



Prevalence Study of the Intestinal Protozoal Parasitic Infections Rates at Babylon and Kerbala Cities

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Abstract

Intestinal protozoa are parasites transmitted by the consumption of contaminated water and food and mainly affect children and older people and cause considerable health problems. They are leading to causes of outpatient morbidity in developing countries due to diarrhea. The aim of this study was investigation the prevalence of Entamoeba histolytica and Giardia lamblia parasites at Kerbala and Babylon cities in 2022. The research was conducted during the period starting from 1/1/2021 until 31/12/2021 in the provinces of Babylon and Kerbala. The Imam Al-Sadiq Hospital in Babylon and the AlHusseini Hospital in Karbala were taken. Data were collected in both hospitals to detect the spread of the disease (E.histolytica) and they were taken. Considering the percentage of injuries for age groups and gender of the injured during the months of the year. Results of this study showed that rates of intestinal parasitic infections at the Hospitals of Babylon City at Imam Sadiq Hospital, while the total infection rates was 6.58% While the total infection rate with the same parasite at Al-Hashimiya Hospital was 29%. At Hospitals of Kerbala city, the total infection rate at Al-Hussein Hospital was 21.37% While the rate of infected people at Al-Husseiniya Hospital was 26.4% The results of infection rates with Giardia lamblia in the current study showed the following:- At hospitals of Babylon city the total infection rate was 14.3% When it reached Imam Sadiq Hospital, the infection rate was 1.72% While the rate of infection in Al-Hashimiya Hospital was: 1.69% At hospitals of Kerbala city the infection rate was in Al-Hussein Hospital 1.83% While the rate of infected people was at Al-Husseiniya Hospital 2.21% The total infection rate was .4..% as the infection rate was in Al-Hussein Hospital 1.83%, while the infection rate in Al-Husseiniyah Hospital was 2.21%.

Keywords:Kerbala, Bablon, Intestinal parasite, AL-hussein hospital,AL-Sadiq hospital.



Introuction

Intestinal parasites are among the most widespread pathogens throughout the world, as about 3.5 billion people are infected with intestinal parasites, the majority of whom are children [1]. Intestinal parasites include two groups: Parasitic protozoa, which are single-celled. The second group is parasitic helminths, which are multicellular and have bodily systems and other means that enable them to carry out parasitic living [2].

The rates of spread of parasitic infections are wide at tropical and subtropical regions because they have climatic conditions suitable for the continuity and development of the stages that parasites pass through during their life cycle, such as temperature, humidity, nature of the soil and other environmental factors [3], that social and economic conditions have a clear impact on the spread of intestinal parasite infection. It has been observed that people in crowded places with an inappropriate health and environmental system are more susceptible to infection than others.

The lack of municipal services, unhygienic disposal of garbage, and lack of suitable housing are also among the reasons for the spread of intestinal parasites. [4]. Children are often more susceptible to infection with parasites in general and intestinal parasites in particular for many reasons, awareness, a lack of health awareness, lack of interest in public hygiene, as well as a decrease in the immune response compared to adults [5].

Parasitic infection to the intestinal tract is an important cause of many pathological effects, such as diarrhea, anorexia, flatulence, weight loss, abdominal pain, nausea, vomiting, and fever, in addition to intestinal obstruction [6]. Some intestinal parasites can cause an obstruction in the absorption of digested nutrients such as proteins, carbohydrates, vitamins and minerals that are important for human health. [7].

The appearance of these effects depends on a group of factors, including the type of parasite, its numbers, the duration of the infection, the age of the infected person, and the physiological and immune status, as well as the different interstitial immunity [8].

Intestinal parasitic infections cause many problems. Health conditions, such as anaemia, which a high percentage of people all over the world suffer from, noting that anaemia results from either iron deficiency, folic acid deficiency, or vitamin B12 deficiency, which is often caused by parasitic infections [9]. Infection with intestinal parasites results in hepatitis, appendicitis, and biochemical changes in blood components.

At Iraq, the spread of parasites among students was at high rates, as recorded by [10]. Other studies indicated high infection rates in rural areas due to the lack of health services and the scarcity of potable water. Studies also indicated that infection rates were high in the central and southern regions due to high temperatures [11] and studies indicated that infection rates increased in families with low levels of education [12].



