

Original Article

Epidemiological, clinical, and obstetrical profile of women who used medicinal plants during labor and delivery: a retrospective survey in the Guelmim-Oued Noun region, Morocco

Perfis epidemiológico, clínico e obstétrico de mulheres que usaram plantas medicinais durante o trabalho de parto e o parto: um estudo retrospectivo na região de Guelmim-Oued Noun, Marrocos

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Abstract

In Morocco, pregnant women commonly use phytotherapy to facilitate childbirth. However, data on the safety and effects of medicinal plants during labor remain scarce and limited from a toxicological point of view. This retrospective descriptive study investigates the epidemiological, clinical and obstetric profiles of women who used medicinal plants during labor and delivery at the regional hospital of Guelmim. Data were collected from the records of women who gave birth between 2015 and 2021. A total of 22 523 files were examined, including 216 cases of women who had used medicinal plants during labor and delivery. Among these women, 57.8% were young primigravidas and primiparous women, the majority (83.79%) having received prenatal care and 78.24% of women having been admitted in the latency phase. In 65% of cases, delivery took place vaginally, with a significant reduction in the duration of labor. Nevertheless, 34.72% of women underwent a caesarean section. Complications were noted in 58.79% of cases: foetal and neonatal distress, post-partum haemorrhage, meconium-stained amniotic fluid, uterine hyperkinesis, premature rupture of membranes, neonatal death and perineal tears. These complications occurred in women who had used medicinal plants such as *Lepidium sativum* L., *Crocus sativus* L., *Cinnamomum verum* J. Presl. and *Peganum harmala* L., raising about a possible link. Further research is needed to better understand the effects of these plants and their consequences for maternal-foetal health. The frequent association of these plants with adverse effects suggests that they may contribute to the complications observed during labor and delivery. Further research is needed to assess the risks in the obstetric context and establish clear recommendations on its use.

Keywords: medicinal plants, pregnant women, epidemiological profile, labor, delivery.

Resumo

No Marrocos, as mulheres grávidas comumente usam fitoterapia para facilitar o parto. No entanto, os dados sobre a segurança e os efeitos das plantas medicinais durante o parto permanecem escassos e limitados do ponto de vista toxicológico. Este estudo descritivo retrospectivo investiga os perfis epidemiológico, clínico e obstétrico de mulheres que usaram plantas medicinais durante o parto e o parto no hospital regional de Guelmim. Os dados foram coletados dos registros de mulheres que deram à luz entre 2015 e 2021. Um total de 22.523 arquivos foram examinados, incluindo 216 casos de mulheres que usaram plantas medicinais durante o parto e o parto. Entre essas mulheres, 57,8% eram primigestas jovens e primíparas, a maioria (83,79%) tinha recebido cuidados pré-natais e 78,24% das mulheres tinham sido admitidas na fase de latência. Em 65% dos casos, o parto ocorreu por via vaginal, com redução significativa na duração do trabalho de parto. No entanto, 34,72% das mulheres foram submetidas a uma cesárea. Complicações foram observadas em 58,79% dos casos: sofrimentos fetal e neonatal, hemorragia pós-parto, líquido amniótico meconial, hiperkinesia uterina, ruptura prematura de membranas, morte neonatal e rasgos perineais. Essas complicações ocorreram em mulheres que usaram plantas medicinais, como *Lepidium sativum* L., *Crocus sativus* L., *Cinnamomum verum* J. Presl. e *Peganum harmala* L., levantando a hipótese de uma possível ligação entre essas intercorrências e o uso das referidas plantas medicinais. Mais pesquisas são necessárias para entender melhor os efeitos dessas plantas e suas consequências para a saúde materno-fetal. A associação frequente dessas plantas com efeitos adversos sugere que estas podem contribuir para as complicações observadas durante o trabalho de parto e o parto. Mais pesquisas são necessárias para avaliar os riscos no contexto obstétrico e estabelecer recomendações claras sobre seu uso.

Palavras-chave: plantas medicinais, gestantes, perfil epidemiológico, trabalho de parto, parto.

