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RESEARCH PAPER

Slums and Environmental Sustainability: A Case Study of Multan City

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ABSTRACT

This research addresses the growing challenges of slums formation in Multan City, Pakistan. Metropoltan area population of Multan in 2021 was 2 million and growing at the rate of 2.23%. The main reason of slum formation is rapid urbanization. People migrated towards urban areas to facilitate themselves from the opportunities they are deprived. Unfortunately, there is no space for the poor's in urban areas. In that case, these poor are forcibly choose margins of the cities or the deprived areas within a city to live. This study is survey-based. 5 urban slums areas of Multan city were randomly chosen. To execute the objectives of this research structure questionnaire was designed. A total of 144 questionnaires approximately 25-30 from each settlements were filled from filed survey by the researcher. Findings has been observed that these settlements are extremely deprived from the basic human facilities and infrastructure like clean water, sanitation, health facilities, inadequate houses etc. This has created a big problem for the sustainability of the city. For the betterment of these settlements Government should make law for the sustainability.

Keywords: Sattelments , Sustainability, Urbanizationand Urban Areas

Introduction

Urbanization is the common component of developing countries (Hashim et al., 2023) and slums are the essential outcomes of urbanization (Mirza et al., 2015).Slums inhabitantsare extremely poor and their socio economic condition doesn't permit them to carry on with a healthy life (Tanni et al., 2014). They don't have access to sanitary system and they can't get safe water supply. They live in antagonistic conditions because of poor socio-economic and unsound health facilities (Kamruzzaman & Hakim, 2016). Slum implies a vigorously populated area in city. Slums Population basically imply to individuals living in informal regions under the poverty line. Slum regions delineate high rates of poverty, awful wellbeing status and lack of education. Slums residents have low income (Alamgir et al., 2009). UN-HABITAT characterizes a slum family unit as a community of people living under a similar shelter in a metropolitan region that have at least one of the characteristic:insufficient approach to safe water,insufficient approach to sanitary and other establishment, unhygienic conditions of housing, overpopulated and insecure residentiary status (Omoboye, 2020).

Slums are characterized as settlements with at least 10 household or a mess unit with at least 25 individuals and prevalently extremely unhygienic houses, very high population density, poor environmental conditions e.g. water and sanitary conditions, very low financial status; absence of safety of residency. Mostly these people migrated (Parveen et al., 2023) from rural areas towards urban areas because of financial unstability. They choose margine of the urban area to live because they are landless (Hashim et al., 2024).

As indicated by UN HABITAT, by 2008, the greater part of the globe's populace (6.7 billion), 3.3 billion individuals will be living in towns and urban areas. Out of 3.3 billion individuals, more than 1 billion individuals (one out of each three city inhabitants) live in

informal settlements. Today, more than 90% of slum inhabitants in developing countries. South Asia has the biggest slums, then in Eastern Asia, sub-Saharan Africa and Latin America. There are something like 550 million slum occupants in Asia, 187 million in Africa, 128 million in Latin America and the Caribbean and a further 54 million on the planet's 30 most extravagant nations (Elrayies, 2016).

Due to the mountainous terrain and landscape (Qasim et al., 2024), the northern most part of Pakistan has no compacted urban areas (Qasim et al., 2024) or slum settlements. In the south of Pakistan, Orangi Town (Karachi) is obtained to be home of around 2.4 million individuals as per the report, notwithstanding accurate figure stays obscure. Orangi town is a region roughly 22 square miles in zone that structures a significant part of the north-western part of Karachi, Pakistan. At the point when assembled with the adjoining region of Baldia Town, the Orangi-Baldia populace is assessed to be more than 2,000,000. The region was portrayed in a 1999 National Geographic article on Mumbai's Dharavi informal settlement or slum as the "biggest shanty town in Asia." Nonetheless, just a few pieces of Orangi town can be described as an informal settlement. Orangi is the biggest of Karachi's for the most part spontaneous settlement, a lot of Orangi gets civil administrations (Ahmad, 2020).

Multan is the major metropolitan city of the southern Punjab. The geographical area of Multan city is 29.56^0 latitude north and 71.22^0 longitudes east. Political wise Multan situates in the region that is profoundly populated territory of Pakistan. The population of Multan metro area is 2,059,534 in 2021. Growth rate of Multan city is 2.23% in 2021 Territory of Multan city is 110 square miles. There are four tehsils of Multan. Multan sadder, Sujaabad, Multan city and JalalpurPirwala. Multan city is extremely urbanized area of the Multan district. The altitude of Multan city is 423 feet high from the sea level. Multan city code of telephonic association is 061. Time zone is +5GMT.

