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Open Sewage and Poor Drainage System Damage the Health of Slum Residents; A Case Study of Hamatiyan, Bahawalpur, Pakistan

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Abstract: Provision of safe sewage system, adequate sanitation and personal hygiene are vital for the sustainable environmental conditions and reducing the incidence of diarrhea, malaria, trachoma, hepatitis A and B and morbidity levels. The provision of adequate sanitation and better sewage system is not only a development oriented strategy in itself, it can also yield other socio-economic benefits in terms of improved health status, quality of labor force and reduced burden-of-disease. Water, sanitation and sewage systems are the neglected sector in Bahawalpur. Most of the households in Bahawalpur do not have access to adequate sanitation system. The objective of the study is to discuss the sewage problem and its impact on human health in Hamatiyan. The majority of inhabitants of the area are poor and deprived in basic needs such as education, health, and safe water supply and sanitation facilities. The findings show these constraints in a better way and indicate the alarming situation to the policy makers and authorities.

Keywords: Open sewage, Health, Diseases, Bahawalpur,

1. INTRODUCTION

Urban settlements generate waste of different types including solid waste, waste water etc. Open sewage and poor drainage systems are a major threat for human settlement around the globe. An sanitation development tents to improve hygiene helps greatly to improve health conditions. The majority of urban settlements still have no adequate facilities for disposing the wastes generated. There are several reasons to reconsider the present urban water and waste water policy including limitations of a conventional sanitary system, better understanding of nature and its principles gained during last decades, and the goal of society to achieve sustainable development (Czemiel Berndtsson and Hyvönen 2002). Heavily populated areas are facing increasing problem and carrying the risk of infectious diseases, especially to the vulnerable groups such as the very young, elderly and people suffering from different kinds of diseases that compromise their immunization system. Ineffectively controlled waste is another way of daily exposure to an unpleasant environment. Sewage and drinking water can be affected by several routes:

By polluting drinking water;

a. Entry into the food chain, for example via fruits, vegetables or fish
b. Bathing and other contact with contaminated waters
c. By providing breeding sites for flies and insects that spread diseases
d. Poor nutrition from loss of important fish protein sources due to environmental pollution. (Robert, Daniel *et al.*, 1991)

This study was conducted to document the impacts of waste water on human health in Hamitiya Bahawalpur. The disposal of domestic and industrial waste water is a serious problem. It is affecting the freshwater resources and human health.

Main objectives of the study are

1. To investigate the impact of domestic sewage on the health.
2. To identify different causes of improper sewage conditions in study area.
3. To identify the different types of diseases caused by waste water.

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Causes of Sewage Problems

Disposal of sewage is a major problem in developing countries particularly and in Pakistan; especially because settlement populations in these countries do not have access to proper sanitary conditions and clean water (Hyvönen L.R.S., *et al.,* 2003).

Sewage pollution can be caused by:

- Broken or leaking sewer mains
- Poor maintenance or improper management of on-site sewage management systems (e.g. septic tanks)
- Flooding overloading the sewerage system
- Improper disposal of wastewater (commercial, industrial and residential)
- Improper disposal of solid wastes
- Spills during transportation and handling (Network 2003-2011)

Impacts of Sewage Water

- Sewage water has microbial pollutants that often result in infectious diseases that effect both aquatic and terrestrial life through in-taking drinking water. Microbial water pollution is a greater problem in developing countries than in the develop world. The major diseases such as cholera and typhoid fever are the primary cause of infant mortality in developing world.
- Industrial waste water often contains toxic compounds of several types that are detrimental to the health of aquatic life, and distributed through injection to the whole food chain. Few of the industrial waste water toxic compounds may have mild effect; whereas the rest can be fatal. They can cause immune suppression, reproductive failure or acute poisoning (Joseph 2007).

Water Born Diseases

Pathogenic micro-organisms are major cause of waterborne diseases, which are directly diffused when contaminated fresh water used preparation of food. Few major diseases are explained here likewise; diarrhea, cholera, hepatitis and typhoid fever. According to the World Health Organization (W.H.O. 2011) diarrheal disease accounts for an estimated 4.1% of the total daily global burden of disease and is responsible for the deaths of 1.8 million people every year. It was estimated that 88% of that burden is attributable to unsafe water supply, sanitation and hygiene, and mostly concentrated in children in developing countries. Cholera is caused by the bacterium Vibrio cholera. People become infected after eating food or drinking water that has been contaminated by the feces of infected persons. Diarrhea is a symptom of infection caused by a host of bacterial, viral and parasitic organisms most of which can be spread by contaminated water. It is more common when there is a shortage of clean water for drinking, cooking and cleaning and basic hygiene is important in prevention. Hepatitis A and E viruses, while unrelated to one another, are both transmitted via the faucal-oral route, most often through contaminated water and from person to person. Hepatitis A can also be transmitted via food contaminated by infected food-handlers, uncooked foods, or foods handled after cooking. Hepatitis A has also caused outbreaks transmitted through injecting or non-injecting drug use. Typhoid Fever: Typhoid and paratyphoid germs are passed in the feces and urine of infected people. People become infected after eating or drinking beverages that have been handled by a person who is infected or by drinking water that has been contaminated by sewage containing the bacteria (Freebase 2011; W.H.O. 2011).

