

Perinatal Mortality: A Descriptive Study in the Laâyoune-Sakia El Hamra Region (2023–2025)

Fadil A.^{1,2*}, Reguig A.^{1,2}, Labhairi S.^{1,2}

¹Pediatrics Department, Neonatal Intensive Care Unit, Moulay El Hassan Ben El Mehdi Regional Hospital, Laayoune, Morocco

²Faculty of Medicine and Pharmacy, Laâyoune, Morocco

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*Corresponding author: Fadil A.

Pediatrics Department, Neonatal Intensive Care Unit, Moulay El Hassan Ben El Mehdi Regional Hospital, Laayoune, Morocco

Abstract

Original Research Article

Introduction: Perinatal mortality remains a significant public health problem despite global efforts to improve maternal and neonatal health. It is a key indicator of the quality of obstetric and neonatal care. Preventing this mortality requires a better understanding of the risk factors that can compromise the survival of the fetus and newborn. **Objective:** Determine the perinatal mortality rate and describe the characteristics of perinatal deaths in the Laâyoune-Sakia El Hamra region. **Materials and methods:** This is a retrospective descriptive study conducted in maternity facilities in the Laâyoune-Sakia El Hamra region during the period 2023–2025. All births registered during this period were included. The variables studied included stillbirths, early neonatal deaths occurring between 0 and 7 days of age, and the total number of births. **Results:** Between 2023 and 2025, the Laâyoune-Sakia El Hamra region recorded a perinatal mortality rate of 2.47%. This rate was higher than the Moroccan national average of 2.07%. Regionally, the Marrakech-Safi region recorded a rate of 2.27%, while the Dakhla-Oued Ed-Dahab region had the lowest rate at 1.53%. Despite a relatively small population according to the 2024 General Population and Housing Census (RGPH 2024), the Laâyoune-Sakia El Hamra region thus had the highest perinatal mortality rate in the country. **Conclusion:** Perinatal mortality remains high in the Laâyoune-Sakia El Hamra region. Optimizing prenatal care, early management of high-risk pregnancies, and strengthening neonatal resuscitation capacity are essential measures to reduce this mortality and improve neonatal survival.

Keywords: Perinatal mortality, Stillbirth, Early neonatal mortality, Laâyoune-Sakia El Hamra, Risk factors, Morocco.

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INTRODUCTION

Perinatal mortality remains a major public health problem worldwide, particularly in developing countries where unfavorable socioeconomic conditions and limited access to maternal and fetal care contribute to an increased risk of perinatal deaths. In southern Morocco, especially in Laayoune, this issue is particularly acute due to geographical constraints, difficulties in accessing specialized facilities, and sometimes delayed transfers of high-risk pregnancies.

According to the World Health Organization, perinatal mortality is defined as the number of stillbirths occurring after 28 weeks of gestation and early neonatal deaths occurring within the first seven days of life, per 1,000 live births [1]. Despite progress in maternal and neonatal health, perinatal mortality remains high worldwide. The WHO estimates that approximately 2 million stillbirths occur each year globally, primarily affecting resource-limited countries [2].

Several international studies have shown that prematurity, perinatal asphyxia, neonatal infections, and inadequate prenatal care are the main factors associated with perinatal mortality. In low- and middle-income countries, these factors are exacerbated by difficulties in accessing specialized obstetric and neonatal care.

In Morocco, several studies have also highlighted the importance of this issue. A study conducted at the Souissi Maternity Hospital in Rabat identified prematurity, lack of prenatal care, and maternal pathologies as the main factors associated with perinatal and neonatal mortality [3]. Another study carried out in the neonatology department of Mohammed V Hospital in Tangier reported that prematurity was the leading cause of early neonatal mortality, followed by perinatal asphyxia and neonatal infections [4].

Perinatal mortality is a sensitive indicator of the quality of obstetric and neonatal care. Reducing it is a major public health policy challenge and requires

improving prenatal monitoring, optimizing obstetric care, and strengthening early neonatal care. In the southern provinces of Morocco, where significant distances and limited specialized resources can delay access to care, identifying maternal, obstetric, and neonatal risk factors is essential for implementing appropriate preventive strategies.

In this context, our study conducted in Laayoune aimed to assess the frequency of perinatal mortality and to identify the main associated factors in our regional context.

MATERIALS AND METHODS

Type and framework of the study

This is a retrospective descriptive study carried out at the level of the maternity structures in the Laayoune region, in southern Morocco.

