

Assessment of Liver Disorders Causing Factors among Rural Communities in Greater Noida Villages

Suzoang Enan Targain¹, Salviya Tiwari¹, Priyanshi Panday¹, Zainab¹, Ruchika Singh¹, Madhav Kumar¹, Chaitenya Verma¹, Abhimanyu Kumar Jha²

¹Department of Biotechnology, Sharda School of Engineering and Technology, Sharda University, Greater Noida, India

²Department of Biotechnology, School of Biosciences and Technology, Galgotias University, Greater Noida, India.

Corresponding Author¹: Chaitenya Verma, Email Id: chaitenya.verma@sharda.ac.in

Corresponding Author²: Abhimanyu Kumar Jha, Email Id: abhimanyujha630@gmail.com

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ABSTRACT

The purpose of this study is to look into the prevalence of liver illness in Greater Noida, India's rural district, with an emphasis on the effects of lifestyle choices and ground-water contamination. A survey was carried out with 30-40 families in order to collect information on sources of drinking water, health issues, and behaviour. The findings showed that contaminated groundwater from a neighbouring factory is connected to dangerously high incidence of liver illnesses, such as hepatitis, jaundice, fatty liver and different form of cancer. In addition, the issue is exacerbated by harmful habits like smoking, drinking alcohol, and chewing tobacco. It draws attention to the pressing need for public health initiatives to deal with these problems, encouraging healthy living, and increase accessibility to clean water. This study provides a comprehensive case study while examining the relationship between lifestyle factors and waterborne liver disorders in the rural village of Greater Noida.

Keywords: Liver disease, Hepatitis, Ground-water Contamination, Cancer

INTRODUCTION

The term "liver disease" refers to a broad spectrum of illnesses that impair the liver's regular activity. The liver, one of the main organs in the human body, is needed for detoxification, metabolism and the synthesis of critical proteins. Severe chronic liver disease can result in consequences including hepatocellular carcinoma, cirrhosis and liver failure, resulting in a major concern for health worldwide. The distribution and digestion of nutrients are two of the many metabolic processes for which the liver is necessary. Infections such

as hepatitis A and B can give birth to a variety of liver ailments, such as medication toxicity, metabolic problems, autoimmune conditions, genetic alterations, and excessive alcohol intake. Non-alcoholic fatty liver disease has increased in part due to the growing obesity prevalence. Liver cancer risk is also increased by a number of liver disorders [1]. There is evidence linking a number of external variables, particularly water contamination, to the rising incidence of liver illnesses. Hazardous metals, chemicals, and microorganisms can be found in contaminated water sources. These

substances and microorganisms can cause sickness and damage to the liver when consumed over time [2].

Furthermore, microorganisms that might cause liver damage include Gram-negative bacteria and coliform. Water that has been contaminated can cause illnesses and jaundice. The IARC (International Agency for Research on Cancer) categorises inorganic compounds with arsenic and heavy metals such as arsenic, group of carcinogens, harmful to multiple organs, especially the liver. These diseases pose serious risks to one's health, particularly for areas where contaminated water is the primary source of drinking. According to research, drinking contaminated water can increase the risk of developing liver cancer, hepatitis, and non-alcoholic fatty liver disease (NAFLD). Excess bilirubin causes tissues in the body to turn yellow, which is known as jaundice or hyperbilirubinemia. Normally, serum bilirubin levels are below 1 mg/dL, but jaundice becomes noticeable, especially in the eye sclera (scleral icterus), when levels exceed 3 mg/dL [3]. Non-alcoholic fatty liver disease (NAFLD) is a common liver condition in people who consume little to no alcohol, characterized by excessive fat accumulation in the liver. It is most prevalent among those who are overweight or obese. Hepatitis A is a highly contagious liver infection, typically spread through contaminated food and water. Discovered in 1973, it can range from mild to severe illness and sometimes cause acute liver failure, which can be fatal. Unlike hepatitis B and C, it does not lead to chronic liver issues [4].

