International Research Journal of Engineering and Technology (IRJET) e-ISSN: 2395-0056
Volume: 07 Issue: 03 | Mar 2020 www.irjet.net p-ISSN: 2395-0072

Planning strategies for Walkability: Case Study of Gomti Nagar, Lucknow

Naveela Khan[1], Mohd. Akbar[2], Somya[3]

[1]Assistant Professor, Department of Architecture, Aligarh Muslim University, U.P., India
[2]Research Scholar, Jamia Millia Islamia, New Delhi, India
[3] Research Scholar, Jamia Millia Islamia, New Delhi, India

Abstract - *In the Past Era, Indian cities were built for walking and streets were narrow. Today, the urban areas having a high level of accumulation and concentration of economic activities and this increased urbanization. Rapid urbanization combined with limited attention to pedestrian facilities has led to a decrease in the overall mode share for the NMT. Transport problems like Traffic Congestion, Road Accidents, and Increased level of GHG emissions are very common and the factors behind these problems are, insufficient widths of streets, insufficient parking spaces, and lack of designated space for local vendors, lack of footpaths, etc. This paper presents the planning strategies for pedestrian mobility, assess the existing pedestrian facilities in the city and problem people are facing.*

The researchers examined the one sector of patrakar-puram market, Gomti Nagar, Lucknow, U.P. They collected data on existing pedestrian facilities and street behavior. The analysis of the data finds lack of footpath, connectivity issue, lack of amenities, local hawker capture footpath, and street, civic behavior (People do not hesitate to park the vehicles anywhere on the street, etc.), etc. The recommendations for the urban street are there should be Continuous footpath and cycle track, Proper space for hawkers on street, retrofitting of streets, Proposed Street Cross Section, properly planned parking space, Retrofitting of existing Cycle tracks, Etc.

Key Words: Transportation, pedestrian, Mobility, Traffic Congestion, Connectivity.

1. INTRODUCTION

Walkability is a measuring index for the pedestrian area, how the area is affectionate to walk. The parameters of workability are connectivity, land-use, community, density, traffic safety, parking, experience, green spaces, community, and surveillance, etc. Walkability enhances the individual as well as social capital. The factors which influence the walkability are quality of sidewalks, quality of footpath, traffic, road condition safety, security, etc. Walking is the oldest and the main mode of transportation for Indian people. It comprises a small portion of all trips because people use to walk when they get out of their vehicles. Nowadays, there is no inclusive planning for pedestrians and with rapid urbanization pedestrian facilities are damaging and missing day by day. Rapid Urbanization, rapid motorization, inadequate traffic enforcement and lack of walkable built environment increase traffic-related issues. Most of the Indian cities have grown haphazard due to a lack of planning intervention.

It has caused several mobility issues in these cities. Some of these issues are:

- Traffic congestion
- Road accident
- Increased level of GHG emission.

The factors behind these problems are insufficient widths of streets, insufficient parking spaces, and lack of designated space for local vendors, lack of footpaths, etc.

2. METHODOLOGY

2.1 Indexes

Before is a measuring index for pedestrian area, how the area is affectionate to walk. Walkability is one of the ways which can improve urban mobility. In this study, we examine the street on the basis of three

- Existing pedestrian facilities
- Streets behavior

2.2 Study Area

The study area consists of Gomti Nagar, which is one of the planned areas of the city, lying in the zone IV of Municipal Corporation. Predominantly area is residential, flatted development, with some upcoming favorite hangout destinations city.

Patrakar-puram is one of the major markets in Gomti Nagar so the study area of Four neighboring sectors out of which one sector is selected for the study purpose. The area of the sector is 2.68 SQ.KM and the population are 4800. The Site can be accessed by the Lucknow-Faizabad highway and the inner ring road. Upcoming MRTS into the study area.

Fig 1: Map of Gomti Nagar

Fig 2: Map of Vivek khand showing the land use, and footpaths along with cycle Track

2.3 Data Collection

The researcher collects data by two survey methods and by literature study.

Questionnaire survey and observation study have been done, the researcher asked some questions to the random people, take some interviews, collected photograph and observe the behavior of people while walking.

Secondary data has been collected from Literature sources:

1. Documents Review (City mobility plan, comprehensive development plan)
2. Land use plans by Lucknow development authority

3. RESULT

The finding which analysis by this study are lack of infrastructure, connectivity issues, lack of proper amenities and civic condition.

According to IRC (Indian Road Congress): 103-2012, "No ducts, utility poles, water or telecom, box, signage or any kind of obstruction should be placed within the walking zone". Obstruction free minimum walking zone should be 1800x2200mm both horizontally and vertically.