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Received: May 14, 2024 – Accepted: November 7, 2024



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1. Introduction

Phytotherapy has been commonly used by pregnant women worldwide (John and Shantakumari 2015; Elkhoudri et al., 2016; El Hajj and Holst, 2020). Many women consider medicinal plants (MPs) to be safer options than conventional medicines (Holst et al., 2008). The frequency of this practice varies significantly due to factors such as geographic location, ethnicity, culture, and socio-economic status, with rates ranging from 10% to 80% across different regions and countries (Zamawe et al., 2018; Illamola et al., 2020). Common reasons for using MPs during labor include treating infections, inducing and facilitating labor, preventing cesarean sections, expelling the placenta, and regulating postpartum bleeding (Kamatenesi-Mugisha and Oryem-Origa 2007; Rahman et al., 2008; Malan and Neuba 2011; Mureyi et al., 2012; John and Shantakumari 2015; Adusi-Poku et al., 2015; Hanafy et al., 2016; Aljofan and Alkhamaiseh, 2020). Despite their widespread use, there is limited data on the safety and efficacy of medicinal plants during pregnancy (Illamola et al., 2020; Ivari et al., 2022). The identification of potentially useful medicinal plants and the assessment of their safety are critical. Indeed, the use of unstudied plants, with unspecified dosages and toxicity thresholds, may pose risks to both maternal and fetal health (Goyal, 2017; Ahmed et al., 2017). The World Health Organization highlights several challenges associated with phytotherapy, including the regulation of use, safety evaluation, and a lack of comprehensive knowledge about this practice (OMS, 2015).

Some plants have been identified as effective in relieving various symptoms associated with pregnancy and beneficial in facilitating the labor process, without adverse effects (Attah et al., 2012; Close et al., 2014). A synthesis of published works between January 1997 and 2014 indicated that the use of plants during labor could be beneficial, by facilitating the labor process without side effects (Dante et al., 2014). However, other research has shown that medicinal plants can be harmful due to their pharmacologically active compounds, leading to minor and severe complications such as hemorrhages, meconium-stained amniotic fluid, respiratory issues in newborns, and stillbirths (Kennedy et al., 2016; Caillibooter 2017; Aljofan and Alkhamaiseh, 2020). Therefore, cautious use is imperative due to the absence of clinical evidence supporting their safety (Ramasubramaniam et al., 2015; Ahmed et al., 2017; Eid and Jaradat, 2020).

In Morocco, while there is considerable ethnobotanical research, studies on the use of medicinal plants among pregnant women and associated risks are scarce. A retrospective study in Marrakech found frequent use of medicinal plants by pregnant women and recommended integrating modern healthcare systems to address maternal complications (Elkhoudri et al., 2016).

This study aims to investigate the epidemiological, clinical, and obstetrical profiles of women using medicinal plants during labor and delivery. The results of this study could enhance the understanding of traditional practices in obstetrics and inform clinical decision-making while improving maternal and infant care.

2. Material and Methods

2.1. Study type and context setting

This is a retrospective study conducted at the maternity service of the Guelmim Regional Hospital Center (GRHC).

2.2. Study population and sampling

All childbirth records from the period between 2015 and 2021 were studied. We carried out a comprehensive recruitment by including all records of women who used medicinal plants. Records that were not eligible or had a significant number of missing data were excluded from the study.

2.3. Data collection

Data were collected from childbirth records using a data collection form that included all variables present in these records. These data cover sociodemographic data such as age, origin, family situation, and medical coverage. Clinical and obstetrical characteristics at admission and during labor and delivery were also recorded. These characteristics include gravidity, parity, medical, surgical, gynecological, and obstetrical history, pregnancy follow-up, gestational age, general and obstetrical examination (including uterine height, color of amniotic fluid, fetal heart rate, hemodynamic data of uterine contractions, cervical status and dilation), mode of delivery, newborn status at birth, Apgar score, any maternal, fetal and/or neonatal complication, as well as the duration of labor.

Practices related to the use of medicinal plants were also documented, including the vernacular name of each species and the mode of administration.

2.4. Data analysis

Statistical analysis was performed using the Statistical Package for the Social Sciences (SPSS) software version 24.0. Quantitative variables are expressed as mean $\pm$ standard deviation and Median (IQR). Qualitative variables are expressed in frequency and percentage.