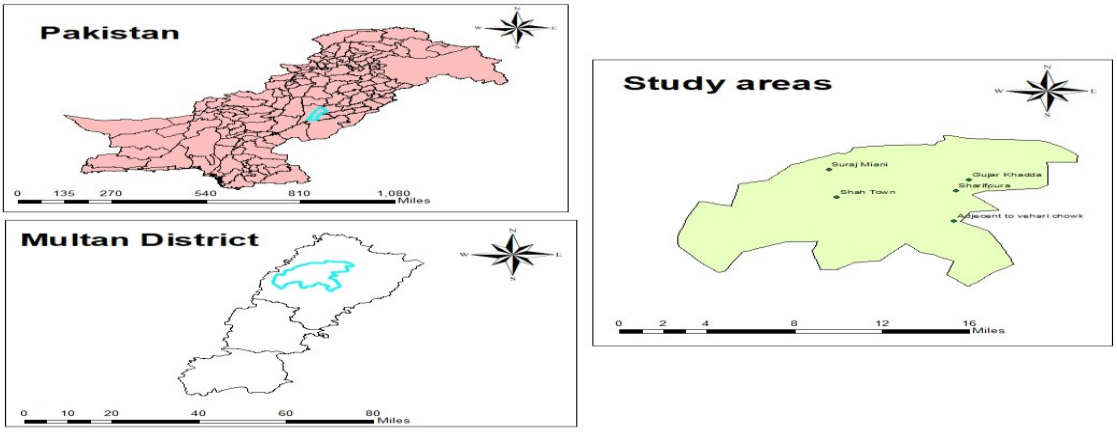


Fig.1 Map of the Study Area

Literature Review

The urban areas make a link between housing need, economic development and urban growth to support or establish an act (Hashim et al., 2023). This agenda has been neglected by the city government thus, the slum formed rapidly.One of the results of wild size of monetary development is the rise of informal settlements, where metropolitan neediness is on an ascent and where because of natural corruption, poor people particularly ladies are confronting the adverse consequences of monetary development. Helpless framework, environment chances and improved weakness to natural risks in slums meet to characterize the existences of the metropolitan poor, particularly ladies and goes about as an obstruction to ladies' financial strengthening specifically and financial development of the urban communities and nations when all is said in done. The present examination will

assemble essential and auxiliary information through blended exploration strategies and attempt to build up the interrelation and the differential effect of ecological debasement emerging out of financial development on informal settlements inhabitants(Farooq et al., 2023)..

With Special Reference to Sylhet City, This paper identified the harsh environmental condition of Bangladesh. Climate is the major issue therefore, migration towards posh areas is raised over the last several decades. Increasing in informal settlement is become a challenge for the development of urban area. This paper also describe about the unhygienic conditions of slums dwellers like over population, lack of shelter, food, health amenities ,insufficient infrastructure, open space, narrow streets, unhealthy environmental conditions, Poverty, inadequate education, low income and insufficient services. The present situation of social life is very woeful due to lack of education, employment and all other basic human amenities that's why they are far from modernization (Ballesteros, 2010).

Rapid urbanization is now become a major challenge for developing countries. Pakistan is also a populated country (Qasim et al., 2023). Urban areas are already overpopulated (Farooq et al., 2023), thus migrated people forcibly choose open space to live which are called slums. According to this paper conditions of informal settlements was poor than others. Various variables were used to identify lack of facilities which were faced by the slums dwellers of Faisalabad. For the lack of amenities SEOI (socio-economic opportunity index) was made. The index was made for clarify the variables identified by Multidimensional Poverty Index (MPI) and Poverty of Opportunity Index (POI) introduced by in (human development in south Asian report 1998). Health care, housing conditions, income status, and education level these four parameters were identified in this article. The main theme of this article was to identify the lack of facilities. It also described that Government should grab the lack of amenities faced by slums. Also narrated that Pakistan as well as world was already took many steps for the upgradation of the informal settlements.

Environmental degradation is one of the most problematic issue in urban areas as well as in informal settlements. Environmental, heath, water and sanitary issues were discussed in this paper. Poverty is also one of the main issue in posh areas and also in slums. This paper is about Tabriz the city of Iran. All environmental issues of Tabriz's slums were discussed and examined in this paper (Ahmad, ft. al., 2015; Moosavi, 2011).

The main point of this study was to transform environmental issues into environmental activities. Low income, unhygienic housing conditions, dependency ratio, unawareness of environmental problems in slums dwellers all were influenced inadequately. In this paper diseases like malaria, typhoid, and diarrhea were included. Analysis of this paper is that socio- economic and environmental problems were adversely impact on health as well as on the lives of slums dwellers (Noor et al., 2014).

Karachi is hub of slums. It also describes about the environmental, economic and social problems and solutions of the slum's dwellers. It also describes the social conflicts like human smuggling, abducted, drug smuggling and so on, and environmental complications such as pollution in water, cleanliness health services and deforestation, unhealthy food and health problems etc. This article also describes the promotion of education for their better future. And also describes about mental awareness towards environment, cultural beliefs (jatoo, 2017).

People migrate towards urban areas for fulfillment of their amenities but urban land is overcrowded and refuges did not got piece of land for them and forcibly choose open space for residence. Those areas are not suitable for living. Slums people suffered from high

risk e.g. habitual of drinking, smoking open space along the roads, unsafe houses, lack of amenities etc.

