

# Epidemiological Investigation On Infectious Diseases At The Saida Governorate Maternity Ward

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Received: 11/07/2023; Accepted: 02/11/2023

DOI: 10.47750/pnr.2023.14.04.95

## Abstract

Infectious diseases are caused by pathogens (bacteria, viruses, parasites, and fungi) and spread, directly or indirectly, from one person to another. Our objective revolves around a retrospective study on infectious diseases recorded at the maternity ward of the Saida Governorate from 2009 to 2021, during which a growing prevalence of several pathologies such as HIV, Syphilis, Brucellosis, and Meningitis was observed. We highlighted the main determinants of health and the causes of infectious diseases that escape direct control of the health sector, along with their consequences. We proposed solutions encompassing other sectors, such as sanitation and wastewater management, environmental and climate changes, education, agriculture, commerce, tourism, transportation, and industrial development.

**Keywords:** infectious diseases, maternity, Saida.

## Introduction

Infectious diseases are caused by pathogenic microorganisms such as bacteria, viruses, parasites, or fungi. These diseases can spread in the environment or be transmitted from one person to another, leading to their presence in our communities (63). In our study, we aim to provide public health workers with the expertise, support, and necessary resources for the prevention and control of infectious diseases. For further information and sources on a specific disease, refer to the following:

### Bloodborne Diseases

Bloodborne infectious diseases (BBIDs) are viruses carried through the blood, particularly Hepatitis B, Hepatitis C, and the Human Immunodeficiency Virus (HIV). They can be transmitted through sexual contact, sharing needles, needle-stick injuries, from mother to child during pregnancy, childbirth, or breastfeeding. BBIDs can also exist in other bodily fluids.

### Respiratory Diseases

Respiratory diseases are caused by organisms such as viruses or bacteria that attack the respiratory system (e.g., lungs and throat). These organisms spread through coughing, sneezing, and close contact with an infected person.

### Sexually Transmitted Infections (STIs)

Sexually transmitted infections are caused by microorganisms such as viruses or bacteria transmitted through sexual contact, especially during vaginal, oral, or anal relations. According to the World Health Organization, approximately 350 million new cases are reported worldwide each year.

## Vaccine-Preventable Diseases

Vaccination is widely recognized as one of the greatest achievements of the 20th century in public health. Vaccines prevent vaccine-preventable diseases (VPDs), save lives, and reduce healthcare costs. Immunization programs are an important foundation of Ontario's healthcare system.

## Zoonotic and Vector-Borne Diseases

Zoonotic and vector-borne diseases are caused by viruses, bacteria, or parasites transmitted to humans by animals or insects. Some animal-origin diseases require transmission through a vector (e.g., a mosquito or tick) to infect humans.

## Material and Methods

### Study Setting

Our study took place in the Obstetrics and Gynecology Department of the Mother and Child Specialized Hospital in Saida. The hospital operates with administrative, paramedical, medical personnel, and includes a pediatric service.

### Obstetrics and Gynecology Department

This department is housed within the Saida University Hospital, facing the Entry Office. It comprises three floors, including a biological analysis laboratory, an emergency medical consultation office, an external consultation office, a delivery ward, an operating block with three rooms, a recovery and resuscitation room, a postpartum unit, a gynecology unit, a high-risk pregnancy unit, and a postoperative hospitalization unit.

### Pediatric Service

- Neonatology Service
- Service for children under 5 years old
- Service for children over 5 years old

### Activities

A daily shift report occurs during working days starting at 8:30 AM, gathering the service personnel led by the department head. During this briefing, the shift team provides a summary of activities and events from the past 24 hours. The service conducts scheduled operative days during the week, managed by physicians apart from emergencies. Daily visits are made to different hospitalization units led by an assistant.

### Study Period

The study commenced in December 2022, covering the period from 2009 to 2021.

- Study Type: This is a retrospective, descriptive study.
- Study Population: It comprises all pregnant women admitted to the service during the survey period.

### Sampling

#### a. Inclusion Criteria

Pregnant women of all ages and from all areas within the Saida region.

**b. Sample Size:** We included all women with analysis records.

1. Definition of Variables:

- Gravidity: number of pregnancies
- Parity: number of deliveries
- Nulliparous: women who have never given birth
- Primiparous: women who have given birth once
- Multiparous: women who have given birth three to six times
- Grand multiparous: women who have given birth more than six times.

