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RESEARCH PAPER

The Role of Cultural Diversity in Geographical diffusion of Hepatitis among Gender in Rural Extents of District Larkana, utilizing the Health Digital GIS Technology

Naila Parveen Abbasi

Assistant Professor, Department of Geography,Shah Abdul Latif University Khairpur, Sindh, Pakistan

Corresponding Author proudtobeageographer@yahoo.com

ABSTRACT

Hepatitis is a burning health issue in rural community of Sindh particularly in district Larkana where dearth of medical remedy in villages/Deh of study area. The culture diversity reflects the gender discrimination in cure for this alignment due to dominant cultural elements, the number of male and female remained change, the high rate in male as compare to female due to the mobility in environment for male disease ratio and female cases not properly reported at the cure sites in study area. This study explored the rate of disease in 2010 to 2016 on the basis of gender difference among male and female on Deh wise in district Larkana. For this the Geoinformatics techniques remained helpful to sort out the disease pattern of gender gap in sited area where the social diversity reflects the living standards among different culture in study area.

Keywords: Cultural Diversity, Disease Diffusion, Gender Ratio, Geo-Spatial, Hepatitis

Introduction

Infectious diseases have been a serious danger to humanity ever since the dawn of civilization. In the current era, Hippocrates provided an explanation of endemic jaundice (Krugman, 1992). Hepatitis is a significant public health issue worldwide; according to PMRC (2011), 500 million individuals have chronic hepatitis B or C. Infection with one of the five hepatitis viruses (A, B, C, D, and E) is the most prevalent cause of hepatitis, which is defined as the "swelling of the liver" (WHO, 2016). The WHO (2015) estimated that 1.4 million individuals each year pass away from one of the numerous viral hepatitis strains. Infections with hepatitis are common everywhere in the world. It is estimated that these ongoing infections are the root of 57% of cases of liver cirrhosis and 78% of cases of hepatitis.

Chinese research dating back to the 1970s show that the frequency of HBV infection has steadily increased among the general population, making it a severe public health concern in China (Lu, 2009; Zhang, 2012). In 2015, there were an estimated 71 million hepatitis C patients and 257 million hepatitis B patients still living in the world. (WHO, 2017). Geography employs a range of methods to comprehend this problem, including the use of spatial analytical tools and geographic information systems. Along with providing techniques for disease prevention, diagnosis, and treatment, public health initiatives, and sanitation infrastructure, spatial epidemiology also highlights important factors that have an impact on community health (Zhou, 2009; Elliott, 2004).

Due to the high prevalence of chronic diseases, the (WHO) has placed Pakistan on secondary greatest recorded diseased nation around globe.. There are still 8.6 million Hepatitis C carriers in Pakistan. According to the WHO (2012), the countries with the highest percentage of chronic epidemiological rate is in Egyptian are (22% of people), Pakistani are around 4.8%, besides Chinese 3.2% of the over-all population. As a result unsanitary reusing of needles is the primary method of spread in these nations. 2.4 billion needles are used

annually in Pakistan, one of the countries with the highest syringe consumption rates (WHO, 2014). Over 15 million people in Pakistan have been affected by hepatitis, which is likely to rank as the third most serious illness there (Aziz, 2014).

Pakistan is the second highest chronic disease burden in the world, according to the WHO. About 8,6 million people in Pakistan are still stigmatized with hepatitis C which is the third most prevalent disease in the country with one in every 10 people suffering from the virus. The prevalence of syringe reuse, the lack of blood and blood product screening, and the spread of virus generally via contaminated drinking water are contributing factors to the poor sanitation in the country. The prevalence of viral disease in the family system is a contributing factor to the poor standard of living in Pakistan, especially in rural areas.

Gender difference is a term used to describe the differences between men and women, particularly as reflected in communal, government, logic, social, and economic achievements and attitudes. Gender variance is a difference between men and women in physical appearance and biological appearance, usually related to men and women of the same species as a whole. As in the case of hominids review, socio-political awareness in disputes increases in order to order whether a gender difference results from the biology of genders or not. Gender disparity is an exploration of the difference in earnings and incomes among men and women, as well as in additional movements, such as safety health and malaises, thus sickness masculinity discrepancy. It also observant to the modification for differences between males as well females as regards the contagion formed.

Women's exclusion from education or from public life, for example, affects their knowledge of health and how to treat and manage health problems. In most of the world, women are treated as second-class citizens by men, leading to a division of roles between men and women and their separate roles in the home and in the public life. The prevalence of this position varies across countries and depends on geographic or cultural factors within countries. But it is most prevalent in developing countries. Let's take nutrition as an example of how gender plays an important role in social determinants of health and hence on health outcomes.

Literature Review

Sindh is home to one of the highest incidences of hepatitis in the country, particularly in the province's rural areas. As revision zone is to be found in Pakistan's northerly-west, along the Indus river in the southern part of Sindh's Larkana province. The geographical coordinates of this study area are as follows 27.08-28.00 north; and 67.12-68.30 east (DCR, 1998).

Larkana District is one of the four talukas of Larkana District in Sindh Province. Larkana District has a topography of highland and lowland. The complete range of this region is 7,423 square km. As over-all inhabitants of the Locality is 1,137,042 as per Pakistan Census, 1998. The four talukas include Larkana taluka, Ratodero taluka, Bakrani taluka, Dokri taluka. The figure: 1 indicates that hepatitis-related disease is very communal in Larkana. The number of cases in Larkana has increased significantly from 2010 to present. The red dot indicates a high hepatitis-related disease prevalence in many villages of the District.

