Ind. J. Phys. Anthrop & Hum. Genet. Vol. 42, No. 2, (2023) : 119-126

ENVIRONMENTAL SANITATION WITH RESPECT TO WASTE WATER DISPOSAL PRACTICES IN HAMIRPUR AND SOLAN DISTRICTS OF HIMACHAL PRADESH

ASHISH THAKUR AND RAJAN GAUR

ABSTRACT

Environmental sanitation plays a very vital role in the health and well-being of people. India continues to lag far behind several countries in the field of environmental sanitation. Among various parameters of environmental sanitation, a very important one is the proper disposal of waste water. Improper disposal of waste water is a potential reason for the speared of vector born and other diseases. The present study investigates the issue of waste water disposal in Hamirpur and Solan Districts of Himachal Pradesh from an environmental sanitation viewpoint. This research study is based on a total cross-sectional sample of 400 respondents, 200 from Hamirpur District and 200 from Solan District. The respondents were asked to give details of the mechanism adopted for the disposal of domestic liquid or wet waste. The results revealed that 80 percent of the households disposed their liquid waste in an open ditch, 15 percent in a soak away pit, 3 percent got rid of their wet waste in the open in premises of their yard and only 1 percent used a septic tank for this purpose. Thus, the environmental sanitation with respect to the waste water disposal in Hamirpur and Solan Districts leaves much to be desired and needs attention and improvement.

***Keywords**: Environmental sanitation, Waste water disposal, Hamirpur, Solan, Himachal Pradesh*

INTRODUCTION

India continues to lag far behind several countries in the field of environmental sanitation. Most cities and towns in India are characterized by over-crowding, congestion, inadequate water supply and lack of facilities of disposal of wastewater and solid wastes. Most of the problems in the country are due to contaminated environments, which in turn rob people of their health, destroy their livelihoods and undermine their overall development potential. In fact,

Ashish Thakur, Center for Public Health, Panjab University, Chandigarh-160014, Email: ishu070707@gmail.com; **Rajan Gaur**, Former Professor, Department of Anthropology, Panjab University, Chandigarh-160014, rajan_gaur7@yahoo.com.

environmental sanitation is still a vastly overlooked issue in India. To raise the overall standard of living conditions, the issue of environmental sanitation must be tackled seriously. For achieving this, it is essential to take some strict steps for raising the current levels of environmental sanitation in India.

It goes without saying that sanitation plays a major role on the health and well-being of the people. Therefore, importance of improving poor sanitary conditions in some sectors cannot be over emphasized, given its wide-ranging impact on community health and development. In this context, children are particularly vulnerable (Murray and Lopez, 1997). According to a study, almost 1,000 children under five years of age die in the country everyday due to diarrhoea alone which is a preventable disease and caused majorly by unhygienic and unsanitary conditions (Water Aid, 2006).

Environmental sanitation aims to improve community health by focussing on a clean environment and interrupting the cycle of disease. It is determined by a number of variables, including the people's hygienic status, the nature of available resources, creative and relevant technologies, country's socioeconomic status, political commitment, legislative interventions, capacity building of stakeholders and behavioural and cultural factors in the community (Kumar *et al.,* 2011). It is now recognised that basic sanitation is critical for development of children and for social and economic progress of people because in its absence, optimum mental, physical and social well-being is difficult to attain (UNICEF, 2020). Given its vital role in human health and well-being, the United Nations General Assembly recognized Sanitation as a discrete right, in 2015 (Thakur, 2022). It was also agreed by the member states to provide sanitation to all by 2030. However, the world appears to be clearly off-track in this goal by 2030.

World Health Organization defines sanitation as access to and use of facilities and services for the safe disposal of human excreta (WHO, 2018). According to a report of the United Nations Childrens Fund (UNICEF, 2020), more than half the world's population (4.2 billion people) utilize sanitation facilities, which do not treat human waste, threatening human as well as environmental health. Countries like India have though made significant progress in the area of sanitation and considerably reduced open defecation. However, sustained and continuous efforts are required to achieve the desired goals.

Lack of sanitation also influences the quality of drinking water and even leads to microbial contamination thus threatening the health of the people. According to an estimate, roughly two billion people in the world drink water from sources contaminated with faeces and nearly half of the world's population does not possess the services of safely managed sanitation services (WHO, 2023a). It has been reported that, every year, in low- and middle-income countries roughly 1.24 million people loose their lives on account of inadequate water and improper sanitation (WHO, 2023b).

