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Exploration of Drainage and Sanitary Conditions at Mithi, Sindh, Pakistan

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Abstract: *In developing nations, access to essential utilities presents a dual problem, particularly in rural areas. A little over 1.3 billion people lack access to electricity, while 2.6 billion rely on traditional biomass cooking methods. It is not possible to solve the current energy crisis solely by promoting particular technologies or switching to alternative fuels. Mithi, one of the most developed towns in Pakistan, has recently experienced significant growth in development. The city has experienced rapid growth as a result of the large influx of residents from the district of Tharparkar. There is a need to explore the condition of the drainage system in Mithi and to describe sanitary conditions to make people fit and healthy. It has been analyzed and found the different problems related to drainage and sanitation system in Mithi and surrounding areas.*

Key Words: Mithi, Sindh, Sanitation, Water Supply, Drainage

Introduction

Rural area improvement not only organizes the overall structure of the area, but also reveals the surroundings, physical location, social milieu, and customs with a variety of originality and diversity. Rural locations have a wide range of distinct potential and a variety of difficulties compared to urban places. Due to the range of requirements, motives, and optimism that are ecological and environmentally friendly, rural development should be incorporated into the sustainable management of natural resources. By evaluating local understanding

of the establishment of a rich society the balance of the region is positively affected by sustainable development. (Poerwoningsih et al., 2016).

This study emphasizes rural areas with a focus on addressing physical and socioeconomic problems as catalysts for rural revitalization. Without addressing the demands of the rural community, urban development would continue to be characterized by slums and informal settlements. (Ertling et al., 2006). Investments in rural development are required in both the communities where the poor reside and the endeavours in which

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they engage. Although the improvement of rural regions is an issue that is regularly discussed, there is no agreement on how to quantify it. Many other criteria can be used to evaluate rural development, including economic, social, cultural, and environmental factors. Finding out what variables and indicators are appropriate for tracking the development of rural areas is the primary research issue this study seeks to answer (Hegger et al., 2016).

In this study, we deal with the problem of identification of parameters involved in a poor drainage system. This deprived drainage system causes trouble for the people, especially at the time of rainfall ([Malengier, 2004](#)). Facilitators and barriers, which are elements that facilitate or obstruct access to sanitary facilities and clean water, can enhance or weaken the participation of water and sanitation. To comprehend the prevalence of these diseases, a conceptual framework of socioeconomic and water and sanitation variables can be used to evaluate facilitators and obstacles. Understanding facilitators and barriers can allow different parties to work with communities to come up with a practical solution to the rural water crisis in Mithi (Wahyuni et al., 2016).

Security restrictions, difficult operational circumstances, and obstacles to this research include a lack of funding, understaffing or high staff turnover, the challenge of taking precise measurements in an emergency, and the fact that refugee camps are frequently pushed to be situated in isolated places. (Ersel, 2015). In communities with inadequate immunity, malaria during pregnancy carries a substantial mortality risk for both the mother and the fetus or unborn child. Malaria, a key contributor to perinatal mortality, maternal anaemia, and low birth weight is particularly harmful to pregnant women and their unborn children. (Mokuolu et al., 2016).

Study Area

Thar is Sindh province's most underserved area. Almost the whole Tharparkar area is suffering from a housing backlog. The climate is tropical desert. Summers are exceedingly hot during the day, while evenings are noticeably cooler. The warmest

months are April, May, and June, while the coldest months are December, January, and February. During the winter, the average maximum and lowest temperatures are 28°C and 9°C, respectively. The quantity of rainfall varies greatly from year to year, and the yearly average for certain locations is as low as 100 millimetres. During the southwest monsoon, most of the rain occurs between July and September. In

In addition to the aforementioned problems, access to basic utility services is another complicated issue, particularly in rural areas. While 2.6 billion people continue to cook their meals on rudimentary biomass burners, a little over 1.3 billion people still do not have access to electricity. Promoting specific technologies or moving to alternate fuels alone will not be enough to address the current energy dilemma. (Weiner & Jerome, 2016). Current settlement issues in emerging nations also include rapid population expansion, a shortage of basic services and utensils, deteriorating housing, a lack of jobs, inadequate road and transportation systems, a lack of or insufficient health facilities, etc. Poor drainage and sanitization systems are the main issues. Because stagnant water in the streets could contain some dangerous germs, it causes several ailments. It is a significant task to find solutions to these two issues that affect rural populations. More to the point, other challenges are also faced by the development authorities. Rural settlement development is undoubtedly hampered by the rural aspect of many towns that are undergoing fast urbanization. In developing nations, planning for human settlements typically incorporates concepts and methods carried over from previous foreign rulers before independence ([Ettling et al., 2006](#)).

