




## Review Article

# Women's awareness and experience of analgesic use during pregnancy in the UAE

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Received (first version): 11-Jul-2025

Accepted: 20-Aug-2025

Published online: 06-Jan-2026

### Abstract

**Background:** Pregnancy is a critical phase in a woman's life, marked by significant physiological and emotional changes. Cautious and safe pain management during this period requires a careful evaluation of the benefits and risks of analgesic drug use. Paracetamol is the preferred choice, considered generally the safest option, while NSAIDs, especially in early pregnancy, carry potential risks like an increased risk of miscarriage and congenital disabilities. This study aimed to assess the knowledge, self-medication behaviors, and sources of information regarding analgesic use during pregnancy among women in the UAE. **Methods:** This cross-sectional study was conducted using a self-administered online questionnaire. The survey was validated through expert review and pilot-tested for clarity and reliability. The questionnaire was distributed via social media platforms. Data collection took place from October 2022 to May 2023. A convenience sampling method was employed, targeting women residing in the UAE with at least one pregnancy experience. The collected data were analyzed using SPSS V.26, employing descriptive and inferential statistics to assess knowledge levels and identify significant associations. **Results:** Among 405 participants, 64.4% reported using analgesics during pregnancy, with 38.3% specifically using them in the first trimester. Paracetamol was the most commonly used analgesic 33.3%, and 39% of participants self-medicated without consulting a healthcare provider. While 70.6% correctly identified paracetamol as the safest analgesic, 58.3% acknowledged potential fetal risks from long-term analgesic use. Higher awareness was significantly associated with younger age ( $p = 0.035$ ), higher education ( $p = 0.003$ ), and a medical background ( $p < 0.001$ ). Participants who used analgesics in the first trimester had significantly higher awareness levels ( $p = 0.004$ , 71.6%), particularly those who took paracetamol ( $p = 0.002$ , 76.7%). Self-medication was also linked to greater awareness ( $p = 0.006$ ). Additionally, awareness levels were significantly higher among participants who obtained information from pharmacists ( $p = 0.004$ , 94.4%) and books ( $p = 0.004$ , 90.0%). **Conclusions:** The study concludes by highlighting the need for better education and awareness among UAE women regarding the use of analgesics during pregnancy. The results show that many women self-administer analgesics without seeking medical help, which could be associated with potential risks. Policymakers and healthcare professionals must create focused educational initiatives to arm pregnant mothers with accurate knowledge about safe analgesic dosages and options during pregnancy.

**Keywords:** Analgesic Use, Pregnancy, Self-Medication, Maternal Health

## INTRODUCTION

Pregnancy causes profound changes in a woman's physical and emotional well-being; the body's adaptation to support the fetus's growth and development causes these changes<sup>1</sup>. Pregnant women conventionally suffer from headaches, lower back pain, and pelvic pain. The guidelines recommend prenatal analgesia for pregnant women when needed. The first-line treatments should always be non-pharmacological, including massage, hot and cold compresses, exercise, relaxation, and rest<sup>2</sup>. Pain management by using analgesic medications in pregnancy necessitates carefully weighing the benefits and

risks, especially in the first trimester. However, concerns about the safety, efficacy, and potential adverse reactions that accompany analgesic use on the fetus and the mother were raised in the literature<sup>3,4</sup>. Analgesic overuse and suboptimal use have both been documented to have adverse effects on the health of the mother and fetus<sup>5</sup>.

The ability of the medication to cross the placenta is an essential factor to take into account when selecting appropriate medicines<sup>6,7</sup>. During pregnancy. Most medications pass through the placenta to some extent, but the extent of placental transfer depends on many factors<sup>8</sup>. Paracetamol quickly passes the placenta in its un-conjugated form, and it does not appear to raise the risk of birth abnormalities or other unfavorable pregnancy consequences when administered at therapeutic doses<sup>6,7</sup>. Paracetamol is the first-choice analgesic for treating mild to moderate pain in pregnant women<sup>2</sup>. However, some studies have suggested that paracetamol may adversely affect fetal development, potentially increasing the risk of certain disorders<sup>7</sup>. On the other hand, NSAIDs cross the placenta and can potentially have adverse effects on the fetus.