Entamoeba histolytica and *Giardia lamblia* are among the most important medical protozoa that cause diarrhea as a result of their infection [13]. The *Entamoeba histolytica* parasite is widespread in the world, especially in areas with low awareness. Infection with this parasite occurs as a result of eating food and water contaminated with the parasite's cysts, as the trophozoite stage attacks the mucous membrane of the large intestine, forming ulcers in its walls, causing diarrhea accompanied by blood and mucus and abdominal pain[14,15] .

may infect other organs, such as the liver, brain, and spleen, causing abscesses on those organs in the case of secondary infection as a result of the parasite entering the bloodstream. The same is true for the *Giardia lamblia* parasite, which is widespread and infects humans and milkmaids and causes diarrhea, especially young children who suffer from malnutrition[16,17].

The infection occurs as a result of the ingestion of parasite cysts contaminated with water, food, and water sauce, as they remain viable in it for three months. [18].

This study aimed to the prévalence the rate of infection people with *Entamoeba histolytica* and *Giardia lamblia* parasites at Kerbala and Babylon cities governoates at 2022.

Material and Methods

This study was conducted at Imam Al-Sadiq Hospital and Al-Hashimiya Hospital at Babylon city, and Al-Husseini Hospital and Al-Husseiniya Hospital at Kerbala city.

Al-Hashimiya and Al-Husseiniyah Hospital were chosen as hospitals located in rural areas, while Imam Al-Sadiq and Al-Husseini Hospital were chosen as hospitals located in the city center for both governorates.

This study was conducted by using the records of the four hospitals located in the laboratories affiliated with those hospitals for the period fro 2/1/2022 to 31/12/2022.

Results and Discussion

Data that obtained from the four hospitals in the Babylon and Kerbala, showed all infections were with the parasites *E. histolytica* and *G. lamblia*. Infections were studied for a period of twelve months for the year 2022. The infection rates for both cities were include studied, as well as the differences infection rates among the hospitals of the city center and the hospitals of the districts and rural areas for both cities as well.

The number of referrals to Babylon hospitals was 2,353, with 778 referrals to Al-Hashimiya Hospital and 1,575 to Imam Al-Sadiq Hospital, while the number of referrals to Karbala hospitals was 2,240, including 1,355 referrals to Al-Husseini Hospital and 885 to Al-Husseiniya Hospital.

The infection rates for each of the parasites *Entamoeba histolytica* and *Giardia lamblia* for each hospital during the months of the year are shown in Table 1.

Table (1): The infection rate with the parasites *E. histolytica* and *G. lamblia* in hospitals in the Babylon and Kerbala governorates for all months of the year

Hospital Months 2022	AL-Hashimia (Babylon)		AL-imam ALsadiq (Babylon)		AL-Husseini (Kerbala)		AL-hussieniya (Kerbala)	
	<i>E. histolytica</i>	<i>G.lambli</i>	<i>E. histolytica</i>	<i>G.lambli</i>	<i>E. histolytica</i>	<i>G.lambli</i>	<i>E. histolytica</i>	<i>G.lambli</i>
January	20%	0%	10.24 %	0%	15%	0%	18.5%	0%
February	32%	0%	8.88%	0%	%0	2.1%	33.3%	0%
March	29.8%	0%	6.45%	0%	12%	2.1%	24.4%	1%
April	26%	4.16%	3.36%	4.1%	20%	3%	26.4 %	4%
May	36.5%	2.11%	5.37%	3.2%	50%	4.1%	34.7%	2.1%
June	30%	2.3%	4.12%	2.5%	38.5%	4.3%	27.58%	2.3%
July	48.5%	0%	2.5%	4%	14.73%	2.7%	52.4%	5%
August	31%	5.88%	10.7%	5.88 %	23.75%	2.7%	29.4%	5.8%
September	26.5%	3.13%	0%	0%	27.5%	0%	25%	3.5%
October	12%	1.75%	12.98 %	1%	33.33%	1%	10.53%	2%
November	17%	0.98%	8.57%	0%	0%	0%	18.6%	0.9%
December	14%	0%	5.86%	0%	21.65%	0%	16%	0%
Total	29%	1.69%	6.58%	1.72 %	21.37	1.83 %	26.4%	2.21%

The rates of infection with the *Entamoeba histolytica* parasite in the four hospitals were taken as shown below Figure - 1.

