



Original

Knowledge, Perceptions, and Practices Related to Self-Medication among Pregnant Women in the Kénitra City, Morocco: A Hospital-Based Cross-Sectional Study

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ABSTRACT

Background: It is common for pregnant women to resort to self-medication. However, the latter can cause serious adverse effects, both structural and functional.

Objectives: This study assessed the prevalence of self-medication among a population of pregnant women followed at Moulay El-Hassan Hospital in Kénitra, while analyzing the impact of socio-educational factors on these behaviors in order to propose appropriate awareness measures.

Materials and Methods: A hospital-based cross-sectional study was conducted among a convenience sample of 102 pregnant women from April to June 2025. Data were analyzed to identify determinants of self-medication. Statistical associations were tested using logistic regression, with significance set at $p < 0.05$ and a 95% confidence interval (CI).

Results: A total of 68 participants (67%) resorted to self-medication during their pregnancy. The majority of them (87%) are housewives, living in rural areas (59%), and have an average economic status (69%). The level of education shows a significant meaning ($P < 0.001$). There was a strong correlation between knowledge of the risks and actual practice (a OR = 12.43; 95% CI: 2.40–64.43); however, the width of the confidence interval suggests a degree of caution is warranted due to the sample size. The most commonly used medicines included analgesics (52%) and antipyretics (26%).

Conclusion: Self-medication is prevalent in Kénitra and is strongly influenced by education and risk perception. While these associations are significant, the cross-sectional design precludes establishing direct causality.

Keywords: Knowledge, Attitudes, Self-medication, Pregnancy, Women's Health



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INTRODUCTION

Self-medication is the use of medicines without a medical prescription. These medicines are sold in pharmacies and are called "over-the-counter" or "without prescription".¹ According to the World Health Organization,² self-medication is defined as a practice that involves the use of medicinal products by the consumer to treat self-diagnosed disorders or symptoms, or the intermittent or continuous use of a prescribed medicine for a chronic or recurrent disease or symptoms.

This practice is particularly widespread in developing countries. It includes not only traditional medicines but also plant-based treatments.³ However, self-medication carries significant risks, especially for pregnant women,⁴ due to the physiological changes related to the pregnancy period and the potentially teratogenic or fetotoxic effects of certain medications. In Morocco, recent studies including that of Bouquoufi et al. (2024)⁵ raise an alarm regarding this issue. However, most existing research focuses on major hubs like Casablanca or Rabat. This study fills a specific geographical gap by providing data from Kénitra, a transition zone between rural and urban environments. Furthermore, while previous studies focus on prevalence, this manuscript specifically examines the strength of the association between specific risk knowledge and practice (OR = 12.43), providing a sharper articulation of how education serves as a protective factor.

METHODOLOGY

Study Setting: The study was conducted over a period of three months, namely April, May, and June 2025, in the urban area of the Kénitra province, within the territory of the Rabat-Salé-Kénitra region, and more specifically at the Moulay El-Hassan Hospital maternity ward.

Study Design: A descriptive cross-sectional survey was conducted among pregnant women attending the maternity ward at Moulay El-Hassan Hospital in Kénitra.

Study Population

This study focused on pregnant women present at this primary healthcare maternity ward, selected during data collection.

Sampling

An opportunistic sampling method was implemented, recruiting all eligible pregnant women attending the service during the study period.

Inclusion criteria: Pregnant women aged 18 years or older who gave their informed consent. Exclusion criteria: Women suffering from cognitive disorders or in obstetric emergency situations that make it impossible to conduct an interview.

Ethical Considerations: Verbal informed consents were obtained from all participants, assuring them of confidentiality and the right to withdraw without this affecting their medical care.

Statistical data analysis: The sample size of 102 participants was determined using the Cochran formula: $n = Z^2 \cdot p \cdot (1-p) / e^2$

Where $Z = 1.96$ (95% confidence level), $p=0.5$ (assumed prevalence of 50% to maximize sample size due to lack of local pilot data), and a margin of error $e = 0.097$ (approx. 10%).

The collected data were entered and filtered in Excel, then transferred to SPSS software version 26.0 (free version). The test used is binary logistic regression analysis to identify independent predictors of self-medication. Results are reported as Adjusted Odds Ratios (a OR) with 95% Confidence Intervals (CI). The significance threshold was set at $p < 0.05$.

Validity of the questionnaire: The same method followed by Taouda et al. (2025)⁶ was adopted, where the questionnaire was presented to a group of physician members at the Moulay Hassan Primary Health Center in the Kenitra region in 2025, in order to collect their opinions and observations regarding the completeness of the questionnaire dimensions, the extent to which the statements represent the proposed axes and dimensions, their appropriateness, as well as the clarity of each statement. After that, the agreement percentages for each statement were calculated. As a result, some statements were deleted while others were modified and rephrased.