The type of NSAID, dosage, length of treatment, gestational stage, and timing of the mother's NSAID administration concerning delivery are some of the variables that can affect the typical risks of NSAID usage during pregnancy<sup>9</sup>. However, there is conflicting evidence regarding the association between

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the use of NSAIDs and an increased risk of first-trimester miscarriage. The FDA recommends avoiding NSAIDs during early pregnancy, but if clinically indicated, the lowest effective dose for the shortest possible duration is advised<sup>2</sup>. Studies indicate that over half of pregnant women use painkillers during pregnancy, with paracetamol being the most frequently consumed due to its perceived safety profile followed by NSAIDs<sup>10-12</sup>. However, research also suggests that many pregnant women self-medicate without consulting healthcare professionals, potentially exposing themselves and their fetuses to avoidable risks<sup>10,13,14</sup>.

Despite the widespread use of analgesics during pregnancy, research assessing pregnant women's knowledge and self-medication behaviors in the UAE remains limited. Studies from other regions, including Saudi Arabia, Ethiopia, Pakistan, and Brazil have highlighted significant knowledge gaps in pregnant women's understanding of analgesic safety and appropriate usage<sup>15</sup>. Given the unique and diverse population of the UAE and its unique healthcare landscape, there is a pressing need to evaluate how women acquire information about analgesic use and their decision-making processes regarding pain management. This study aims to evaluate the awareness and experiences of women in the UAE regarding the use, safety, and self-medication practices of analgesics during pregnancy.

## METHODS

### Study design

A cross-sectional study was conducted using a self-administered online questionnaire. The survey was designed based on an in-depth study of the available literature<sup>16</sup> and then validated and piloted. The questionnaire was posted and shared through various social media platforms (Facebook, Instagram, and WhatsApp); the responses were collected from October 2022 till May 2023.

### Sample size and Sampling

The target population included women residing in the UAE who had at least one pregnancy experience. A convenience, non-probability sampling method was employed due to accessibility constraints and the need to reach a broad demographic through online platforms. While effective for rapid data collection, this approach may introduce selection bias and limit the generalizability of findings to the broader population. The required sample size was calculated using the Raosoft® sample size calculator, assuming a 5% margin of error, 95% confidence level, and a population size of 2,299,300 women aged 18 and above<sup>17</sup>. The calculated minimum sample size was 385, and we successfully recruited 405 participants.

### Inclusion and Exclusion Criteria

Inclusion criteria specify that participants must be women residing in the UAE with a history or current pregnancy, and they must be 18 years or older to ensure authorized age and capacity for informed consent. Exclusion criteria include childbearing women who have never been pregnant and

those below the age of 18, aligning with the study's focus on experiences related to pregnancy and analgesic use.

### Data collection sheets

The final questionnaire consisted of 31 questions divided into three sections:

1. Demographic Information: Age, educational background, nationality, number of pregnancies, and history of miscarriage.
2. Analgesic Use and Practices: Frequency, types of analgesics used before and during pregnancy, reasons for use, and whether usage was based on self-medication or healthcare provider recommendations.
3. Knowledge and Awareness: An 11-item test evaluating knowledge of safe analgesic use, risks, potential side effects, and long-term implications of analgesic consumption during pregnancy.

The questionnaire was developed in English and Arabic to ensure accessibility for diverse linguistic groups. A back-to-back translation method was employed, where the initial English version was translated into Arabic by a bilingual expert, followed by a reverse translation into English by a second independent translator to ensure accuracy and consistency.

Content and face validity were established through expert review by three faculty members in pharmacy practice and maternal health, who evaluated item relevance, clarity, and appropriateness for the target population.

The internal consistency of the 11-item knowledge section was assessed using Cronbach's alpha, which yielded a value of 0.73, indicating acceptable reliability, which supports the questionnaire's suitability for evaluating participants' awareness regarding analgesic use during pregnancy.

The finalized bilingual questionnaire was distributed via social media platforms (Facebook, Instagram, and WhatsApp). Responses were collected anonymously via Google Forms, and participants could withdraw at any time (refer to supplementary Table 1 for the full survey).

### Data Analysis

Data from the Google online form was extracted into an Excel sheet and analyzed using SPSS version 26. Descriptive statistics were applied to determine frequencies, percentages, means, and standard deviations. Inferential statistical tests, including the Chi-square test, were conducted to examine associations between categorical variables, while logistic regression analysis was used to identify predictors of higher awareness levels.

Participants' knowledge about analgesic use was assessed using an 11-item test, with each correct response assigned a score of one and incorrect answers coded as zero. The total knowledge scores were then categorized into two groups: low awareness, below 7, and high awareness, score of 7 or above.