India has an elevated rate of liver disease, accounting for 18.3% of the two million liver deaths caused by disease worldwide in 2015. Like many poor countries, India has several shortcomings in terms of the quality of the epidemiological data resources that are accessible for liver illness in terms of clinical phenotyping and diagnostic accuracy, reporting consistency, and the lack of computerised databases throughout the nation [5,6]. Two million

deaths worldwide are attributed to liver illness each year, making up 4% of all deaths (1 in every 25 deaths); men make up almost two thirds of all liver-related deaths. The primary causes of death are consequences from hepatocellular carcinoma and cirrhosis, with acute hepatitis contributing a smaller percentage of deaths [7]. Depending on exposure levels and length, heavy metals like arsenic, can raise the chance of liver disease by 40–70%. Furthermore, a 20–50% rise in liver infections has been linked to long-term exposure to pollutants from factories, industries and agricultural run-off, which frequently contaminate water supplies. The effects of water pollution on liver health emphasize the necessity of more stringent environmental laws and better access to clean water, especially in regions with a high concentration of manufacturing activity. To prevent the increasing incidence of liver disease caused by environmental variables, this issue must be resolved.

METHODOLOGY

The main goal of this study is to determine the risk of liver disease to the local communities which is caused by the contamination of ground-water. The study mainly focused on the villages of Greater Noida as it understood their importance as sample settings for both rural and urban environments, providing insights into a range of environmental conditions and lifestyle trends. Systematically, a survey was carried out from 30-40 families wherein the information was collected on a range of factors impacting liver disease, such as awareness levels, environmental factors, habits, and demographics. Based on this survey, there are serious liver hazards that has been associated predominantly by the use of contaminated ground-water which is the result of the nearby factory situated in that area. Additionally, typical behaviours like drinking alcohol, smoking, and chewing tobacco, which are well embedded in their culture, were also the cause of the illness. Furthermore, exacerbating health hazards

were unsanitary environmental conditions, ground-water contamination such as flooded residential garbage and inadequate drinking water facilities that includes use of the water from wells, hand pumps etc. The results highlighted the critical need for lifestyle modifications and awareness raising, even in the presence of some knowledge about liver disease, in order to reduce the incidence of liver disease in these populations.

This survey highlights adequate focus on interventions to support healthy lifestyles and surroundings by enlightening the intricate interactions between social,

environmental, and behavioural factors that influence liver disease in village settings.

RESULTS AND DISCUSSION

According to this survey, 36% of inhabitants have moved to RO- water sources, while 8% still rely on wells for their drinking water and 56% of residents still use hand pump as shown in the figure 1. This suggests that people are becoming more conscious of as well as inclined towards options for drinking water that is cleaner, possibly as a result of concern about the water quality and sanitation.

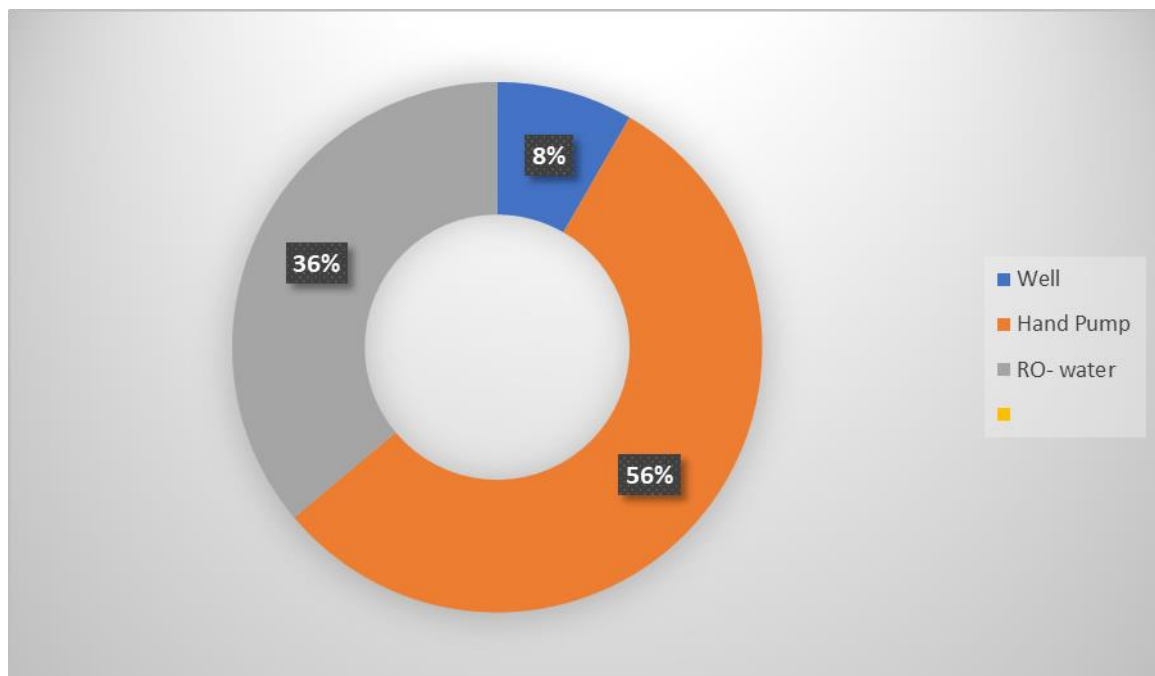


Figure 1. Source of Drinking water

There is some serious health concerns associated with these practices, including a higher chance of liver disease. The total evaluation of the population's prevalence of liver disease reveals alarming numbers. Figure 2 illustrates that although 25