Table 1 shows the reliability of the questionnaire

Table 1. Reliability Statistics

Cronbach's Alpha	Number of Items
0.704	15

RESULTS

Socio-demographic variables

Table 2 illustrates the sociodemographic characteristics of the participants (N=102). The most represented age group within the sample is 25–34 years, constituting 45% (n=46) of the participants. This is followed by the 15–24 age group at 35% (n=36) and the 35–44 group at 20% (n=20). No participants were over the age of 45. The mean age of the sample was 28.25 ± 6.5 years.

Regarding education, the largest segment of participants (37%, n=38) reached a secondary level, while 22% (n=22) are illiterate. Occupational data indicate that a

vast majority of the participants are housewives (87%, n=89), with only a small minority holding public office (3%, n=3). In terms of economic status, 69% (n=70) reported an average economic level, while 31% (n=32) indicated a low economic level.

The majority of the women reside in rural areas (59%, n=60), compared to 41% (n=42) in urban settings. Regarding obstetric history, 67% (n=68) had experienced between two and five pregnancies, while 33% (n=34) were primigravida (one pregnancy). No women reported six or more pregnancies. Finally, 71% (n=72) of the women reported no significant medical history.

Table 2. Sociodemographic characteristics of the participants

Socio-demographic variables	Categories	Frequency (n)	Percentage (%)
Age	18- 24	36	35.3
	25- 34	46	45.1
	35- 44	20	19.6
Habitat	Urban	42	41.2
	Rural	60	58.8
	Illiterate	22	21.6
Education level	Primary	34	33.3
	Secondary	37	36.6
	University	9	8.8
Profession	Housewife	87	85.3
	Civil servant	3	2.9
	Employee	10	9.8
	Other (Freelance work)	2	2.0
	Low	31	30.4
Economic level	Medium	71	69.6
	1 time	33	32.4
Number of pregnancies	2 to 5 times	69	67.6
	6 and more	0	0
Medical history	Yes	29	28.4
	No	73	71.6

Knowledge of Pregnant Women about Self-Medication

Table 3 summarizes the results of pregnant women's knowledge regarding self-medication. Indeed, nearly half of the participants (46%, n=47) admit not being aware of medications that are prohibited or not recommended during pregnancy, while 54% (n=55) claimed to know them.

Regarding information sources, 32% (n=33) received no information, while the social circle (30%, n=31) and healthcare professionals (23%, n=23) were the primary sources.

When asked about the acceptability of over-the-counter drugs, 48% (n=49) believe it is not recommended. However, 11% (n=11) believe it is acceptable; this suggests a gap in public health education, as a portion of the population remains unaware of the clinical risks associated with unmonitored drug use during gestation.

Table 3. Results of pregnant women's knowledge about self-medication

Items	Categories	Frequency (n)	Percentage (%)
Knowledge of prohibited or discouraged medications during pregnancy	Yes	55	54
	No	47	46
Use of medications without prescription during pregnancy	Possible	11	11
	To be avoided as a precaution	28	27
	Not recommended	49	48
	Contraindicated	14	14
Knowledge of risks related to self-medication during pregnancy	Yes	54	53
	No	48	47
Risk of self-medication on the pregnant woman	Miscarriage	54	53
	Premature birth	13	13
	Side effect	10	10
	No danger	12	12
	Other (hemorrhage, death)	13	12
Risk of self-medication on the fetus	Congenital; malformation	59	58
	Fetal death in uterus	25	24
	Growth retardation	7	7
	No danger	11	11

While 53% (n=54) of women claimed to be aware of the risks, their specific knowledge was varied. While many recognized the risk of miscarriage (53%, n=54), far fewer identified intrauterine growth retardation (7%, n=7). This indicates a limited understanding of specific developmental consequences compared to general awareness of pregnancy loss.

Self-medication practice among pregnant women

Table 4 illustrates the results of self-medication practice among pregnant women. Regarding the use of medicinal plants, 41% (n=42) of the participants reported having used them during their pregnancy, while 59% (n=60) stated they did not use them. This habit remains common despite the medical precautions required during gestation. A significant proportion of the sample, 72% (n=73), reported preferring to consult a pharmacist rather than a doctor for minor health problems. Conversely, 28% (n=29) do not favor this option. In total, 67% (n=68) of the women surveyed resorted to self-medication at least once during their pregnancy.

