



Designing Spaces underneath the Flyover in Mumbai City: Issues and Concerns

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Abstract. Spaces have been fundamental for improving the quality of the city and lives of the people in metropolitan cities. One such biggest metropolis of the India is Mumbai, which is connected with railways, metro, roadways, water ways for travel and transport, having 40 flyovers and 16 proposed and under construction. Space under the flyover in the cities is considered as an urban void which has been neglected, left unmaintained and unmonitored. These spaces under the flyover have the potential of development to serve as public space. Thus, to understand the utilization and designing of spaces under flyover in Mumbai city the present study was undertaken with the objective to identify the provisions and uses of spaces under flyover, to categorize activities carried out under the flyover, evaluate the existing design with respect to function and problems associated with these spaces. 120 visitors participated in the study from 4 flyovers selected for the study based on the usability of the facilities and amenities provided. The data was analysed using descriptive statistics. The results of the study, indicated that the users were overall satisfied with the facilities and activities provided for public. The spaces were mostly used by the visitors for relaxing under the flyover. Visitors were dissatisfied with the security services and extremely annoyed by the unhealthy and illegal encroachments prevailing under the flyover and the toilets below flyover lacked hygiene and maintenance. There is a need for some action to be taken by the local BMC authorities to maintain the space; provide some sports equipment and walking spaces, reading spaces, comfortable sitting spaces, library, hygienic drinking water and good washroom facilities so that people are attracted to these spaces and utility is increased for the people who don't have proper spaces for these activities.

Key words: Flyover, facilities, encroachments, public spaces, visitors

1 Introduction

Mumbai is facing heavy traffic congestion problem due to rapid industrialization and growth of the city leading to pollution at various traffic junctions. To improve the traffic congestion problem in Mumbai city, Maharashtra government has given task to MSRDC. MSRDC aimed to construct 50 flyovers to lessen the problem of traffic jams at various key junctions (website: msrdc.in/Site/Common, 2022) and to build additional roads and highways for the convenience of the public, while overlooking pedestrians, public spaces, and other factors (Ahmed, 2020). The notion of constructing something productive beneath the flyover arose from the rapid increase in the number of flyovers built to help with traffic flow. Widespread new and improved transportation infrastructure construction has accompanied and aided Mumbai's growth. The region has seen over 50 elevated roads (flyovers) erected since 1998 and over 30 elevated pedestrian walkways / skywalks installed since 2008. A number of elevated metro lines and monorails that are currently being built or proposed are expected to maintain this vertical emphasis (Andrew H., Mumbai Reader, 2017). A rapid increase in the number of flyovers to facilitate the smooth flow of traffic gave birth to the idea of developing something productive under the flyover spaces (Andrew H., Mumbai Reader, 2017).

Cities need public spaces because they improve people's quality of life, the environment, and their long-term viability. The addition of green space to public spaces will help the city's lungs breathe easier. However, due to a lack of available space in the city, the empty places beneath flyovers are a valuable resource for some types of adaptation. Stimulatingly, the areas beneath the flyovers were left as empty parcels, and the vulnerable communities welcomed them in response to their hunger for public places in the city. These marginal communities exploit flyovers impulsively before institutional institutions discover the possibilities of these empty areas (Kassim and Mydin, 2019). The Brihanmumbai Municipal Corporation intends to transform the space beneath bridges into functional public spaces such as an open garden, a running track, and a community centre. To reduce encroachment, unauthorized parking, waste dumping, and improve recreational activities by beautifying these areas (Sanjana B., The Indian Express, 2022).

The leftover spaces under flyover are usually worthy of design and are ordinary, ugly and not in context. Public spaces act as a buffer zone and lobby of the city (Kurniawati, 2012). Public spaces are an important part of cities as they contribute to improvements in liveability, environmental quality and sustainability (Praliya, 2016). Public space also can be used as a space for air and sunlight penetration to the city. It enhances the quality of life (Kurniawati, 2012).

1.1 Objective of the study

The main objective of the present study is to identify the spaces planned and usage of spaces under flyover by the community and to know the problems and issues of concern for visitors. Secondly, to get suggestions on the needs of the visitors to increase the usage and benefit to the society on large.

