
- Develop safety related materials and information communicating safe practices for pedestrians, bicyclists, non-motorized transport drivers, and motorized vehicle drivers.
- Incorporate safety awareness and safe practices as part of the educational curriculum.
- Conduct a multi-media campaign emphasizing safety, on a periodic basis.

Major recommendation for developing pedestrian facilities is provided to serve pedestrians better and encourage people to walk from choice rather than from necessity. Walking is currently a commonly used mode of transport in Dhaka. A major commitment to improve all types of pedestrian facilities is recommended. Not only is this aimed at serving those who have no choice but walking, but also to encourage others who have a choice to walk more often.

Draft Urban Transport Policy

Some of the important factors which need to be addressed are; the lack of pedestrian first priority policy; the absence of continuous footpaths on both the main routes and the neighborhood streets; poorly designed badly located and ill-advertised pedestrian crossings; encroachment on the footpath from traders and equipment and the absence of facilities for the movement of disabled persons, all contribute to a dangerous situation. "Pedestrian First Policy" is needed to encourage walk trips and safeguard pedestrians. The Government will enact a Pedestrian First Policy to ensure the construction of properly designed and continuous footpaths with well-defined and maintained pedestrian routes in the city. For this reason a comprehensive city-wide awareness program as a part of the implementation of a road safety campaign with special emphasis targeted at children, women and disabled persons is going to be launched. The Government will identify and promote some areas of the city as auto-free zones and provide the necessary facilities to make them pedestrian friendly so that walking becomes a favored mode of travel.

Overview of plan conferred pedestrian planning in Bangladesh

Plan	Year covered	Key issues	Pedestrian issues
Dhaka Metropolitan Development Plan (DMDP)	1995-2015	The basis for Dhaka's Master City Plan	11% of funding allocated to pedestrians, despite their having greatest modal share.
Dhaka Integrated Transport Study (DITS)	Early 1990s	Explore transport related problems within the area and suggests solution	The importance of pedestrians acknowledged and good measures are suggested.
Dhaka Urban Transport Plan (DUTP)	1990s	Designed to provide immediately visible and implementable activities	Bus infrastructure activities falling under the DUTP ignores pedestrians even though most passengers to/from the stations.
Detailed Area Plan (DAP)	1995-2015	Emphasizes the building high-end housing.	The only Pedestrian measure include is the construction of 41 foot over bridges and 5 under passes.
Clear Air and Sustainable Environment (CASE) Project	April 2009 to June 2014	Catalyze the adaption of Sustainable Environment Initiatives (SEI)s in the urban transport sector.	The project aimed to expand footpaths and to build foot over bridges

Source: Noman, 2015 (devised by author.)

Regrettably there is no specific standard for pedestrian space of Dhaka has been formulated yet. Authorities provide 6-8 feet space for pedestrians in major road depending on their width (DNCC, 2014).

Conclusion

Till now in Bnagladesh, pedestrian planning has been quite neglected. Some policy interventions have suggested some standards which are yet to be implemented. New infrastructures like metro rail, flyovers, and bypasses are being introduced frequently which are changing transportation dynamics. Policy making organizations are more concerned with creating standards rather than monitoring implementation. This paper is an attempt to put all present available standards both in national and international level right before all stakeholders and authorities to prognosis regarding expected pressure on roads and to provide and improve pedestrian facilities for reducing pressure on vehicular movement.

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