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Pregnancy anemia and traditional medicine use Province of Sidi Kacem Morocco

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Abstract

An in-depth ethnobotanical study conducted in 2018 in the province of Sidi Kacem, Morocco, investigated the use of medicinal plants by pregnant women to manage anemia during pregnancy, revealing a notable prevalence of 41.3% for this practice. This research highlighted the importance of traditional medicine in the treatment of pregnancy-related anemia, emphasizing the frequent use of plant-based remedies during pregnancy and childbirth. Documenting these previously unrecorded practices has enriched our understanding of the beneficial properties of the identified species and raised interest in their therapeutic potential. By identifying plants specifically used by pregnant women in the region, the study opens avenues for future research, considering a collaboration between traditional and conventional medicine for more effective management of pregnancy anemia. It proposes a reflection on integrating traditional knowledge into public health strategies to develop holistic care approaches that respect the cultural and social dimensions of the community. This research underscores the significance of valuing local medicinal heritage and considering traditional medicine practices as a complementary resource in health systems. It offers pathways for improving the care provided to pregnant women and enhancing the efficacy of treatments for pregnancy anemia.

Keywords: Anemia, plants, frequency, traditional medicine, Sidi Kacem, Morocco

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1. Introduction

Pregnancy is a delicate period marked by significant physiological changes, during which the health of both mother and fetus requires special attention. Anemia, characterized by a drop in hemoglobin levels in the blood, remains one of the common complications during pregnancy [1] exposing pregnant women to potential health risks for themselves and their newborns. While modern medicine offers conventional medical approaches to treat anemia, many pregnant women turn to traditional medicine as a complementary alternative for solution [2]. These ancestral remedies, rich in cultural practices and knowledge passed down from generation to generation, often offer alternatives to conventional medical treatments. This article in addition to exploring pregnant women's practices in managing gravidic anemia through medicinal plants, while assessing the prevalence of the use of these plants, also explores the motives that prompt anemic pregnant women to resort to traditional medicine, highlighting the cultural perspectives and implications of this approach on maternal and fetal health.

2. Materials and Methods

2.1. Location of the study

The study took place in health centers, dispensaries and maternity wards in the province of Sidi Kacem. This is one of the four provinces of the Rabat-Salé-Kenitra region, according to the administrative division of Morocco's regions. It is divided into 24 rural communes and 5 urban communes [3].

2.2. Type of study

By adopting a cross-sectional and analytical approach, we conducted a survey that took place over a period of one year, from August 1, 2018, to August 1, 2019

2.3. Study population

Our population consisted of pregnant women who had undergone prenatal consultations in the birthing centers and health centers that were chosen for the study, these centers affect almost 70% of pregnant women who come for their prenatal consultations.

2.4. Sampling and sample size

Sample size was determined using the formula developed by [4] According to Ministry of Health data from the 2000 National Survey on Iron Deficiency Anemia, the prevalence of anemia among pregnant women in Morocco was 37% [5]. Based on this prevalence, the calculation led to a minimum sample size of 358 patients. Sampling was carried out consecutively.

2.5. Inclusion and exclusion criteria

All pregnant women seen for prenatal consultation who had a complete blood count (CBC) were included, while those who came for prenatal consultation or delivery and did not have a complete blood count (CBC) were excluded.

2.6. Ethical considerations

We obtained the authorization of the medical delegate of the Ministry of Health and Social Protection of the province of Sidi Kacem, as well as that of the regional director of the Rabat Salé Kenitra region, who granted their approval to carry out the study. In addition, each participant gave informed consent to be included in the study. Confidentiality was ensured by coding the data collection forms. These data were then subjected to an in-depth, anonymous analysis.

2.7. Data collection and analysis

Data were collected using an anonymous questionnaire including clinical information, gynecological and obstetrical history (such as gestational age, number of deliveries and abortions), socioeconomic data, as well as information on dietary habits and use of traditional medicine in this population. Data analysis was performed using SPSS software. Anemia was defined according to WHO criteria, indicating a hemoglobin level below 11 g/dl in pregnant women [6].

