

EPIDEMIOLOGICAL STUDY OF COMMUNICABLE DISEASES IN DIYALA IN 2023

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ABSTRACT

A communicable disease is one that can be transmitted from one human, or animals. They are the product of infections like viruses, bacteria, fungi, and protozoa. Communicable diseases can lead to epidemics and pandemics, posing major health and socioeconomic risks. current study included 1745 patients, suffering from diseases Meningitis 1164(67%), Measles 377(22%) viral hepatitis 110(6%), Whooping cough 82 (5%) Cholera 12 (0.7%) in varying proportions, as the results show that males recorded the highest rates of infection with meningitis (61%), hepatitis. (63%), and whooping cough (68%) compared to females (39%, 37%, and 32%) with statistically significant differences ($p < 0.05$). that individuals in the age groups 1-10 and 11-20 years recorded the highest percentages of patients with meningitis (62% and 18%), measles (69% and 11%), and hepatitis (71% and 20%), whooping cough (68% and 32%), and cholera (33% and 33%) compared to other age groups with highly significant differences ($p < 0.05$). The infected patients who live in Baqubah city and its suburbs showed the highest percentage of communicable diseases, meningitis and measles infection recorded the highest percentage, which was (56%) 657 and (54%) 205, respectively. Then comes the Khalis region (23%) 272 (28%) 104 and then Al-Muqdadiah (12%) 136, (14%) 54, while the results of the study in the Khanaqin district showed a higher rate of infection with meningitis and viral hepatitis than the rate of infection in the rest of the regions. Transmissible diseases (9%) 99, (17%) 19. The differences between areas of residence and communicable diseases were significant ($p < 0.05$).

KEYWORDS: Communicable Disease, Infectious Disease, Bacteria, Virus, Transmission Disease.

1. INTRODUCTION

Communicable diseases are those that occur as a result of infection with infectious organisms, viruses, bacteria, or their toxins, which are transmitted through bodily fluids, blood products, insect bites, or through the air, or indirectly through contact with contaminated surfaces, through the air, or from sources of infection to a healthy person who is susceptible to infection via one of the methods of transmission specific to the cause of each disease.^[1] Transmissible diseases are infectious diseases such as HIV/AIDS, hepatitis A, B, and C, measles, cholera, meningitis, and blood-borne disorders. Which is spread from an infected person to a healthy person via inhaling, swallowing, touch, skin, blood transfusion, or placental transfer. These diseases are significant since they impact the majority of people, cause serious consequences, and can lead to mortality at a young age.^[2]

1.2 The most important types of communicable diseases

The natural history of an infectious (infectious) disease is the way it is transmitted and how it evolves over time from the initial pre-emergent stage to its termination in recovery, disability, or death in the human population, worldwide due to the absence of treatment or

prevention.^[3] The facts to be researched include the infectious agent's nature (parasite, bacterium, fungus, virus, or prion), natural host, mechanism of entry and exit from the host, distribution in host tissues, incubation period, and disease signs and symptoms.^[4] The disease, the natural reservoir in animals or the environment, environmental resistance, the agent's geographic spread, and human disease (which may vary significantly). Through this study, it was found that there were diseases that had the highest incidence among patients at that time.

1.2.1 Meningism: is a kind of infection and inflammation affecting the fluid and membranes that surround the brain and spinal cord, known as the meninges. It is an inflammation of the tissue layers that protect the brain, spinal cord, and the fluid-filled area between the meninges (subarachnoid space).^[5] Bacteria, viruses, fungi, and parasites can all cause meningitis, as can infections. Meningitis typically produces visible symptoms such as headaches. Fever, neck stiffness.^[6] Some cases of meningitis resolve without therapy within a few weeks. Other cases are potentially fatal and necessitate immediate antibiotic therapy. Viral infections are the leading cause of meningitis. Bacterial infections

are followed by fungal and parasitic infections. Although bacterial infections are uncommon, it is critical to understand their etiology because they can be fatal.^[7] Bacteria, viruses, fungi, and parasites can all cause meningitis, as can infections. Meningitis typically produces visible symptoms such as headaches. Fever, neck stiffness.^[6] Some cases of meningitis resolve without therapy within a few weeks. Other cases are potentially fatal and necessitate immediate antibiotic therapy. Viral infections are the leading cause of meningitis. Bacterial infections are followed by fungal and parasitic infections. Although bacterial infections are uncommon, it is critical to understand their etiology because they can be fatal.^[7]