2.5. Ethical considerations

This study was conducted in accordance with ethical considerations, ensuring confidentiality and anonymity of the collected data. The study was approved by the Biomedical Research Ethics Committee of the Faculty of Medicine and Pharmacy of Rabat under reference number 29/19.

3. Results

3.1. Sociodemographic, clinical, and obstetrical characteristics of the study population

In this study, 22 523 childbirth records were examined, of which 216 indicated the use of medicinal plants. The analysis of these records reveals that the median age was 26.5 years. The majority of women were married (98%), with a majority coming from an urban environment (70%). 26.85% of the

women did not have any medical coverage, and 57.4% were under the medical assistance scheme (RAMED). Most of them had no medical-surgical, gynecological, or obstetrical history. The pregnancy was full-term in 97.68% of the women. 57.8% were primigravida, and 73% were primiparous. 83.79% of the women received prenatal care during their pregnancy, and 17.59% of them had been diagnosed as having high-risk pregnancies (Table 1).

78.24% of the women were admitted at the onset of labor (latency phase). The general examination was unremarkable in 91.66% of the women. The obstetric examination at admission, including parameters such as uterine height, hemodynamic data of uterine contractions, fetal heart rate (FHR), cervical status, amniotic fluid status, and presentation, revealed no particular problems in most women. Indeed, women had a normal uterine height and a normal fetal heart rate (FHR), a cervix in the process of effacement, cephalic presentation, and clear amniotic fluid. Vaginal delivery occurred in 65% of cases with 37.04% episiotomy. The duration of labor was reduced to less than 4 hours,

particularly among primigravida/primiparous women. Cesarean section accounted for 34.72% of deliveries. 92.59% of newborns had a normal birth weight, and an Apgar score lower than 7 in 26.85% of them (Table 2).

3.2. Maternal and neonatal risks and complications occurring during labor and delivery

Complications occurred in (127/216) cases, accounting for 58.79%, mainly acute fetal distress (30.71%), followed by postpartum hemorrhage (20.47%), hyperkinesia (15.75%), meconium-stained amniotic fluid (13.38%), neonatal asphyxia (12.60%), neonatal deaths (3.15%), premature rupture of membranes (2.36%), and perineal tears (1.58%) (Figure 1).

3.3. Types of medicinal plants used and mode of administration

The results of this study indicate that the most commonly used plants are *Lepidium sativum* L. (28%), *Crocus sativus* L. (20%), and *Cinnamomum verum* J. Presl

Table 1. Sociodemographic and clinical characteristics of women.

Variables		Ni	%
Age (Median [Q1-Q3])		26.5 years [23-32]	
Family situation	Single	4	2%
	Married	212	98%
Place of residence	Urban	151	70%
	Rural	65	30%
Medical insurance	Compulsory Health Insurance (AMO)	16	7.40%
	Private Insurance	14	6.48%
	None	58	26.85%
	Royal Armed Forces (FAR)	4	1.85%
	Medical Assistance Scheme (RAMED)	124	57.40%
Medical-Surgical History	Yes	14	6.48%
	No	202	93.5%
Gynecological-Obstetrical History	Yes	23	10.64%
	No	193	89.35%
Gestivity	Primigravida	125	57.8%
	Secondigravida	43	20%
	≥Thirdigravida	48	22.2%
Parity	1st parity	158	73.14%
	2nd parity	27	12.5%
	≥ 3rd parity	31	14.35%
Gestational age	< 37 weeks	02	0.92%
	37- 42 weeks	211	97.68%
	> 42 weeks	03	1.38%
Pregnancy follow-up	Yes	181	83.79%
	No	35	16.2%
Evolution of the pregnancy	Normal	178	82.40%
	At risk	38	17.59%

Table 2. Obstetrical characteristics of women.