Study period

The study covered a three-year period from January 2023 to December 2025.

Study population

Our study included all births registered within the region's birthing facilities during the study period.

The study population included:

- stillborns;

- early neonatal deaths occurring between 0 and 7 days of life;
- as well as the total number of births recorded during this period.

Stillbirth has been defined according to the criteria of the World Health Organization as any fetal death occurring from 28 weeks of amenorrhea or for a birth weight greater than or equal to 1000 g.

Data collection

Data collection was carried out using:

- maternity records from the Laayoune regional hospital;
- medical records of newborns hospitalized in the pediatrics-neonatology department during the study period;
- as well as statistical reports from the Regional Health Directorate of Laâyoune-Sakia El Hamra covering the period 2023–2025.

Variables studied

The main variables analyzed were:

- the number of stillborns;
- the number of early neonatal deaths (0–7 days);
- the total number of births.

The perinatal mortality rate was calculated using the following formula:

$$\text{Taux} = \left(\frac{\text{Nombre de mort-nés} + \text{Décès à moins de 7 jours}}{\text{Total des naissances vivantes} + \text{Total des mort-nés}} \right) \times 1000$$

According to the WHO

- Stillborn
According to the World Health Organization (WHO), a stillbirth corresponds to the birth of a fetus with no signs of life at birth, with a gestational age ≥ 28 weeks of amenorrhea, or a birth weight ≥ 1000 g, or a body length ≥ 35 cm in the case of unknown gestational age [5].
- Early neonatal deaths
Early neonatal deaths are defined by the WHO as deaths occurring in a live newborn during the period between 0 and 6 completed days of life [6].
- Total births
Total births correspond to all live births and stillbirths that occurred during a given period [7].

RESULTS

At the scale of the Laâyoune-Sakia El Hamra region

During the period from 2023 to 2025, the Laâyoune-Sakia El Hamra region recorded a perinatal mortality rate of 2.47% [8]. (Figure 1).

At a comparative regional level

Variability in perinatal mortality rates is observed between the regions studied. The Marrakech-Safi region has a rate of 2.27% (Figure 1) while the Dakhla-Oued Ed-Dahab region has the lowest rate estimated at 1.53% (Figure 1) [9].

At the national level

The national data used in this work come from the official report “Health in Figures 2023” of the Ministry of Health and Social Protection of Morocco, a reference document for monitoring health indicators and evaluating the performance of the health system [9].

According to this report, the national perinatal mortality rate is estimated at 2.07% [9] (Figure 1). Thus, the rate observed in the Laâyoune-Sakia El Hamra region is higher than the national average. Similarly, the Marrakech-Safi region has a slightly higher rate, while the Dakhla-Oued Ed-Dahab region remains below this national average [9].