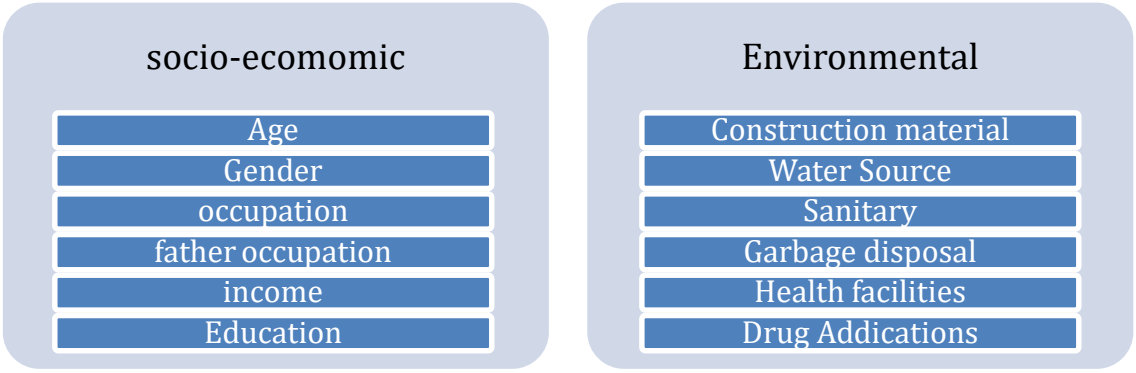
Material and Methods

For this study quantitative research method was selected; because it was most suitable one to accomplish the objectives of the research. The aim of the research describes about to explore socio-economic profile, environmental degradation and upgradation of slums in Multan city.

Data Collection Technique

A Questionnaire was designed consist of both open and close ended questions to collect data from respondents. The Questionnaire was pretested in selected areas for sample and revised according to the feedback gained during pilot survey. The questionnaire was design to gain relevant information considering general, social, economic and environmental details.For this research 5 areas were selected. 80% of the population were analyzed.

Total 15 variables were taken to fulfill the requirement of the objectives. 6 parameters are socio-economic and 6 are from environmental conditions and 3 are others. All parameters are individually characterized.



Data Analysis and Interpretation

To analyze the data both qualitative and quantitative techniques were used. Quantitative data which help to generate data from household through field survey, was analyzed using simple descriptive statistical tools like percentages and frequencies operate with SPSS and Microsoft Excel. Single and multiple variables are used to analyze the data. Coding method had been used in SPSS to maintain the data base. Arc GIS 10.4 was also used for making map, to show the location of the study area. The qualitative data collected utilizing by personal observation was also examined through interpreting, narrating and description.

Results and Discussions

Demographic profile

As per indicator, this table represent a comparative analysis of the respondent's age their marital status and gender. 32.64% out of 100 falls in 31-40 and 41-50 age group which is 47 in numbers. 25% lies in 20-30 age group. 51-60 years old group relatively accounts 6.94% to the entire selected sample. The least dominant group falls in above 60 which covers 2.78% of the total.

In gender, there is a huge clash between in gender. Male are dominant over female. Only 11.11% are female and 88.89% are male. Hence, proof that male are archon over female.

Concerning with marital status, 94.44% are married which is 136 in numbers. Only 1.39 % is unmarried which is 1 in number. 2.08 % are widow and divorced which are 6 in numbers.

Table 1
Demographic profile of the Slum Dwellers

Characteristics	Values	Frequency	Percentage
Age	20-30	36	25.00
	31-40	47	32.64
	41-50	47	32.64
	51-60	10	6.94
	Above 60	04	2.78
	Total	**144**	**100**
Gender	Female	16	11.11
	Male	128	88.89
	Total	**144**	**100**
Marital status	Married	136	94.44
	Unmarried	02	1.39
	Divorced	03	2.08
	Widow	03	2.08
	Total	**144**	**100**

Occupation

Occupation is one of the salient feature of the research. In study area 1(Adjacent to VehariChowk), most dominant occupation is labor which are 15 in numbers second dominant is scrap collection. In study area 2(SurajMiani), most dominant occupation is scrap collection which accounts 20 in numbers. In study are 3(Shah Town), prominent occupation is labor but in it hawker, scrap, and auto diver occupation are also presiding occupations. In study are 4(GujjarKhadda), auto drivers are prominent which relatively accounts 14 in numbers to the entire sample. Lastly, in study are 5(Mohallah Sharif Pura), labor is preeminent occupation. Second dominant is auto drivers.