### Ethical Approval

Ethical approval was obtained from the Dubai Pharmacy



College Research and Ethics Committee, reference number (REC/Pg/2022/05). Participants gave their consent on the questionnaire’s first page after being informed of the research’s goals and purpose and before completing the questionnaires. Respondents’ privacy was preserved, and the study was anonymous; no personal information about the participants’ identities was included in the questionnaires.

## RESULTS

### Participants Demographics

The study included 405 women, with the majority, 48.4%, aged 36–45 years and 76.3% having a university-level education. Most participants, 91.1%, were expatriates, and 24.9% had a background in the medical field. At the time of the study, 8.6% were pregnant, while 42.5% had experienced four or more pregnancies. Miscarriage was reported by 40.2% of participants, with 1.0% attributing it to medication use (Table 1).

### Participants sources of information about Analgesics

Approximately 57.5% of women in the study had a background

about the risks associated with analgesic consumption during pregnancy; half of them, 58.4%, identified physicians as the primary source of information regarding the use of analgesics (Figure 1).

### Participant’s use of analgesics before and during the first trimester of pregnancy

The study examined analgesic consumption patterns before and during pregnancy. A majority 81.7% of participants, reported using analgesics before conception, while 64.4% continued their use during pregnancy. However, only 38.3% used analgesics in the first trimester, with 33.3% specifically taking paracetamol. Among these, 30.1% used analgesics under physician guidance, whereas 39.0% reported self-medicating without consulting a healthcare provider during pregnancy, and 6.4% did so in the first trimester. Paracetamol was the most commonly used analgesic in both pre-pregnancy and pregnancy periods (Figure 2 and Figure 3).

### Participants’ awareness regarding analgesic use and safety

Of most participants, 70.6% correctly identified paracetamol as the safest analgesic during pregnancy, while 23.5% were unsure. Awareness of risks varied, with 28.9% recognizing potential

**Table 1.** Socio-Demographic Characteristics of Participants

Variable		N	%
Age group	19-25 years	13	3.2
	26-35 years	137	33.8
	36-45 years	196	48.4
	46 years or older	59	14.6
Educational status	High school or less	55	13.6
	University level	309	76.3
	Higher education	41	10.1
Nationality	citizen	36	8.9
	Expatriate	369	91.1
Is your major related to the medical domain	no	304	75.1
	yes	101	24.9
Are you currently pregnant?	no	370	91.4
	yes	35	8.6
Number of times you got pregnant	Once	40	9.9
	Twice	82	20.2
	Three times	111	27.4
	Four times or more	172	42.5
Number of miscarriages	Never	242	59.8
	Once	101	24.9
	Twice	43	10.6
	Three times or more	19	4.7
Is your miscarriage/abortion related to administering a drug	I did not have a miscarriage	242	59.8
	no	149	36.8
	maybe	10	2.5
	yes	4	1.0



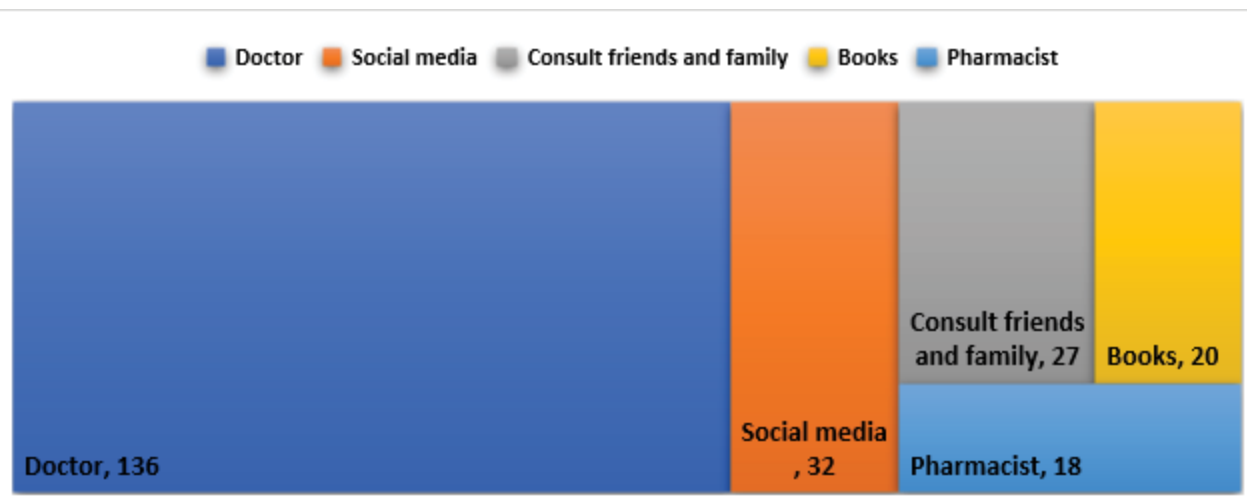


Figure 1. Participants Source of information concerning analgesic use during pregnancy