Most people living with hepatitis don't know they have it, so they don't have a safe way to get relief from the drugs that are out there. The lack of innovative solutions is directly connected to the environment. Clean water and safe food contribute to the environment, but it also encourages health caution for those at risk of being tested. It normalizes disease resistant practices in the realm of health maintenance tools. And it makes injection drug users lazy and not aware of the risk.

Larkana taluka has the highest number of patients with HBV, HCV and HDV. The number is rising everyday because of societal plus ecological aspects which are responsible for the spread of infection in Larkana taluka as compared to the other 3 talukas of the District. The same is true for the treatment of germ-contaminated kits which are practiced in treatment centers, hairdressing salons and parlors. These factors can be the reason for the spread of this long-lasting disease among societies to such an extent.

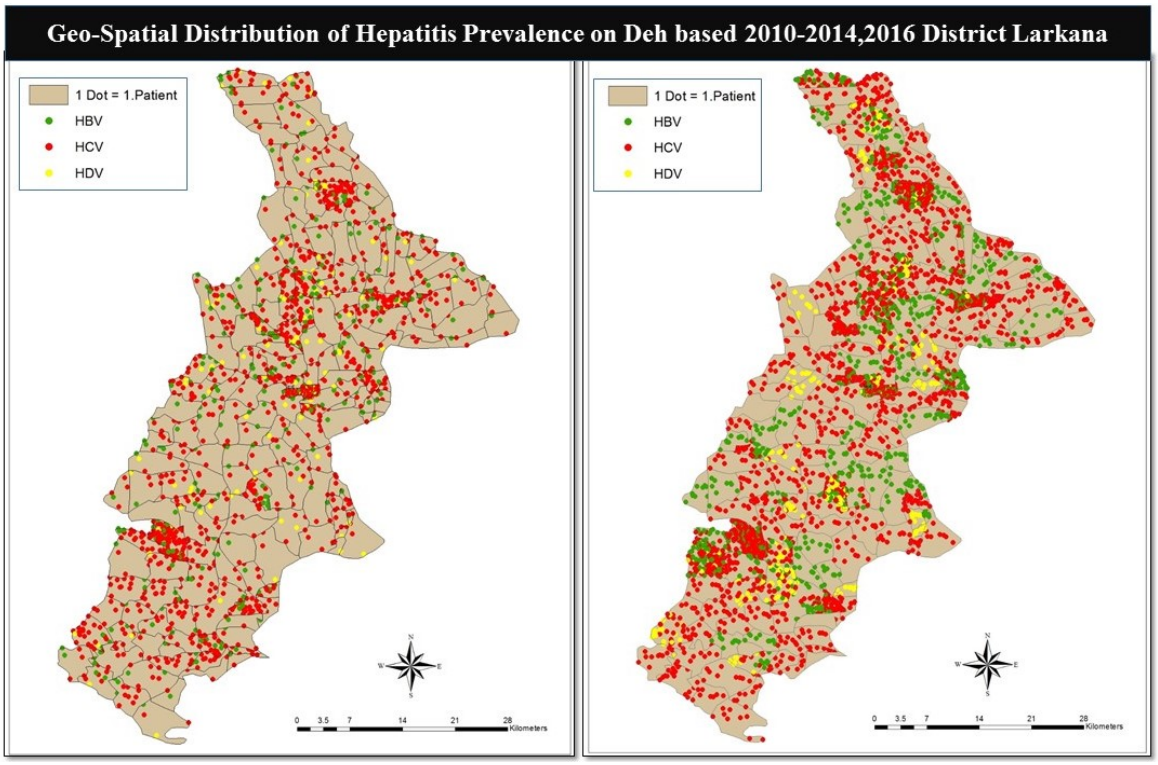


Fig: 1 Spatial distribution of Hepatitis Prevalence on Deh wise, District Larkana

Material and Methods

A linked assessment was prearranged on methodological morality that mandatory a proper procedural sketch which is an appropriate way for implement the theoretic idea up to the pre-defined charter in order to achieve the objectives of the investigation systematically. To achieve the objectives of this exploration, the structural outline is provided through a schema which is explained in the planned section. The main purpose of this revision remained to study the spatial distribution of hepatitis in the District of Larkana, understand the frequency forms of the ailment, the disease represented by maps, and the association of environmental and socio-economic aspects through hepatitis, as well as the comparison of health amenities with the situation in the vicinity of hepatitis.

Using the same primary and secondary record assortment approach, the accuracy of logical skill was sufficient to cover all issues. For the study, the disease pattern was analyzed using primary secondary data for the years 2010-2014 in addition to in 2016. While facts on the numbers of Hepatitis patients in the talukas also on Deh wise were composed through the Civil Hospital sectional site in Larkana that was moreover included in the record acquirement unit. The correlation between the disease pattern and the chronological disparity between the disease in the taluk and Deh wise was based on the fact that the number of patients in the taluk varied significantly from the overall population regularization methodology.

Qualitative exploration questionnaire is a powerful tool to get primary data. For this purpose, prime facts were collected from hepatitis patients as well as health providing consultants /professionals using the planned inquiry form. A total of 800 questionnaires remained asked by patients done field inspection among the talukas plus deh based of Larkana wherever the disease proportion stood high. The questionnaire completed from patients is integrated in the system to overlay personal, demographic, socio-fluential, ecological and infection related characteristics by approachability routes.