Drinking water availability is extremely limited, with only 47% of the population having access. According to data collected by the Thardeep Rural Development Programme, 60% of families wait more than an hour for their turn to obtain drinking water from wells. Thirty rupees are spent by 30% of families for two rubber buckets of water. 85% of families get their water from camel/donkey leather organized states. 25% of homes acquire their water from buckets brought by camels or donkeys, which can take up to two days in some locations.

Women are responsible for collecting water in 75% of homes. These women must commute 3 kilometres on average, consuming 52% of the working hours available for any economic activity. The Pakistan Social and Living Standard Measurement Survey also collects data on drinking water sources.

When Tharparkar District was split off from Mirpur Khas to form a new District in 1990, Mithi was designated as its capital. One of the very few Pakistani cities, Mithi, does not have a majority of Muslims. In the town, the Hindu group accounts for more than 80% of the populace. According to reports, both Muslims and Hindus coexist peacefully, which contributes to the town's low crime rate. The settlement lies 450 kilometres from Karachi at 24°74'0N 69°80'0E, at a height of 28 meters (92 feet), and it is situated in a desert environment ([Ghaffar et al., 2021](#); [Kalwar et al., 2022](#); [Memon et al., 2020](#); [Memon, Sahito, et al., 2021](#); [Qureshi et al., 2022](#); [Sahito et al., 2020](#); [Shaikh et al., 2020](#); [Soomro et al., 2021](#); [Talpur et al., 2016](#); [Talpur, Chandio, et al., 2014](#)).

Mithi is presently one of the most developed

towns in Pakistan and has experienced a significant surge in development. The city is currently experiencing rapid growth as a result of the enormous number of residents who have relocated there from the entire Tharparkar district. The Government of Sindh declared in April 2014 that it would build a Cadet College and a University of Oxford group in Mithi, Tharparkar District. According to GMO's National Statistics, Mithi has a population of over 250,000. The city is home to several private medical facilities as well as a hospital. The water is provided in a very small quantity. Also, the drains and sewers are in very bad condition. The open drains produce a very bad smell ([Brohi, Kalwar, et al., 2021](#); [Brohi, Memon, et al., 2021](#); [Gill et al., 2020](#); [Kalwar et al., 2020](#); [Kalwar et al., 2019](#); [Kamal, et al., 2022](#); [Memon et al., 2014](#); [Talpur, Madzlan, et al., 2014](#)). The water and sewage, sometimes, overflow from the open drains making the streets unable to walk on ([Marvi et al., 2022](#); [Memon, 2010, 2018](#); [Memon, Kalwar, Sahito, & Napiyah, 2021](#); [Memon, Kalwar, Sahito, Talpur, et al., 2021](#); [Memon, Napiyah, Hussain, et al., 2016](#); [Memon, Napiyah, Talpur, et al., 2016](#); [Memon et al., 2022](#); [Shah et al., 2021](#); [Soomro et al., 2022](#)).



Figure 1: This figure shows the location map of the Mithi district

Research Objectives

- a. To explore the condition of the drainage system in Mithi
- b. To describe sanitary conditions to make people fit and healthy

Literature Review

The prevalence of waterborne diseases can be decreased with the use of efficient water and sanitation treatments. Facilitators and barriers, or elements that make it easier or harder to get clean water and appropriate sanitation, can boost or weaken water and sanitation efforts. To comprehend the prevalence of waterborne diseases, a conceptual framework of socioeconomic, water and sanitation variables can be used to evaluate facilitators and barriers. A practical solution to the rural water problem in Mithi, Tharparkar, can be implemented with the aid of diverse stakeholders by strategizing with local communities and taking into account facilitators and barriers (Wahyuni et al., 2016).