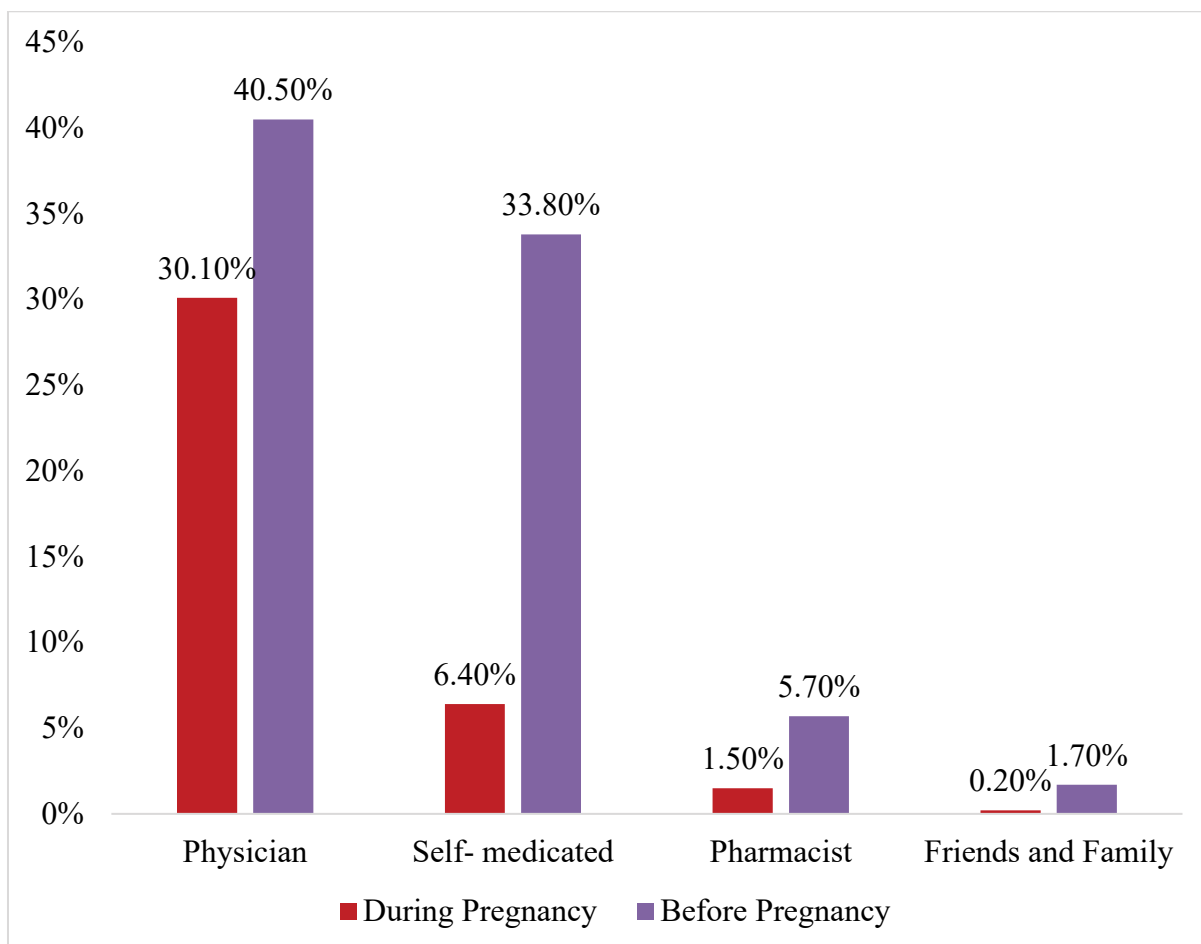