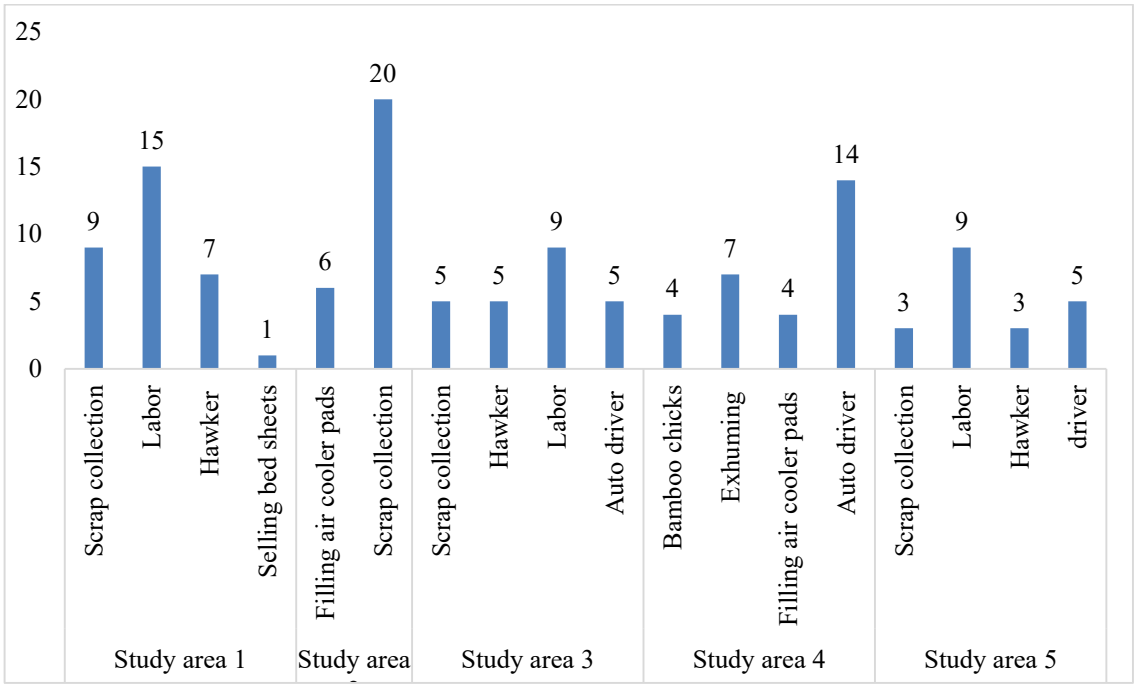


Fig. 2 Occupation of the Respondents

Monthly Income of the slum dwellers

The finding shows that, 46.87% respondent's income is lies in 5000-6000 range. Highest income of the respondent falls in above 10000 range and the least falls in 1000-2000 range in study area 1 (Slum adjacent to Veharichowk). In study area 2(SurajMiani), most dominant range of income is 7000-8000 which relatively accounts 61.54% of the total. Least income range is 3000-4000 which covers 11.54% of the total. In study area 3(Shah Town), most prominent group is 7000-8000 which covers 43.75% and least one is occupies 15.65%. In study area4(GujjarKhadda), highest range of income is 9000-10000 which accounts 48.28% and lowest is 13.79%. In study area 5(Sharif Pura), 36% out of 100 falls in 5000-6000 range. Study area 1 is deprived among all points and study area 4 is much better in selected points.

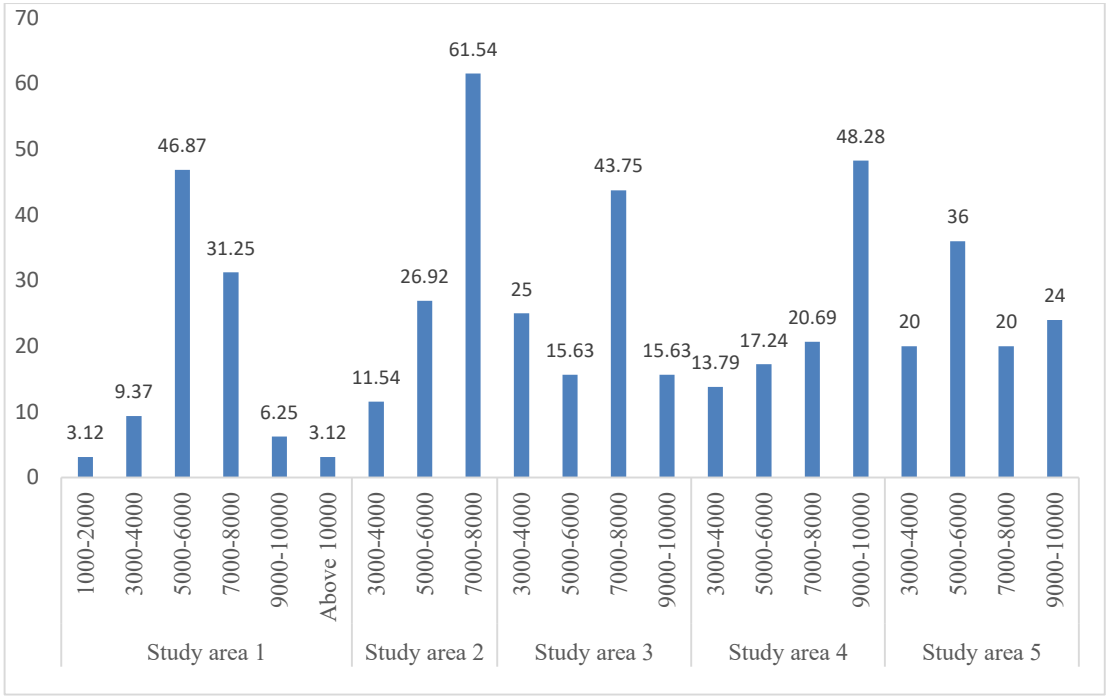


Fig. 3 Monthly income of the Respondents

Migration

Migration is the main factor among all. People migrated towards urban area to facilitate themselves from better opportunities. In study area 1, most of the respondents migrated from Ansari chowk which is 10 in numbers than from head Muhammad which is 8 in numbers. In study area 2, respondents migrated from Muzaffargarh, LayyahKabirwala and Bhakkar. In study area 3, respondents are living in that area from a long time few of them are migrants. They migrated from Karachi, Mumtazaabad, Chakwal and old Chichawatni. In study area 4, most dominant area of migration is Madnichowk in Multan city. At that time Madnichowk was the hub of informal settlement. They occupied government land which was vacant by government for market. In study area 5, Lahore is prominent which relatively accounts 5 in numbers. Respondents also migrated from Islamabad, Kotaddu and Jhelum. Most of them are migrated because owners of the land vacant their land and some of them left their residence with family for searching of job.