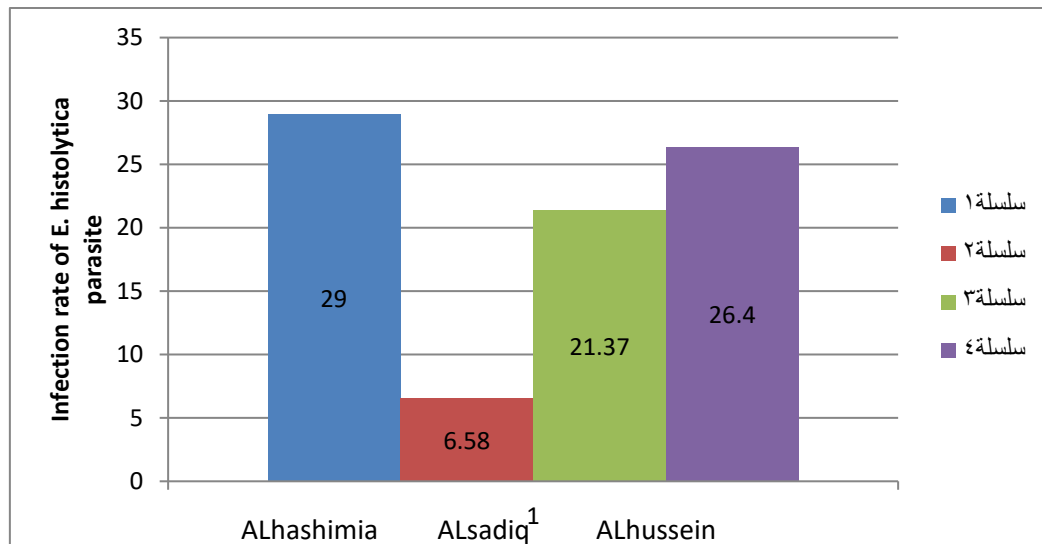


Figure (1): The rates of infection with the Entamoeba histolytica parasite in the four hospitals.

The rates of infection with the Giardia lamblia parasite in the four hospitals were taken as shown below Figure - 2.

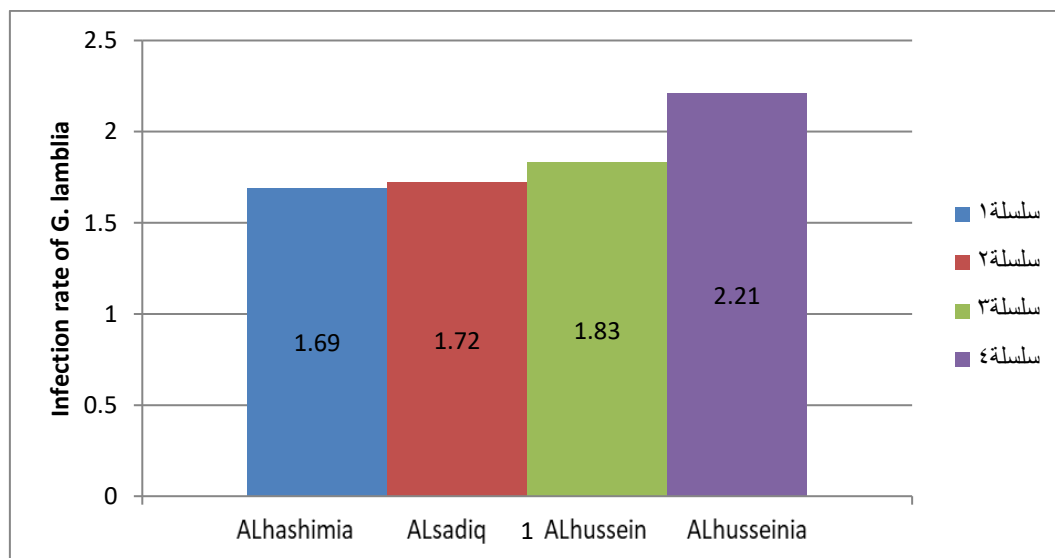


Figure (2): shows the rates of infection with the Giardia lamblia parasite in the four hospitals.

The rates of infection with the parasite Entamoeba histolytica in Al-Sadiq and Al-Hashimiya Hospital in Babylon Governorate were taken as shown in Figure - 3.