1.2 Statement of the problem

Mumbai is the commercial capital, most populous and fast-growing city of India. It has an increasing number of flyovers on highways to reduce the traffic congestions at peak hours, resulting in an increase in the empty spaces underneath the flyovers. The void spaces under the flyovers are either unplanned, or used for dumping scraps, parking spaces, shelter by homeless and drug addicts, illegal shops and hub of illegal activities creating unhealthy environment. Very few spaces under flyover are designed and used for the public activities.

2 Methodology

The present study is the descriptive research focusing on activities carried out under the 4 flyovers situated under the highways in the city of Mumbai. The design of the study is essentially a blueprint of a plan for data collection. The selection of flyovers was based on the activities carried out under flyover, design, location and usage. Observation and questionnaire tools were used to collect the information. Only those subjects using the flyover were included in the study. The data gathered was analysed using descriptive statistics.

The 4 flyovers selected for the study are listed below:

- A. Nanalal D. Mehta flyover, Matunga
- B. Jagannath Alias Nana Sunkersett flyover, Dadar TT
- C. Fergusson Flyover, Lower Parel
- D. Elphinstone Flyover, Elphinstone

2.1. Description of Flyovers under study

Flyover A: Nanalal D. Mehta flyover, Matunga

Nanalal D. Mehta flyover is also known as Tulpule flyover and North end flyover. It is located on Dr. Babasaheb Ambedkar Road in Central Mumbai. The Nanalal D. Mehta Garden/park is located in a 7200 square meter strip under the flyover in the Matunga neighbourhood. The flyover is 1.3 kilometers long, of which 600 meters have been converted into a jogging/walking track. The area is 12 meters wide (approx.)

The park's mosaic jogging/walking track in shades of blue, having Narmada River theme, is its most striking feature. The river is represented by the blue walking/jogging path, while the vegetation and terrain on either side stand in for eight riverside sights. The seating area on the riverbanks that is modelled after the steps of a Ghats. Due to the thick foliage covering both sides of the spacious walking/jogging area, the space is bordered on either side by an iron grill that is hardly visible. The water supply for the plants, pots, and entire garden is supplied by specially constructed water tanks at the end of the garden with sufficient street lights (Vatsala, Mid-day, 2016).



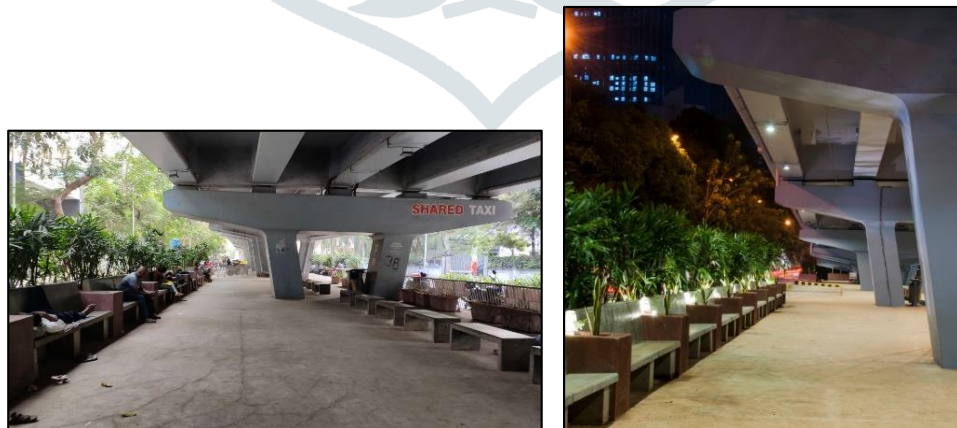
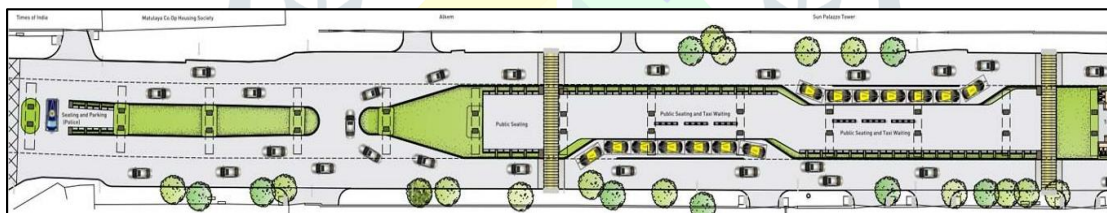
Flyover B. Jagannath Alias Nana Sunkersett flyover, Dadar TT