Experimental Protocol

Sampling was primarily based on a preliminary study where information was collected on patients with pathologies at the maternity ward. We established a form (patient information sheet) summarizing details about the patients such as age, diagnosis, systematic assessment, and analysis results from their hospitalization file and/or laboratory analysis registry.

Results

We have summarized the main diseases recorded from 2009 to 2021 in the following figures:

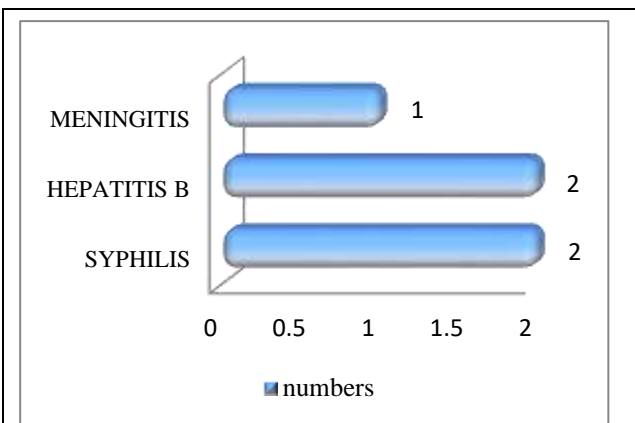


Figure N °01 : Distribution des affections enregistrées en 2009

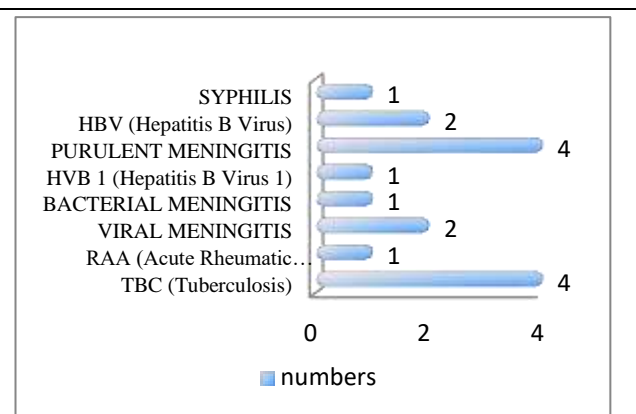


Figure N °02 : Distribution des affections enregistrées en 2010

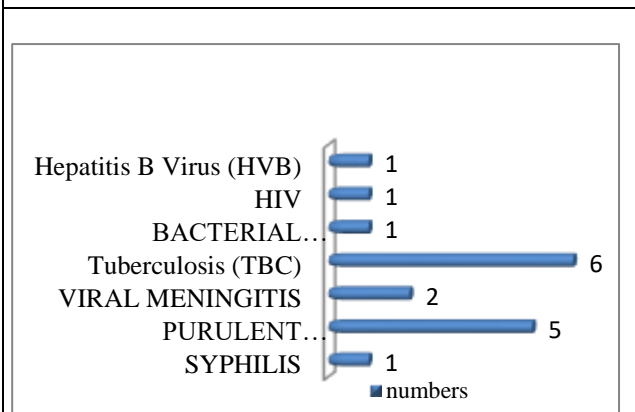


Figure N °03 : Distribution des affections enregistrées en 2011

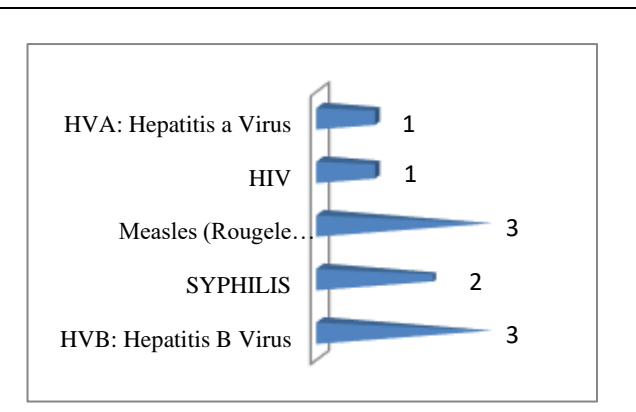


Figure N °04 : Distribution des affections enregistrées en 2012

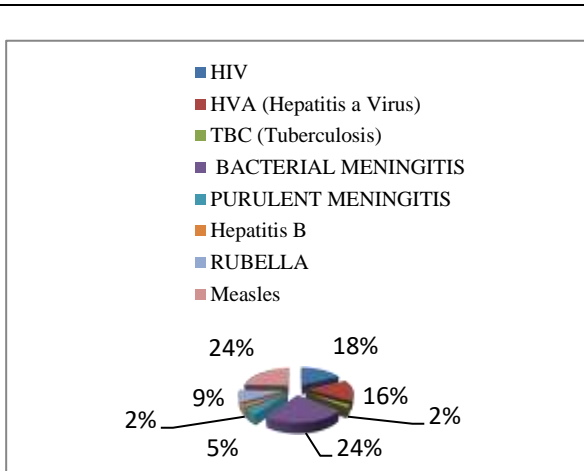


Figure N °05 : Distribution des affections enregistrées en 2013

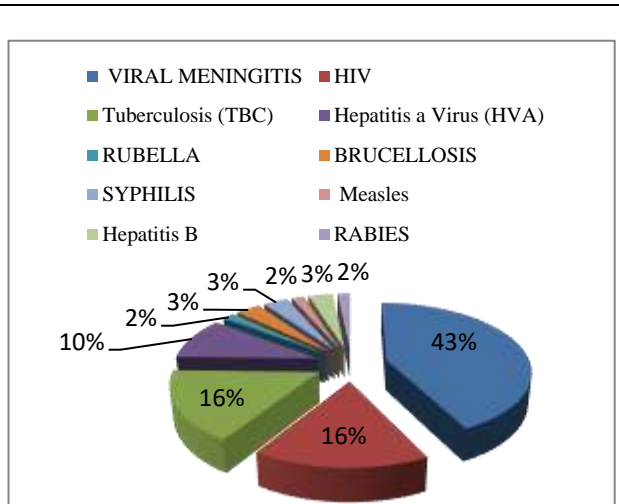


Figure N °06 : Distribution des affections enregistrées en 2014

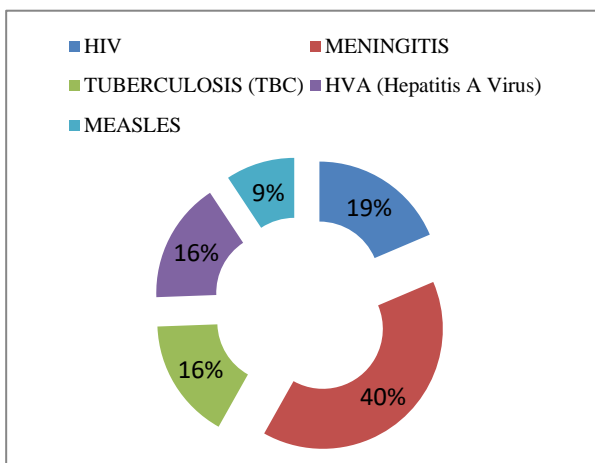