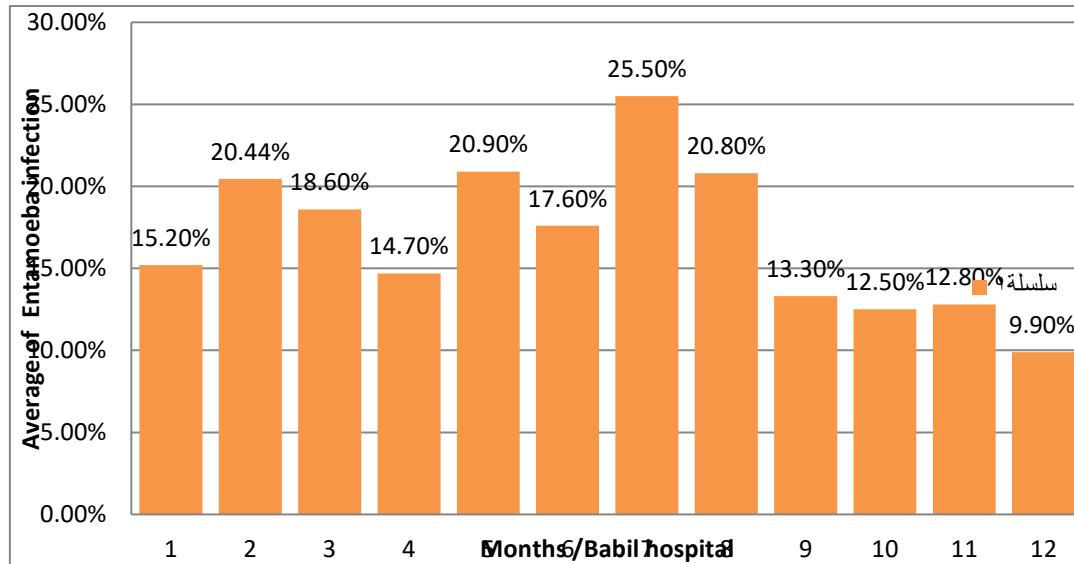


Figure (3): The rates of infection with the parasite *Entamoeba histolytica* in Al-Sadiq and Al-Hashimiya Hospital in Babylon City.

The rates of infection with the parasite *Entamoeba histolytica* in Al-Hussien and Al-Hussieniah Hospital in Kerbala City were taken as shown in Figure - 4.

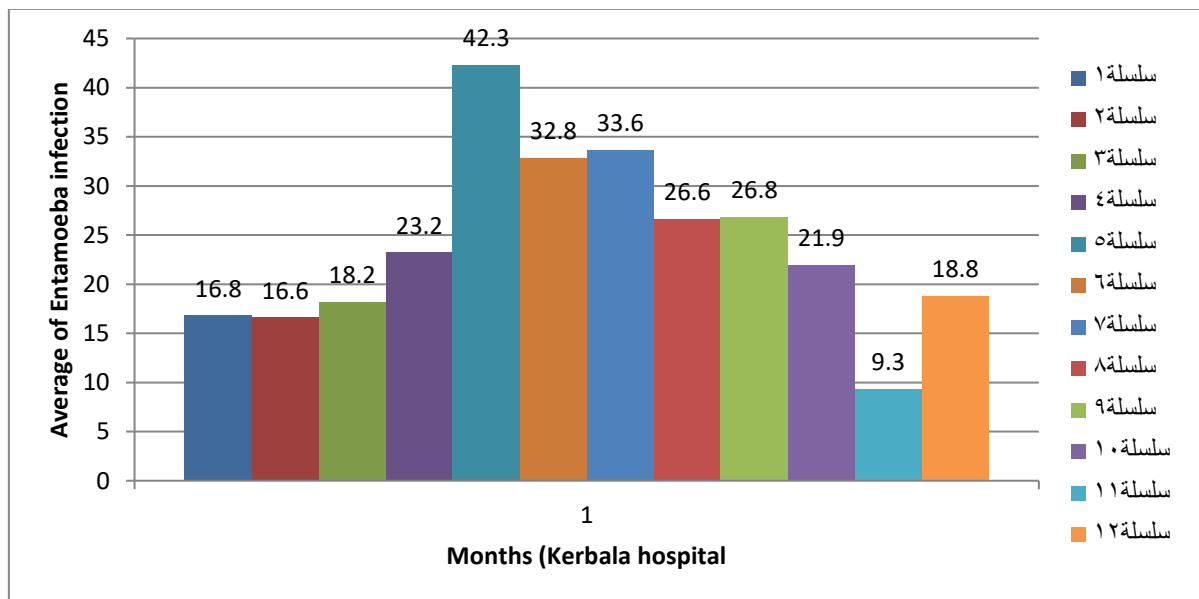


Figure (4): The rates of infection with the parasite *Entamoeba histolytica* in Al-Hussien and Al-Hussieniah Hospital in Kerbala City.

