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Case Report

Prevalence of Common Infectious Diseases Among Hospitalized Patients in Dera Ismail Khan, Khyber Pakhtunkhwa, Pakistan

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ABSTRACT:

Background: Worldwide, infectious agents cause a disproportionate share of illness and mortality. Using this data, researchers looked at the infectious illnesses and risk factors of Dera Ismail Khan hospital admissions.

Method: Between January 2025 and November 2025, data from 840 individuals who visited four clinical laboratories in D. I. Khan were collected utilizing immune chromatographic technique. We acquired knowledge on the frequency and prevalence of each virus or illness. The research was conducted with the endorsement of the institutional ethics committee. The Top 5 list comprises the five most significant infectious agents and diseases.

Result: Among the patients examined, 385 (45.83%) were infected with the Hepatitis B virus, 168 (20%) with Salmonella typhi (the causative agent of Typhoid fever), 128 (15.23%) with the Hepatitis C virus, 103 (12.26%) with Helicobacter pylori, and 56 (6.66%) with Plasmodium (the causative agent of malaria). A total of 840 individuals were tested for infectious diseases, with over half being male (443, or 52.73%). The remaining half comprised women (397, or 47.26%). The majority of cases involved individuals who were married (52.19%) and those aged between 21 and 30 years.

Conclusion: This study facilitates the estimation of the prevalence of common illnesses, the evaluation of risk factors, and the management of these conditions in Pakistan.

Keywords: *Infectious diseases, Disease prevalence, Hospitalized patients, Dera Ismail Khan, Khyber Pakhtunkhwa, Pakistan*

INTRODUCTION

Microbiology is the scientific discipline that examines bacteria, fungi, viruses, and parasites. Numerous microscopic creatures inhabit our surroundings and can infiltrate our bodies, potentially causing illness. Infectious diseases significantly contribute to elevated morbidity and mortality rates globally. In 2000, GBDS indicated that infectious illnesses accounted for 22% of all deaths and 27% of all disabilities. Infectious diseases encompass several types, including bacterial, viral, fungal, and protozoan parasite infections (Schlossberg & Samuel, 2017).

Bacteria are responsible for typhoid fever, cholera, tuberculosis and other typical human diseases. Of the many species of bacteria that lead to diseases in people, *Helicobacter pylori*, *Salmonella typhi*, *Streptococcus pneumonia*, *Mycobacterium tuberculosis*, *Vibrio cholera*, *Brucella abortus* and *Clostridium tetani* are especially important. Among the agents of disease in humans are *Trypanosomes* (leading to sleeping sickness or Chagas' disease), *Leishmania* (linked to Kala-azar and oriental sore), *Giardia* and *Trichomonas*. The agents that may cause these diseases are *Plasmodium* (malaria), *Toxoplasma* and *Cryptosporidium*. Humans can also be sickened by *Entamoeba* (amoebiasis), *Naegleria* (amoebic meningoencephalitis) and *Acanthamoeba* (amoebic encephalitis and keratitis of the cornea) (Patoli, Patoli, & Mehraj, 2010).

Pakistan is frequently affected by tropical and subtropical illnesses since it is located in the subtropics. This implies that the nation faces several infectious illnesses each year. Illnesses are more prone to spread in Pakistan due to a number of factors, including poverty, poor hygiene, a large number of mosquito breeding sites, restricted access to food, and individuals not getting (or avoiding) vaccinations. Additionally, it implies that cholera is a result of poverty and self-neglect. The state lacks a strong monitoring system that manages ID since it is still vulnerable to infectious illnesses (Naeem et

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al., 2022; Preim & Lawonn, 2020). As a result, it discusses how both private and public health care have not done enough to manage the spread of IDs. Apart from carelessness, unclear guidelines being ignored, limited healthcare staff lacking training for emerging outbreaks like COVID-19, make it worse for controlling outbreaks in the country(Preim & Lawonn, 2020).

Co-infection is the leading cause why diseases and infections are more common in developing countries. Those who are poorest tend to suffer the greatest from infectious diseases. A lack of resources for integration and prevention is most severe among these people tools intended for medical use and medications. WHO has listed Pakistan as eighth among the top 22 countries carrying the highest burdens of TB. In 2007, researchers suggest that about 297,108 people in Pakistan (the majority being in their productive years) were diagnosed with TB. Additionally, TB infections and HIV coinfections, together with MDR TB, are becoming worrying trends. Baluchistan became a pilot site in Pakistan when DOTS, an internationally recommended way to control TB, was put into use by the Ministry of Health in 1995. There have been a lot of improvements over the past five years. From 13 percent in 2002, Pakistan's ability to identify cases reached 67 percent by 2007, very near to WHO's target of 70 percent. Based on findings, the proportion of DOTS coverage went up in Pakistan from 44 percent to 99 percent in the years 2002 to 2007. The large jump in detected TB cases reported annually since 2000 is due to both countrywide efforts to include private doctors and community volunteers in the search, as well as to the active support of the public. Since 2001, when the Government made TB a national emergency, efforts have advanced with the help of USAID and the Global Fund to Fight AIDS, Tuberculosis and Malaria (Naeem et al., 2022).