Variable		Ni	%
General admission exam	Normal	198	91.66%
	Abnormal	18	8.33%
Uterine height	Less than 33 cm	199	92.12%
	Greater than or equal to 34 cm	17	7.87%
Uterine contraction	Yes	205	94.90%
	No	11	5%
Intensity of contractions	Hypokinesis	02	0.92%
	Normal	196	90.74%
	Hyperkinesis	18	8.33%
Fetal heart rate at admission	Normal	207	95.83%
	Abnormal	09	4.16%
Cervical status at admission	Long	10	4.62%
	Partial effacement	145	67.12%
	Fully effaced	61	28.24%
Cervical dilatation on admission	Less than or equal to 3cm	169	78.24%
	Greater than or equal to 4cm	47	21.75%
State of the amniotic sac at admission	Intact	148	68.52%
	Ruptured	68	31.48%
Admission presentation	Cephalic	209	96.75%
	Location	07	3.24%
Use of oxytocin	Yes	32	14.81%
	No	184	85.18%
Delivery mode	Caesarean section	75	34.72%
	Normal vaginal delivery without interventions	43	19.91%
	Vaginal delivery with episiotomy	80	37.04%
	Instrumental vaginal delivery	18	8.33%
Birth Weight	Less than 2500g	10	4.62%
	Between 2500g - 4000g	200	92.59
	Greater than or equal to 4000 g	06	2.7%
State of newborn at birth (Apgar score)	Less than 7	58	26.85%
	Greater than 7	158	73.14%
Duration of Labor (Median [Q1-Q3])			
Primigravida and Primipara	4.50 h [2.50 – 5.00]		
Second pregnancy and Second birth	4h [2.45 – 4]		
Multipara	2.5 h [2 - 5]		

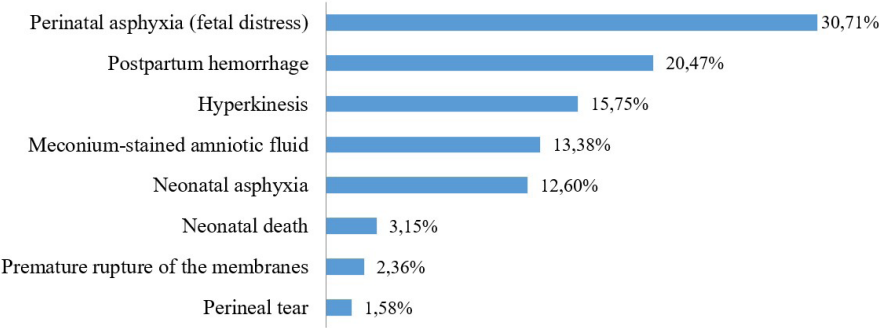


Figure 1. Risks and complications occurring during labor and delivery.

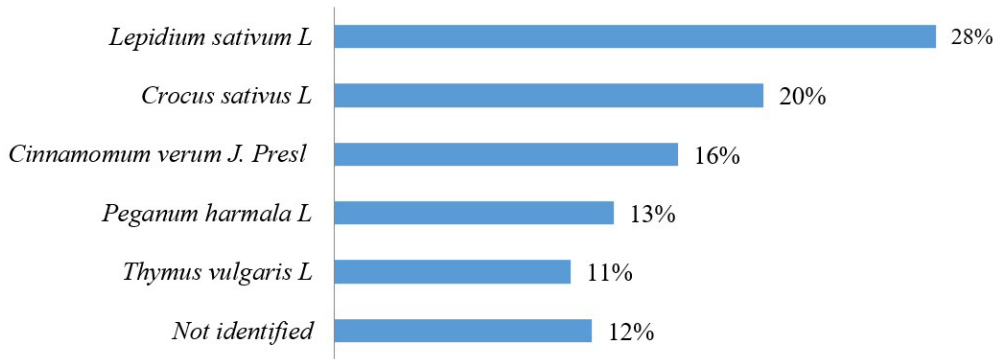


Figure 2. Medicinal plants used.

(16%). Other plants such as *Peganum harmala* L. and *Thymus vulgaris* L. were also consumed, but with percentages not exceeding 13%. Additionally, 12% of the used plants could not be identified (Figure 2).

The oral route was the most used method of administering medicinal plants (61.7%), followed by fumigation (24.8%). The method of administration could not be identified in 13.5% of cases.