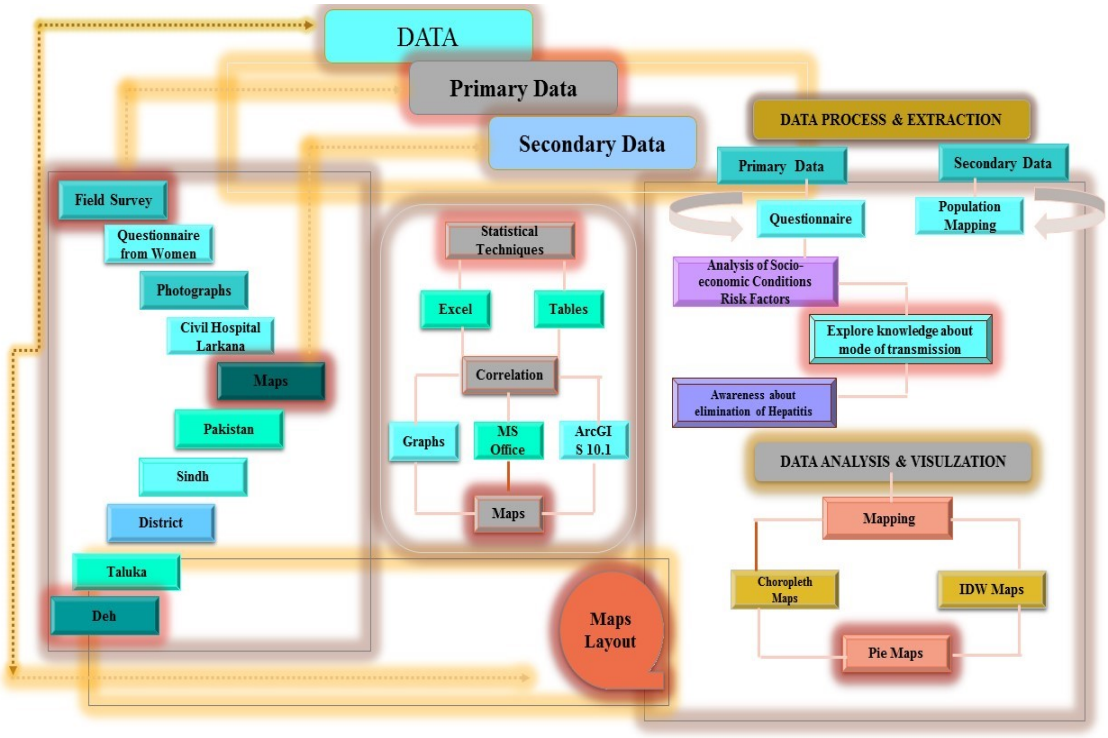


Fig: 2 Methodological Framework

This study continued to demonstrate the significance of secondary data, which were related to the total number of hepatitis patients between 2010 and 2014, the overall ratio of patients who were positive, and demographic records for all the talukas in the District of Larkana, for the purpose of regulatory purposes, as well as for wellbeing facility sites located in investigated zone. As data pertaining to the whole hepatitis patients in the locality as facts were gathered from the Civil Hospital Sectional Site Larkana, which is located in the Study Area. If regularization methods are to be used to assess disease patterns, it's also important to look at the difference between the taluka and the deh in Larkana. To do this, we need demographic data. Back in 1998, the government of Pakistan started a population census, so used the data from the census to get a better idea of the entire population of a particular taluka or deh.

Also used the population census data to get a better understanding of demographic and social-cultural settings. Finally, we used the population census reports to figure out how the disease spread with the human population and how it changed over time. The statistical annual reports and Pakistan Demographic Survey, as well as websites created by the government of Pakistan and additional reliable organizations, were used to identify the taluka with the highest rate of disease. Maps were then created using Geographic Information Systems (GIS) techniques to reveal the patterns of the disease-to-population

This paper developed a method of calculating the disease gender ratio by dividing the total numbers of male in an inhabitants by way of over-all numbers of female present in the similar residents, with outcomes stated as a fraction. This method was used to identify the gender ratio variation among hepatitis patients in the District of Larkana, taking into

account the ratio between males and females among the social population.ratio. When the proportion of male and female patients with an ailment was higher than 100, it indicated that the number of female patients exceeded the maximum number of male patients, however, when the ratio was lower than 100, it was found that the total number of female patients remained higher than the total number of male patients. This finding was confirmed by Shafquat (2011).

Results and Discussion

Geographic proximity and movement are the primary causes of the spread of illness, particularly in districts with a high prevalence of hepatitis, such as Larkana. Syringes and barbershops, particularly in rural areas, are the most common risk factors for hepatitis, while the use of personal items such as blades, nails, and toothbrushes can spread the virus. Furthermore, earhole nose irritation caused by non-sterile needles and the prevalence of cigarette smoking in the District are further contributing factors to the persistence of hepatitis in Larkana.(shaikh,2009).

Larkana District is a major urban area in Sindh with a large population that is exposed to a high risk of epidemiological hepatitis. In rural areas, the social fabric has deteriorated significantly. The lack of financial resources, personal belongings, and hazardous materials, as well as the high cost of living, has made it difficult to maintain control of the spread of the virus. The majority of the district's population resides in rural areas, where there is a lack of reliable health facilities and other services.