India continues to lag far behind several countries in the field of

environmental sanitation. Most cities and towns in India are characterized by over-crowding, congestion, inadequate water supply and lack of facilities of disposal of human excreta, wastewater and solid wastes. Most of the problems in the country are due to contaminated environments, which in turn rob people of their health and undermine their overall development potential. To raise the overall standard of living conditions of the people of our country, the issue of environmental sanitation must be tackled seriously. To this end, it is essential to take some strict steps for raising the current levels of environmental sanitation in India. Though, several states and union territories of India are aware of the situation, but still much remains to be achieved. In the last two decades, efforts have also been made to conduct research on various aspects of environmental sanitation situation in India (Dwivedi and Sharma, 2007; Banda *et al.* (2007); Sharholy *et al.* (2008); Thakur and Gaur, 2020; Thakur, 2022).

A very important issue intimately related to environmental sanitation is the proper disposal of waste water. Improper disposal of waste water is a potential reason for the speared of vector born diseases such as malaria, dengue, etc., as mosquitoes multiply in improperly disposed stagnant pools of water. Several other diseases could also be linked to waste water sanitation related issues. Unsafe wastewater and sludge disposal tends to result in outbreaks and an increase in chronic food borne diseases (Thakur, 2022). The manner of disposal of waste is to a great extent based on living conditions of the people. While some communities provide waste water treatment others do not, which reduces the ability to control the well-being of the environment and its people. When liquid waste is not removed and treated properly, pollution tends to lead to the spread of disease; when proper disposal and treatment methods are followed, disease and pollution can be kept in check.

In the last two decades, efforts have been made to carry out research investigations on environmental sanitation situation in various areas of India. Dwivedi and Sharma (2007) studied the personal hygiene, sanitary habits and environmental sanitation of the Baiga tribals of Samnapur Block of Dindori District, Madhya Pradesh. This research was based on a random sample of 100 households and 494 subjects. Their results indicated that, the environmental sanitation was average from the hygiene point of view, but not very satisfactory.

Banda *et al.* (2007) investigated some factors impacting water safety, such as attitudes and practices of water handling and usage, sanitation, and defecation habits, among Harijans and upper caste people of rural Tamil Nadu. The study revealed that most of the households stored drinking water in wide-mouthed containers and 30.9% of the households had toilets of which only 83.3% used these. Many (74.2%) respondents still defecated in fields. Among children under the age of fifteen years, hand washing with soap after defecation and before meals was common (86.4%).

Sharholy *et al.* (2008) found that municipal solid waste management (MSWM) was one of the major environmental problems of Indian cities. Thakur

and Gaur (2020) conducted a preliminary study to find out the status of environmental sanitation and its relation with health in Hamirpur District of Himachal Pradesh. They found that 100% of the households had private toilet facility in their premises and about 95% of the households had hygienic latrines. It was further found that 60% of the households burnt their solid waste in their premises and 32% of the households dumped solid waste anywhere in the premises or outside the premises. A small proportion (8%) of them deposited it in bins or common garbage area.

Thakur (2022) investigated the environmental sanitation in Hamirpur District of Himachal Pradesh with respect to traditional water harvesting and current water issues. The author noted that Hamirpur and Solan Districts were showing signs of environmental degradation because of the lack of adequate sanitation practices at the individual, community and municipal levels. The management of solid waste by the Municipal Corporation, as also the people of Hamirpur, left much to be desired.

Thus, most of the researches are focused on sanitation, hygiene and solid waste disposal among communities and waste water disposal aspect of environmental sanitation has not been properly researched, particularly in the state of Himachal Pradesh. In the present study, the issue of waste water disposal in Hamirpur and Solan Districts of Himachal Pradesh has been investigated from an environmental sanitation viewpoint.