1.2.2 Measles: Measles creates a red, blotchy rash that begins on the forehead and behind the ears and progresses downhill to the chest, back, and feet.^[10] Rubella is a contagious viral infection characterized by a red rash. It's also known as German measles or three-day measles. Most people may experience minor or no symptoms as a result of this infection.^[11] However, it can have catastrophic consequences for fetuses whose mothers become infected with it during pregnancy.^[12] Rubella is not the same as measles, despite having similar signs and symptoms, such as a red rash. Rubella is caused by a different virus than measles, and it is less contagious and harmful. The measles-mumps-rubella vaccine is both safe and effective against rubella. The immunization confers lifetime rubella immunity.^[13]

1.2.3 Viral hepatitis: Viral hepatitis is a virus-related liver inflammation. The most common kinds are hepatitis B and C viruses.^[14] Viral hepatitis is a severe global health concern that causes acute and/or chronic liver inflammation, which can lead to extensive scarring (cirrhosis), liver failure, liver cancer, and death. Viral hepatitis is the tenth leading cause of death and the primary cause of liver cancer worldwide.^[15]

Because the two hepatotropic viruses use the same transmission routes, co-infection with both viruses is common, especially in areas with a high prevalence of hepatitis B virus infection and among patients at high risk.^[16] There are millions of vectors in the world, which serve as a significant reservoir for hepatitis B and C viruses. It may cause chronic liver disease (CLD), including hepatocellular carcinoma (HCC).^[17]

1.2.4 Whooping cough: is an acute respiratory infection caused by *Bordetella pertussis* that is distinguished by a continuous, violent hacking cough followed by a high-pitched intake of breath that sounds like "whoop."^[18,19] "Prior to the development of the vaccine, whooping cough was considered a childhood ailment. Whooping cough now largely affects children who are too young to have received all of their immunizations, as well as teenagers and adults whose protection has waned."^[20,21] Deaths from whooping cough are uncommon, but they most usually occur in newborns. That is why it is critical

for pregnant women and everyone who will have close contact with an infant to get vaccinated against whooping cough.^[22]

The purpose of this study was to investigate the many types of communicable diseases in Diyala Governorate, as well as their distribution rates. Such information could help with the design, targeting, and implementation of health promotion and disease prevention education programs for individuals and the general public, with the goal of protecting health and lowering the prevalence of lifestyle-related NCDs and risk factors, as well as the social and economic costs associated with them.

2. METHODS

2.1 Sample collection

Al-Batoul Teaching Hospital and Baqubah Teaching Hospital were visited several times between November 2023 and January 2024 to collect study samples from the 2023 Epidemiological Disease Census Register, which included the number of patients infected with transmissible epidemic diseases in hospitalized patients' records as well as newborn age groups. Adult males, pregnant and non-pregnant women, to conduct statistics on communicable diseases and determine the degree of the spread of infectious epidemic diseases at the Diyala Governorate level, as this study comprised all age categories and both sexes.

2.2 Sample counting

After gathering and categorizing the study data, which totaled 1,745 patients, the number of male patients with meningeal disease (1,164) was 707, while the number of female patients with meningeal disease was 457. There are 377 people infected with German measles, 193 of whom are male and 184 of whom are female. Governorate, as this survey covered people of various ages and sexes. There are 110 people affected with viral hepatitis, with 69 men and 41 females. The total number of whooping cough cases was 82, with 56 males and 26 females affected. The number of patients infected with cholera was likewise discovered to be (12), with two men afflicted and ten patients infected.