Jagannath Alias Nana Sunkersett flyover is popularly known as Dadar TT flyover. It is located on the Dr. Babasaheb Ambedkar road. The flyover stretches across 60,000 sq. ft. area turned into garden known as Dadar TT garden. The space once was parking lot for taxis but these were moved out and a garden was made for public. There are 300 samplings inside, children play equipments, seating and walking track. The garden is used by local residents and outstation travellers as a waiting area, kids as play areas with parents. Cars were parked in front of the entry, which made it difficult for a new visitor to spot the entry of the space. Some parts of the garden are not maintained. There were booking office situated under the flyover and a stop for outstation with green walls around (Ashar H., Mid-day 2021).



Flyover C. Fergusson flyover, Lower Parel

Fergusson flyover is located on the Senapati Bapat Marg near Palladium Mall. The flyover is situated in a commercial and residential area in Lower Parel. Fergusson flyover has been turned into a hangout zone cum-utility area boasting pay-and-use toilets, taxi bays, benches and pedestrian pathway. The larger aim was to decongest traffic, provide an open space under the flyover that had been taken over by encroachers and illegal settlers and ensure pedestrian safety. The key features of the revamped stretch include taxi bays on both sides of the road and a U-turn that will ease chaos created by share-taxi operators, plants to mitigate pollution and stave off mosquitoes, pedestrian walkways, pay-and-use toilets, and dedicated area for traffic police, seating space, dustbins and lights. (Baliga L., Mumbai Mirror, 2018)





Flyover D. Elphinstone flyover, Elphinstone

Elphinstone flyover garden is located on the busy road of Senapati Bapat Marg, surrounded by commercial and residential buildings. The transformed public spot is a vibrant greenish-yellow patch with a community space, sitting arena, play area, reading space, interesting artwork, green aisle as well as exercise and recreational zones. The garden was used by children to play and elderly to sit. Vachnalaya was used by readers, students to study. There was furniture provided in the garden and vachnalaya, different playing activities in the garden. The paintings cover everything from the old ST ticket to the mills, mill workers, and Dadar's famous flower market and even have figures with historical relevance, like Savitribai Phule.

There were different levels between the road and space to make it safe for users. Zebra crossing for safe accessibility, proper lighting in space with plants. The green area was not allowed for locals. (Murugkar K., Indian Express, 2022).



2.2. ANALYSIS OF DATA

After the data collection, the data was analysed using descriptive statistics. Mean and percentage were computed and graphs were prepared for presentation of the results.

3 Findings and Discussion

The study identified the design of the spaces under flyover; activities planned and carried out and how to modify the void spaces under the flyover that can bring significant changes in the aesthetics of the city and make it more functional. For this purpose, 120 subjects participated in the study that included males (45.8%), females (35.8) and children (18.4%) respectively. Majority of the participants belonged to age group 15-25 years and were students.

3.1 Observation Analysis

The on-site observation was carried out for four flyovers under study, which focused on various facilities like essentials, leisure activities and other activities. The data gathered was analysed which is presented in table 1.