3. Results and Discussions

3.1. Socioeconomic and demographic profile of participants

The study sample consisted of 416 pregnant women, almost all of whom were followed up in the birthing centers and health centers of the province of Sidi Kacem, and some of whom had benefited from at least one consultation in a general practice before being followed up in the health centers of the same province. These data formed the basis on which this study was conducted. Of the 416 women recruited, 179 (43.03%) were anemic, and their ages ranged from 18 to 48 years. The average number of children was 1.25 (±1.37), with a minimum of 0 and a maximum of 4. The proportion of illiterate women was 62.02%, while 100% were married. The vast majority of patients (73.8%) benefited from social security coverage, of which MAP (Medical Assistance Plan) was predominant at 71.9%. Around 98.1% were housewives and 88.7% had a low socio-economic status. In terms of geographical context, anemic women were more likely to come from rural than urban areas, with a proportion of 62.6%.

3.2. Prevalence of anemia

Among the 416 pregnant women included in our study, 179 (43.03%) women were diagnosed with anemia. An analysis of the distribution of women by severity of anemia, according to the WHO classification [7] revealed that the mild form was the most frequent at 56.98%, followed by the moderate form at 40.22%, while the severe form was less prevalent, accounting for only 2.79%.

3.3. Traditional anemia practices

The results of the analysis of traditional practices in relation to anemia reveal some interesting trends among the participants. Some 41.3% of women chose to use traditional medicine after the diagnosis of anemia was confirmed, while 58.7% chose not to. Among those who opted for traditional medicine, various herbs and plants were specified, such as fenugreek (l'helba), madder (lfowa) and Arab parsley (Al qasbûr), accounting for 9.6%, 17.1%, and 2.4% of cases respectively. The only traditional medical practice commonly cited by our participants was bloodletting (Techrat), with a frequency of 21.4%. This is a traditional therapy in which superficial micro-lesions are made on the skin to draw out drops of blood. Regarding the improvement following these interventions, 45.9%, the vast majority of participants, were uncertain about the effectiveness of traditional medicine. As for the reasons for using traditional medicine, 0.7% said it was mainly because of the lower cost, while 45.2% cited a combination of lower cost and geographical proximity as their main motivations. Among those who opted for traditional medicine, various herbs and plants were used, including fenugreek (l'helba), madder (lfowa) and Arab parsley (Al qasbûr), purslane (rejla), mallow (bakkoula) and green chard (salq), Some participants used several of these elements simultaneously, such as (fenugreek, purslane, mallow) in 10%, madder in 17%, (Arab parsley, fenugreek, purslane, mallow) in 2% and (purslane, mallow, green chard) in 12% of cases, underlining the diversity of approaches to the use of specific herbs in traditional medicine. Analysis of the results of the chi-square test concerning associations between traditional practices and anemia revealed significant associations between the following variables and the prevalence of anemia in the participants: firstly, recourse to traditional medicine by these women after confirmation of the diagnosis was statistically significant (p= 0.001), as was the type of herbs and plants used (p= 0.003), and finally, the cause of this recourse was significantly linked to anemia (p= 0.026). The results of the logistic regression analysis showed significant associations between the use of traditional medicine, the types of herbs and plants used by these women

and anemia, as well as a non-significant association between the specific practices of this medicine adopted by the women, the improvement following these interventions, and the reasons for resorting to this practice.

Table 1. Classification of gestational anemias according to hemoglobin value

Anemia classification	Hemoglobin value
mild anemia	[9.1- 11 g/dl]
moderate anemia	[7- 9 g/dl]
severe anemia	< 7 g/dl

Table 2. Classification of gestational anemias according to mean corpuscular volume (MCV) value

Anemia classification	MCV value
Normocytosis	[80- 100 µ3]
Microcytosis	< 80 µ3
Macrocytosis	> 100 µ3

Table 3. Classification of gestational anemias according to the value of the mean corpuscular hemoglobin content (MCHC)