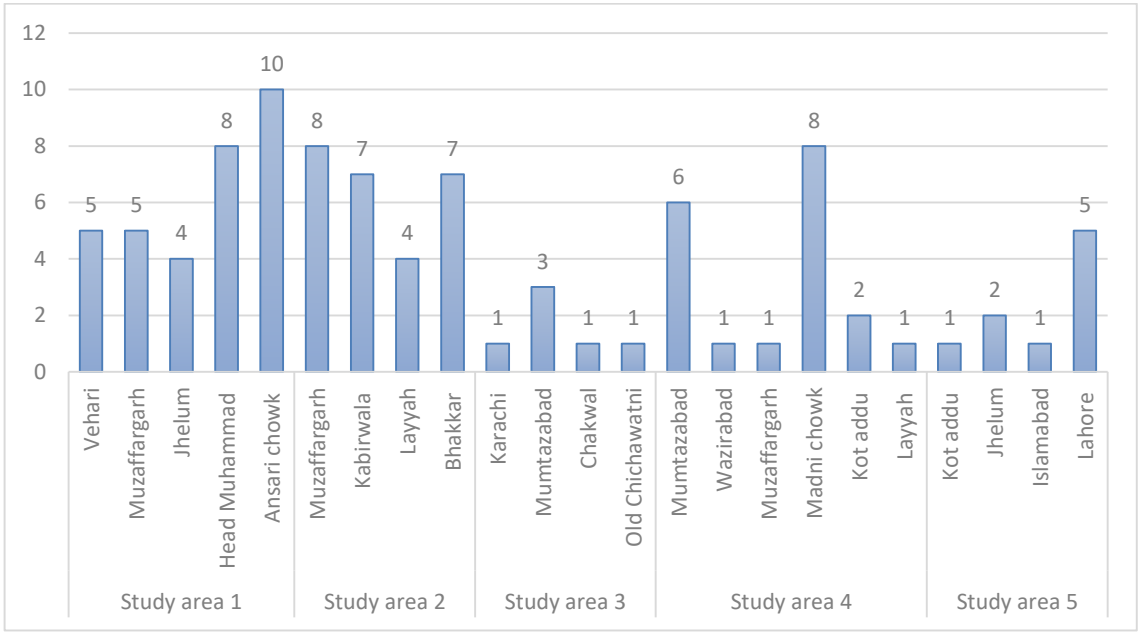


Fig. 4 Respondent's status of migration

Diseases

Fitness is the priority of life. In slums due to unhealthy environment people are suffering from various diseases. In study area 1, most of the respondents are affected with joint problem and least are suffering from thalassemia. While in study areas 2, cardiac disease and skin allergy is highest in number which is 8 and joint problem and diabetes mellitus covers 1%.Cardiac disease is highest in number which is 7 in number in study area 3. Diabetes mellitus, joint problem, tuber culosis, thalassemia &disable covers 5, 4, 3, 2 and 2% respectively. In study area 4, cardiac disease covers 8%, thalassemia covers 3%, and diabetes mellitus covers 2%. Diabetes mellitus ranks highest in study area 5 covers 6%. Thalassemia and joint problem covers 3%, tuber culosis covers 2% in the end cardiac disease and disable covers 1% of the total.