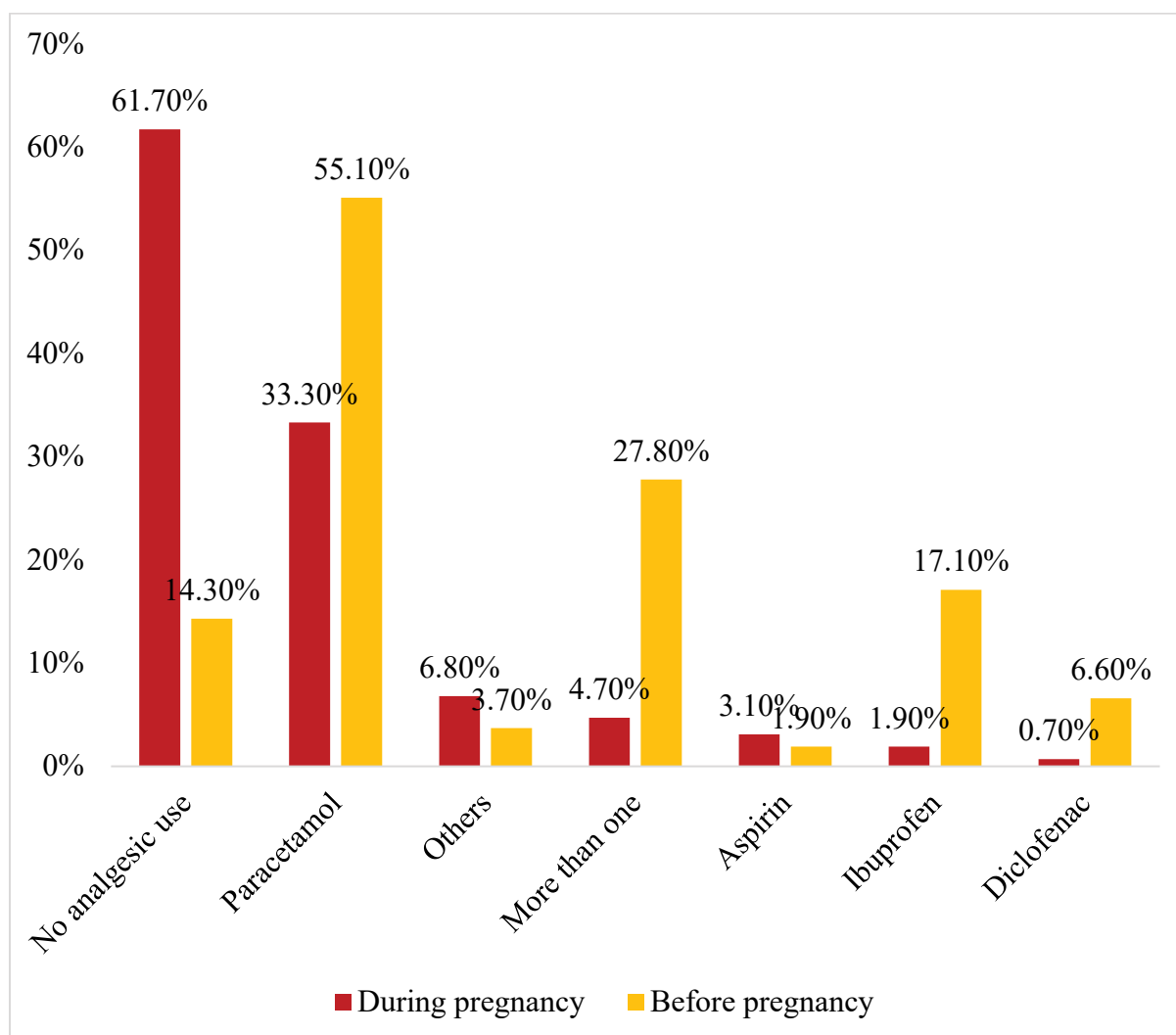