4. Discussion

This study can be considered the first of its kind in the Guelmim Oued Noun region in southern Morocco. The study targeted women who gave birth at the maternity department of the Guelmim regional hospital center and who used medicinal plants during pregnancy from 2015 to 2021.

The exhaustive examination of all childbirth records (22,523 records) revealed 216 cases of medicinal plant use, representing 0.96% of all records. This finding differs from a recent study on the prevalence and factors associated with the use of medicinal plants, which indicates a high prevalence of use of these plants by women in the Guelmim-Oued Noun region. According to this study, 67.45% of women use medicinal plants during pregnancy, 26.82% during childbirth, and 5.73% postpartum (Kamel et al., 2022). During data collection, observations were noted, particularly that midwives rarely mention the use of medicinal plants in the records (if they do, they note it at the header of the record). They consider that the absence of a data field on the use of medicinal plants in the records complicates the monitoring of these uses, which makes this practice often overlooked. These observations underline the need for better integration of practices related to medicinal plants in obstetric documentation.

According to the results of this study, women who used medicinal plants were generally young, primiparous, and about 60% of them were covered by the medical assistance scheme (RAMED). Several factors may contribute to these results. Firstly, young primiparous women often consider medicinal plants (MP) as a natural and safer option during pregnancy to facilitate childbirth, which could be due to a lack of previous experience with conventional methods (Holst et al., 2008).

It is essential to note that the analyzed childbirth records do not contain information on education level, income, perceptions, and psychosocial factors. Previous research has highlighted several factors significantly associated with the use of medicinal plants, including age, education level, marital status, socio-economic level, place of residence, cultural characteristics, and multiparity or nulliparity (Dika et al., 2017; Zamawe et al., 2018; Abdollahi and Yazdani Chareti, 2019; Illamola et al., 2020).

According to the literature, several studies have reported the most common reasons for the use of medicinal plants at the time of childbirth, including labor induction, reduction of labor duration, and relief of associated pain, placenta expulsion, management of bleeding, relief of postpartum pain, acceleration of uterine involution process, and prevention of cesarean section (Hanafy et al., 2016; Aljofan and Alkhamaiseh, 2020; Bafor and Kupittayanant, 2020; El Hajj and Holst, 2020; Ijioma et al., 2020; Tengia-Kessy and Msalale, 2021). A national survey on the use of herbal preparations by midwives to stimulate labor revealed that these preparations were used in situations such as premature rupture of membranes, failure of labor progression, and overdue pregnancies (McFarlin et al., 1999).

Previous studies have shown that the traditional use of herbal remedies aimed at stimulating labor or facilitating childbirth did not lead to any complications for pregnant women during and after childbirth (Attah et al., 2012; Close et al., 2014). Thus, a study on the efficacy and safety of herbal medicines for labor induction revealed that users of medicinal plants were significantly more likely to give birth within 24 hours compared to those who did not use them. However, no significant difference was observed between the two groups in terms of the incidence of cesareans, hemorrhages, assisted vaginal delivery, or the presence of meconium (Zamawe et al., 2018). Some studies have shown that there are plants known for their uterotonic and oxytocic properties which could significantly reduce the duration of labor through their effects that can stimulate the secretion of oxytocin, increase the contractility of the smooth muscle cells of the human myometrium, with varying efficacies depending on the time and dose of exposure. These include dill seeds, fenugreek, raspberry, blue cohosh, castor oil, evening primrose oil, whole Ajumbise extract, *Calotropis procera*, *Commelina africana*, *Duranta repens*,

Hyptis suaveolens, *Ocimum gratissimum*, *Saba comorensis*, *Sclerocarya birrea*, *Sida corymbosa*, *Vernonia amygdalina*, aqueous leaf extracts of *Bidens pilosa* L. and *Luffa cylindrica* (L.) (Orief et al., 2014; Bafor and Kupittayanant, 2020; Ijioma et al., 2020; Talebi et al., 2020).