The rates of infection with the *Giardia lamblia* parasite in Al-Sadiq and Al-Hashimiya Hospital in Babylon Govern orate were taken as shown in Figure - 5.

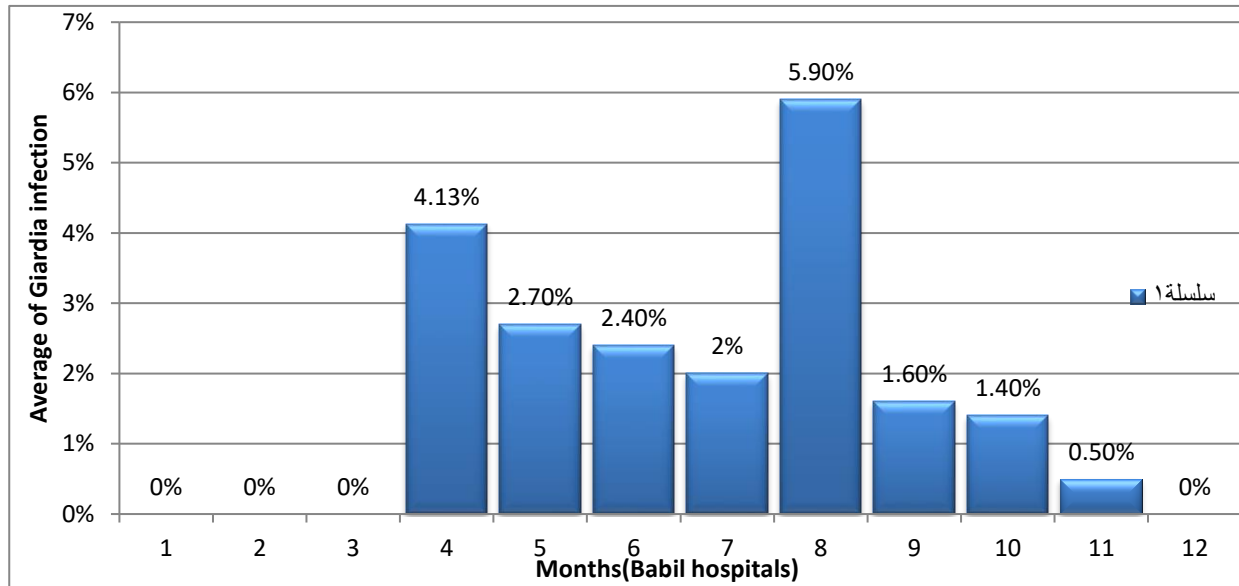


Figure (5):The rates of infection with the Giardia lamblia parasite in Al-Sadiq and Al-Hashimiya Hospital in Babylon City.

The rates of infection with the Giardia lamblia parasite in Al-Hussien and Al-Hussieniah Hospital in Kerbala Governorate were taken as shown in Figure – 6.