Figure 2. Analgesic prescription pattern before and during the first trimester of pregnancy



**Figure 3.** Analgesic use pattern before and during the first trimester of pregnancy

harm from analgesic use in the third trimester and 58.3% acknowledging long-term use could negatively impact fetal health. 65.4% were aware of the risk of stomach ulcers, with ibuprofen 17.3% and diclofenac 12.8% perceived as the most ulcerogenic. Most participants correctly associated analgesics with headache, 90.6%, and fever, 87.4%, while awareness was lower for rheumatism pain, 73.6%, and dysmenorrhea, 79.8% (Table 2).

#### Association of knowledge level with demographics and use of analgesics

Higher awareness levels ( $\geq 7.00$ ) were significantly associated with younger age ( $p = 0.035$ ), higher education ( $p = 0.003$ ), and having a medical background ( $p < 0.001$ ). Participants with higher education (82.9%) and those in the medical field (86.1%) demonstrated better awareness. Awareness levels did not significantly differ by nationality ( $p = 0.098$ ) or pregnancy status ( $p = 0.265$ ). Additionally, those with fewer pregnancies ( $p = 0.044$ ) tended to have higher awareness, while miscarriage

history showed no significant association with awareness levels (Table 3).

#### Predictors of Awareness Levels: Logistic Regression Analysis

A logistic regression analysis was conducted to identify independent predictors of higher awareness levels regarding analgesic use during pregnancy. Higher education ( $p = 0.015$ , aOR = 3.59, 95% CI: 1.28–10.09) and having a medical background ( $p < 0.001$ , aOR = 4.45, 95% CI: 2.34–8.49) were significant predictors of better awareness. Expatriates ( $p = 0.053$ , aOR = 2.17, 95% CI: 0.99–4.75) showed a trend toward higher awareness than citizens, though not statistically significant. Age, pregnancy status, number of pregnancies, and history of miscarriage were not significantly associated with awareness levels (Table 4).

#### Association between awareness and analgesic use practices

A significant association was found between higher awareness levels ( $\geq 7.00$ ) and analgesic use behaviors during pregnancy.



		Awareness				P-value
		< 7.00 (low)		7.00+(high)		
		N	%	N	%	
Age group	19-25 years	3	23.1	10	76.9	0.035
	26-35 years	40	29.2	97	70.8	
	36-45 years	80	40.8	116	59.2	
	46 years or older	28	47.5	31	52.5	
Educational status	High school or less	28	50.9	27	49.1	0.003
	University level	116	37.5	193	62.5	
	Higher education	7	17.1	34	82.9	
Nationality	citizen	18	50.0	18	50.0	0.098
	Expatriate	133	36.0	236	64.0	
Is your major related to the medical domain	no	137	45.1	167	54.9	<0.001
	yes	14	13.9	87	86.1	
Are you currently pregnant?	no	141	38.1	229	61.9	0.265
	yes	10	28.6	25	71.4	
Number of times you got pregnant	Once	8	20.0	32	80.0	0.044
	Twice	33	40.2	49	59.8	
	Three times	37	33.3	74	66.7	
	Four times or more	73	42.4	99	57.6	
Number of miscarriages	Never	89	36.8	153	63.2	0.503
	Once	34	33.7	67	66.3	
	Twice	20	46.5	23	53.5	
	Three times or more	8	42.1	11	57.9	
Does your miscarriage/ abortion-related to administering a drug	I did not have a miscarriage	89	36.8	153	63.2	0.175*
	No	53	35.6	96	64.4	
	Maybe	6	60.0	4	40.0	
	Yes	3	75.0	1	25.0	

\*Fisher’s exact test

		P-value	aOR	95% C.I. for aOR	
				Lower	Upper
Age group (years)	19-25 (ref)		1.00		
	26-35	0.741	0.77	0.16	3.70
	36-45	0.401	0.51	0.10	2.47
	46+	0.187	0.33	0.06	1.72
Educational status	High school or less(ref)		1.00		
	University level	0.447	1.27	0.68	2.37
	Higher education	<b>0.015</b>	3.59	1.28	10.09
Nationality	Citizen(ref)		1.00		
	Expatriate	0.053	2.17	0.99	4.75



Is your major related to the medical domain	No(ref)		1.00		
	Yes	<0.001	4.45	2.34	8.49
Are you currently pregnant?	No(ref)		1.00		
	Yes	0.593	1.27	0.53	3.01
Number of times you got pregnant	Once(ref)		1.00		
	Twice	0.176	0.51	0.19	1.35
	Three times	0.791	0.88	0.33	2.32
	Four times or more	0.611	0.78	0.29	2.06
Number of miscarriages	Never(ref)		1.00		
	Once	0.193	0.18	0.01	2.38
	Twice	0.114	0.11	0.01	1.68
	Three times or more	0.206	0.17	0.01	2.69
Is your miscarriage/abortion related to administering a drug	I did not have a miscarriage (ref)		1.00		
	No	0.810	1.05	0.69	1.61
	Maybe	0.151	0.39	0.11	1.41
	Yes	0.158	0.19	0.02	1.89

Ref: reference category, aOR: adjusted odds ratio. CI: confidence interval

Participants who used analgesics in the first trimester had significantly higher awareness ( $p = 0.004$ , 71.6%). Among those who took paracetamol, 76.7% had high awareness ( $p = 0.002$ ). Self-medication was linked to awareness, with 84.6% of those who prescribed analgesics to themselves demonstrating higher knowledge ( $p = 0.006$ ). Additionally, participants who had urgently used analgesics without medical consultation had significantly better awareness ( $p = 0.007$ ). Awareness was also associated with analgesic use outside of pregnancy; 68.0% of regular analgesic users had high awareness ( $p < 0.001$ ). Furthermore, participants who obtained information from pharmacists 94.4% and books 90.0% showed the highest awareness levels ( $p = 0.004$ ) (Table 5).