The Water Distribution Control Center, from which distant operations, local intervention control, and variable monitoring are managed, is the unit's principal division, and we conclude by outlining the unit's organizational structure, and procedures for managing alarms, notifications, and events in the water distribution and drainage systems are implemented (Mara et al 2016). The current study contends that the problem of sanitation and its remedies go much any planned improvement in sanitation technology must go beyond accessibility and address the problems with end-of-pipe technologies for centralized wastewater treatment. Given the simultaneous patterns of predicted population growth and urbanization, it is evident that the provision of better sanitation facilities would require more effort and socio-technical innovations than those in place today. Diverting resources and recovering them can assist build a variety of scenarios, particularly in terms of the security of health, food, and water (Prithvi & Kumar, 2016).

Sanitation is an effort to control some of the elements that have an impact on how physical environments affect people, particularly those elements that are harmful to physical growth, health, and survival. Keeping the biological environment clean is also important (Rusmali, 2004). General hygiene is the cornerstone of process hygiene, according to Johns (1991). Cleanliness is important because it has the power to hinder the germs that thrive in unhygienic conditions. Environmental sanitation is the term for the state of an environment, which includes dwellings, sewage systems, and water sources. (Notoatmodjo, 2003). In the workplace, good hygiene includes not only keeping the workspace, workers, equipment, and raw materials clean but also how waste is handled and disposed of. Even though an industry generates good-quality products, if the trash disposal industry is not managed effectively, it can disrupt the local economy and harm the environment. The beba TPI has a very subpar sanitation system and disregards the cleanliness fish pelengan site guidelines set forth by the minister of marine and fisheries, which harms the environment and human health. To make the TPI and the surrounding area more hospitable, it needs to be corrected by taking some steps to improve sanitary systems.

Research Methodology

In this chapter, we adopted the research methodology for the collection of primary and secondary data. First, using questionnaires we created after conducting a thorough site analysis, we gathered the primary data. The internet, and earlier research publications, and were then used to gather secondary data. The utilization of case studies and literature is discussed, as well as the advantages of conducting original research. Advice on how to make use of the data from previous studies is also provided. The following approach was used by us.

Primary Data

Surveys are used to collect primary data, a type of information, observation, or experimentation directly from first-hand sources. The first source of data to be collected is called the primary source. To

collect the complete information regarding the assignment, we have to follow some methods, which are as under;

Secondary Data

Information collected by a third party, not the user, is known as secondary data. The usual sources of secondary data for social sciences are reports from censuses, organizational records, and data obtained through qualitative procedures or qualitative research. Primary data, on the other hand, are

obtained by the researcher who is carrying out the study.

Secondary data analysis produces larger, higher-quality databases that are impossible for a single researcher to access on their own, saving time that would otherwise be spent gathering data, especially when it comes to quantitative data. In addition, research on social and economic change considers crucial secondary data because it is challenging to produce a brand-new survey that can fully capture past change and/or advances.