Hence, this investigation aims to highlight how often the most common infectious diseases occur in patients from Larkana and the factors linked to these infections. Such investigations support the prediction of most common diseases, the assessment of risks and efforts to keep such diseases in check in Pakistan.

MATERIAL & METHODS

Data collection and experimental design

We looked at people who were in the hospital and tested positive for infectious agents to find out how common diseases were at D. I. Khan's four main labs. From January 2025 to November 2025, infected patients could only get the info after getting permission from the right people. There were 753 cases of sick people who were tracked down and written down. Immune chromatographic techniques (ICT) were used to identify the contagious diseases. Next, find out how often the diseases or viral agents happen and what percentage of the time they do.

Ethical Statement

The ethics committee of Qurtuba University of Science and Information Technology in D. I. Khan, Pakistan, approved the research's continuation.

Data Analysis

We looked at the general rates of infectious diseases, the number of infections by gender, the trends by month, the links between a patient's age and marital status, and the rates of diseases and infections by gender and age. SPSS version 24 was what we used to look at the data. We found out both the total number and the percentage of each disease or contagious agent in this study. It was put together in groups and shown in tables and graphs.

RESULTS

To identify the most prevalent infectious diseases affecting the population, the hospital analyzed the number of cases reported in District D. I. Khan from May 2024 to April 2025, recording a total of 840 instances. The results indicated that 385 cases (45.83%) were infected with the Hepatitis B virus, 168 cases (20%) were infected with *Salmonella typhi*, the causative agent of Typhoid fever, 128 individuals (15.23%) were infected with the Hepatitis C virus, 103 were infected with *Helicobacter pylori* (*H. pylori*), and 56 cases (6.66%) were infected with Plasmodium, the parasite responsible for malaria (Figure 1).

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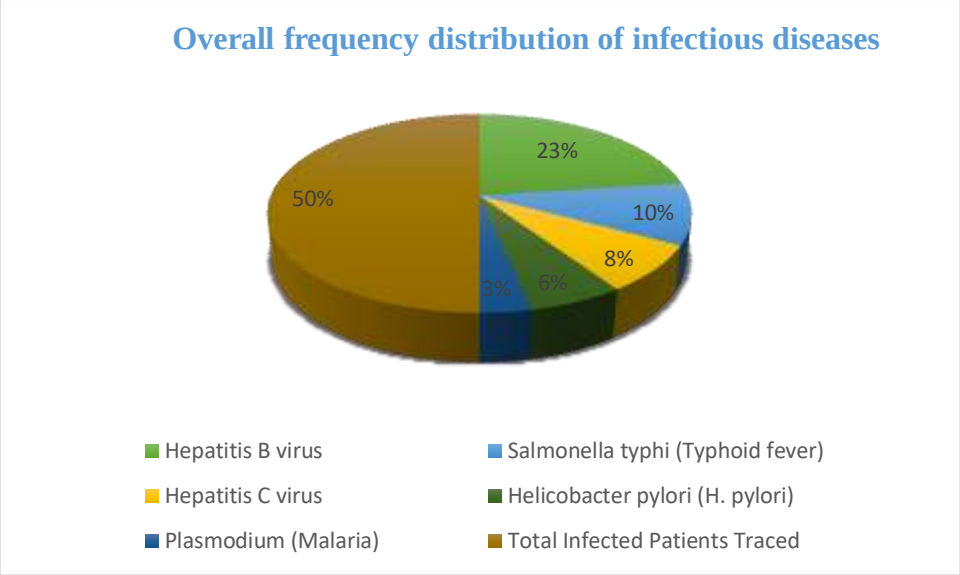

Figure 1: Overall Frequency distribution of Infectious diseases

Gender wise infectious diseases

A total of 443 men and 397 women were examined for infectious diseases. Both male and female individuals exhibited equal susceptibility to infections (Figure 2). Among the 105 patients diagnosed with H. pylori, 52 were female (49.52%) and 53 were male (52.38%). In our study, 49.14% of the 175 Typhoid fever cases were female, while 52% were male. A total of 364 cases of Hepatitis B were recorded, with 194 (53.29%) being male and 184 (50.54%) being female. Among the 140 cases of Hepatitis C, 69 were male (49.28%) and 59 were female (42.14%). Among the 56 patients diagnosed with Malaria, 26 were male (46.42%) and 24 were female (42.85%) (Figure 2).