3. RESULTS AND DISCUSSION

The samples of the current study included 1745 patients, suffering from diseases Meningitis 1164(67%), Measles 377(22%) viral hepatitis 110(6%), Whooping cough 82 (5%) Cholera 12 (0.7%) in varying proportions, as the results show that males recorded the highest rates of infection with meningitis (61%), hepatitis. (63%), and whooping cough (68%) compared to females (39%, 37%, and 32%) with statistically significant differences ($p < 0.05$). As for cholera, it was found that more females (83%) were infected than males (17%), with a statistically significant difference ($p < 0.05$). Finally, we did not find any statistical differences ($p > 0.05$) between males and females regarding measles infection (Table and Figure 1).

Table (1): Distribution of communicable diseases by gender

| Gander | Meningism | | Measles | | Hepatitis | | Whooping cough | | Cholera | |
|--------|-----------|------|---------|------|-----------|------|----------------|------|------------|------|
| | No. | % | No. | % | No. | % | No. | % | No. | % |
| male | 707 | 61% | 193 | 51% | 69 | 63% | 56 | 68% | 2 | 17% |
| Female | 457 | 39% | 184 | 49% | 41 | 37% | 26 | 32% | 10 | 83% |
| Total | 1164 | 100% | 377 | 100% | 110 | 100% | 82 | 100% | 12 | 100% |
| Moral | p<0.05* | | p>0.05 | | p<0.05* | | p<0.05* | | p<0.001*** | |

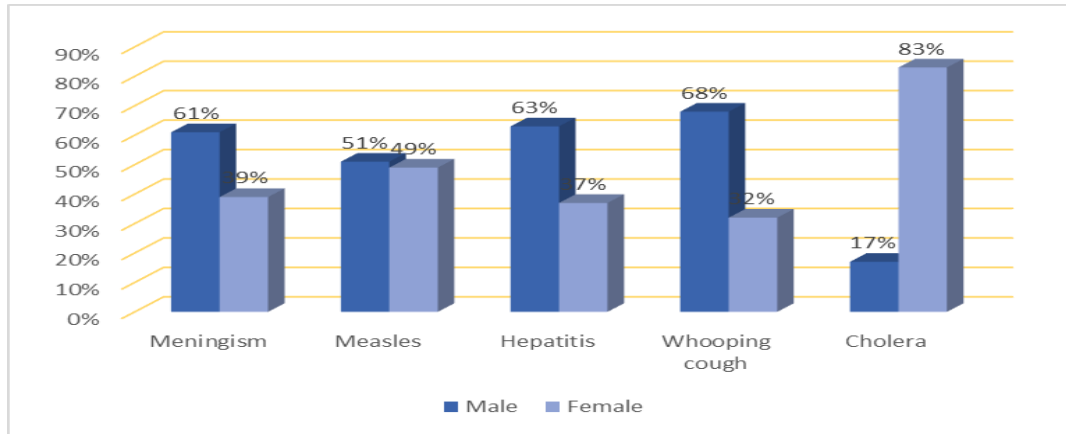


Figure 1: Distribution of communicable diseases by gender.

The results of the current study show that individuals in the age groups 1-10 and 11-20 years recorded the highest percentages of patients with meningitis (62% and 18%), measles (69% and 11%), and hepatitis (71% and 20%).,

whooping cough (68% and 32%), and cholera (33% and 33%) compared to other age groups with highly significant differences (p<0.05) (Table and Figure 2).