Figure N °07 : Distribution des affections enregistrées en 2015

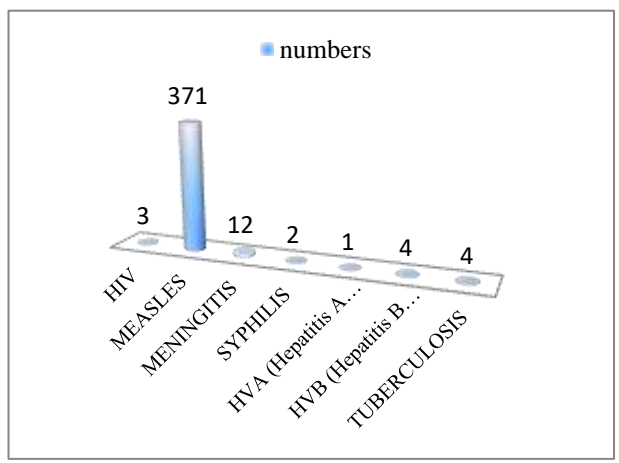


Figure N °08 : Distribution des affections enregistrées en 2018

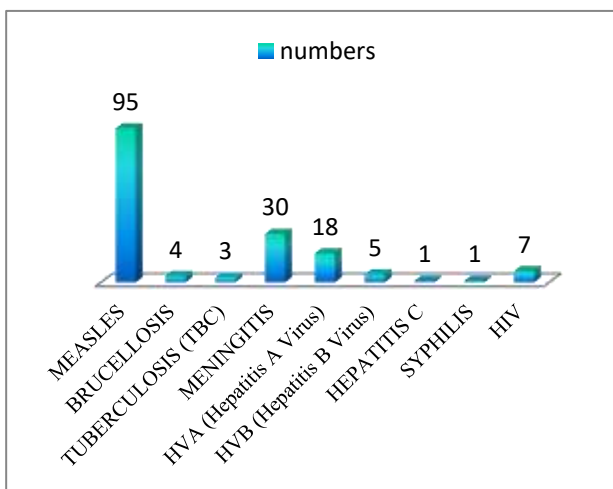


Figure N °09 : Distribution des affections enregistrées en 2019

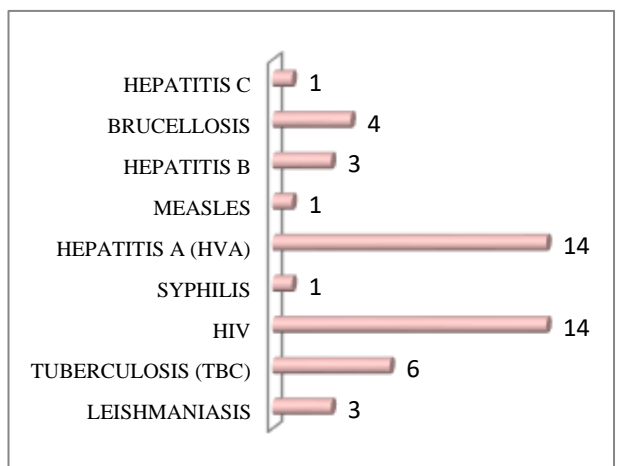


Figure N °10: Distribution des affections enregistrées en 2020

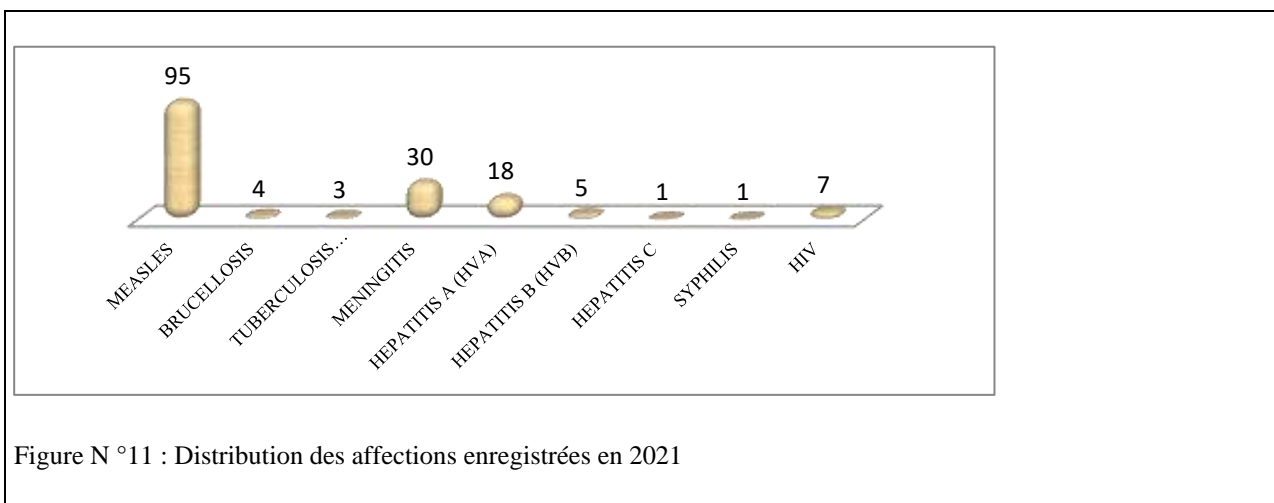


Figure N °11 : Distribution des affections enregistrées en 2021

## Discussion

Our work constitutes an analytical study of the epidemiological aspects of infectious diseases in the Wilaya of Saida. Its objective is to: Identify the main bacterial and viral diseases among pregnant women and children aged 0 days to 14 years old, and determine certain parameters that could influence the proportions of affected subjects (age, year, municipalities, and type of disease). In our study during the period (2009-2021), the results show a higher number compared to the study in Mali (57) from January to December 2008, which reported 187 cases of bacterial meningitis; and the study in the wilaya of Bejaia (52) from 2010 to 2013, which reported 51 cases of bacterial meningitis. In our Wilaya, the increase in cases of bacterial meningitis during the study period can be explained by the absence of vaccines in the vaccination schedule and by the interplay of various contributing factors: lack of hygiene, overcrowding, malnutrition, pollution, acquired or congenital immunodeficiency, climate change, weak healthcare structures, and also the development of bacterial resistance to certain antibiotics. Regarding age, our study shows that the number of cases of bacterial meningitis in infants (0-1 year) could be explained by the frequency of ENT (ear, nose, and throat) infections in this age group and their immature immune system, unable to provide effective protection against major infectious agents. Leishmaniasis is a parasitic disease widely spread worldwide, currently prevailing endemically in over 88 countries, both in the new and old worlds. Its overall prevalence has been estimated by the World Health Organization (WHO) at 12 million cases for an exposed population of 350 million, with a global annual incidence of 1 to 1.5 million cases (59).