Among the types of medications used, analgesics are the most common at 52% (n=35), followed by antipyretics at 26% (n=18). The use of antiemetics is also noted (15%, n=10), while antibiotics represent only 2% (n=2). Regarding sources of advice for these medications, 37% (n=25) received advice directly from a pharmacist, 54% (n=37) from their entourage, and 9% (n=6) reused an old prescription. Of the 68 women practicing self-medication, only 22% (n=15) report always checking for side effects or contraindications. The majority, 60% (n=41), do so occasionally, while 18% (n=12) never do. The main motivations cited are easy access to medications (55%, n=56) and the high cost of medical consultations (48%, n=49). Lack of time (15%, n=15) and knowledge of symptoms (9%, n=9) are also mentioned. Furthermore, 24% (n=24) of women experienced adverse effects following this practice. Finally, while 60% (n=61) claim to have received information from health professionals, almost all participants (99%, n=101) consider it essential to strengthen awareness on this subject.

Table 4. Results of self-medication practices among the women surveyed

Items	Catégories	Frequency (n)	Percentage (%)
Use of natural remedies based on medicinal plants during pregnancy	Yes	42	41
	No	60	59
Tendency to seek advice from a pharmacist rather than a doctor for a health problem	Yes	73	72
	No	29	28



Items	Catégories	Frequency (n)	Percentage (%)
Prevalence of self-medication during pregnancy	Yes	68	67
	No	34	33
Types of medications taken without a prescription	Analgesics	35	52
	Antipyretics	18	26
	Antiemetics	10	15
	Antibiotics	2	2
	Other types of medications	3	4
Source of information on medications taken without a prescription (n=68)	Entourage	37	54
	Pharmacist	25	37
	Old prescription	6	9
Checking for side effects or contraindications of medications (n=68)	Always	15	22
	Sometimes	41	60
	Never	12	18
	Ease of access	56	55
	Cost of	49	48
Reasons related to the practice of self-medication	consultations	15	15
	Lack of time	9	9
	Knowledge of symptoms	15	15
	Other		
Adverse effects related to self-medication	Yes	24	24
	No	78	76
Information provided by healthcare professionals	Yes	61	60
	No	41	40
Need for better awareness	Yes	101	99
	No	1	1

Table 5 illustrates the results of binary logistic regression analysis. Indeed, the odds ratio is 12.43, this means that women with this mode of knowledge are 12.4 times more likely to practice self-medication than others. This is a very strong and highly significant association. Furthermore, the level of education shows a marked significance ($p=0.000 < 0.05$). Conversely, the use of natural remedies ($p=0.274 > 0.05$) and socio-economic status ($p=0.612 > 0.05$) Do not significantly affect self-medication in the studied population.

Table 5: Results of binary logistic regression analysis

Variables	Modalities	Percent (%)	Sig. <i>p-value</i>	Odds Ratio (Exp (B))	95% Confidence interval for EXP(B)	
					Lower	Upper
Knowledge of risks	Yes	53	0,003* < 0.05	12,43	2,401	64,433
	No	47				
	Illiterate	22				
Level of education	Primary	34	0,000*** < 0.05	-	-	-
	Secondary	37				
	University	7				
Economic level	Low	31	0,612 > 0.05	0,659	0,132	3,302
	Medium	69				
Use of natural remedies	Yes	59	0,274 > 0.05	0,428	0,093	1,958
	No	41				

* Degree of significance

DISCUSSION

This study revealed a relatively high prevalence of self-medication among pregnant women (67%, n=68), thus confirming the extent of the phenomenon and aligning with numerous previous studies conducted both internationally and nationally.^{4,7} Indeed, in accordance with the results obtained in this study, it appears that the majority of pregnant women who resort to self-medication are in the age group of 25 to 34 years (45%, n=46), followed by those aged 15 to 24 years (35%). These data suggest that these women generally have greater autonomy and some maternal experience, which may enhance their confidence in managing pregnancy-related symptoms, as highlighted by Mirzakhani et al. (2023)⁸ in her study.

In terms of education, the majority of women have a medium to low level of education, with 37% (n=38) having a secondary level, and 22% (n=22) are illiterate. This limited level of education can lead to a poor understanding of the risks associated with self-medication during pregnancy and encourage the use of medications without medical advice^{9,10} particularly by relying on advice from their social circle or traditional practices.

Professionally, 87% (n=89) of the participants are housewives, a situation often linked to limited access to official medical information and increased dependence on their close circle for health decisions. Furthermore, the state of the economy has a crucial impact, as 69.6% (n=71) of women report having an average economic level. However, this perception can be subjective, which leads some women to opt for self-medication to reduce health expenses, as also noted by Ahmed et al. (2025).¹¹

It is important to note that 59% (n=60) of women live in rural areas. Limited access to healthcare facilities, transportation issues, and a shortage of medical resources are factors that encourage the use of self-medication. These results can be explained by the residential environment, as indicated by several research studies, including those conducted by Babu et al. (2023).¹²

On the obstetric level, it should be noted that 67% (n=68) of women have had between two and five pregnancies. This multiplicity can lead to the trivialization of symptoms and overconfidence in the autonomous management of common pregnancy problems.