MATERIALS AND METHODS

The present community-based survey of Hamirpur and Solan Districts of Himachal Pradesh State is based on a total cross-sectional sample of 400 respondents (200 from Hamirpur District and 200 from Solan District) (Figure-1). The data were collected by first author (AT) from year 2016 to 2018 from the people inhabiting the area and other stakeholders like Government officials and Gram Panchayat members. Out of the six development blocks in the Hamirpur District (namely Bhoranj, Barsar, Hamirpur, Nadaun, and Bijhari) 2 blocks, namely Bhoranj block and Barsar block, were randomly chosen for data collection. Similarly, out of the five developmental blocks of Solan District (namely Dharampur, Kandaghat, Kunihar, Nalagarh and Solan), two blocks, namely Solan Block and Nalagarh Block, were randomly selected using the chit system. From these developmental blocks of Hamirpur and Solan Districts, 10 villages from each District (viz., 5 villages from each block) were randomly selected to check the status of the environmental sanitation. District and block headquarter towns were also included for data collection. Both the qualitative and quantitative data were employed to facilitate the present research. The primary data were collected through a questionnaire that solicited information on socio-demographic and economic aspects, water supply, water disposal, excreta disposal, solid waste disposal and personal hygienic services. However, in the present paper, data only on waste water disposal are being reported. The

secondary data were obtained from reputed newspapers, random surveys, census, reports and records from the concerned government departments.

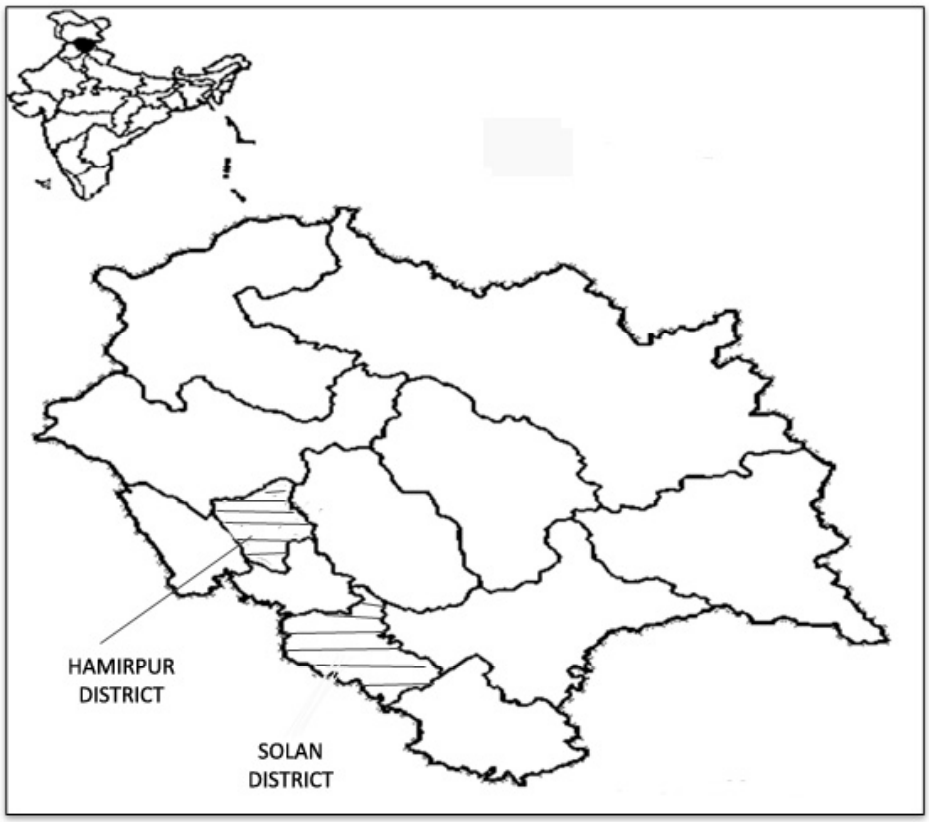

Figure-1: Location of Hamirpur District in Himachal Pradesh (Modified from Thakur, 2022)

Study Area: Himachal Pradesh State of India is mainly mountainous with altitude ranging from 365 to 6975 meters above mean sea level. Hamirpur District, which is located in the south-western part of the state has five tehsils namely, Barsar, Bhoranj, Hamirpur, Nadaun and Tira Sujanpur. For development purposes the district has been further divided into six Development Blocks viz., Bamson, Bijhri, Bhoranj, Hamirpur, Nadaun and Tira Sujanpur (Census of India, 2011). The district has a total number of 1,725 villages. Its economy is chiefly dependent on agriculture. As per Census of India (Census, 2011), Hamirpur had a population of 454,768 individuals (217,070 males; 237,698 females), a sex ratio (females per 1,000 males) of 1095, and a population density of 407 inhabitants per square kilometre. According to 2011 Census (Census of India, 2011), Solan had a population of 5,80,320 individuals (3,08,754 males; 2,71,566 females), a sex ratio (females per 1,000 males) of 931, and a population density of 298 inhabitants per square kilometer.