According to the results of the present study, 78.24% of women were admitted at the beginning of labor (latency phase). Delivery was vaginal in 65% with a labor duration reduced to less than 4 hours especially among primigravida and primiparous women. In line with the study by Belinga et al. the average duration of labor was 4.33 hours $\pm$ 2.1 hours for multiparous women and 6.6 $\pm$ 4.3 hours for nulliparous women (Belinga et al., 2020). These results also align with the findings of the study conducted by Ijanya et al., in Nigeria, which reported durations of 3.7 $\pm$ 3.2 hours for multiparous and 4.8 $\pm$ 2.5 hours for nulliparous women (Ijaiya et al., 2011). Conversely, these durations are shorter than those reported by Albers et al., in the United States (Albers, 1999). According to Schaal, the duration of labor varies, averaging 8.6 hours for primiparous and 5.3 hours for multiparous women, with a maximum of 20 hours for primiparous and 14 hours for multiparous women (Schaal et al., 1998). The observed difference in labor duration could be due to the mode of evaluation. Indeed, the duration of labor is counted from admission to the labor room, which could neglect the phase that took place before admission and, consequently, underestimate the duration of labor (Belinga et al., 2020). Moreover, many parturients had taken traditional pharmacopeia products to stimulate and accelerate labor (Aka et al., 2016).

The most frequently used medicinal plants by pregnant women according to the present study are *Crocus sativus* L. (Saffron), *Lepidium sativum* L. (Garden cress), and *Cinnamomum verum* J. Presl (Cinnamon) and *Peganum harmala* L. (harmel). There is limited scientific evidence regarding the use of these medicinal plants in obstetrics. Indeed, *Crocus sativus* L. and its active ingredients appear to be effective in pain management, softening, and maturation of the cervix, as well as in labor progression and acting as a labor facilitator (Sichani et al., 2020; Abadibavil and Dashti, 2021). Another study also reported positive effects of edible medicinal plants, including saffron, chamomile, boiled dill seeds, dates, and castor oil, on uterine stimulation, reducing labor duration, and facilitating childbirth (Ivari et al., 2022). Regarding *Lepidium sativum* L. and *Cinnamomum verum* J. Presl, previous studies have found that both species possess potent bioactive properties, including antidiabetic, anticancer, antimicrobial, antihypertensive, and gastrohepatoprotective (Akour et al., 2016; Al-Snafi, 2019). While some research has suggested that *Lepidium sativum* seeds may play a role in postpartum milk production (Doke and Guha, 2014; Singh et al., 2015), and could potentially induce abortions (Belton and Whittaker, 2007). However, no previous pharmacological or clinical studies have been conducted to test the properties of *Lepidium sativum* L. and the potential adverse effects associated with its use during labor and delivery.

For *Cinnamomum verum* J. Presl, it has been suggested that it could be used to facilitate childbirth, reduce perineal pain, improve episiotomy incision healing, and thus prevent vaginal tears during childbirth (Mohammadi et al., 2014;

Al-Ramahi et al., 2013). A retrospective study conducted in Morocco, reported that the surveyed women mainly consumed *Cinnamomum zeylanicum* Blume (Cinnamon 2.8%), *Aloysia triphylla* (Lemon verbena 2.2%), and *Nasturtium officinale* (Watercress 1.1%) during labor and delivery. The primary reasons for their use were pain caused by labor, induction, and facilitation of childbirth (Elkhoudri et al., 2016).

Regarding the plant *Peganum harmala*, research reveals that this traditionally used herb in the Middle East and North Africa possesses uterotonic properties due to its alkaloids, particularly harmine and harmaline. These compounds can induce uterine contractions by increasing calcium influx in the smooth muscle cells of the uterus, which explains its application in facilitating childbirth. However, this ability to provoke contractions raises concerns due to associated risks, including toxicity and obstetric complications such as uterine hypertonicity and placental abruption. Pharmacological and ethnobotanical studies also highlight its potential toxicity on the nervous, cardiovascular, and gastrointestinal systems, making its use during pregnancy particularly hazardous. Reports of intoxication illustrate the dangers linked to its employment in pregnant women, although maternal and fetal outcomes have generally been positive in these cases. Research also indicates that *Peganum harmala* may have detrimental effects on embryonic development, necessitating increased caution regarding its use in obstetric phytotherapy (Achour et al., 2012; Jamshidi et al., 2018; Bettihhi et al., 2022; Nejatkakhsh et al., 2022).