In our study, we observed an irregular evolution of cutaneous leishmaniasis over the years. This can be explained by the interplay of various contributing factors that foster the proliferation of this condition. These factors notably include the degradation of living conditions and environmental hygiene, uncontrolled urbanization, climate change, proliferation of rodents and stray dogs, negligence in mosquito control operations, the use of unregulated animal fertilizers and other organic materials, as well as the spread of ponds and lakes in populated areas.

In our study, the observed rate aligns with findings from literature as follows:

- In a study conducted in Tunisia between 1982 and 2004 (59), the very young population (10 to 16 years old) accounted for over 50% of all cases of cutaneous leishmaniasis.

- Another study in India from August 2016 to July 2017 (61) indicated that the highest proportion of cases involved children aged 7 to 12 years, comprising 40% of the cases. The number of cutaneous leishmaniasis cases in males was higher than in females. This male predominance represented 61% of cases compared to 39% in females, with a sex ratio of 1.56. These results closely resemble those found by (60) in Biskra, where cutaneous leishmaniasis cases were 55% male and 45% female, with a sex ratio of 1.43, and the findings of (57) in Marrakech, where the percentage of male cases (52%) was more prominent than female cases (48%) with a sex ratio of 1.07. Conversely, different from the results of (59) in Tunisia, where the percentage of female cases (51.66%) was more prominent than male cases (48.33%) with a sex ratio of 0.93, and the results of (62) in Morocco, which showed a feminine predominance with a sex ratio of 0.93. The causes of this predisposition remain poorly understood, and it remains unclear if the difference lies in the infection stage itself or in the expression of the

pathology. However, this difference could be attributed to a greater exposure of boys to the main risk factors during their work or travel activities in endemic areas.

Over the past 10 years, we recorded a measles peak (371 cases) in 2018. Physicians concluded that the causes of these contaminations were due to:

- Respiratory transmission being faster than other routes.
- Congregation of children in daycares, schools, sports facilities, etc.
- Unregulated hospital visits due to parental ignorance and varied reasons for consultation.
- Lack of isolation for sick individuals and suspected cases.
- Inadequate disinfection in contagious service areas.
- Underreporting of respiratory transmission cases.

## Conclusion

In conclusion, our comprehensive study of infectious diseases in the Wilaya of Saida has unveiled critical insights into the epidemiological landscape, shedding light on various factors influencing disease prevalence among specific demographics.

The stark increase in cases of bacterial meningitis observed during the study period stands as a concerning testament to the absence of vaccines in the vaccination schedule, compounded by a myriad of contributing factors such as poor hygiene, overcrowding, and bacterial resistance to antibiotics. Notably, the vulnerability of infants to this disease underscores the importance of addressing ENT infections and bolstering their fledgling immune systems.

Cutaneous leishmaniasis, a widespread parasitic disease, has displayed an erratic evolution over the years, influenced by multifaceted factors including environmental degradation, urbanization, and unchecked vectors like rodents and mosquitoes. Our findings echo global trends, showcasing the prevalence of this condition among specific age groups and gender disparities, hinting at potential variations in exposure and susceptibility among males and females.

The alarming measles peak in 2018, with 371 recorded cases, underscores the urgency of addressing crucial factors contributing to its spread. Respiratory transmission's rapidity, coupled with settings favoring close contact among children, alongside inadequate isolation and disinfection measures, emerged as key contributors to the contagion.

These findings emphasize the critical need for multifaceted interventions addressing vaccination schedules, hygiene standards, and public awareness campaigns. Strengthening healthcare structures, enhancing environmental hygiene, and targeted interventions aimed at vulnerable demographics are imperative to curb the prevalence of these infectious diseases in the Wilaya of Saida. Addressing these multifaceted challenges requires concerted efforts from healthcare authorities, policymakers, and community engagement to mitigate the burden of infectious diseases on the population.

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