RESULTS AND DISCUSSION

The present study was conducted in Hamirpur and Solan Districts of Himachal Pradesh State of India to investigate the waste water disposal in the context of environmental sanitation. The respondents were asked to give details of the mechanism adopted for the disposal of domestic liquid or wet waste. The responses showed that 80 percent of the households were found to be

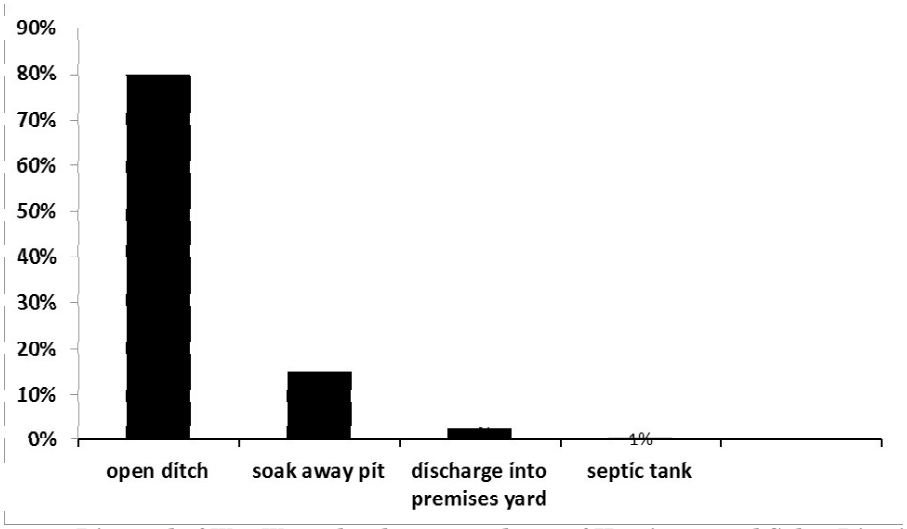

Figure-2: Disposal of Wet Waste by the respondents of Hamirpur and Solan Districts

disposing their liquid waste in an open ditch (Figure-2). There was also 15 percent of the response from those who disposed-off their liquid waste in a soak away pit. There were 3 percent who disposed-off wet waste in the open in premises of their yard and 1 percent in septic tank. Thus, very few of the respondents used septic tank to dispose-off wet waste. There was a significant proportion of the respondents who reportedly used the open ditch for disposal for wet waste. This is a vital cause for concern as the open ditch could be a spread point for contamination and pollution of the environment. Thus, it is apparent that the dissatisfactory disposal of wet waste was causing concern among the population especially with regard to its severally adverse impact on health.

The respondents were asked to enumerate the problems faced by them due to liquid waste disposal. There were 43 percent who told about the filthy surroundings of the locality. Nearly 18 percent believed it to be the causative factor for repeated cases of diarrhoea and 15 percent spoke about the health hazards of the stagnation of water (Figure-3). Eleven percent of the respondents were most concerned about the spread of germs and 1.5 percent were of the opinion that the pools of stagnant waste water were breeding sites of vectors.