District Larkana's gender gap has been changing between 2010 and 2016. Last year, the male-to-female ratio was the highest in all the talukas in Larkana. In 2013, the male ratio was high at 312, and the female ratio was higher at 195 in 2011. In Ratodero, the male ratio is around 146 in 2011 and the female is around 99 in 2012. In Bakrani, the man-to-woman ratio is around 69 in 2011 and 2016, and in Dokri, it's around 124 in 2011 and 86 in 2012. Men are more likely to get hepatitis than women because they're more likely to be mobile, barbers, blood and blood product recipients, drug users, have extra-marital relationships, and because of the environment they live in. Hepatitis is a virus, and it's easy to spread if you use the wrong utensils.

Females have a relatively lesser right to access health facilities in Larkana District. When hepatitis is not cured within a reasonable period of time, it is considered the most vulnerable condition for women. In rural community, the circumstances varies because of the dearth of educational system, masculinity discernment, also the manly-dominated general public in the rustic parts. The men does not prioritize the ladies well-being, which is why the total digit of female is not recounted and report on relevant treatment spots. However, in 2016, throughout the more than two-month period of study, set up around (347) women in just dualistic month.

Deh/Village Based Spatial Analysis

The district Survey Account for Larkana, 1998, indicated that the study region had 195 villages. However, the total number of villages in the district was determined by the fact that four different talukas had different total number of villages. With approximately 62 villages in Ratodero, this taluka has a wide area in comparison to the remaining taluka in the

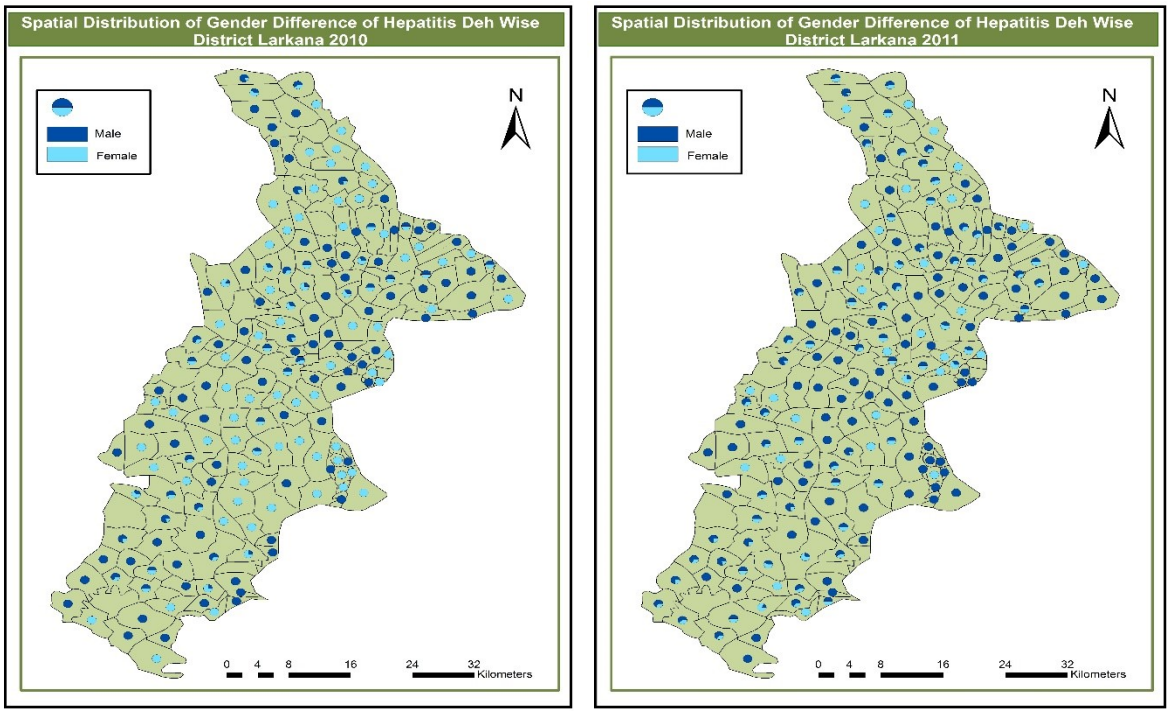


Fig: 3 Spatial distribution of Gender ratio of Hepatitis on Deh wise, District Larkana

district. As a result, it has a higher number of villages than the other three talukas. The Larkana taluka had 51 villages, the Bakrani taluka had 46 villages, and the Dokri taluka had 36 villages. The spatial distribution of disease prevalence and incidence data in the year 2010 and 2016 in the district was uneven.