Table 1. Results of the Observations of the Spaces below Flyovers

Sr. No.	Parameters under study	Flyover A	Flyover B	Flyover C	Flyover D
a	Developed year	2016	2019	2018	2018
b	Length of the bridge	1.03km	0.95km	2km	18km
c	Length of the area developed	0.60km	0.26km	1.3km	1km
I	Essential				
1.	BMC RTO /Cleaning office	-	-	-	✓
2.	Acquired vehicle parking	-	-	-	✓
3.	Parking for visitors	✓	✓	✓	✓
4.	Waiting area & out station bus stop	-	✓	-	-
5.	Toilet crossing	-	✓	✓	✓
6.	Zebra crossing (under flyover)	✓	-	✓	✓
7.	CCTV surveillance	-	-	-	✓
8.	Security/Maintenance cabin	✓	✓	-	✓
9.	Dustbins	✓	✓	✓	✓
10.	Water tank for plants/water outlet pipe	✓	✓	-	✓
11.	Electrical box	✓	✓	✓	✓
12.	Fence on sides	✓	✓	✓	✓
13.	Taxi stand	-	✓	✓	✓
14.	Painted pillar's /plantation buffer	✓	✓	-	✓
15.	Green Pillar & Buffer screen wall design	-	-	-	✓
16.	Total facilities (15 items)	8	10	7	14
II	Leisure activities				
1.	Garden with Fitness equipment's	✓	✓	-	✓
2.	Reading	✓	-	-	✓
3.	Walking path	✓	✓	✓	✓
4.	Jogging track	-	✓	-	-
5.	Cycling path	✓	-	-	-
6.	Working space for school/office goers	✓	✓	✓	✓
7.	School for kids	-	-	-	✓
8.	Seating area	✓	✓	✓	✓
9.	Newspaper stands	✓	-	-	✓
10.	Pet friendly	✓	✓	✓	✓
11.	Pedestrians walking	-	✓	-	-
12.	Kids play area	✓	✓	-	✓
13.	Total Facilities (12 items)	9	8	4	9
III	Other activities				
1.	Fast food/Fruit/Tea/ kids' toys stall	-	✓	✓	-
2.	Day/Night shelter /Drug addicts	✓	✓	✓	✓
3.	Hackers	-	-	✓	✓
4.	Migrants /Encroachments	-	✓	✓	✓
5.	Garbage dumping / Construction debris	-	✓	✓	-
6.	Unauthorized cycling/motorists parking	-	-	✓	✓
7.	Total issues (6 items)	1	4	6	4

Table 1. highlights the findings of the observations made of all 4 flyovers. In essential category it was observed that all the spaces under flyover had parking for visitors, dustbins, fencing and electrical box; while only one flyover had CCTV surveillance, RTO office with acquired vehicles parking space and green pillars. Three flyovers had taxi parking space, toilet and zebra crossings, water tanks and plantation buffers. Among leisure activities category it was observed that walking path, provisions of workplace and seating areas

for school / office goers/common public and pet friendly areas was made and only two of them had reading area. Garden with fitness equipment's, kids play area were provided by three flyovers, while reading, jogging track, cycling path, pedestrian walking were provided by only one among four flyovers.

Some other illegal activities were also observed under the flyovers like hub for drug addicts/hackers, encroachers and migrants, variety of stalls, unauthorized parking by cyclists and motorists and garbage and construction dumping ground.

3.2 Purpose of visit and Uses of the spaces under the flyovers

To find out the purpose of visit, since how long participants were using the spaces under flyover, what was the preferred time of visit, whether the visitors were satisfied with the design and facilities provided a questionnaire cum interview schedule was used.

The responses on number of years using the spaces under flyover, majority of the participants started visiting less than one year period followed by participants visiting for less than a month. Majority of them preferred going every day in afternoon and evening for 30 minutes to 2 hours respectively. The main purpose of visit was people wanted to relax, meet people and others went to enjoy leisure activities.

When asked about the facilities and design of the spaces under flyover; 100% of the participants reported that they were satisfied with the design and facilities provided by flyover A, followed by flyover D and B; while majority of users of flyover C were not satisfied. Based on 5-point scale of satisfaction 86.6% from flyover D, 66.6% and 40% from flyover A and B were extremely satisfied; while 36.6% from flyover B, 30% from flyover A, 23.3% from flyover C and 13.3% from flyover D were very satisfied; but 43.3% from flyover C were dissatisfied/not satisfied at all respectively. Overall, 50.8% were extremely satisfied and 25.8% were very satisfied with design and facilities provided under flyovers.

3.3 Usage of amenities / facilities by the visitors

3.3.1 Usage of essential amenities/facilities provided under the flyovers

The questions related to the usage of essential amenities and facilities were asked. The responses gathered were tabulated, that are presented in table 2. The results showed that 75% of people use under flyover space while waiting for crossing roads, hiring taxi or rickshaw; 71.7 % visitors use dustbins to throw waste; 44.2% used for parking vehicles and using toilets; while others use for buying food items, newspaper and cabbies for parking.

