

Active Community Participation and Involvement as a Strategy to Upgrade and Maintain the Quality of Sidewalks in Pedestrian Infrastructure of Karachi, Pakistan

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Abstract- Pedestrian mobility with accessibility and safety is a basic social right of citizens. Accounts of experiences of public spaces are generally devoid of sidewalks accessibility, utilization and ownership. The value, quality and performance of sidewalks should be prioritized for promoting pedestrian culture which is healthier and environmentally beneficial. However, in Pakistan the cities have generally chronic issues associated with sidewalks and often underutilized due to (1) absence of infrastructure (2) encroachments (3) dilapidated conditions. Without proper lane discipline pedestrians are found often using vehicle lanes and it has also been observed that during traffic jams, motorbike riders use pedestrian tracks. This causes a decrease in pedestrian flow and unsafe pedestrian movements that result in conflicts and accidents. The city infrastructure agencies are responsible for providing this service; however, the stakeholders which are user group have an ethical obligation to own sidewalks as public spaces with realization as it is a property of all people. Often sidewalks are found constructed with uneven surfaces, miscalculated slopes, high enough from road level, underutilized due to permanent obstacles such as utility poles, partially blocked by overgrown bushes and vegetation, heaped with litter, construction debris and potentially dangerous items such as broken glass. In this research paper, through literature review as secondary source of research, active community participation and involvement in decision making and ownership in urban infrastructure is found to be meaningful endeavor for neighborhoods to sustain developments. This research paper employs interviews and photographic documentation of 3 study areas to delineate state of public sidewalks in commercial, mixed and residential neighborhoods of Karachi city, proposing effective design guidelines and implementation together with maintenance policies which would be essential with active community participation and involvement.

Key Words- Sidewalks, Pedestrian Infrastructure, Community Involvement, Infrastructure Development

I. LITERATURE REVIEW

The rapid growth in vehicle ownership and traffic congestion has lead city developers, policy makers and infrastructure providing agencies to provide solutions to mitigate the situations of urban stresses. However, a concern to ease pedestrians although pertains but needs to be adhered scholarly to be implemented practically with quality. Rowangoned and Padilla (2019) stated

that in research and practice generally less attention is paid to physical design and maintenance requirements of sidewalks in comparison with infrastructure for other modes of transportation.

The first section of the literature review aims at focusing on pedestrian sidewalk performance and pedestrian level of service examined by various researchers. The second section is an account of application of methods and benefits of community participation and involvement in urban infrastructure development.

Pedestrian Level of Service

Increasing the walkability and improving the pedestrian facilities (such as sidewalks) has been one of most relevant themes of sustainable models of urban developments. Marisamyathan and Vedagiri (2019) believed that in urban cities, for relatively short distances, walking is one of the best examples for sustainable mode of transportation. In developed countries the sustainable models of urban cities more pedestrianized, less motorized thus maintaining air quality had been a vision of researchers and policy makers. However, developing countries are yet to adapt consciously. Soni (2016) opined; for improving lifestyle and community liability, segregation of vehicles and pedestrianization can be an effective measure.

Evaluation of walking route facility as pedestrian sidewalks is generally referred as pedestrian level of service LOS. Marg (2012) described pedestrianization level of service as indicator of environmental qualities of a pedestrian space and a guide for development of standards for pedestrian facilities. Various studies have developed models of pedestrian LOS. Bellizzi and Forciniti (2019) conducted a study on pedestrian walkways and found that presence of street vendors and environmental factors such as noise, pollution, temperature, color, cleanliness, environment and landscape greatly influence pedestrian level of comfort. Sarkar, (1993) proposed a qualitative method for computing pedestrian LOS on basis of six factors; safety, security, convenience and comfort, continuity, system coherence and attractiveness. Wibowo and Nurhalima (2018) analyzed five aspects of dimensions, safety, security, comfort and convenience to perceive pedestrian level of service as basis for planning a pedestrian facility. To promote walk trend among people Shabaan (2019) enquired about obstructions, continuity, physical condition, encroachments, cleanliness, slope,

shade trees and buffer zone as side walk indicators to evaluate and improve side walk condition in developing countries. Mutiawati et al. (2020) examined service quality of the pedestrian lanes that requires to be improved to ensure their performances as per pedestrians' expectations.