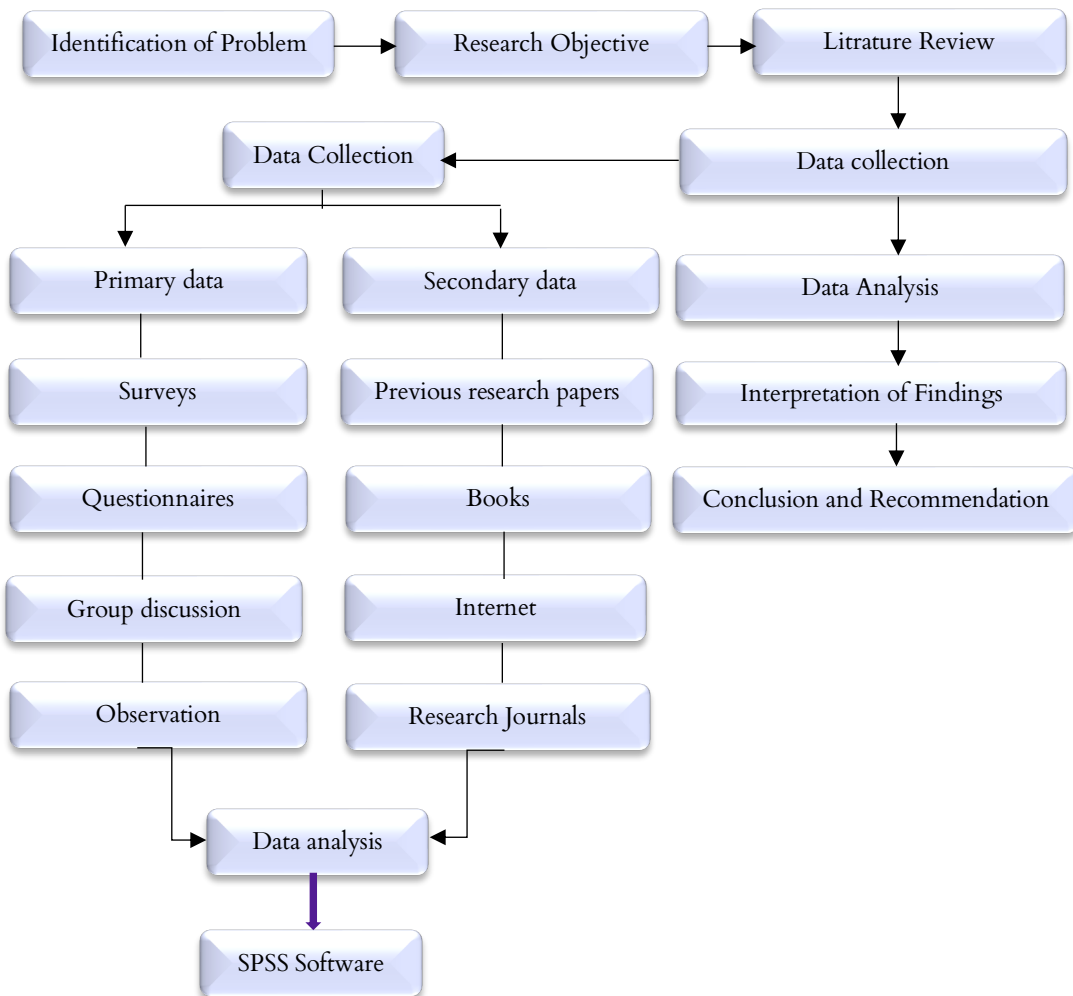


Figure 1. Research Methodology

Findings

It has been analyzed and found the different problems related to drainage and sanitation system in Mithi and surrounding areas. The water is provided in a very small quantity. In about a week or more, people get water from water supply schemes. In addition, most people find the water unsafe and unhygienic for drinking. They suffer from many diseases because of this unhygienic water. Other causes also exist for their poor health. First, they dump their household waste near their homes and some open spaces. This causes the environment to be much more polluted. Second, they do not keep themselves and their houses clean. This causes the growth of germs. Besides sanitary conditions, the drainage system has not been given much consideration. The rainwater can be found on the streets without deliberation. Also, the drains and sewers are in very bad condition. The open drains produce a very bad smell. The water and sewage, sometimes, overflow from the open drains making the streets unable to walk on.

Conclusion

Rural area improvement not only organizes the

Overall structure of the area, but also reveals the environment, space, culture, and traditions with a variety of originality and diversity. After doing comprehensive research on drainage and sanitation system in the district of Mithi and surrounding areas, we have concluded that:

- Water is scarce mostly in the surrounding areas of Mithi.
- The water supply schemes distribute water without treatment. This causes the water to remain unhygienic for drinking.
- People mostly dump their household solid waste near their homes. This causes environmental pollution.
- People usually drink rainwater without treatment. This water contains some harmful elements.
- People suffer from many diseases because of these unhygienic conditions.
- Rainwater is found on the streets in the rainy season without deliberation.
- The water and sewage, sometimes, overflow from the open drains. People cannot walk over these streets because of this dirty water.

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