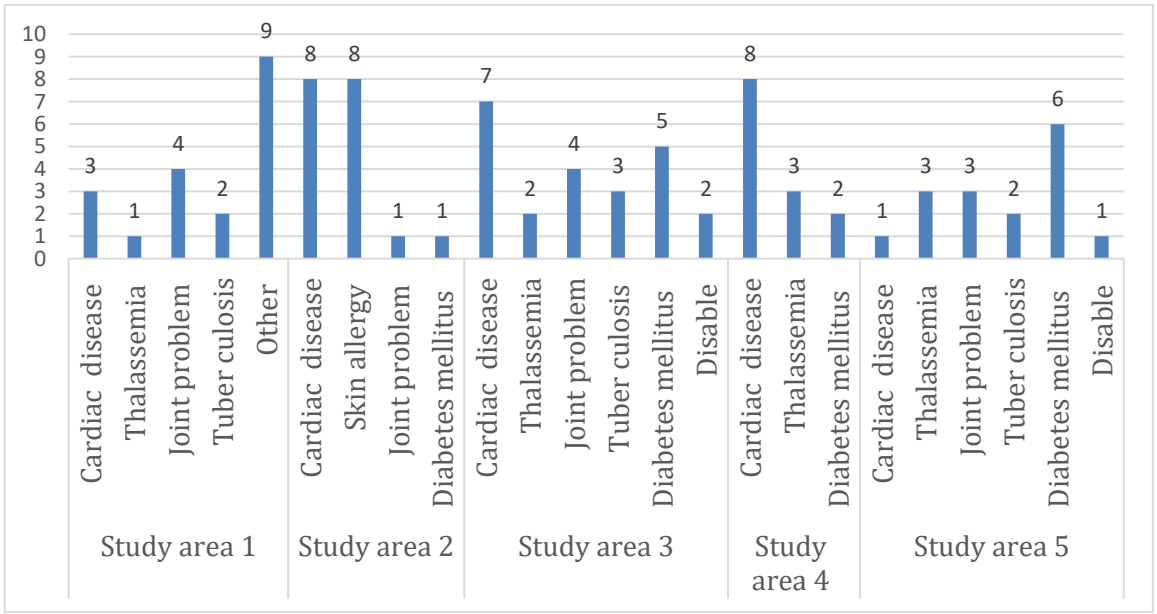


Fig 5. Common diseases in slums

Water Source

The greatest requirement for life is water. Water is a blessing. Safe and easily available water is important for health, food sanitary management etc. In slums water is not available. They face a lot of problems due to unavailability of water. Mostly slums occupants fetch water and some of them take water from neighbors. Water is not use only for drinking they use water for bathing washing as well as cooking. Water is one of the most vital factors for living organisms to live. Findings shows that, in study area 1, the source of water is hand pump and tap. It takes 30 to 40 minutes to fetch water, some of them mostly went through donkey-cart. In study area 2 (SurajMiani), hand pump and tap both are used, it takes 30 minutes to fetch water from the source. In study area 3 (Shah Town) mostly inhabitants use hand pump instead of tap. In study area 4, hand pump and tap both sources are respectively used. In study area 5 (Sharif Pura) both sources are used. To fetch water it takes approximately 25 minutes. They used water not only for drinking they also use for cooking washing and bating but in a limited way.

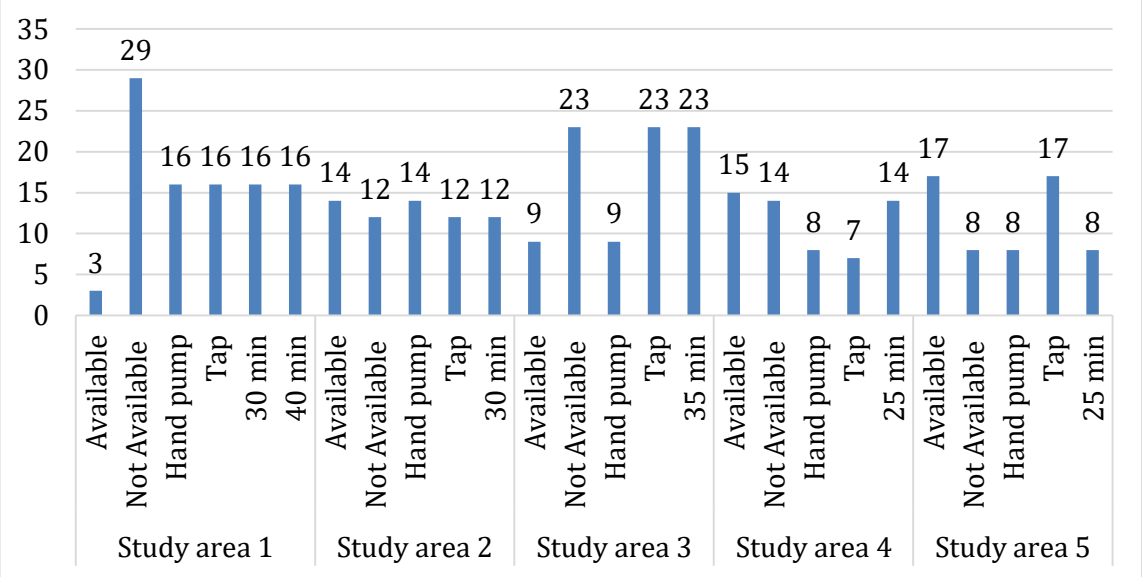


Fig 6. Availability of water in the study area

Sanitary system

A better sanitary system gives a good hygienic environment and a good health. In study area 1, 29% covers no arrangement of sanitation, 3% covers shared sanitation system. On the other hand, 28% respondents throw garbage in a plot and 4% burn it. 20% respondents use shared toilets in study area 2, and 6% have no arrangement for sanitation. While 14% throw garbage in a plot and 12% burn it. In study area 3, 31% use indoor and 1% use shared toilets. Also 26% respondents throw garbage in a plot and 6% give their garbage to municipal staff. In study area 4, 12% respondents have no arrangement for sanitation, 15% use shared toilets and 2% have indoor toilets. 15% respondents have no fix pattern for garbage disposal, 12% throw in bins and 2% throw in a plot. 25% respondents use indoor toilets in study area 5 while 13% throw garbage in bins and 12% throw in a plot.