Anemia classification	MCHC value
hypochromic	< 27 pg
normochromic	≥ 27 pg

Table 4. Socioeconomic and demographic characteristics of the study population (n=416)

Variables	Conditions	Total headcount	Percentage (%)	Mean ± Standard Deviation
Socioeconomic and demographic data				
Age	[18- 25]		50%	
	[25- 35]			
	> 35		30.8%	
Marital status	Married	416	100%	
	Single		0%	
	Widow		0%	
Number of children		416		1.25 ± 1.37
Origin of patients	Rural	416	52.2%	
	Urban		47.8%	
Education level	Illiterate	416	62%	
	Primary		21.4%	
	Secondary		14.4%	
	Higher education		2.2%	
Medical coverage	NSSF (National Social Security Fund)	416	1.9%	
	MAP (Medical Assistance Plan)		71.9%	
	Without coverage		26.2%	
Occupation	Active	416	1.9%	
	Housewife		98.1%	
Socioeconomic level	Low	416	88.7%	
	Middle		10.8%	
	High		0.5%	

Table 5. Traditional anemia practices

Variables	Conditions	Total headcount	Percentage (%)
Traditional practices			
Use of traditional medicine	Yes	416	41.3%
	No		58.7%
Herbs and plants used	fenugreek, purslane, mallow	416	9.6%
	madder		17.1%
	Arab parsley, fenugreek, purslane, mallow		2.4%
	purslane, bakkoula, green chard		12.3%
	No plants		58.7%
Types of practice	bloodletting	416	21.4%
	No practice		78.6%
Improvements following these appeals?	Not sure	416	45.9%
	No answer		54.1%
Reasons for using traditional medicine	Less expensive	416	0.7%
	Less expensive, Accessible		45.2%
	No recourse		54.1%