Table 2. Usage of Essential Amenities/Facilities provided under the 4-Flyovers in Mumbai city

Sr. No.	Essential amenities / facilities	Flyover A n=30	Flyover B n=30	Flyover C n=30	Flyover D n=30	Total amenities used N=120
1.	Parking vehicles	12 (40.0)	12 (40.0)	15 (50.0)	14 (46.7)	53 (44.2)
2.	Toilet	7 (23.3)	21 (70.0)	1 (3.3)	24 (80.0)	53 (44.2)
3.	Waiting for road crossing/ for hiring taxi/ rickshaw	23 (76.7)	19 (63.3)	25 (83.3)	23 (76.7)	90 (75.0)
4.	Dustbins	22 (73.3)	18 (60.0)	21 (70.0)	25 (83.3)	86 (71.7)
5.	Taxi stand	1 (3.3)	9 (30.0)	13 (43.3)	5 (16.7)	28 (23.3)
6.	Buying food/ other items	6 (20.0)	13 (43.3)	8 (26.7)	7 (23.3)	34 (28.3)
7.	Buying newspaper	3 (10.0)	11 (36.7)	1 (3.3)	3 (10.0)	18 (15.0)

*figures in parenthesis denotes percentages

3.3.2 Use of the leisure-time spaces for leisure activities provided under the flyovers

The responses for usage of leisure-time activity spaces provided showed that majority of the visitors came for relaxing (87.5%); meeting friends/relatives, walking, reading books/newspapers, to do office / school work while some come for eating and jogging purpose.

Table 3. Usage of Spaces for the Leisure activities provided under the Flyovers

Sr. No.	Leisure-time amenities / facilities	Flyover A n=30	Flyover B n=30	Flyover C n=30	Flyover D n=30	Total amenities used N=120
1.	Exercise equipment	11 (36.7)	15 (50.0)	1 (3.3)	0 (0.0)	27 (22.5)
2.	Reading books/ news paper	15 (50.0)	17 (56.7)	14 (46.7)	27 (90.0)	73 (60.8)
3.	Sitting space in the garden	25 (83.3)	26 (86.7)	6 (20.0)	10 (33.3)	67 (53.8)

4.	Walking path/track	15 (50.0)	27 (90.0)	18 (60.6)	13 (43.3)	73 (60.8)
5.	Jogging track	13 (43.3)	14 (46.7)	7 (23.3)	10 (33.3)	44 (36.7)
6.	Space provided for office/school work	13 (43.3)	12 (40.0)	19 (63.3)	24 (80.0)	68 (56.7)
7.	Playing area for children	10 (33.3)	14 (46.7)	7 (23.3)	11 (36.7)	42 (35.0)
8.	Meeting friends/ relatives	27 (90.0)	16 (53.3)	30 (100.0)	29 (96.7)	102 (85.0)
9.	Relaxing seats	25 (83.3)	25 (83.3)	30 (100.0)	25 (83.3)	105 (87.5)
10.	Stalls for Eating	10 (33.3)	15 (50.0)	19 (63.3)	12 (40.0)	56 (46.7)

*figures in parenthesis denotes percentages

3.4 Satisfaction derived by the visitors from the facilities /amenities provided under the flyovers

The responses related to the satisfaction derived by the amenities and facilities provided under the flyover spaces showed that majority of visitors were extremely satisfied with the tree plantations/landscaping, beautification of the spaces, accessibility to the spaces below flyover, lighting, circulation spaces, fencing provided to the area, spacious seating spaces and provision of toilets. 89.5% visitors were satisfied with the school facility provided for under privileged street children. 85% of the visitors were satisfied with provision of dustbins, garden area and walking path. 65.8% were satisfied with planning of leisure-time activities as they wanted more activities to be provided; 49.2% were happy with CCTV cameras but they felt more cameras should be there for safety of night visitors. Visitors were happy with BMC office under flyover as it gave them secured feeling.