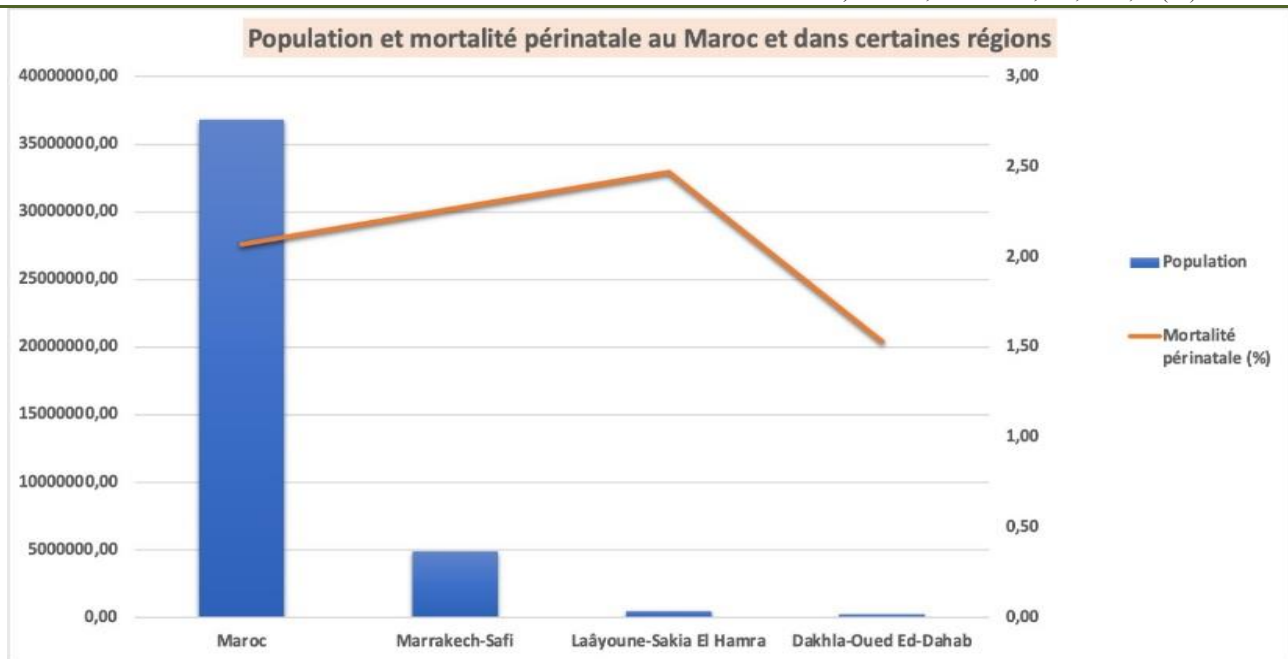


Figure 1

DISCUSSION

Perinatal mortality in the Laâyoune-Sakia El Hamra region appears to be a multifactorial phenomenon, resulting from the interaction of medical, obstetric and organizational determinants.

From a medical standpoint, it is primarily associated with inadequate prenatal care, as well as the occurrence of obstetric complications such as hypertensive disorders of pregnancy, obstetric hemorrhage, and premature rupture of membranes. Delayed referral of high-risk pregnancies to appropriate healthcare facilities is also an aggravating factor, compromising maternal, fetal, and neonatal care. (Ref. Article on prematurity in southern Morocco).

These factors are reinforced by structural and organizational constraints, including a lack of specialized human resources and limited availability of neonatal intensive care units, contributing to sometimes suboptimal care. (Ref. Article on prematurity in southern Morocco).

In our study, the perinatal mortality rate observed in the Laâyoune-Sakia El Hamra region (2.47%) is higher than the national average estimated at 2.07%, according to the 2023 Health in Figures report from the Ministry of Health and Social Protection [9]. This result reflects the regional health inequalities already reported in Morocco, particularly regarding access to obstetric and neonatal care.

Similar results have been observed in other national studies. In Marrakech, one study showed that neonatal mortality is strongly associated with the quality of prenatal care, delayed transfer, and obstetric

complications, including prematurity and perinatal asphyxia [10]. Similarly, in Agadir, the main risk factors identified were prematurity, low birth weight, and neonatal asphyxia, highlighting the importance of early perinatal care for neonatal survival [11].

At the international level, these results are consistent with estimates from the World Health Organization, which indicate that the majority of perinatal deaths occur in settings where access to emergency obstetric care and specialized neonatal care remains inadequate [12]. In sub-Saharan Africa, high rates of perinatal mortality are also reported, mainly due to delays in care, a lack of skilled personnel, and insufficient health infrastructure [13].

Furthermore, the WHO emphasizes that the majority of neonatal deaths are preventable through effective interventions such as regular prenatal monitoring, management of high-risk pregnancies, the presence of skilled personnel at delivery and immediate neonatal resuscitation [14].

These results highlight the need to strengthen the quality of prenatal care, improve the early detection of high-risk pregnancies, and optimize the referral and counter-referral system. Strengthening specialized human resources and neonatal care units is also a strategic priority to reduce perinatal mortality in the study area.

CONCLUSION

Perinatal mortality remains a key indicator of maternal and neonatal health and healthcare system performance. In this study, the Laâyoune-Sakia El Hamra region has a perinatal mortality rate higher than

the national average, reflecting persistent regional disparities.

Analysis of the associated factors highlights the crucial role of inadequate prenatal care, obstetric complications, and delays in referring high-risk pregnancies. These factors are exacerbated by structural constraints, including a shortage of specialized human resources and the limited availability of neonatal care and resuscitation units.

In this context, optimizing prenatal monitoring, actively managing high-risk pregnancies, and strengthening neonatal resuscitation capacity appear to be essential interventions to reduce perinatal mortality at the regional level and improve neonatal survival.

Ultimately, reducing perinatal mortality requires an integrated approach combining improved healthcare provision, strengthened medical skills, and more efficient organization of care pathways.

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