Accelerated demand for improvement of pedestrian sidewalks arose due to several reasons such as difficulties in crossing heavy traffic lanes, conflicts among vehicles and pedestrians, physical barriers, abrupt discontinuity of sidewalks, low accessibility to handicapped due to improper design of ramps and so on. Kadal and Vedagiri (2016) stated that in developing countries, pedestrian level of service studies for disabled people and wheelchair users have been ignored regarding use of sidewalks and crosswalks. Muraleetharan et al (2005) examined the factors affecting pedestrian level-of service LOS at intersections and proposed a method of regression analysis to estimate pedestrian LOS at intersections.

Community Involvement and Participation in Infrastructure Development

Yirsaw (2012) stated that welfare of citizens and an efficient functioning of urban economy are greatly affected by presence, absence along with the quality of urban infrastructure. To achieve this all stakeholders including the end users who are community can be effectively involved. The communities' involvement in development tasks is beneficial as 1) fresh perspective in dealing with problems in new ways 2) local needs are accurately targeted 3) outputs last longer due to acceptability and ownership by community. Legesse (2017) advocated for role of community participation in own development is to promote skills and capacity of communities. Burns et al, (2001) also mentioned that community participation has an impact on involvement of individuals and communities regarding decision about matters that influence their lives. Mentioning several benefits of community involvement Bruce (1964) asserted that people involvement in planning for their own well-being is ethical, functional, administrative, manipulative, educational and promotive.

The professional agencies working in partnership with communities must be committed to listen and respect their views. For infrastructure development Legesse (2017) stated; to contribute effectively, better security of tenure, organizational and technical support, an environment conducive to enabling and supportive policies, and a larger voice in the process must be provided as basic right to infrastructure users for self-help improvement. The programs with flexible and creative approaches are found to achieve better results by involving the community. Training sessions between residents and professionals have always been proved successful. Francis C Okafor (1982) opined; sense of participatory democracy is the basis of success for community development projects. However Legesse (2017) argued that opportunity to inform pressing needs and priorities is not provided to communities by decision making process. Lack of funding to support community efforts has been one of failures of incorporating community participation in development infrastructure.

Developing Effective Community Involvement Process and Strategies at Beginning

1. It is crucial to involve community at an earlier stage with adequate resources and understanding community needs and strengths.
2. To begin with it is significant to build a general awareness for the need for community initiatives for infrastructure development.
3. Systematic analysis of problems is relevant before initiating contact with community
4. At an earlier stage, to develop a community vision, street meetings in an informal atmosphere can bring potential ideas.
5. Postal communication and a door-to-door collection is another way to gauge the strength of local opinion.
6. Later, workshops can be conducted with wider public support for detailed plans, training of leaders and educating the people.
7. Sustain the organizations by maintaining links and network of support groups.

Developing Structures for Community Representation

It is essential to organize a forum to represent diversity of the community which can elect representatives and consultative to the Board and working parties that may also work as a channel of information, knowing their rights and responsibilities. The community representatives as 'social entrepreneurs' thus establishes a team of program administrative including financial administrator maintaining accounts and basic assertive including public speaking. The most crucial stage of community involvement comes at the time of controlling the project during execution and ownership.

Physical and Functional Benchmarks for Sidewalks

To promote walk culture with safety, it is required to prioritize the quality of sidewalks. Santos et.al (2019) stated presence of sidewalks as a good social and quality life indicator hence often relates to the income and economic profile of the region. Referring to benefits of correctly sized pedestrian zone makes sidewalk more comfortable, inviting and prevents conflicts among walking. Santos et.al (2019) stated that a greater sense of security, benefit to local commerce and increased quality of life and the sense of citizen benefit are due to streets with more life, therefore leverages a sense of ownership and care for public spaces by the population. Following as a checklist are requirements that sidewalks must ensure to be functionally successful.