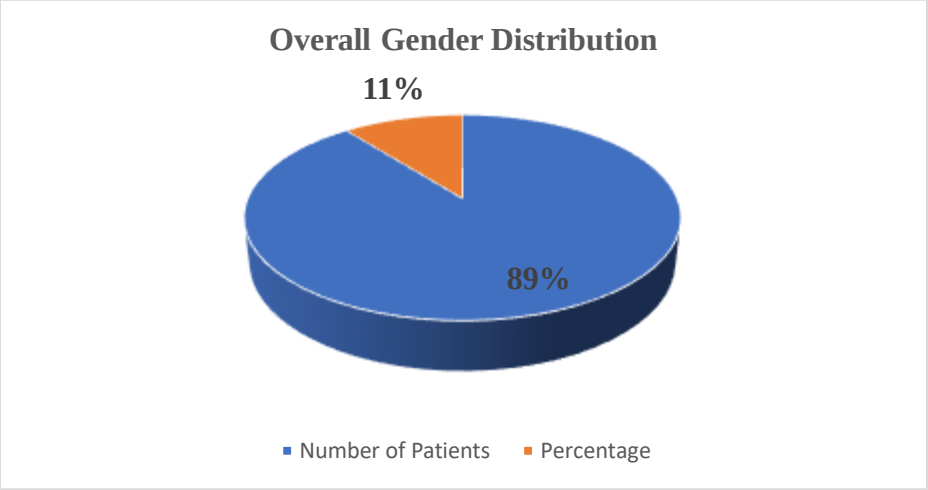

Figure 2: Overall Gender Distribution (Total Patients: 840)

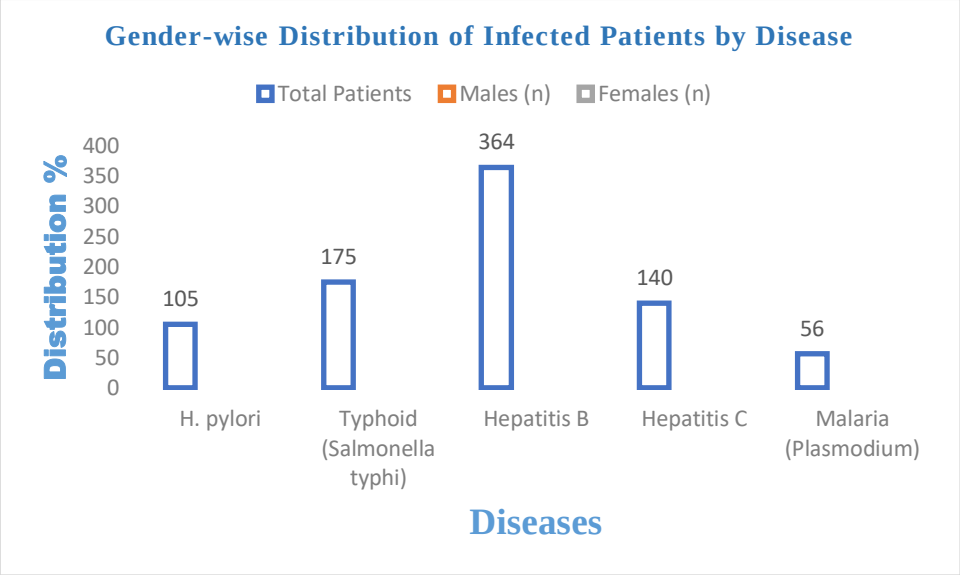

Table-1: Age-wise frequency of infections/ diseases

Age Group	H. pylori		Typhoid fever		Hepatitis B		Hepatitis C		Malaria	
	Count	%	Count	%	Count	%	Count	%	Count	%
10 to 20	6	5.7%	59	33.71 %	72	19.78	58	38.57%	14	25 %
21 to 30	54	51.42 %	70	40 %	190	52.19 %	13	9. 28 %	14	25 %
31 to 40	18	17.14 %	18	10.28 %	47	12.91 %	22	15.71 %	10	17.85 %
41 to 50	13	12.38 %	12	6.85 %	23	6.31 %	28	20 %	9	16.07 %
51 to 60	9	8.57 %	10	5.71 %	14	3.84 %	11	7.85 %	7	12.5 %
61 to 70	5	4.76 %	4	2.28 %	18	4.94 %	8	5.71 %	2	3.5 %
Total	105	100%	175	100%	364	100%	140	100%	56	100 %