3.1 Infrastructure

Fig 3: Poor design of the footpaths and their continuity is really challenge to use them

Street sections consist of:

- Narrow footpaths
- Open drains
- Overhead poles on the footpaths

The study area consists of Gomti Nagar, which is one of the planned areas of the city, lying in the zone IV of Municipal Corporation. Predominantly area is residential, flatted development.

Table 1: Comparison with the IRC-103

	Standard	Existing
Minimum pedestrian width	1800mm	Varying from 900 to 1200
Pedestrian width in shopping frontage	2500mm	NIL
Clear Height	2200mm	Obstruction by trees at various locations
Obstruction	Free from trees, signage's in walkable path	Electrical poles are installed in walking path
Walking surface	Continuous with	Discontinuous and

	access to wheel chair	varying in width
Guard rail	Simple and neat in appearance	Does not exist
Service covers	Should not be on the walkable path	At same level of footpaths, making the usage of footpaths hazardous

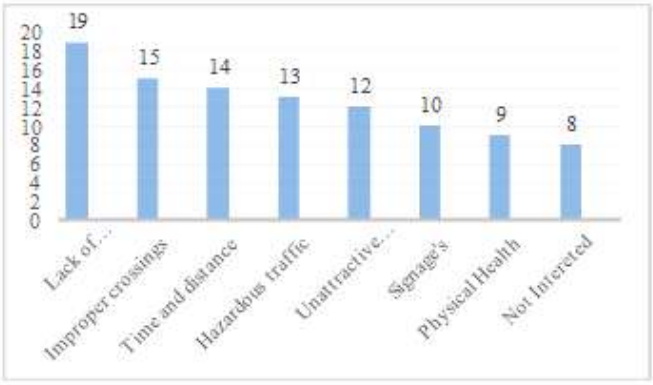

Fig 4: Graph showing the rating of the major problems related to walkability in the study area.

According to the survey, the issue of lack of paths and connectivity are the major difficulty experienced by people while walking.

Fig 5: Picture showing the usage of cycle track

3.2: Connectivity

The study area has ample green and open spaces. The grid is also fine with a maximum walking distance of 100 meters. This kind of green space promotes the walkability of the area.

Fig 6: Map shows that study area is under walkable distance from major nodes

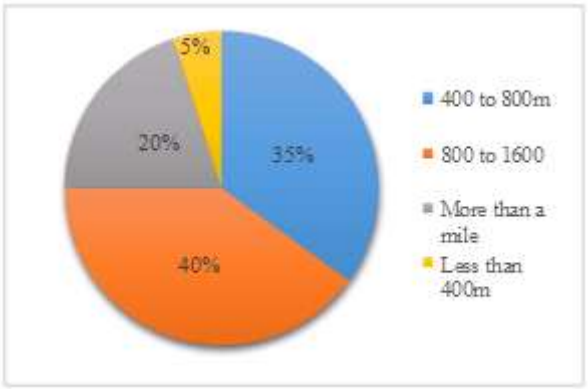

Fig 7: showing walking distance by people during weekdays

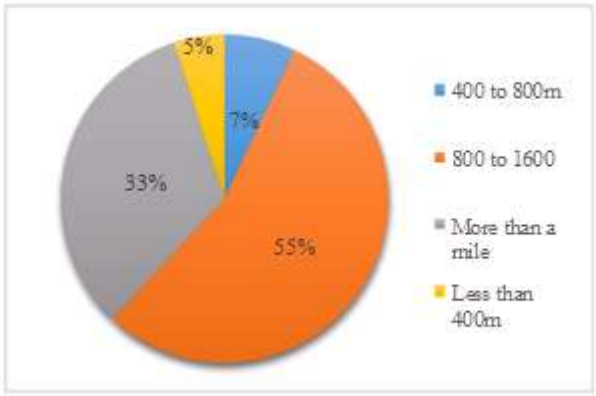

Fig 8: showing walking distance by people during weekends

According to the survey, most of the people walk 800 to 1600 meters daily. Walking distance also increases on weekends as people tend to enjoy walking as an activity. This shows that people are interested in walking but the lack of infrastructure does not support them.

Fig 9: Lack of mode for public transport

- Lack of designated parking space, paratransit stand and public transport.
- Mismanagement of road width with parked vehicles and without segregation of traffic.
- This makes cause's congestion on the road during peak hours.