2. MATERIAL AND METHOD

Study Area

The study area is "Hamitiyan". Hamitiyan is a slum located on southeastern side of Bahawalpur City **(Fig.1)**. Hamitiyan originated in 1970. This area is a part of Union Council No 11. The population of Hamitiyan is about 20,000 according to the 1998 Census. This settlement started with 1 or 2 houses and grew into a colony. In the beginning there was no registration of plots system available in this area. People occupied the area according to their desire. In 1980 the plots were registered and the squatter settlement changed into official one. In the beginning people paid about 800.Rs/Marla to the government for registration. At present the land value of this colony is rapidly increasing due to the construction of main Hasilpur Road. Hamitiyan is an undulating planned area that is why some houses in this area were constructed at height while other are constructed in depression. The majority of the people living in this area is poor and belongs to the labor class.

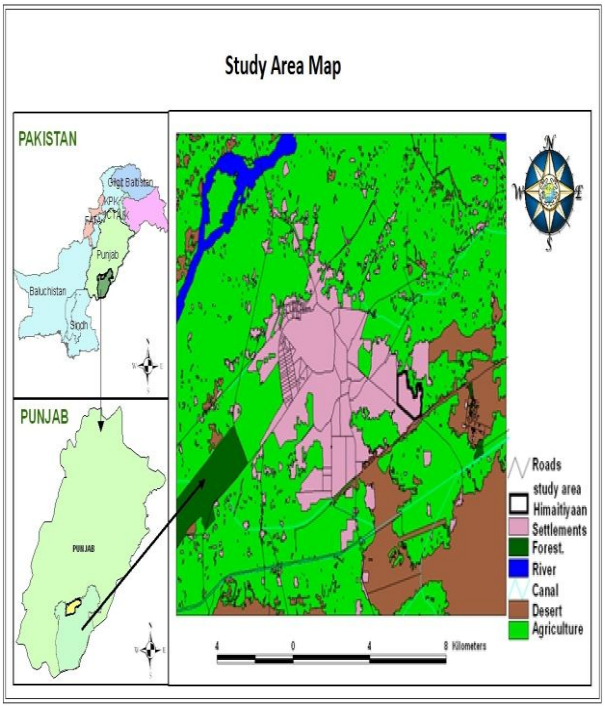

Fig. 1: Map of Bahawalpur City
Source: Author, 2010

Hamitiya of Bahawalpur city was selected for study because of the sewage water problem is critical in this area. The research focuses on the sewage problems and its impacts and implementations in Hamitiya, Bahawalpur City. A simple, random sampling technique was applied in study area. 50 inhabintants were selected for study on a random sample basis. Data was collected through questioner (social survey technique). After collecting the samples from the field, the data was analyzed by applying statistical techniques such as correlation, chi-square on quantitative data and texture analysis on qualitative data.

3. RESULTS

The field result showed that the drinking water quality of the area is badly affected by the worst sewage conditions. The study also examines the relationship between the waste water and health of the residents. The study also reveals the deficiencies in planning and management of the local government of the Bahawalpur city. The findings also show inhabitant dis-satisfaction on the services provided by Tehsil Municipal Administration Bahawalpur.

Waste Water Disposal Systems in Hamatiyan Bahawalpur

Fig. 2 is showing the percentages of the respondents which are using different types of sewage system. 18% people having connections to sewage pipe lines, they throw their waste water through these pipelines into the sewage tanks. 82% people have open drains.

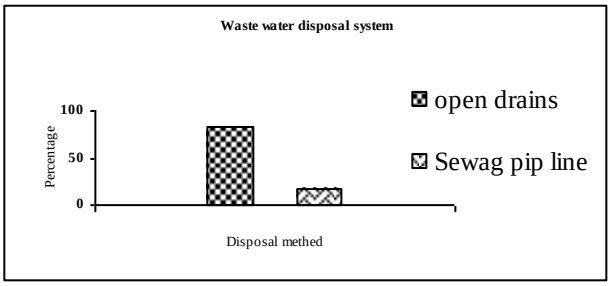

Fig. 2: Waste Water Disposal System in Hamatiyan Bahawalpur, N=100
Source: Rani, 2010

Main Causes of Sewage Problems in Hamatiyan Bahawalpur

According to the **(Fig. 3)**, four percent people said that due to leakage of pipes the wastewater over flows and creates unhygienic conditions. 52% of respondents said that these problems were created due to poor planning of the concerning departments. Six percent respondents replied that solid waste is the main cause of sewage over flow, such as solid garbage, shopping bags and other material thrown into the sewage tanks which blocks the pipelines and cause sewage overflow. Two percent of respondents said that all of above reasons are more or less is responsible for sewage overflow. 22 percent of respondents said that the problem is due to the non-serious behavior of workers because they cannot clean the open drain regularly or can't take the garbage from the streets.