Age-wise infectious diseases

The largest number of infectious diseases were found in people aged 21 to 30 (see Table 1). Among the studied age groups, the highest rate (52.19%) was found in those between 21 and 30 years and the next highest (19.78%) was among those between 10 and 20 years. Alaska Natives between 31 and 40 years old received 12.91% of Hepatitis B tests; those aged 41 to 50 years had 6.31% of the cases; those aged 51 to 60 saw 3.84% of the cases and 61 to 70 years had only 4.94%. Forty percent of people diagnosed with Typhoid fever were 21-30 years old and 33.71% were 10-20 years old. For the years 2015 to 2019, those age 51-60 had the next highest rate of Typhoid fever at 5.7%, followed by 31-40 years at 10.28%, then 41-50 years at 6.85%. The 61-70 age group shows the smallest number of cases with a rate of 2.28%. Among all patients tested, those in the age range of 10-20 years were found to have Hepatitis C at the highest rate (38.57%), after which the rate reduced in those ages 41-50 (20%). Hepatitis C infections in adults are highest among 31 to 40-year-olds (15.71%), followed by 51 to 60-year-olds (7.85%), then 21 to 30-year olds (9.28%). H. pylori was present in most cases (49.52%) in adults aged 21 to 30, with the next highest number found in the 31 to 40 age group (17.14%). The lowest H. pylori infection is seen in the age group of 10-20 (5.7%), followed by 61-70 (4.76%), 41-50 (12.38%) and 51-60 (8.57%) years. In both the 10-20 age group (25%) and the 21-30 age group (25%), Malaria was common. For other age groups, Malaria was found in: 41-50 years (16.07%), 31-40 years (17.85%), 51-60 years (12.5%) and 61-70 years (3.5%) showed the lowest rate (Table 1)

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DISCUSSION

Many lives are lost every year in the developing countries, including Pakistan, due to microbial infections6. Thus, active efforts are needed to check the worldwide increase in death rates, paying special attention to emerging countries, to protect them from these diseases. Laboratory data was gathered from several hospitals in Dera Ismail Khan to check for infectious diseases and obtain epidemiological results. Here, we present information on the transmission of infectious diseases, the related risks, their prevention and control in Pakistan among the selected population. New researchers can later compare their observations with our findings and data which will help them better understand infectious diseases in Larkana.

A new scientific view suggests that factors including gender, age and location can shape how patients respond to antibiotics and any medicine that treats infections. For this study, researchers emphasized five diseases that significantly affect the economy (Hepatitis B, Typhoid fever, Hepatitis C, H. pylori and Malaria). Yet, the Hepatitis B rate was much greater than expected in the area and population under study (52.19%). In all these studies, far more individuals had viral diseases (HBV and HCV) than all other diseases.

Both infection response and use of therapy are closely associated with gender, age and geographic location. Five important diseases (Typhoid, Helicobacter pylori, Malaria, Hepatitis C, Hepatitis B) are examined in this study. Typhoid fever accounted for 59.78% of the infectious diseases identified in the selected population, compared to 22.24% among all the people treated for any diseases in the study (Naeem et al., 2022). According to Sharma and Malakar in 2012, typhoid saw around 26% of total visits; this compares well to the recent rates seen in Buner District. The region studied found that the rate of H. pylori were (31.74%). The H. pylori rate in the center and north of Pakistan was estimated to be between 66% and 84%. As a result, there was less H. pylori infection reported. In the current study, malarial infection occurred in 3.7% of cases. yet, the occurrence of viral infections was not very frequent in the individuals studied in that area. Hepatitis C and Hepatitis B occurred in (3.17% and 1.58%) of the cases being analyzed (Naeem et al., 2022).

What we observe here is not in line with what was previously reported which mentioned that HBV and HCV were the country's top two economically important viral diseases. The current discovery that Typhoid fever affects a large proportion (21.5%) is greater than the rates in earlier studies (Ullah et al., 2020). which found 10%. H. pylori was less common in the researched population than it is in many other large Pakistani cities. About 66% to 84% of people in the Pakistan northern and central areas had H. pylori. Around 80% of people in Karachi are thought to be infected with H. pylori (Khan, Akbar, & Shah, 2022).

CONCLUSION

According to the survey, students' cleanliness has an impact on their physical health. They should assist the kids in forming healthy habits, such cleaning their hands before eating, avoiding unclean food, and consuming well-prepared meals. When a child's doctor gives the all-clear, teachers should strive to encourage them to eat fresh veggies, drink milk every day, and include fiber in their meals. Frequent examinations are necessary to detect conditions such as rash, nausea, constipation, diarrhea, and stomach pain. To identify illnesses early and prevent them from worsening, the school medical officer may periodically check a student's health and hygiene.

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Competing Interests: None of the authors have factors that could affect their results.

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