Regarding the prevalence of self-medication during pregnancy, our study revealed a rate of 67%, which confirms the results of Hattab Al-Ani et al. (2023),¹³ who reported that the prevalence rate of self-medication during pregnancy in Arab countries ranged from 40% to 98.2%.

Furthermore, the results of our study reveal that 41% (n=42) of pregnant women reported having used natural remedies based on medicinal plants during their pregnancy. This use can be explained by cultural and educational beliefs.^{14,15}

As for medications taken through self-medication, half of the women (52%, n=35) reported having used NSAID-based analgesics during their pregnancy, which can harm fertility and increase the risk of early miscarriage.¹⁶ It should be noted that during the third trimester of pregnancy, the use of NSAIDs is often prohibited due to major fetal risks such as kidney damage, oligohydramnios, ductus arteriosus stenosis (which can lead to persistent pulmonary hypertension in

the newborn), necrotizing enterocolitis, and intracranial hemorrhage.¹⁶

Another medication reported to be used by pregnant women (26%, n=18) is antipyretics based on paracetamol (APAP). However, increasing experimental and epidemiological research suggests that prenatal exposure to APAP could alter fetal development, which may increase the risks of certain neurodevelopmental, reproductive, and urogenital disorders.¹⁷

The results of our research show that 54% of the participants rely on their social circle, and 37% consult a pharmacist. This use of the pharmacist, already mentioned in the study by Kelly et al. (2014),¹⁸ shows that a large number of women consider this professional more accessible than the doctor.

Regarding the knowledge of pregnant women about self-medication, although 53% (n=54) of women report having heard about the risks associated with this practice, a significant proportion (46%) still ignore the potential consequences on maternal and fetal health. Indeed, the risks mentioned by our participants include miscarriage (53%), congenital malformations (58%), and intrauterine fetal death (24%), but only a minority make the connection with other serious complications.

Binary logistic regression analysis shows that the level of education and knowledge of risks are the major factors influencing self-medication among pregnant women ($p < 0.01$). In other words, among women who have specific knowledge of the risks, the risk of self-medication is multiplied by 12.4 (OR=12.43; 95% CI: 2.4-64.4). On the other hand, a high level of education (university level) serves as a strong protective factor, significantly reducing the likelihood of this action (OR=0.028; $p=0.002$). There is no significant link ($p > 0.05$) between economic level and the use of natural treatments.

According to our study, the causes that promote self-medication among pregnant women are related to the ease of access to medications (55%), which is consistent with the study conducted by Chergaoui et al. (2022)¹⁹ in the city of Settat, Morocco, and the high cost of medical consultations.

Similarly, this study highlights a lack of appropriate information from healthcare professionals. Indeed, 40% stated that they did not benefit from this information, while 60% of the participants reported having received information. However, only 3% consider it very satisfactory. Moreover, a very large proportion of participants (99%) emphasize the need for thorough education on this topic. This reinforces the

recommendations of several authors, including Pereira et al. (2021);²⁰ Mirzaei-Alavijeh et al. (2024).²¹

Strengths and limitations of the study

The study provides crucial information for the prevention and safety of pregnancy. Additionally, the sample includes women from both urban and rural contexts, with varied socio-economic and educational backgrounds, which enriches the study's findings. However, a limitation of the study lies in the possibility that women may tend to minimize or underestimate their use of this practice (particularly for medications or substances considered risky), leading to an inaccurate assessment of the actual prevalence.

Implications of the findings of the study

The implications include sending medical convoys or mobile awareness units to the peripheral areas of Kenitra in order to reduce inequalities in access to information. Furthermore, the involvement requires the creation of communication materials (brochures, videos in waiting rooms) in the colloquial dialect, accompanied by visuals, to overcome obstacles related to illiteracy or insufficient education levels.

Recommendations

- Establish a continuing education program aimed at pharmacists and particularly pharmacy assistants in the province of Kénitra, focused on the specific dangers of teratogenic drugs as well as on safe alternatives;
- Design visual resources (infographics, short videos) to share on social media and in hospital waiting areas, detailing not only "that it is dangerous," but also "why" (risks of malformations);
- The inclusion of a "Medication Safety" aspect in the health caravans regularly organized by the Ministry of Health, especially in rural areas.

CONCLUSION

Our results highlight a significant correlation between a low level of knowledge and the habit of self-medication. However, due to the cross-sectional nature of this research, we are not able to establish a direct or temporal causal link. Nevertheless, these results indicate that educational actions remain an essential path, even though longitudinal research is necessary to validate this causal influence.

Declarations

Authors' contribution: LERHLIBI Hajar

Conceptualization, Data collection, critical discussion, revision and validation of the manuscript
SLIM Mostafa

Data Analysis, critical discussion, revision and validation of the manuscript, editing

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