individuals (69.4%) of respondents say they lead a healthy normal life, 4 individuals (11.1%) have been diagnosed with hepatitis (8% with hepatitis B and 3% with hepatitis A), 5 individuals (13.8%) with jaundice, and 2 individuals (5.5%) with fatty liver.

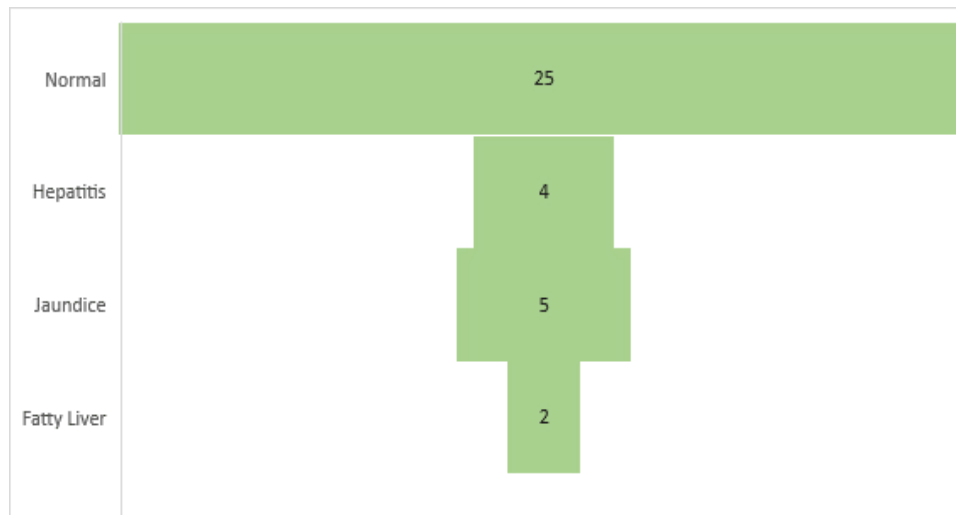


Figure 2. Number of individuals suffering from liver disease.

A sizeable fraction of the population polled partakes in behaviours that are known to increase risk of liver disease like drinking alcohol, smoking, and chewing tobacco. There is concerning prevalence with

roughly 9 individuals (25%) smoking, 5 individuals (13%) drinking alcohol and 4 individuals (11%) chew tobacco while 18 individuals (51 %) do not consume these substances.

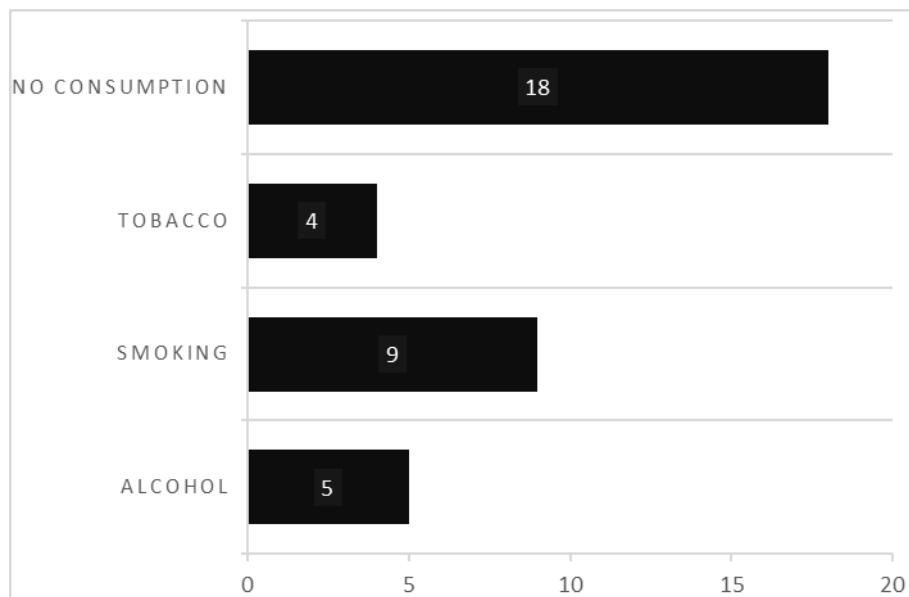


Figure 3. Number of individuals consuming Alcohol, Smoking, Tobacco and individuals not consuming these substances.