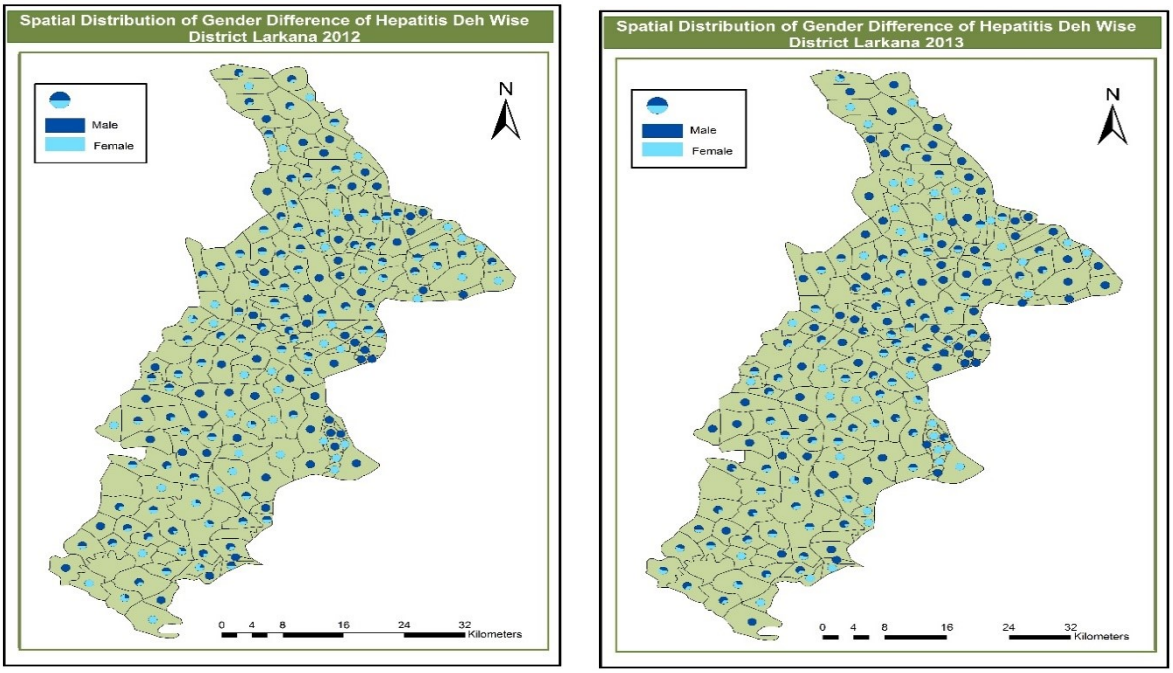


Fig: 4 Spatial distribution of Gender ratio of Hepatitis on Deh wise, District Larkana

Figure 6 outlines the distribution of disease prevalence and incidence data across the District, categorizing parts shown Very High, High, Medium, Low and Very Low. The distribution of prevalence among villages by taluka wise reveals a variety of patterns, as evidenced by the overall numbers of village by taluka and year wise between 2010 and 2016. The concentration of prevalence as well as incidence stayed higher in Ratodero, with a total of zero villages in the very high group. The same pattern can be observed in the Taluka of Bakrani, Dokri and other parts of the District. The hepatitis prevalence rate in the district of Larkana remained at a high level throughout the year due to the presence of the disease in the main city of Larkana, which is classified as a very high area due to its dense population and urban environment. In the high category, Ratodero had approximately 7 villages, while in the medium category, 18 villages, in the low category, 33 villages, and in the very low category, 314 villages. In the low category, the total number of villages was 5, in the medium category 23, and in the low category 57, with 250 villages in the taluka of Larkana belonging to the very low category.

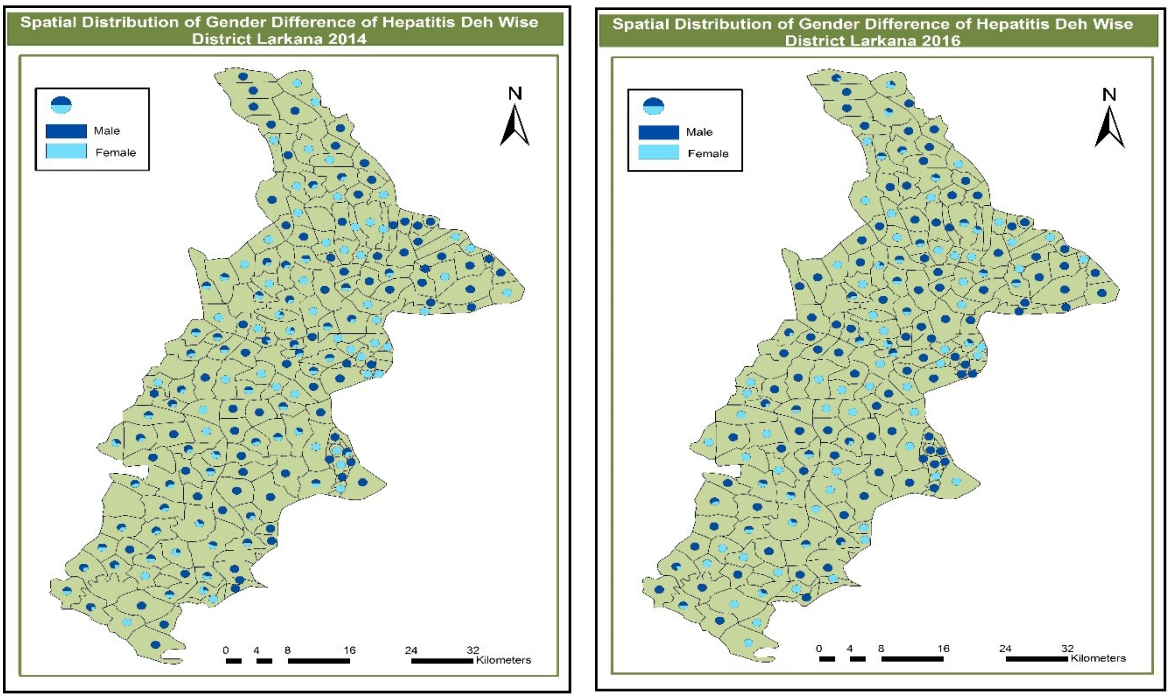


Fig: 5 Spatial distribution of Gender ratio of Hepatitis on Deh wise, District Larkana

Bakrani doesn't have any villages in the very high category from 2010 to 2016, but it does have 7 villages in the medium category, 37 villages in the low category, and 232 villages in the very low category. Dokri, which is a densely populated taluka in Larkana, has no villages in the high category, but it has 7 villages in medium, 19 villages in medium, 68 villages in low, and 122 villages in very low categories from 2010 to 2016. Though entire number of villages changed because of rise also decrease in disease cases in the exploration zone since 2010.