Table 4. Level of Satisfaction derived by the Visitors from the facilities provided under the Flyovers

Sr. No.	Satisfaction level	Flyover A n=30	Flyover B n=30	Flyover C n=30	Flyover D n=30	Total amenities used N=120
1	CCTV	5 (16.7)	16 (53.3)	8 (26.7)	30 (100.0)	59 (49.2)
2	Accessibility to the area	30 (100.0)	28 (93.3)	26 (86.7)	30 (100.0)	114 (95.0)
3	Beautification process	30 (100.0)	29 (96.7)	25 (83.3)	30 (100.0)	114 (95.0)
4	Tree Plantations / Landscaping	30 (100.0)	30 (100.0)	25 (83.3)	30 (100.0)	115 (95.8)
5	School for street kids	30 (100.0)	24 (80.0)	23 (76.7)	30 (100.0)	107 (89.2)
6	Planning leisure activities	30 (100.0)	27 (90.0)	19 (63.3)	30 (100.0)	79 (65.8)
7	Pathway / walkway	27 (90.0)	26 (86.7)	22 (73.3)	27 (90.0)	102 (85.0)
8	Pay and park facility	26 (86.7)	15 (50.0)	18 (60.0)	26 (86.7)	85 (70.8)
9	Garden area	30 (100.0)	28 (93.3)	14 (46.7)	30 (100.0)	102 (85.0)
10	Provision for toilet	28 (93.3)	24 (80.0)	30 (100.0)	28 (93.3)	110 (91.7)
11	Provision for dustbin	30 (100.0)	25 (83.3)	17 (56.7)	30 (100.0)	102 (85.0)
12	Provision for security services	30 (100.0)	25 (83.3)	7 (23.3)	30 (100.0)	92 (76.7)
13	BMC office	25 (83.3)	24 (80.0)	18 (60.0)	25 (83.3)	92 (76.7)
14	Provision for seating space	30 (100.0)	28 (93.3)	22 (73.3)	30 (100.0)	110 (91.7)
15	Provision for fencing	30 (100.0)	30 (100.0)	25 (83.3)	30 (100.0)	115 (95.8)
16	Lighting	30 (100.0)	30 (100.0)	25 (83.3)	30 (100.0)	115 (95.8)
17	Circulation space	30 (100.0)	30 (100.0)	25 (83.3)	30 (100.0)	115 (95.8)

*figures in parenthesis denotes percentages

3.5 Factors stopping and annoying visitors to enjoy spaces designed under the flyovers

Even though visitors had many reasons to visit the beautiful spaces under the flyover, but some illegal and unauthorised activities carried out under flyover were annoying and which were stopping them to visit and enjoy the public spaces. The major factor annoying visitors was unhealthy and unhygienic environment created by dumping garbage, construction debris, dumped scrap and stollen vehicles, night shelters by beggars and migrants, hub for illegal activities, breeding space for drug addicts and peddlers, unauthorised encroachment, parking, food stalls and nuances created by street children making it unsafe for the visitors; especially during night time.

Table 5. Factors stopping and annoying visitors by the activities carried out under the flyovers