1. **Sidewalk Dimensions:** sidewalk dimensions are required to be spacious enough for people to walk comfortably.
2. **Accessibility:** Sidewalk is an urban space and urban spaces must be accessible for everyone. Proper curb ramps, tactile surfaces and running slopes are features that ensure universal accessibility of sidewalks.
3. **Safety and Security:** Sidewalks are dedicated spaces for pedestrians therefore must ensure safety and security from vehicular movement and must have connections with crosswalks having signals to avoid pedestrian versus motor rides clashes.

4. Surface Quality and Continuity: The walk surfaces casted with concrete pavers, slabs or tiles must ensure quality with durability and quick maintenance requirement. Avoid any kind of random blockages or breaks at short intervals.

5. Attractive Features: urban furnishing features on sidewalks i.e., trees, lamp posts, garbage bins, guardrails, sitting benches, signage, signals must be placed strategically not to block the passage but adds to attractiveness with comfortable environment for pedestrians.

6. Post maintenance Policy: sidewalk vigilance should be ensured by installing CCTV cameras and often physical surveillance to ensure smooth functioning. Cleanliness must be ensured at frequent intervals.

Based on this checklist, three areas have been selected from city of Karachi to examine situation of sidewalks with an analytical approach through field investigations by pictorial documentation as evidence of stated facts.

II. SELECTED STUDY AREA

A. Study Area 1: Mixed Area (Peoples' Square)

People's Square is located in the city center, Sadar Town of Karachi. The area is noteworthy for its long dated history and culture. In addition to this, it is commercial, educational and cultural hub with many reputable educational institutes and prominent landmarks such as Arts Council, SM Law College, D J Science College, National Museum and Burns Garden. The area's urban infrastructure is being upgraded by Karachi Neighborhood Improvement Project KNIP. Improving mobility and quality of life for local residents was the objective. The organization KNIP (2017) claimed that public space enhancements and improved access to citizen services in targeted areas will improve livability, safety and inclusion.

The area was rehabilitated and repaved with 36 ft wide major roads and 6 ft wide sidewalks on both sides. Two of minor roads were closed for vehicles to promote pedestrianization by developing spaces for student piazzas and parking space. Overall infrastructure was reworked including roads, sidewalks, parking, electric utilities, water supply lines, storm water drains etc.

The project was first of its kind (infrastructure development) in which consultation with various stakeholders from government departments to end users was taken into account. Primary stakeholders or direct beneficiaries were considered as people belonging to educational institutes, however secondary stakeholders or indirect beneficiaries were considered as area residents, shopkeepers and agencies such as K Electric, KWSB, SSGC and PTCL and Department of Antiquities, GOS, DMC South, Hindu community and Transport Itehad (Union). The people belonging to the educational institutes are the visitors commuting to this neighborhood on daily basis however those households and shopkeepers considered as 'secondary beneficiaries' are actually the community of the neighborhood actually using the infrastructure as custodians. A neglected

category of stakeholders were the hawkers or vendors selling food items on daily basis in the targeted area.

A direct consultation through interviews was carried with 'primary stakeholders' (teachers, students and staff). Consultation with 'secondary stakeholders' including various organizations and local community was conducted with objectives of informing, ascertaining of the project and identification of potential positive and negative social and environmental impacts. Very limited sample of respondents i.e., 16 residents and 14 shopkeepers were collected in which all were unsatisfied with prevailing situation. Proposed project interventions were received positively by respondents envisaged with resolving problems after the project.

The agenda fulfills the requirement of community involvement at the stage of mere consultation. However, it was devoid of a workable plan for community involvement at the stage of execution, handing over the project and post occupancy ownership. The facts now result in moreover same issues as before regarding garbage dumping, parking chaos and mismanaged sidewalks. The reason as it is vast difference in community consultation and community involvement.