The traditional life of Muslims in villages of Larkana has been highly influenced by the Islamic approach to life. The Pir and Murshid are widely held in high regard and trust by the rural population, largely due to the lack of education in these areas. Ear piercing, particularly by women of Baloch, Chandio, Brohi, Jagirani, Jatoi, Jarwar, and Bozdar communities, has become increasingly popular, with many women opting to have their ears and noses pierced from both sides. This is a traditional practice known as Dai, which is a name in Sindhi used to refer to a lady who provides services at home in the event of delivery in villages. During on-the-spot surveys, it has been observed that people are using infected utensils amongst their family members.

During the summer months, the consumption of thadhal, a soft drink, is widespread due to its cooling effects. This is particularly common on roads and highways due to the high temperature. Many infected individuals consume thadhal, and the owner keeps all glasses for washing in a tab. This same culture has been observed in hotels, with contaminated pots and foods being consumed by the public in villages. The prevalence of hepatitis in rural areas is largely attributed to the same traditional costumes and costumes, as well as the physical and social environment in the surrounding areas. Furthermore, the low socio-economic conditions, lack of awareness of health facilities, and the superstitious beliefs of the Pir and Murshid system are all contributing factors to the spread of the disease.

Catogray HBV	Total Villages
Very High	1
High	3
Medium	9
Low	55
Very Low	127
Total	195

Catogray HCV	Total Villages
Very High	1
High	3
Medium	19
Low	38
Very Low	134
Total	195

Catogray HDV	Total Villages
Very High	1
High	5
Medium	10
Low	68
Very Low	111
Total	195

Catogray HBV	Total Villages
Very High	1
High	4
Medium	18
Low	51
Very Low	121
Total	195

Catogray HCV	Total Villages
Very High	1
High	3
Medium	7
Low	25
Very Low	159
Total	195

Catogray HDV	Total Villages
Very High	1
High	2
Medium	5
Low	20
Very Low	167
Total	195

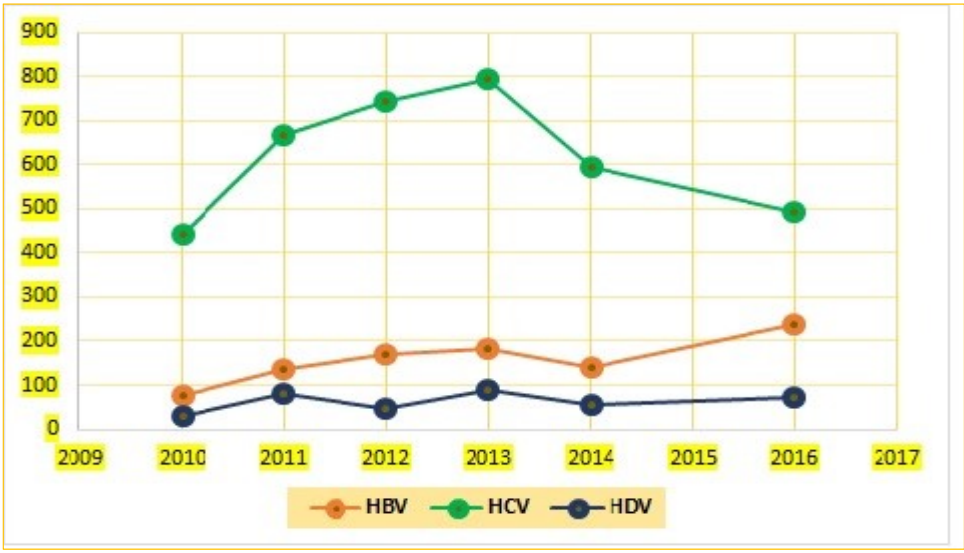
Fig: 6 Total number of villages included in Hepatitis HBV,HCV & HDV Deh wise, District Larkana

Fig.3,4 and 5 illustrate the gender gap in hepatitis patient demographics in the district of Larkana during a survey of targeted villages and the treatment center at Civil Hospital Larkana in 2016. Male and female patients were observed in all villages of the district. However, in remote areas, only one or two male or female patients visited the hospital on the due date for treatment. Therefore, in some villages, light blue and dark blue colors were used, indicating a disparity in the total number of patients. Maps from 2010 and 2011 illustrate the density of male patients in comparison to female patients in most villages.

In the 2012-2013 survey of District Larkana, it was observed that the majority of male community members are dominant in the various villages of the district, which is likely to be a contributing factor to the spread of hepatitis. Drug users and hoteling in villages were also observed to be common during the survey in targeted villages. Female patients are more likely to develop hepatitis due to the habit of delivering at home in villages, as well as the consumption of unclean food and water. Additionally, it has been found that infected partners are engaging in unprotected relationships with their partners, which can be detrimental to the spread of the disease from one village to another.