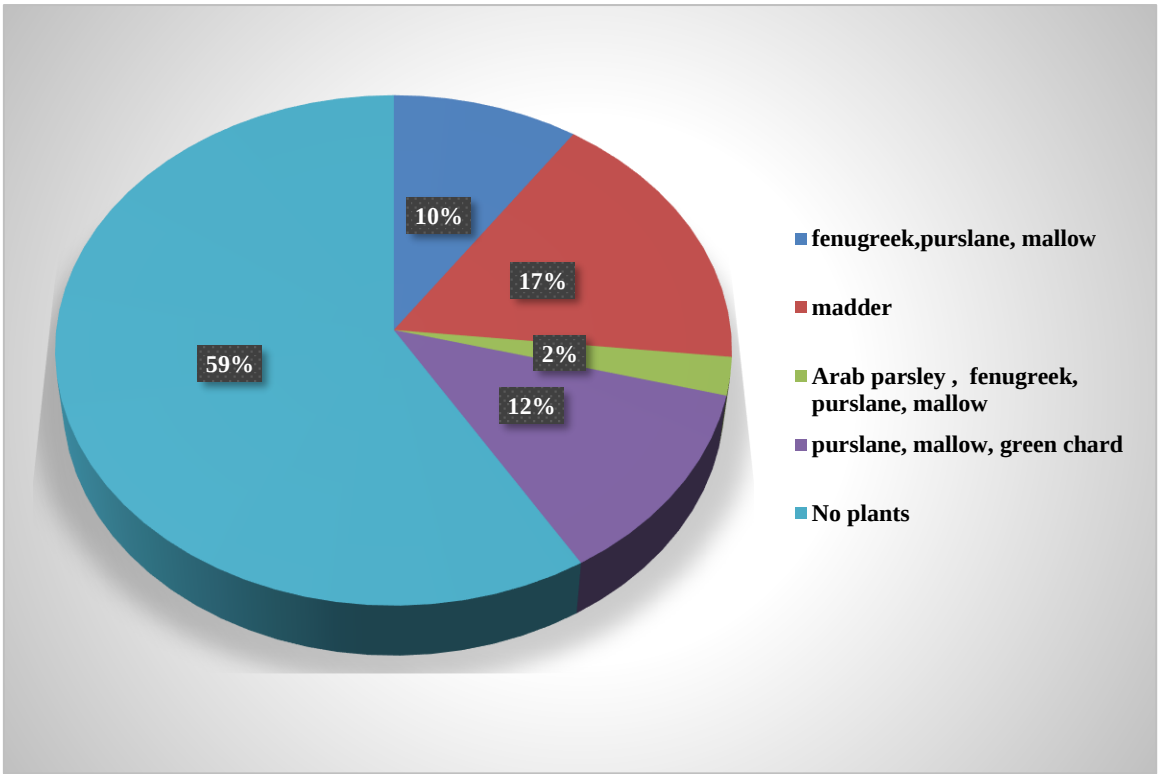

Figure 1. Distribution of plants used by anemic pregnant women

Table 6. Association between traditional practices and anemia

Variables	Conditions	Total headcount	Women		P value
			Anemic (n)	Non-anemic (n)	
Use of traditional medicine	Yes	416	55	117	**0.001***
	No		124	120	
Herbs and plants used	fenugreek, purslane	416	40	0	**0.003***
	madder		2	69	
	Arab parsley, fenugreek, purslane		10	0	
	purslane, green chard		3	48	
	No plants		124	120	
Types of practice	bloodletting	416	33	56	0.201
	No practice		146	181	
Improvements following these appeals?	Not sure	416	74	117	0.104
	No answer		105	120	
Reasons for using traditional medicine	Less expensive	416	3	0	**0.026***
	Less expensive, Accessible		71	117	
	No recourse		105	120	

* significance is established at $p< 0.05$

Table 7. Binary logistic regression of Traditional Practices and anemia

	B	S.E	Wald	ddl	P value	Exp(B)
Use of traditional medicine?	-26,135	9220,901	0,000	1	**0,008***	0,000
Herbs and plants used	2,055	0,410	25,144	1	**0,000***	7,804
Traditional medicine practices	-6,919	24977,402	0,000	1	1,000	0,001
Improvements following these appeals?	28,191	23213,104	0,000	1	0,999	1,728
Cause of recourse to traditional medicine	-26,679	23213,104	0,000	1	0,999	0,000
Constant	-26,135	9220,901	0,000	1	0,998	0,000

B: regression coefficient; S.E: standard error; Wald: odds ratio; ddl: degree of freedom * significance is established at $p < 0.05$