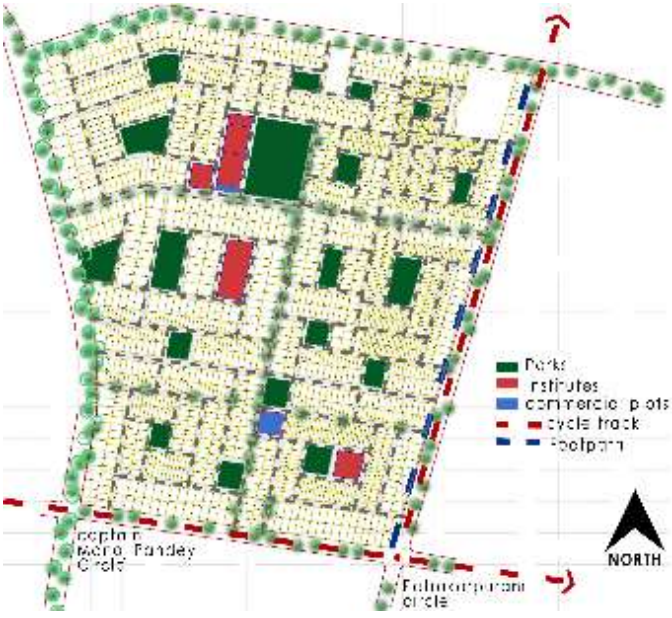

Fig 10: Map of Vivek khand showing the land use, and footpaths along with cycle tracks.

3.3 Amenities:

- The Study area lacks in various amenities for the pedestrian facility.
- Drinking water, public toilets and street furniture is major missing.

Fig 11: Existing amenities are not designed in for pedestrian use

Fig 12: trees are planted for shading purpose

- The trees planted are to cover the pedestrian path and cycle track but they also cover them from the street lights during the night.
- This causes the security concern of the pedestrian during dark hours.

3.4: Civic Behavior

- People do not hesitate to park vehicles anywhere on the street.
- This, in turn, causes the hindrance in the movement.
- Pedestrians also enjoy along on the road as they can approach the shops easily.

Fig 13: Behavioral pattern causing the problems for others

Fig 14: Cycle tracks are meant for the purpose of parking and street vending

4. CONCLUSIONS

This paper examines the urban street of patrakar-puram market, Gomti Nagar. The conclusion and recommendation are as follow:

- Due to the lack of pedestrian infrastructure, as we discussed in table 1, existing conditions of streets and footpaths are worst, Narrow Street, no footpath on street, and no connectivity. Mostly interviewer respondent that there is a lack of connectivity and footpaths. According to the survey, most of the people walk 800 to 1600 meters daily. Walking distance also increases on weekends as people tends to enjoy walking as activity. This shows that people are interested in walking but the lack of infrastructure does not support.

- Due to lack of parking space, mismanagement of road width with the parked vehicles without proper segregation of traffic. These conditions cause congestion and decrease the safety level for a Pedestrian walk.

- Due to the lack of amenities and civic behavior for pedestrian facilities. Hawker captures the footpaths, people do not hesitate to park these vehicles on the cycling track, Pedestrians also enjoy to along on the road as they can approach to the shops easily. This causes the security concern of the pedestrian.

We recommended that

- Pedestrian mobility should be promoted.
- There should be proper pedestrian planning
- Proper connectivity
- Retrofitting of streets
- Proposed pedestrian network plan
- Proposed NMT street
- Proposed proper parking space with proper hawker space
- Retrofitting of existing cycle track

REFERENCES

[1] Peter Nikolov and Boryana Nozharova, 2019, Strategies and regulations for walkability in the city of varna, IRASA International Scientific Conference SETI I 2019.

[2] Dinesh Mohan, Omer Tsimhoni, Michael Sivak and Michael J. flannagan, 2009, Road Safety in India: Challenges and Opportunities(Technical Report No. UMTRI-2009), Ann Arbor: The University of Michigan Transportation Research Institute, 1 - 61

[3] Athanasios Galanis, George Botzoris and Nikolaos Eliou, 2017, Pedestrian road safety in relation to urban road type and traffic flow, Sustainable Urban Mobility 3rd CSUM 2016, Elsevier B.V., Volos, 220-227.

[4] Aparna Verma, Ashutosh Gupta and Baikunth Nath, 2017, Road Safety Improvement in India, Journal of Civil Engineering and Environmental Technology, 4 and p-ISSN: 2349-8404; e-ISSN: 2349-879X, 371-381.

[5] Helene Littke, 2015, Planning the Green Walkable City: Conceptualizing Values and Conflicts for Urban Green Space Strategies in Stockholm, Sustainability, 7, ISSN 2071-1050, 11306-11320.

[6] Mohan, D. and Tiwari, G, 2000, Road safety in less motorised countries - Relevance of international vehicle and highway safety standards, International Conference on Vehicle Safety 2000, London: Institution of Mechanical Engineers, pp. 155-166,

[7] Saija, K. K., Patel, C. D., and Upadhyay, V. J, 2000, Spectrum analysis of road accidents, Indian Highways, 28, 29-41.c

[8] IRC:103-2012 "Guideline for Pedestrian Facilities" (First Revision)