Sr. No.	Other Activities under Flyover	Factors Annoying the Visitors				
		Flyover A n=30	Flyover B n=30	Flyover C n=30	Flyover D n=30	Total amenities used N=120
1	RTO Office	7 (23.3)	9 (30.0)	8 (26.7)	16 (53.3)	40 (33.3)
2	Unauthorized Encroachment	30 (100.0)	22 (73.3)	30 (100.0)	30 (100.0)	112 (93.3)
3	Unauthorized Parking	28 (93.3)	23 (76.7)	30 (100.0)	30 (100.0)	111 (92.5)
4	Used as Night shelter by beggar's/migrants	29 (96.7)	24 (80.0)	30 (100.0)	30 (100.0)	113 (94.2)
5	Dumping of Garbage	30 (100.0)	25 (83.3)	30 (100.0)	30 (100.0)	115 (95.8)
6	Breeding space for Drug Addicts/ peddlers	30 (100.0)	25 (83.3)	30 (100.0)	30 (100.0)	115 (95.8)
7	Illegal activities	30 (100.0)	25 (83.3)	30 (100.0)	30 (100.0)	115 (95.8)
8	Nuances by street kids	30 (100.0)	24 (80.0)	29 (96.7)	29 (96.7)	112 (93.3)
9	Unauthorized Fast-food stall/sellers	25 (83.3)	20 (66.7)	27 (90.0)	28 (93.3)	100 (83.3)
10	Unauthorized Tea stall	25 (83.3)	20 (66.7)	28 (93.3)	28 (93.3)	101 (84.2)
11	Filled with hoardings/Signage's	17 (56.7)	16 (53.3)	26 (86.7)	27 (90.0)	86 (71.7)
12	Debris from construction sites	30 (100.0)	23 (76.7)	30 (100.0)	30 (100.0)	113 (94.2)
13	Dump for stolen/scrap vehicles	30 (100.0)	25 (83.3)	30 (100.0)	30 (100.0)	115 (95.8)
14	Cycling path	9 (30.0)	14 (46.7)	20 (66.7)	16 (53.3)	59 (49.2)
15	Pet sharing spaces	7 (23.3)	14 (46.7)	19 (63.3)	15 (50.0)	55 (45.8)

*figures in parenthesis denotes percentages

3.6 Recommendations by the visitors to improve the number of visitors utilizing the spaces under flyovers

Visitors were asked about their expectation and needs from the BMC to improve the spaces below flyover so that maximum visitors can enjoy the public facilities designed for the communities. The most important factor which majority of the visitors felt was maintenance, safety, hygiene, installation of more CCTV cameras, 24X7 guard, removal of garbage, debris and unused vehicles dumped under flyover and maintain cleanliness. The other factors which visitors expressed were to have good hygienic café's, water coolers, clean toilets, more activity and games area. Few suggested to have some spaces designed for outstation people waiting for buses and have some places for street people /children for sleeping.

Discussion

Observation of the flyovers strongly manifests the possibilities and opportunities for designing and creating spaces for community and public utilization. All 4-flyovers attracted the visitors as they provided abundant opportunities by providing essential amenities, leisure activities and creating beautiful spaces. Similar activities were carried out under the flyover of MRR2 at Jalan Kanan and Penchala Link at Jalan Sungai Penchala in Kuala Lumpur (Qamaruz-Zaman et al., 2012). Kushwah and Rathi, 2017 suggested that spaces for play, for shelter, for community building, for worship, shaded seating areas, food courts, gathering spaces, plazas, and insert public

facilities like rickshaw stand, public toilets, incorporate signages, good lighting and waste collection for better usage. Chouhan, 2014 commented that the leftover spaces under flyover brings lots of negativity through illegal parking, accidents, drug addicts spot and also dengue problem. Chohan, 2014 further in research established that non-development of under spaces could be due to encroachment, bribery, lack of motivation, non-involvement of urban designers/ architects and government. Sabbir and Ali, 2021 mentioned that social spaces, play spaces, shelter for homeless needs to be addressed for greater benefit of the urban space. In the present study also visitors suggested shelter for homeless should be designed. Marfani et al., 2019, designed rough prototype of mini theatre and game zone for the leftover spaces under flyover in surat city. Ahmed et al., 2020 found children playing, vendors selling fruits, vegetables and toys and beggars resting under the flyover in Lahore, Pakistan. The co-author Khan Rabia proposed hexagonal pods for homeless people, spaces for vendors, play area for children and public toilets. Kassim & Mydin (2019) in a study on Malaysia flyover found cycle parking, walking, jogging activity under the flyover, which is similar to our study.

4 Conclusion

It could be concluded that the space under the flyover is utmost important for the urban public and infrastructure. Space under the flyover has a positive impact on the visitors with the activities and facilities provided for the public. The space benefits all age groups for their different functions, relaxing, eating, meeting people, etc. The other aspect of the study is the satisfaction level of the amenities provided under the flyover. This is essential as the study proves that majority of the respondents were not using the facilities provided extremely annoyed by the unhealthy condition prevailing because of encroachments, homeless sleeping shelter and illegal activities under the flyover have to be cut and the facilities like toilet, dustbin, garden area, seating area should be maintained to attract more foot-fall.

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