Since 2010-2016, the total number of patients diagnosed with gender disparity in Larkana has been analyzed. According to the table, in 2010, the total patients were 551, with 338 males and 213 females, in 2011, there were 882 patients, with 556 males and 326 females, in 2012, there were 960 patients, with 559 males and 401 females, in 2013, there were 1066 patients, with 636 males and 430 females, in 2014, there were 463 patients, with 332 males and 332 females. Graph 1 illustrates the data regarding the prevalence of the disease, with a one-year interval between the 2010s, 2011s, 2012s, 2013s, and the 2016 survey year. The hepatitis patient count was observed in all the District's talukas. As the

Districts differ significantly in population size, it is not feasible to analyze the disease pattern and compare it between talukas without taking into account the population base.



Graph:1 Prevalence of Hepatitis HBV,HCV & HDV District Larkana 2010-2016

In Larkana, the number of people diagnosed with HBV in 2016 was higher than in other years, with 237 cases, and lower than in 2010 with 72. 2013 had the highest rate of HCV, with 795 cases, and 2010 had the lowest rate, with 444 cases. HDV was the highest in 2013, with 89 cases, and the lowest in 2010, with 31 cases. The number of Haemophilia B virus (HBV), Haemophilia C virus (HCV) and Haemophilia H virus (HDV) incidence in each taluka wise between 2010 and 2014 and 2016 was deemed to be high due to the widespread use of contaminated syringe and barber utensils in hospitals, as well as infected therapeutic tools. The disease rate in Larkana was particularly high due to the large population density, while the disease rate in Ratodero was second highest due to the density of the population. This viral disease is closely related to humans, which is why the population density in these areas is high, resulting in a high patient rate.

This study provides an assessment of the prevalence of hepatitis in rural areas, taking into account the living standards of cast communities living in urban and rural settings. Figure 7 illustrates the number of casts observed during the Larkana survey, which were related to the patient interviews. The purpose of the map is to demonstrate which cast has the highest prevalence of the disease. A total of 73 casts were identified in all patients. The majority of patients in the study area were found to be from the following casts: Brohi (Baloch), Chandio (Jatoi), Sangi (Bhutto), Jagirani (Jagirani), Lashari (Abro), Gopang (Mughari), Kalhoro (Shar), Shaikh (Channa), Khokhar (Ghangro), Sohu (Soomro), Khoso (Junejo), Syed (Chawan), and Khoso (Hepatitis).

These casts are all Baloch casts in the Sindhi language, and the majority of these people are illiterate and have low living standards due to their residency in rural areas. Although some of these people are now literate and serve in good departments, the majority of them still live in poverty. The culture of the Baloch community is distinct, with all members speaking a mixture of Seraiki and Sindhi. Intermarriage between families and the presence of a weehra system in the family is evident which demonstrates the family structure and quality of life of the community. The front of the community has one entrance, and within this particular culture, the quality of the women and their homes is evident in the targeted villages. Most of the women used to wash their pots using unclean water, because of a lack of nontoxic water also a lack of care for food and hygiene in the home. The lifestyle of this type of living with an infected person can be highly risky, as it can lead to the transmission of hepatitis among other family members.

Consequently,many infected persons have been observed in a single family, as it is a virus-related illness utilizing utensils that is the path of diffusion. This is why it has been bring into being to be prevalent across the entire district. entire district. Figure, 8 shows the geographical distribution of medical facilities of doctors, hospitals and private clinics, PPHI (or) Basic health units (BHUs) and any lab facilities in villages in the study area. Most of the people said that there is no lab facility to provide such lab facility for screening of blood by which the public can be informed about this viral disease.

The only main site for treatment of hepatitis in the city of Larkana, which is far away from many remote villages even within the district. While obtainability of laboratories has been observed merely in the core city parts of talukas, most of the village observed with not availability of test center facilities for screening of blood. 35.6% of patients stated through the interview also seen the test center accessibility in the research zone whereas 63% of patients do not access the lab facility due to the non-availability of laboratory in residential area in rural parts.