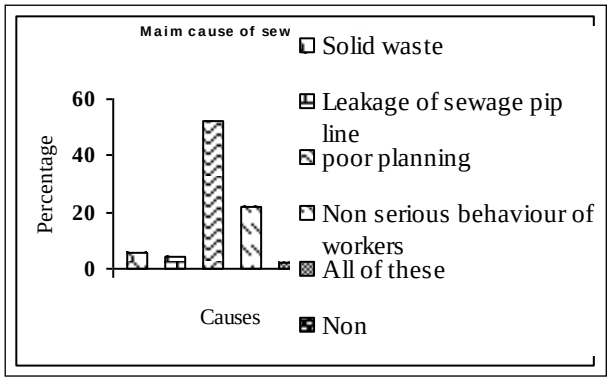

Fig. 3: Main causes of sewage problem in Hamatiyan Bahawalpur
Source: Rani, 2010

Health Risks from Waste Water

The **(Fig. 4)** shows the different diseases caused by untreated waste water (not all waste water causes these diseases be more specific. In Hamatiyan people are affected by different diseases due to waste water. Four percent of respondents indicated that they are suffering with different types of fevers. 68 percent of respondents indicated that they were affected with diseases that were caused by unsuitable drinking water.10 percent respondents in the study area were suffering with different types of skin allergies.

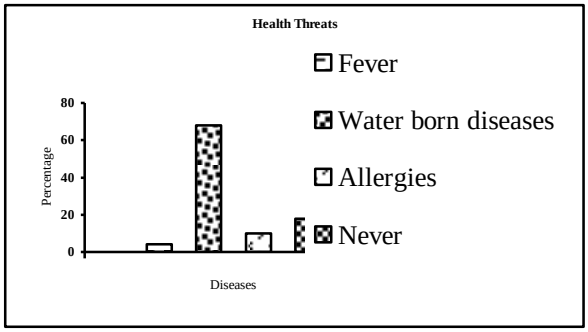

Fig. 4: Health Risks from Waste Water in Hamatiyan Bahawalpur, N=50
Source: Rani, 2010

4. DISCUSSIONS AND FINDINGS

Many cities of Pakistan are characterized by overcrowded housing, contaminated water supplies and lack of proper sewage disposal, drainage or waste collection, all of which contribute to an unhealthy urban environment. In this research many aspects were observed some of which are described in the following section.

Sewage Problems

In the study area improper sewage disposal was a major problem. Residents of the area were not satisfied with sewage conditions. The main cause of sewage problem in the area was the open drain sewage line. Due to the open drain sewage line the wastewater over flows and creates unhygienic conditions. These problems are the result of poor planning of the concerning departments. The Tehsil Municipal Administration (TMA) of Bahawalpur City was not playing satisfactory role in the maintenance of sewage system.

The following remedies are suggested:

- The Tehsil Municipal Administration should provide waste bins to the residents—and regular garbage collection.
- Sweepers should clean the streets regularly and remove the heaps of garbage
- Sweepers should clean the sewage tanks and drains weekly
- Sewage line should be repaired immediately
- If people and concerning department can work together then the problem can be controlled to some extent.

Health Drinking Water Problems from Sewage Water

Poor water supply, sanitation and hygiene are environmental source of ill-health. Inadequate sewage treatment and poor sanitation result in diarrheal diseases caused by bacteria, viruses or parasites. The greatest health risk in this area comes from unsafe drinking water and inadequate sanitation. Waste water creates intensive health risks in Hamatiyan, mostly children were affected by these health risks. Mostly people were suffering from diarrhea and cholera due to poor drinking water quality of the area and poor waste water disposal system. Residents of the area were also suffering from Malaria due to mosquitoes which fostering in the dirty water. Malaria was a very common disease of the area. Some peoples were also suffering from different types of skin allergies. Mostly children were suffering from these diseases.

5. CONCLUSION

The municipal wastewater management system in Hamatiyan is not working properly. Residents of the area are not satisfied with the work

of Tehsil Municipal Administration. The municipal wastewater management system involves collection, transportation, storage, treatment and disposal etc. These activities, if properly controlled and proper precautionary measures adopted, may have adverse impact on land, water, air, environment, human health, aesthetic and quality of life. Two or more decentralized waste water plants may planted to reduce a higher overall environmental impact on site and through their discharges to receiving waters of various qualities (A. Koenig and Fang 1998) which will be helpful to reduce environmental issue as well as prevent water borne diseases in the area.

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