Table 2: Distribution of communicable diseases according to age groups.

| Age groups | Meningism | | Measles | | Hepatitis | | Whooping cough | | Cholera | |
|------------|------------|------|---------|------|------------|------|----------------|------|------------|------|
| | No. | % | No. | % | No. | % | No. | % | No. | % |
| 10-1 | 724 | 62% | 260 | 69% | 78 | 71% | 56 | 68% | 4 | 33% |
| 20-11 | 214 | 18% | 43 | 11% | 22 | 20% | 26 | 32% | 4 | 33% |
| 30-21 | 92 | 8% | 29 | 8% | 3 | 3% | 0 | 0% | 1 | 8% |
| 40 -31 | 44 | 4% | 24 | 6% | 2 | 2% | 0 | 0% | 0 | 0% |
| 50 -41 | 34 | 3% | 17 | 5% | 4 | 4% | 0 | 0% | 1 | 8% |
| 60-51 | 32 | 3% | 4 | 1% | 0 | 0% | 0 | 0% | 0 | 0% |
| 70-61 | 14 | 1% | 0 | 0% | 0 | 0% | 0 | 0% | 1 | 8% |
| 80-71 | 9 | 1% | 0 | 0% | 1 | 1% | 0 | 0% | 1 | 8% |
| 90-81 | 1 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% |
| Total | 1164 | 100% | 377 | 100% | 110 | 100% | 82 | 100% | 12 | 100% |
| | P<0.001*** | | P<0.05* | | P<0.001*** | | P<0.001*** | | P<0.001*** | |

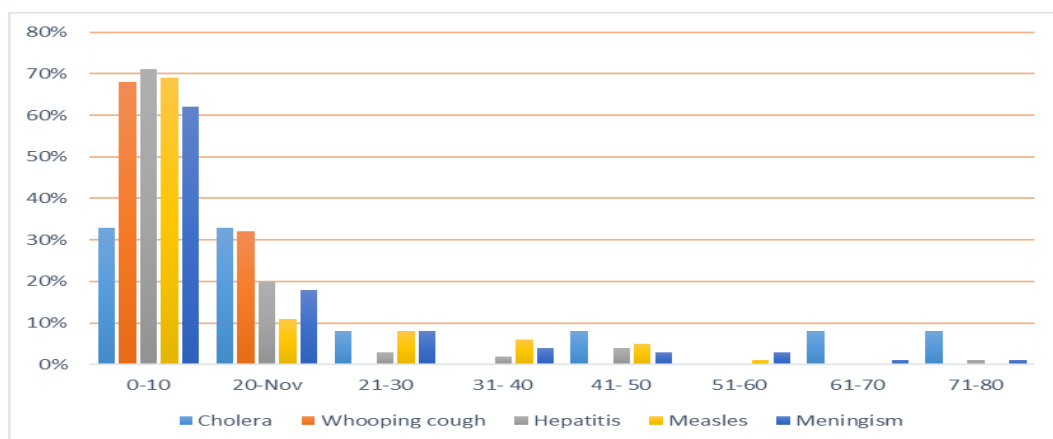


Figure (2): Distribution of communicable diseases according to age groups.

Children showed the highest incidence of communicable diseases within the age group (1- 10) years (71%) because the disease is easily transmitted between children because they are more exposed to contamination, as the spread of communicable diseases within young age groups is due to the weakness of the immune system and children’s ignorance of the rules of hygiene.^[23,24] Which exposes them to the risk of infection more than others, and the phenomenon of the spread of communicable diseases among children is the most common during the changing seasons, as many of them are exposed to

infection through the transmission of these diseases from one person to another, especially in densely populated places, schools, kindergartens, and child nurseries with similar conditions.^[25,26] Crowded places, where many of them are infected with mumps, whooping cough, measles, and others, so healthcare prepares its equipment to confront and combat these diseases with methods and plans that it develops annually, while parents are busy rushing to treat their children and rid them of these diseases.^[27,28,29]

Table (3): Distribution of communicable diseases by residence.

| Town | Meningism | | Measles | | Hepatitis | | Whooping cough | | Cholera | |
|--------------|-----------|------|----------|------|-----------|------|----------------|------|----------|------|
| | No. | % | No. | % | No. | % | No. | % | No. | % |
| Baqubah | 657 | 56% | 205 | 54% | 60 | 55 % | 31 | 38% | 9 | 75% |
| Al Khalis | 272 | 23% | 104 | 28% | 21 | 19% | 25 | 30 % | 2 | 17% |
| AlMuqdadiyah | 136 | 12% | 54 | 14% | 10 | 9% | 15 | 18% | 1 | 8% |
| Khanaqin | 99 | 9% | 14 | 4% | 19 | 17% | 11 | 14% | 0 | 0% |
| Total | 1164 | 100% | 377 | 100% | 110 | 100% | 82 | 100% | 12 | 100% |
| P.V. | P<0.05* | | P<0.01** | | P<0.01** | | P<0.01** | | P<0.01** | |