The disease awareness pie chart, figure 4 shows notable differences in the general public understanding of liver-related conditions. Largest portion (67%) indicating jaundice revealed that most of the respondents are conscious of jaundice. Moderate awareness is represented by the second-largest section hepatitis (22%). Although significant, this suggests that public outreach and education on hepatitis

still need to be strengthened. While minor section indicates knowledge about fatty liver (11%) shows limited awareness. Also there is an alarming situation because no individual had knowledge of liver cirrhosis indicating a complete lack of awareness. Healthcare providers and public health programs must act quickly to close this crucial gap.

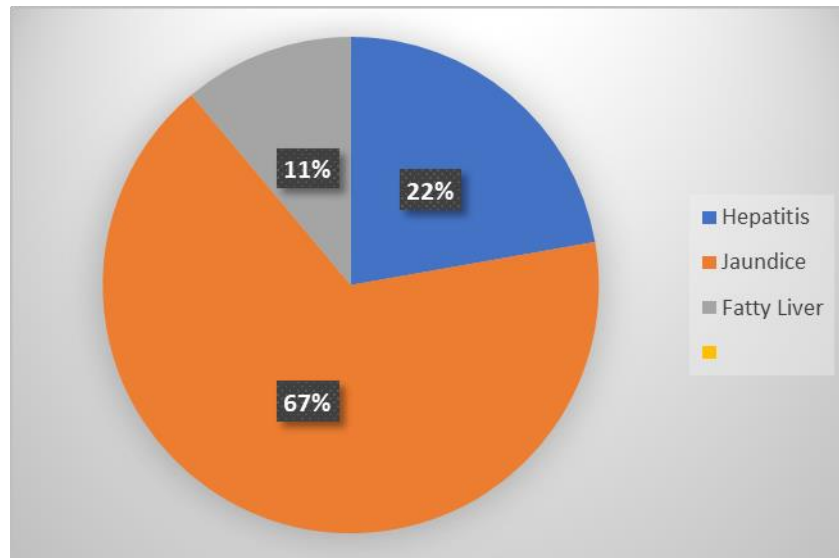


Figure 4. Percentage of people aware about the liver disease

The results of the survey shed light on the complex relationships that exist between the lifestyle decisions, environmental conditions, and health outcomes of the group being studied. There is a cultural heritage that increases the risk of liver disease, as seen by the prevalence of alcohol consumption and the use of cigarettes and chewing tobacco. It is necessary to address these behaviours and raise public awareness of the health risks they provide in order to reduce the prevalence of liver disease in the community. Water pollution is also revealed as a significant concern. The chemicals and waste materials from the adjacent factory is the main sources of contamination in the ground water. Pollution raises health risks and facilitates the spread of disease in addition to its direct effects on human health. It also has indirect effects on agricultural practices and water sources. These findings demonstrate how important it is to implement laws that reduce pollution and safeguard human health.

To address liver disease and other health conditions, a complete approach that considers lifestyle choices, environmental variables, and access to healthcare services is required. Together, lawmakers, medical professionals, and local residents can lessen risks to the environment, promote healthier

lifestyle choices, and improve overall health in the neighbourhood.

CONCLUSION

The study offers a thorough investigation of liver disease, which is brought on by exposure to tainted groundwater in Greater Noida's rural districts. The importance of environmental factors, such as exposure to industrial toxins and contaminated water, in causing liver disease is one of the main conclusions. The study also emphasizes how common liver illness is worldwide, especially in nations like India. A multifaceted strategy is needed to address liver disease, including early detection and treatment, greater access to clean water, environmental laws, and treating underlying medical issues. In addition to liver problems, the tainted water also caused skin conditions, cancer, and a host of other illnesses in some of the persons. The frequency of liver disease could be lowered and global health outcomes can be enhanced by comprehending the variables that contribute to it and putting effective preventative measures in place.

Declaration by Authors

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Conflict of Interest: The authors declare no conflict of interest.

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