Fig 1-8 : Issues of Sidewalks in Study Area 1 (Source: Author)

B. Study Area 2: Residential Neighborhood (Gulshan e Iqbal UC10)

A residential neighborhood in Gulshan e Iqbal, block 14 UC 10 was selected to examine condition and experience of sidewalks from Civic center to Mashriq (East) center. The area is dominated with multi storied, ground plus four storied residential apartments. The ground floor generally comprises of commercial shops. These apartment buildings have unions to manage maintenance, surveillance and other issues. However, the shops frontages are maintained by owners. Pedestrian circulation routes are through shop frontage passage and sidewalks. With passage of time road level rose considerably as compared to shop frontages. This encountered with rain water accumulation in shops during rainy season. The shop keepers individually invested in raising shop frontage passage of their jurisdiction. The present state condition of shop front passage is worsened with different types of flooring and different abrupt levels creating nuisance for pedestrians. The existing sidewalks are further encroached with vendors selling food items. The sidewalks were repaired and maintained by local municipality but after some time the sidewalks were found with several issues such as overtaken for repair and maintenance of nearby fitness center equipment, overall discontinuity randomly, trash heaps and often found parked motorbikes. Also lacks in furnishing features such as street lights, signage, dustbins, benches etc. The shop workers are found using sidewalks as spaces for repair, maintenance and selling space purposes. The overall walk experience does not commit preferring walk on daily basis because of above stated issues.



Fig 9-17: Sidewalk issues of Study Area 3. Source (Author)

C. Study Area 3: Commercial Area (Tariq Road)

Tariq road located in P.E.C.H. society Karachi is commercial area with most thriving shopping markets. On both sides of Tariq Road there are shops and shopping plazas and several under construction shopping malls. The experience of walk here is required to be quite conscious due to numerous differences in levels at short intervals. An overall continuity and coherence in flow of movement is absent due to irregularities of surfaces, levels and vendors sitting beside. There is lack of furnishing features such as signage, dustbins, benches, guard rails, pedestrian crossings and overall repair maintenance system. The shop

frontages are thus narrower due to occupancy by vendors and overall unsafe for elderly, children and inaccessible for people with disabilities. Motorbikes and car parking further adds to congestion in space. There are merchant unions to resolve issues and formulate policies and dialogue with officials. However, maintenance issues are dealt with individually as per ownership jurisdictions.

2. Various obstacles on sidewalks through
 - a. Garbage disposal
 - b. Inappropriately located urban furniture
 - c. Invasion by illegal parking
 - d. Irregular encroachment by private property and hawkers/vendors

2. Interviews

Study Area 1:

Local residents, passerby and shopkeepers were interviewed in study area 1 about their a) satisfaction with infrastructure development particularly the sidewalk upgradation undertaken by government in their area, b) comments about sidewalk present condition of the area, c) willingness to participate and contribute to sidewalk management and maintenance of the area.

Interview Respondent 1, Javed Aged 35 (shopkeeper) informed; *I am not satisfied with these sidewalks due to encroachments. There must be some anti-encroachment type of proper system which can control this problem to serve the people who are the users of sidewalks and will also become a part of the system as if government starts working on it and involve community.*

Interview Respondent 2, Ayub Aged 22 (shopkeeper) informed; *I am partially satisfied with sidewalks with respect to government initiatives. I am satisfied as government is doing the job properly but I am not satisfied with users which are also the shop keeper who use sidewalks as a part of their shop and other remaining space is used for the parking purposes which creates a chaos every evening. I will become a part of government initiative on community basis but only if government is looking for a permanent solution to this problem.*

Interview Respondent 3, Ali Aged 40 (resident) informed; *I am satisfied with government for focusing on cleanliness of sidewalks but I have issues with shop keepers and daily users of these sidewalks as encroachment is main problem and secondly drug addicts took off manhole caps from these sidewalks so government should also look into solution of this problem and yes I will contribute in any community based initiative by government for the betterment of area.*

Interview Respondent 4, Ishaq Aged 21 (passerby student) informed; *Not completely satisfied with these sidewalks because there is lack of maintenance and proper cleaning of the sidewalks. I think sidewalks should be maintained and encroachment should be removed and as it's a huge area with too many users so it needs to be cleaned twice a day. Yes if government asks public for cooperation I would take part in it.*

Study Area 2:

Local municipal committee head, union president of apartment building, shopkeeper and passerby were interviewed in study area 2 about their a) satisfaction with pedestrian walkways of their area, b) concern regarding a central committee dealing with shops



Fig 17-25: Sidewalk issues of Study Area 3. Source (Author)

III. RESEARCH METHODOLOGY

1. Areas Survey with photographic Documentation

Pictorial survey of these three areas as samples of residential, commercial and mixed-use areas supplements evidence of condition and performance of sidewalks in public realms of city of Karachi.