## DISCUSSION

This study aimed to assess the awareness and usage patterns of analgesics among women in the UAE who are currently pregnant or have previous pregnancy experience. To our knowledge, this is the first study in the UAE to comprehensively examine pregnant women’s understanding of analgesic safety, self-medication practices, and sources of information. Given the high prevalence of pregnancy-related pain, ensuring safe and evidence-based pain management is critical. International guidelines emphasize that non-pharmacological methods should be prioritized, with paracetamol being the first-line pharmacological option due to its established safety profile<sup>18-20</sup>.

Table 5. Relationship Between Awareness Levels and Analgesic Use Practices

Question	Response	<7 Awareness N (%)	≥7 Awareness N (%)	95% CI for ≥7 Awareness	p-value
Have you taken analgesic drugs at the beginning of your pregnancy? (first trimester)	No	107 (42.8%)	143 (57.2%)	51.0–63.2	0.004
	Yes	44 (28.4%)	111 (71.6%)	64.1–78.1	
Which analgesic drug that you have taken at the beginning of pregnancy?	I did not use any	107 (42.8%)	143 (57.2%)	51.0–63.2	0.002*
	Paracetamol	27 (23.3%)	89 (76.7%)	68.3–83.5	
	Others	1 (33.3%)	2 (66.7%)	20.8–93.9	
	Multiple drugs	13 (41.9%)	18 (58.1%)	40.8–73.6	
	I do not know	2 (66.7%)	1 (33.3%)	6.1–79.2	
Who prescribed the analgesic medication for you while you were pregnant?	I did not use any	107 (42.8%)	143 (57.2%)	51.0–63.2	0.006*
	Physicians	37 (30.3%)	85 (69.7%)	61.0–77.1	
	Pharmacists	2 (33.3%)	4 (66.7%)	30.0–90.3	
	Myself	4 (15.4%)	22 (84.6%)	66.5–93.8	
	Friends and family	1 (100.0%)	0 (0.0%)	0.0–79.3	



Have you urgently needed to use analgesics at least once without referring to the healthcare providers	No	105 (42.5%)	142 (57.5%)	51.3–63.5	0.007*
	Yes	46 (29.1%)	112 (70.9%)	63.4–77.4	
Do you usually use analgesics when you are not pregnant	No	45 (60.8%)	29 (39.2%)	28.9–50.6	<0.001*
	Yes	106 (32.0%)	225 (68.0%)	62.8–72.8	
Which analgesic drug do you take when you are not pregnant?	I did not use any	45 (60.8%)	29 (39.2%)	28.9–50.6	<0.001*
	Paracetamol	66 (34.2%)	127 (65.8%)	58.9–72.1	
	Others	5 (33.3%)	10 (66.7%)	41.7–84.8	
	Multiple drugs	26 (32.1%)	55 (67.9%)	57.1–77.1	
	I do not know	2 (66.7%)	1 (33.3%)	6.1–79.2	
Who prescribed the analgesic medication for you while you were not pregnant?	I did not use any	45 (60.8%)	29 (39.2%)	28.9–50.6	<0.001*
	Physicians	49 (29.9%)	115 (70.1%)	62.7–76.6	
	Pharmacists	8 (34.8%)	15 (65.2%)	44.9–81.2	
	Myself	43 (31.4%)	94 (68.6%)	60.4–75.8	
	Friends and family	6 (85.7%)	1 (14.3%)	2.6–51.3	
Have you been informed about analgesic side effects or risks during the pregnancy?	No	80 (46.5%)	92 (53.5%)	46.0–60.8	0.001*
	Yes	71 (30.5%)	162 (69.5%)	63.3–75.1	
The source of information about analgesics used during pregnancy	Social media	11 (33.3%)	22 (66.7%)	49.6–80.2	0.004*
	Friends and family	14 (51.9%)	13 (48.1%)	30.7–66.0	
	Books	2 (10.0%)	18 (90.0%)	69.9–97.2	
	Pharmacist	1 (5.6%)	17 (94.4%)	74.2–99.0	
	Physicians	44 (32.4%)	92 (67.6%)	59.4–74.9	

\* Fisher’s exact test used where appropriate.