In this study, complications occurred in 58.79% of cases (127 out of 216), even though the majority of these women had received prenatal care with a normal progression of their pregnancy. They had no medical-surgical or gynecological-obstetric history, and their general and obstetrical examination upon admission was normal. Complications mainly included acute fetal distress, observed in 30.71% of the cases studied, followed by postpartum hemorrhage (20.47%), hyperkinesia (15.75%), meconium-stained/amniotic fluid (13.38%), neonatal asphyxia (12.60%), neonatal deaths (3.15%), premature rupture of membranes (2.36%), and perineal tears (1.58%).

Furthermore, episiotomy was performed in 37.04% of cases, and the cesarean section rate was high, reaching 34.72%. This rate exceeds the recommendations of the World Health Organization (WHO), which advocates for an episiotomy rate of less than 10% and a cesarean section rate between 10% and 15%, thus highlighting the risks associated with high cesarean section rates that can affect the long-term health of both the mother and the child, as well as future pregnancies (OMS, 2015).

The risks and complications observed in this study raise questions about the potential direct correlation between the use of medicinal plants and these complications, or if they are related to other factors. Information available in the literature regarding negative effects associated with the use of medicinal plants during labor and delivery is scarce. Indeed, it is very difficult to find sources on their toxicities, as the vast majority of studies focus solely on the pharmacological properties of medicinal plants (antifungal, anticancer, antimicrobial, etc.). This could be due to constraints and obstacles making research on

plants difficult, such as clinical trials on pregnant women, which are generally not permitted, and the ethical issues characteristic of scientific research on pregnant women (Lupton and Williams, 2004; Morgan and Macgibbon, 2007).

Previous studies have reported associations between the use of certain medicinal plants and certain complications. For example, the use of almond oil was associated with an increased risk of preterm delivery, and oral consumption of raspberry leaf was linked to cesarean delivery. Additionally, African phytotherapy was associated with maternal morbidity and neonatal mortality or morbidity. Only fourteen out of seventy-four studies reported no adverse events (Balbontín et al., 2019). However, the study conducted by Elkhoudri revealed that no statistical association was found between the use of herbal remedies and maternal morbidity complications during childbirth (Elkhoudri et al., 2016).

The most reported problems by studies include stillbirth, newborn respiratory problems, decreased oxygen supply, low Apgar score, neonatal asphyxia, closure of the ductus arteriosus, fetal/neonatal death, and meconium-stained amniotic fluid grade II-III. Other reported issues are precipitous labor, tetanic uterine contractions, perineal trauma, postpartum hemorrhage, and increased cesarean delivery rates (Elkhoudri et al., 2016; Aljofan and Alkhamaiseh, 2020; Talebi et al., 2020; Ivari et al., 2022).

Regarding plants that could potentially be harmful or for which information on safety during pregnancy was lacking, the study by Ahmed et al. cited the following plants: *Salvia officinalis*, *Trigonella foenum-graecum*, *Thymus vulgaris*, *Cinnamomum verum*, *Mentha pulegium*, *Nigella sativa*, *Borago officinalis*, *Cichorium intybus*, and *Cuminum cyminum*. Recommendations were developed to avoid contraindicated medicinal plants and to take other medicinal plants under the supervision of a qualified healthcare professional (Ahmed et al., 2017).

5. Conclusion

This study provides a crucial perspective on obstetric practices in southern Morocco, identifying certain medicinal plants that could be beneficial in facilitating childbirth and reducing labor duration. However, it cautions that the use of these plants during childbirth could be associated with health risks for the mother and fetus, even though this association is not fully understood.

It is important to note that further research is needed to better understand the link between the use of medicinal plants and the various reported complications. This study also highlights the need to add an informative section dedicated to practices related to the use of medicinal plants in the follow-up files of pregnant women. This would allow for proper monitoring of these practices and better prevention of potential complications that could be related to these practices.

Ethics and consent

The study was conducted in accordance with the Declaration of Helsinki, and approved by Ethics Committee

for biomedical research of Faculty of Medicine and Pharmacy, Mohammed V University in Rabat (Dossier number 29/19 and date of approval: 20 December 2018).

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