Common issues of sidewalks identified

1. Lack of quality paving, often broken and requires maintenance.

frontage and sidewalks upgradation in this area to look coherent, c) willingness to involve and participate local community in pedestrian infrastructure upgradation and maintenance.

Interview Respondent 1, Nasir Ahmed Aged 77 (UK Apartment Phase I Union President) informed; *The shops under this apartment are privately owned and have no connection with union committee therefore all initiatives are by individuals themselves, however, it would be better if there is a union of these shops leading by a head so that collective initiatives should be taken for betterment of shopkeepers and public. As community representative we are willing for any help required for infrastructure upgradation.*

Interview Respondent 2, Shoaib Aged 32 (Shopkeeper) informed; *obviously the shop frontage surfaces are not comfortable for us as well as users but unfortunately all shop owners do not contribute collectively for floor raising and finishing as some shop owners are away and rent out these shops. People have budget issues as well so as per their convenience and when their budget allows, they upgrade their shop front area. But if there is a central system in which everybody is bound to pay for similar upgradation we will contribute.*

Interview Respondent 3, Saba Aged 34 (Resident) informed; *I cannot think of having a daily walk on sidewalks in our area due to hurdles of trash heaps, parked motorbikes and encroachment by shopkeepers. I cannot find proper way to pass through due to fruit vegetable vendors and cars parked. The multiple flooring in front of shops is also not comfortable due to different finishes and levels. I do not prefer to walk if I have a car. My father can become a member if community participation is required to upgrade and monitor performance of sidewalks of our area.*

Interview Respondent 4, Mohammed Faheem Khan Aged 53 (Municipal Commissioner, District Municipal Cooperation DMC East) informed; *maintaining sidewalks and roads are responsibilities of all district's corporations. Besides people involvement there is police, traffic police, administration, political involvement and authorities which makes reforms quite complicated. Majorly, due to encroachment issues and people's unawareness sidewalks seem mismanaged. Even if government departments play their role in infrastructure upgradation, you will see chaos and mismanagement after some time. All kind of laws are defined, but issue is in law enforcement. People protest for their poverty when actions are taken for releasing encroachments of sidewalks. It is a difficult job to coordinate with different departments for infrastructure upgradation, especially acquiring funds from government. The money spent on infrastructure upgradation is people's money which is acquired by government through taxes, but unfortunately people do not own their spaces and do not want to intervene into mismanagement stances by other people for their own safety and peace. Lack of awareness, community involvement, ownership and law enforcement are the key issues behind destructive pedestrian infrastructure. We are willing to address complaints regarding sidewalk issues and ready to resolve with community cooperation.*

Study Area 3:

Shoppers, shopkeepers and union committee president were interviewed in study area 2 about their a) satisfaction with pedestrian sidewalk and shop frontage while shopping in this area b) opinion of involving participation of local communities in pedestrian infrastructure development and maintenance, c) their willingness to contribute for upgrading and maintaining pedestrian walkways in their area.

Interview Respondent 1, Hanif Khan Aged 52 (Union President) informed; *I am not satisfied with sidewalks here because of encroachment, illegal parking and illegal stalls on sidewalks. I am not satisfied with KMC (Karachi Metropolitan Cooperation) because the system is corrupted as they take some amount and leave the illegal occupants of sidewalks. There is no proper law enforcement. Residents are also fed up with these problems. The system must be upgraded in a sense of community awareness if the government ensures of law enforcement, I definitely will become a part of the system on community basis.*

Interview Respondent 2, Saleem Aged 45 (Shopkeeper) informed; *I am not satisfied with maintenance of these sidewalks as someone excavated to change a pipe line and just broke the sidewalk and created hindrance for daily users so there should be proper system for this problem and surely community and government together make the place beautiful.*