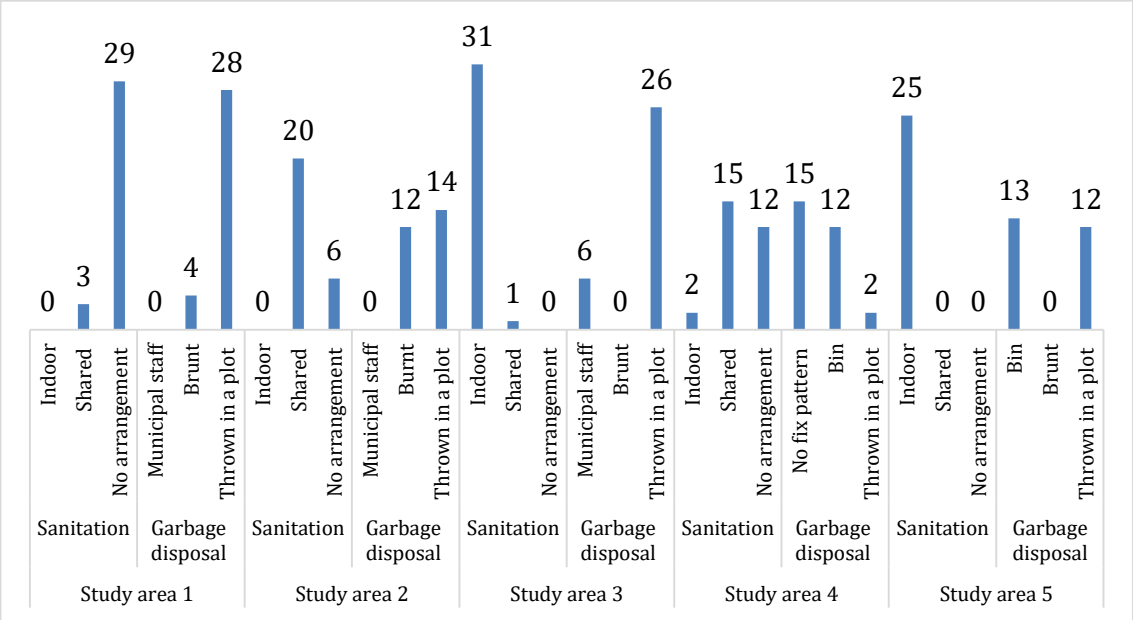


Fig 7.Sanitary system in slums

Construction material of the houses

This finding shows that which type of construction material is used for build up a house in slums. In study area 1, floor of the houses are mostly made by mud which accounts 66.7% and 96 in numbers. 4.2% floor are cemented, 66.7% are made up of mud, and 9.7% are made up of bricks. While 29.2% walls are made up of bamboos, 14.6% are made up of Gondar and clothes.1.4% with metal wall and 36.8% with bricks. 29.9% roof are made up of tarpaulin, 16.7% with clothes, 8.3% with Gondar, 4.9% with Panaflex, 18.8% with tear gadder, 13.2% with bricks and 1.4% with metal.