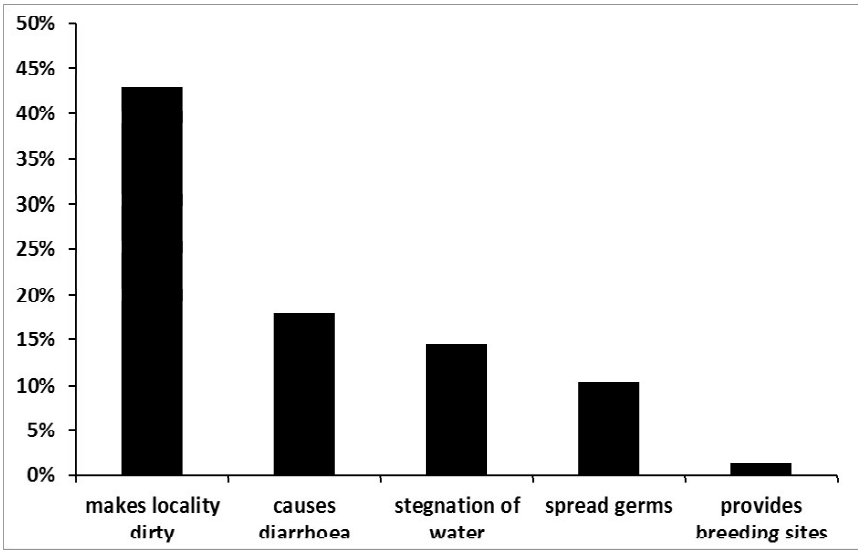

Figure-3: Problems Caused by Improper Wet Waste Disposal reported by the respondents of Hamirpur and Solan Districts

Thus, the study reveals that the environmental sanitation with respect to the waste water disposal in the Hamirpur and Solan Districts leaves much to be desired and needs attention and improvement. According to WHO (2023b), waste water, if properly managed, along with sludge, can be used as a valuable resource in the circular economy that can provide reliable water and nutrients for food production and recovered energy in various forms. In fact, use of wastewater and sludge is already commonplace, but much is used unsafely without adequate treatment, controls on use or regulatory oversight. Safe use that prevents transmission of excreta-related disease is vital to reduce harms and maximize beneficial use of wastewater and sludge (WHO, 2023b). The government, along with the people of the area, need to take concrete steps to develop suitable waste water disposal system in the areas under study to improve the environmental to sanitation which will have long term positive effects on the living conditions and health of the people.

ACKNOWLEDGEMENTS

The authors are thankful to all the respondents of the area under study without whose cooperation this investigation would not have seen light of the day.

References

Banda, K., Sarkar, R., Gopal, S., Govindarajan, J., Harijan, B. B., Jeyakumar, M.B., Mitta, P., Sadanala, M.E., Selwyn, T., *et al.,* 2007. Water handling, sanitation and defecation practices in rural southern India: a knowledge, attitudes and practices study. *Transactions of The Royal Society of Tropical Medicine and Hygiene*, 101(11):1124–1130.

Census of India, 2011. Himachal Pradesh, Series-03, Part XII-B, District Census Handbook Hamirpur. Shimla: Directorate of Census Operations Himachal Pradesh.

Dwivedi, P. and A.N. Sharma, 2007. A Study on Environmental Sanitation, Sanitary Habits and Personal Hygiene among the Baigas of Samnapur Block of Dindori District, Madhya Pradesh. *J. Hum. Ecol*., 22(1): 7-10.

Kumar, G.S., Kar, S.S. and A. Jain, 2011. Health and environmental sanitation in India: Issues for prioritizing control strategies. *Indian J. Occup. Environ. Med.*, 15(3):93-96. doi: 10.4103/0019-5278.93196.

Murray, C.J. and A.D. Lopez, 1997. Global mortality, disability, and the contribution of risk factors: Global Burden of Disease Study. *Lancet*, 349(9063):1436-1442. doi: 10.1016/S0140-6736(96)07495-8. PMID: 9164317.

Sharholy, M., Ahmad, K., Gauhar Mahmood, G. and R.C. Trivedi, 2008. Municipal solid waste management in Indian cities – A review. *Waste Management,* 28:459–467.

Thakur, A. and R. Gaur, 2020. Status of Environmental Sanitation and its Relation with Health: A Preliminary Study in District Hamirpur, Himachal Pradesh. *Ind. J. Phys. Anthrop & Hum. Genet*., 39(2): 119-127.

Thakur, A., 2022. Environmental sanitation in parts of Himachal Pradesh: Traditional water harvesting versus current water issues. *Ind. J. Phys. Anthrop & Hum. Genet.*, 41(2): 93-101.

UNICEF, 2020. State of the World's Sanitation: An urgent call to transform sanitation for better health, environments, economies and societies. Summary Report. New York: United Nations Children's Fund (UNICEF) and the World Health Organization. 45 Pp.

WaterAid India, 2006. Implementation of Asian Development Bank's Water Policy in India-A Review by WaterAid India, WaterAid India. 40 pp.

WHO, 2018. Guidelines on sanitation and health. Geneva: World Health Organization.

WHO, 2023a. Global water, sanitation and hygiene: annual report 2022. Geneva: World Health Organization.

WHO, 2023b. Sanitation. https://www.who.int//news-room/fact-sheets/detail/sanitation.