Interview Respondent 3, Arif Aged 29 (Shopkeeper) informed; *I am satisfied with sidewalks but have issue with illegal parking as it creates a chaos, congestion and disturbs the flow of public most of the time. The upgradation is needed for sidewalks to be wider and these encroachments and parking should be restricted. I will contribute for government on community basis if government works on these problems with public point of views.*

Interview Respondent 4, Sadiq Aged 36 (Shopkeeper) informed; *I am not satisfied with all levels created by peoples on sidewalks however cleanliness is better at few places but still there is need to do work on street level. Government should make system for separate water lines from sidewalks as if any person has issue with his pipe line breaks the sidewalk and disturb all users for a whole day and then also spoils the people flow on sidewalks. If government works on an initiative in a good manner, then I will also become a part of it on a community basis.*

IV. RESULTS AND DISCUSSION

The field visits with pictorial documentation as evidence conducted in three study areas of diverse functions, attributes and physical infrastructure revealed that pedestrian infrastructure exists however it is underutilized and mismanaged. Interviews with user profile of these areas informed a collective concern of all respondents that pedestrian infrastructure needs regular maintenance and upkeep. Pedestrian infrastructure of study area 1 and 2 had been developed by local government agencies. Later on, due to neglect, lack of ownership and maintenance policy resulted in mismanagement of sidewalks with trash heaps, grown vegetation, broken pavers, illegal encroachments and absence of

urban furniture (as documented in photographic survey documentation). Follow ups with municipalities for frequent pickups of litter and garbage and community counselling for dumping garbage inside garbage containers can be possible through community involvement and participation to boost concern for sidewalk ownership. Municipality officials complained about lack of ownership and awareness for sidewalks maintenance. The functional unions of people in residential neighborhoods and commercial areas, structured on self-help basis to facilitate the inhabitants/ communities who are custodians of these neighborhoods, although residential, commercial or mixed use, can thus be involved during policy making or initiatives for infrastructure development. They can play a significant role in convincing their communities through awareness campaigns particularly for uneducated or less educated people, can effectively participate in development tasks and later play a vital role in ownership and upkeep of these public spaces such as sidewalks.

Recommendations for Improvement

1. An integrated approach to manage sidewalks should be ensured to upgrade infrastructure quality and accessibility for pedestrians.
2. Community mobilization and involvement in sidewalk infrastructure needs to be activated for sensitizing care for public spaces and sense of ownership by the population.
3. Sidewalks should be universally accessible to all pedestrians including those on wheel chairs with at least 1.2-meter space and 10% slope.
4. Pedestrian crossings must be ensured with signals to ensure pedestrian safety while crossing roads.
5. It is significant to develop signage system apart from signage from motorized vehicles for the people to orient themselves within urban environments.
6. The inclusion of vegetation in form of trees, planters and fences with urban furniture and equipment such as utility poles, street lights, benches, walls and trash bins contribute to increasing permeability, air quality and encourage walking.
7. Adequate lighting and CCTV cameras can ensure a safer and uninterrupted flow of people on sidewalks.

V. CONCLUSION

There are many researches on community involvement and participation in infrastructure development as well as sidewalk utility and level of service but practical examples are scarce and particularly sidewalks maintenance and upgradation have not dealt with community involvement. From the experience on daily basis of pedestrian infrastructure in the city of Karachi, revealed underutilization of sidewalks as pedestrian spaces due to issues being documented through photographic survey and interviews. Although pedestrian infrastructure upgradation and development is being undertaken in some areas of the city, however, lack of maintenance and ownership results in degradation of sidewalks as public spaces, thus discourages walk culture. The secondary research study on community involvement and participation in upgrading infrastructure development of an area thus is an opportunity to streamline policies of sidewalks maintenance. The

government initiatives together with educating the community through awareness sessions and engaging the existing union representatives of commercial sector and residential communities will be fruitful in activating and mobilizing communities who are custodians of their neighborhoods to own their public spaces, particularly sidewalks. Public spaces created for the people and used by the people cannot be maintained or upgraded without people who are custodians and end users of these spaces.

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