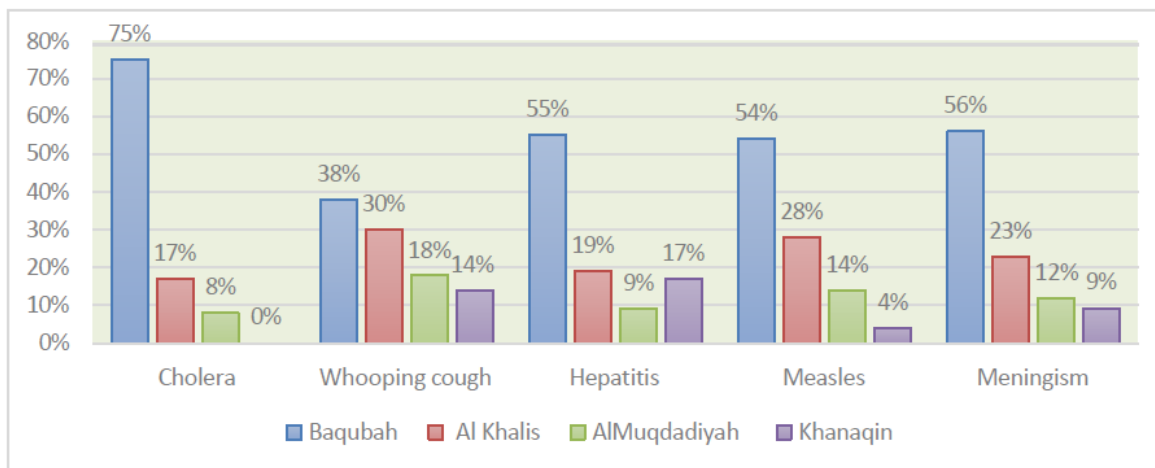


Figure (3): Distribution of communicable diseases by residence.

The results of the current study show that infected patients who live in Baqubah city and its suburbs showed the highest percentage of communicable diseases, 1745 (100%), and meningitis and measles infection recorded the highest percentage, which was (56%) 657 and (54%) 205, respectively. Then comes the Khalis region (23%) 272 (28%) 104 and then Al-Muqdadiyah (12%) 136, (14%) 54, while the results of the study in the Khanaqin district showed a higher rate of infection with meningitis and viral hepatitis than the rate of infection in the rest of the regions. Transmissible diseases (9%) 99, (17%) 19. The differences between areas of residence and communicable diseases were significant (p<0.05) (Table 3) Figure (3).

Due to the high population density in the Baqubah and Al-Khalis area, the large number of schools and students, and the movement of crowded markets, cause the spread of the disease. Likewise, the location of sample collection in Baqubah and the proximity of the Al-Khalis

area to it explain the high rates of infection with communicable diseases.

Statistical Analysis

The data were statistically evaluated with SPSS version 22. Nominal data were described in number and percentage format, and percentages were compared using the Chi-square test with a significance level of P≤0.05.

CONCLUSION

Iraq, like many developing countries, is in the midst of an epidemiological transformation, with communicable diseases and risk factors becoming more prevalent. The main chronic communicable diseases emerged as a result of significant infrastructure deterioration: humanitarian crises, mass population displacement, migration, unemployment, and poverty have resulted in a massive loss of life during the last three decades. With the deterioration of the healthcare system and the disregard for health awareness. To address public health

challenges, strong actions must be adopted at the federal and governorate levels, as well as enough resources committed to prevent or control the spread of communicable diseases.

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