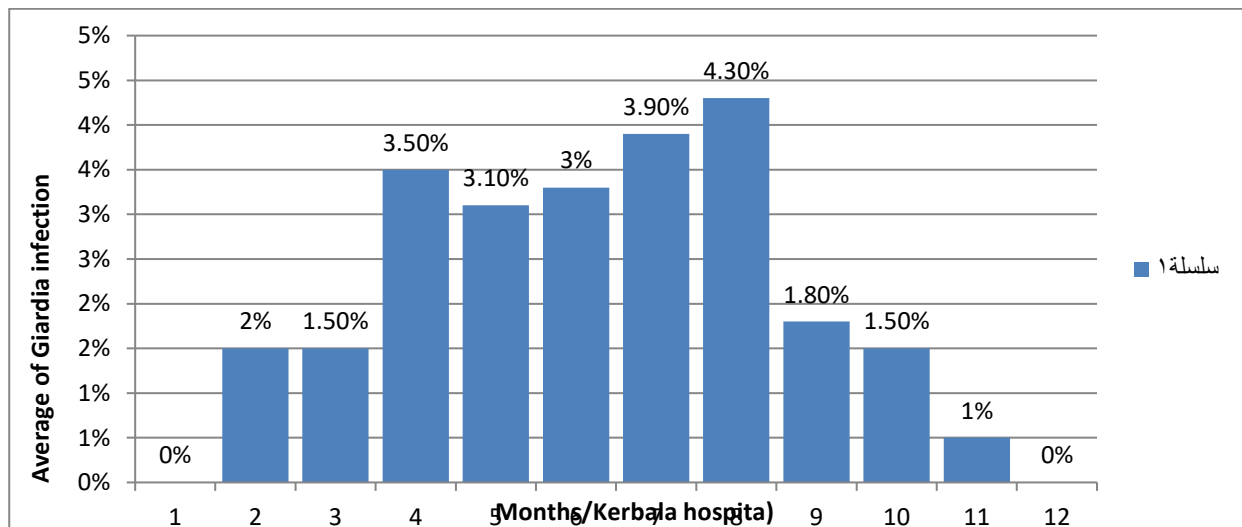


Figure (6):The rates of infection with the Giardia lamblia parasite in Al-Hussien and Al-Hussieniah Hospital in Kerbala City .

The results of total infection rates with *Entamoeba histolytica* showed the following :-

1- Hospitals of Babylon city.

At Imam Sadiq Hospital, the total infection rate was **6.58%** While the rate of infection with the same parasite at Al-Hashimiya Hospital was **29%**.

2- Hospitals of Kerbala city.



At the hospitals of Karbala Governorate, the total infection rate was at Al-Hussein Hospital **21.37 %** While the rate of infected people was at Al-Husseiniya Hospital **26.4%**

The results of total infection rates with *Giardia lamblia* in the current study showed the following :

1- Hospitals of Babylon city.

The total infection rate was **3.41%** When it reached at Imam Sadiq Hospital, the infection rate was **1.72%** While the rate of infection at Al-Hashimiya Hospital was: **1.69%**

1- Hospitals of Kerbala city.

At the hospitals of Karbala city, the infection rate was at Al-Hussein Hospital **1.83%** While the rate of infected people was at Al-Husseiniya Hospital **2.21%**

The total infection rate was **4.04%** as the infection rate was in Al-Hussein Hospital **1.83%** , while the infection rate at Al-Husseiniyah Hospital was **2.21%**

The results of the current study showed that the infection rate with the *E. histolytica* parasite in the hospitals of Karbala city during the study, which was 23%, was higher than the infection rate in the hospitals of Babylon Governorate, which was 14%. The reason may be due to the fact that Karbala Governorate has a religious tourism character, which leads to the arrival of tourists from different regions of the countries of the year. Evidence of this was that the infection rate was different in Karbala city during a study conducted in 2014 during the war against ISIS in Iraq as a result of the lack of tourists to Karbala which reached to 5.85%. [19], While I agreed with a study in Diyala that reported the incidence of infection %26.9 [20].

The results of the current study showed that the infection rate with the *G. lamblia* parasite in the hospitals of Karbala city during the study, which was 1.96%, It was close with the infection rate in the hospitals of Babylon city, which was 1.74%. The two differed with a study in which the infection rate was reached to 55.82% [21] While I agree with the study reached to 1.41% [22].

The results of the study showed that the highest infection rate with the *Entamoeba histolytica* parasite in Babylon hospitals was in the month of July, amounting to 25.5%, while the highest infection rate in Karbala city hospitals was in the month of May, amounting to 42.3% While the lowest percentage was in the months of December and November and reached (9.9% , 9.3%) in hospitals in Babylon and Karbala, respectively. It agreed with the results of [23] study, and [24] as the percentage was highest in the month of July, and May, when it reached 31.1 % and 4.66% respectively the lowest infection rate was with the [24] study, which was in December and reached 3.87%

The infection rate increases in the spring and summer months and its decrease or absence during the winter months, as well as the increase in the infection rate in district and rural hospitals at the expense of city center hospitals.



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