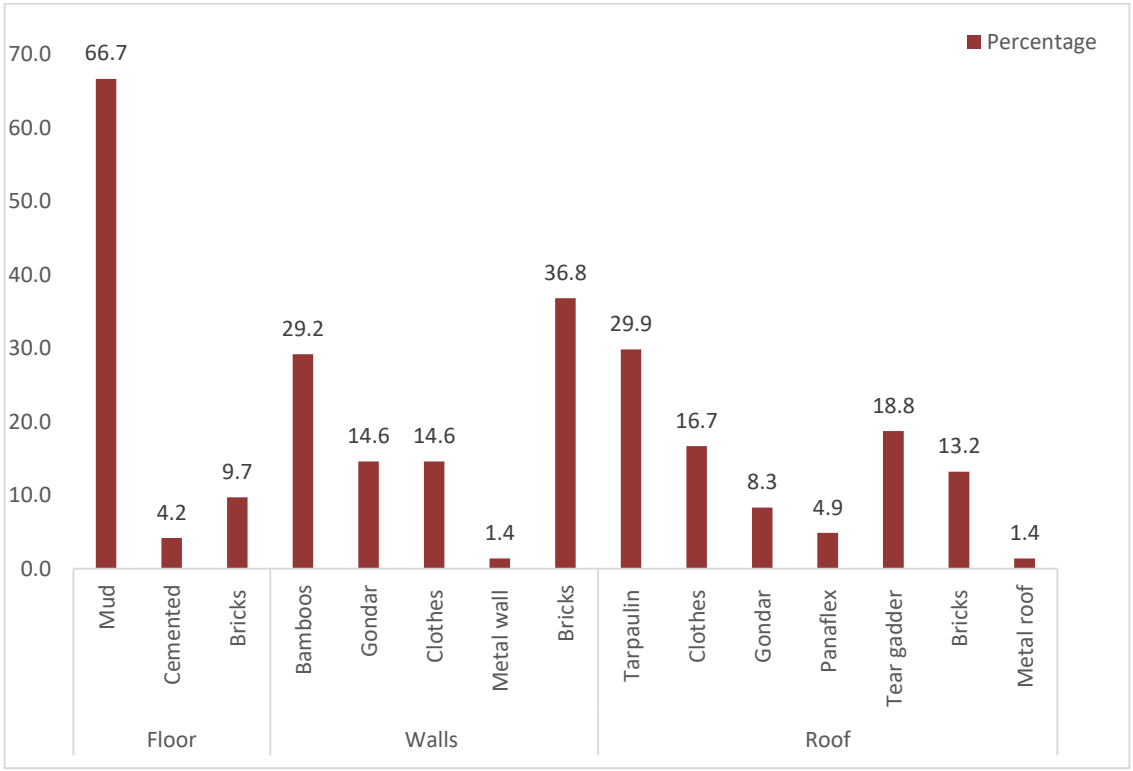


Fig 8. Construction materials of the Settlements

COVID-19

As of now, the whole world is encountering the destruction and pulverization of a fatal infection, the new illness of Coronavirus, arising out of the new Covid SARS-COV 2 has spread all through the world.49% respondents face loss of income and livelihood during pandemic, 11% face increase in food insecurity and malnutrition, 9% respondents face lack of social protection and support of government while 43% respondents face all of these problems. 76% respondents disagreed that government didn't help them in pandemic while 71% strongly agree. Only 44% respondents follow a little bit of SOP, s while 100% didn't, 144% respondents says that not a single family member died due to corona.

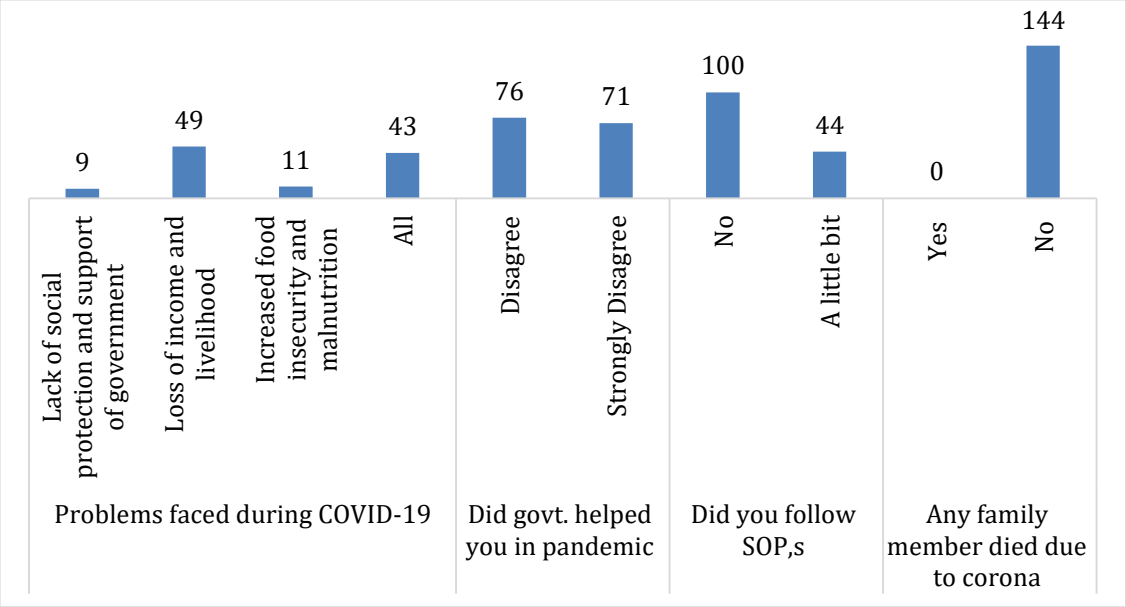


Fig 8. Consequences of COVID-19

Conclusion

Slums are the essential outcome of urbanization. People of slums are extremely poor and living in unsound environment. Multan is an urbanized city having lot of slums around the margins or in the center of the city. Concerning point of the people is core areas because they want to live near to their working places. The condition of the slums are very poor in Multan city. They are living in substandard places, have facing lack of facilities e.g. unhygienic housing conditions, lack of water, poor sanitary conditions and poor health facilities. They don't have sufficient income to fulfill their basic needs their average income is 8.6, maximum is10 thousand and minimum income is 3000. Per day a single person earns 200 to 400 Rs. Scrap collection, labor and auto driver are the major occupations. In study area 2 and 5, parents do not allow their study to get education they contribute in household income. That's why education level is very low in slums. They face a lot of problem due to unavailability of water, they fetch water from other place which approximately takes 20 to 40 minutes. They don't have proper sanitary system toilets are not available, meanwhile, few community or shared toilets are there but they are not properly maintained and as a result people resort to open defecation. The condition of the houses are very poor. These people have already substandard living status. Due to corona they face many problems like shortage of food, no way to earn, because of lockdown all shops are closed, roads are empty. They even could not got any kind of fund or food in pandemic. They even do not follow the SOP's during Covid. Among all study areas socially and economically Shah Town is better than others, but environmentally GujjarKhadda is better among all but SurajMiani condition is more wrost than others. Slums upgradation projects are still a problem because of non-serious participation of the citizens. In the beginning people are involved, but as the phase

of implementation comes they apart themselves from it.Governments often fail to recognize the rights of the urban poor and incorporate them into urban planning, thereby contributing to the growth of slums.

Recommendations

- Measures should be taken for the provision of basic life facilities in the slum area.
- The slum dwellers should have easy access to health facilities so that the proximities can dodge from the viral diseases.
- Government should focused on socio-economic sustainability of slums dwellers.

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