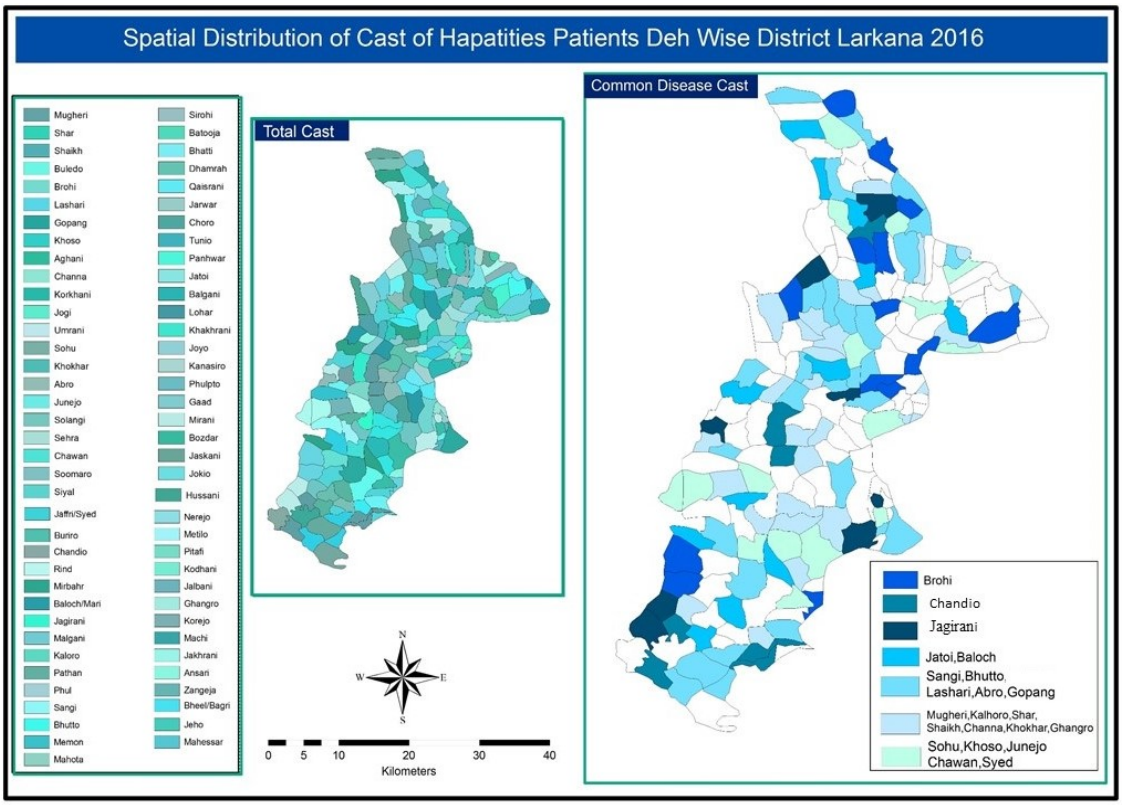


Fig: 7 Spatial distribution of cast for Hepatitis patients on Deh wise, District Larkana.

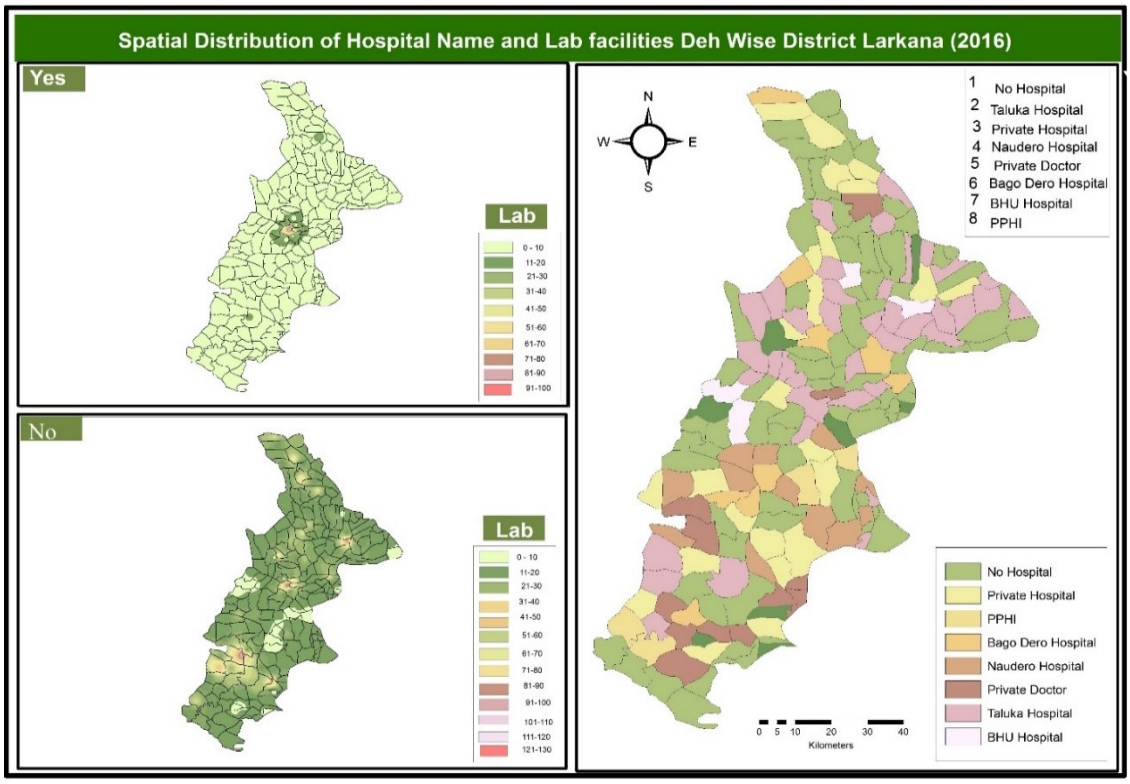


Fig: 8 Spatial distribution of Medical facilities for Hepatitis patients on Deh wise, District Larkana.

Conclusion

This study has demonstrated the power of Geographic Information Systems (GIS) to provide executives with spatial information and investigations to prevent infection and to facilitate the organization of specialized assistance and the allocation of wellbeing assets through the use of ecological information and spatial examination. The study examined the spatial implications of hepatitis disease in Larkana between 2010 and 2016, and the results indicated that the spread of severe, ongoing hepatitis had distinct spatial impacts. The male population was greater than the female population, as the male was perceived to be more mobile than the female. Furthermore, the number of men engaged in various types of occupations, as well as engaging in illegal and hazardous activities such as hidden prostitution, which, with the assistance of reliable sources, can be observed in a variety of localities, including those of low income groups.

This study examines the various factors that are associated with the spread of hepatitis, such as the sharing of blades, towels, and other utilities, as well as the use of citrates by drug users. Additionally, the study examines the prevalence of hepatitis in rural areas, with the majority of the cast belonging to the Balochi community, which is characterized by low income groups living in villages. The GIS platform conducted a gender-based analysis in the study area, however, further research is necessary to fully understand the environmental and social factors that contribute to the spread of hepatitis.

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