Traditional medicine as defined by the WHO is the totality of all knowledge and practices, whether explicable or not, for diagnosing, preventing or eliminating a mental or social imbalance based exclusively on lived experience and observation transmitted from generation to generation, orally or in writing. In our study, we adopted six axes in the questionnaire used, and among these axes, one focused on the traditional practices adopted by women to combat gestational anemia. The results of this axis revealed that 41.3% of participants chose to use traditional medicine after confirmation of anemia which is evidenced by several reports that have confirmed the use of traditional medicine by pregnant women for therapeutic purposes such as the treatment of anemia [8-10]. The prevalence of this use was different from one country to another as described in several studies [11-12]. This difference in prevalence of use is attributed in several studies to socio-demographic and cultural factors [13]. In this study, attention was focused solely on anemia as a cause for its use, whereas other studies have looked at its use during pregnancy for different reasons, such as nausea and vomiting, accelerated delivery and increased breast milk volume [14-16]. In our study, we observed that plants used by pregnant women to treat anemia included: Fenugreek "helba" This plant contains active elements such as steroidal saponin compounds, fiber, iron [17]. The iron content explains its use in treating anemia. Fenugreek seeds have the ability to lower blood sugar levels and also contain oxytocin, which stimulates uterine contractions, therefore, it is necessary to consume them with caution [18]. Madder "lfowa" is recommended for the treatment of jaundice, anemia and darting, due to its diuretic properties. However, it is contraindicated during pregnancy by other studies, since it presents potential risks such as congenital anomalies and miscarriage [19-20]. Arab parsley or coriander "Al qasbûr" is distinguished by its richness in iron, vitamin C, as well as various minerals such as calcium, manganese and potassium. This plant acts as a powerful antioxidant due to its vitamin C, phenolic acid and flavonoid content, hence its use against anemia [21-23]. Mallow "Bakkoula" the findings of various studies have revealed the presence of several compounds in Mallow extract, including phenolic derivatives, flavonoids, terpenoids, catalase enzymes, a sulfite oxidase, fatty acids, as well as various substances, including essential fatty acids such as omega-3 and omega-6, beta-carotene, and vitamins C and E. These compounds give mallow anti-inflammatory and antioxidant properties [24]. Green Chard "salq" it presents fibers beneficial for intestinal transit, promoting satiety, mineral absorption and intestinal flora balance, while helping to reduce cholesterol. Chard is also low in calories. A 200 g serving of raw chard (once cooked) provides 100% of the recommended daily intake of beta-carotene (pro-vitamin A antioxidant), 50% of iron, 33% of magnesium and 15% of vitamins B2, B6 and B9. Chard also contributes to the intake of potassium, calcium and vitamin C, proving its beneficial effect against anemia [25]. Purslane, known as "rejla," is highly recommended due to its high content of polyunsaturated omega-3 fatty acids, particularly for cardiovascular health. It is also a source of iron, essential for cognitive functions, oxygen transport, energy metabolism, and the immune system. Additionally, purslane is rich in potassium and serves as a source of vitamin C and magnesium [26-27]. Other studies in Morocco, such as the one conducted by [28] have shown that the most commonly used plants to treat anemia include Green anise "habet hlawa," Garden cress "hab rchad," Thyme "zaater," Fenugreek "helba," Lin "zeriat lkettan," Sesame "zenjlane," and Candle millet "illan." Some participants used multiple plants simultaneously, notably (fenugreek, purslane, mallow) in 10% of cases, lfowa in 17% of cases, (Arab parsley, fenugreek, purslane, mallow) in 2% of cases, and (purslane, mallow, green chard) in 12% of cases. Additionally, the only commonly mentioned traditional practice by our participants was bloodletting, a traditional therapy involving the creation of superficial micro lesions on the skin to extract drops of blood, with a frequency of 21.4%. The majority of plants identified in this study hold significant importance in Moroccan traditional medicine [29]. This underscores the therapeutic significance of these plant species in the cultural heritage of the Moroccan population, as well as their availability and accessibility. To explain the reasons for resorting to traditional medicine, almost all our participants mentioned the low cost and accessibility. Additionally, several authors have emphasized the financial barrier posed by the cost of medications and professional services, presenting a particular challenge for healthcare users, especially the impoverished. This reality is observed in Benin and other countries [30-31]. Faced with this situation, individuals often turn to self-medication or choose not to seek treatment at all [32]. In such circumstances, they tend to address the symptoms they experience, giving less importance to the underlying causes of their health issues, which in some cases may be linked to malnutrition, particularly iron deficiency. In the Congo, self-medication at home is also the primary recourse in case of illness [33]. Our participants exclusively opted for the oral administration of medicinal plants, and similar results were mentioned in other studies [34], while some studies have discussed the use of various routes [35]. The use of traditional self-medication as the primary recourse in Africa can be explained by the cultural significance of traditional recipes. Furthermore, when combined with a suitable diet, traditional medicine could be considered a complement or alternative to allopathic treatments, both in terms of prevention and treatment, both before and after childbirth [36].

4. Conclusions

It is essential to note that the prevalence of traditional medicine use within our population was not negligible, as suggested by several previous studies [28]. Our findings, highlighting the significance of traditional medicine, underscore the need for comprehensive studies in our country, especially given the rich diversity of medicinal plants exceeding 600 species [37-38]. These research efforts have the potential to yield more reliable and applicable results, contributing significantly to the advancement of traditional medicine and its informed integration into public health strategies. The conclusions of this survey also emphasize the importance of using these results as a foundation for developing strategies, educational programs, and awareness campaigns aimed at promoting safer use of

medicinal plants, particularly among pregnant women. Additionally, in-depth research is essential to assess the effects and risks associated with the use of plants during pregnancy and childbirth.

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