Our findings indicate moderate to high awareness levels among UAE women, with 70.6% correctly identifying paracetamol as the safest analgesic. This is substantially higher than the 38.1% reported in a Saudi Arabian study, suggesting that UAE participants may have greater awareness regarding analgesic safety<sup>16</sup>.

More than half of the participants reported using analgesics during pregnancy, a prevalence lower than that observed in Saudi Arabia 82.9%<sup>21</sup>. Among those who used analgesics, paracetamol was the most frequently used aligning with global recommendations by ACOG and RCOG, which identify paracetamol as the safest analgesic for pregnant women<sup>22-24</sup>. These findings are consistent with McCrae et al., who affirmed that paracetamol remains the preferred analgesic globally<sup>25</sup>.

However, self-medication remains a concern, with 39% of participants engaging in this practice and 6.4% doing so during the first trimester, a critical period for fetal development. This self-medication rate aligns with studies conducted in Saudi Arabia and Ethiopia but is lower than reported in Nigeria and Brazil<sup>15,16,26,27</sup>. Although higher awareness was significantly associated with self-medication practices, this finding highlights a vital nuance: knowledge alone may not always translate into safe health behaviors<sup>28-30</sup>. Women who self-medicated may have felt confident in their understanding of analgesic safety, particularly regarding paracetamol, which is widely perceived as low-risk. However, such decisions may also be influenced by previous pregnancy experiences, ease of access to over-the-counter medications, or long wait times for medical

consultations<sup>31-33</sup>. This suggests that perceived awareness may not always reflect guideline-informed decision-making and reinforces the need for health education efforts that go beyond information provision to address attitudes, risk perception, and behavior change.

Additionally, women with high awareness may still choose to self-medicate due to practical barriers in accessing healthcare. In the UAE, while healthcare services are widely available, factors such as long wait times, consultation costs, and perceived minor severity of symptoms may influence the decision to rely on personal judgment<sup>34</sup>. Some women may believe that mild or familiar symptoms do not warrant a medical visit, especially when over-the-counter medications like paracetamol are easily accessible<sup>35,36</sup>. These behaviors may also reflect cultural norms of self-reliance, prior successful experiences with self-medication, and trust in commonly used medications<sup>37</sup>. This highlights the importance of not only improving knowledge but also addressing system-level, cultural, and behavioral factors that influence medication use during pregnancy

Logistic regression analysis revealed that higher education and a medical background were strong predictors of increased knowledge levels. This features the critical role of education in improving medication safety awareness and suggests that targeted interventions should focus on women with lower educational backgrounds and those without prior medical exposure<sup>38-40</sup>.

While physicians were the primary information source for



most participants, those who obtained information from pharmacists and books demonstrated the highest awareness levels. This finding contrasts with previous studies, where physicians were traditionally the dominant source of medication-related knowledge during pregnancy<sup>41-43</sup>. The underutilization of pharmacists in maternal health education presents an opportunity to enhance knowledge dissemination. Expanding the role of pharmacists in antenatal care counseling could improve awareness of safe analgesic use, especially given their expertise in medication safety.

Despite relatively high awareness levels, many participants lacked formal education on the risks of analgesic use during pregnancy, particularly regarding NSAIDs and their potential fetal effects. Only 58.3% recognized the long-term impact on fetal development, and awareness of risks in late pregnancy remained limited. These findings highlight the need for structured, evidence-based educational interventions to promote safer medication practices among pregnant women.

#### Strength and limitation

This study provides valuable insights into the awareness and practices surrounding analgesic use among pregnant women in the UAE, an area with limited existing research. One of its key strengths is the large and diverse sample size, which includes women from various educational and professional backgrounds. This allows for a more comprehensive understanding of knowledge gaps and influencing factors in countries with high diversity, such as UAE. A validated bilingual questionnaire (English and Arabic) also ensures broad accessibility.

However, some limitations must be acknowledged. The convenience sampling method and online data collection may introduce selection bias, as women who are more health-conscious or digitally connected were more likely to participate. Additionally, the questionnaire's self-reported nature may be subject to recall bias or social desirability bias. Furthermore, while the study establishes associations, it does not prove causation, and future research with longitudinal or interventional designs could provide deeper insights into how educational interventions impact analgesic use during pregnancy.

#### Public Health Implications and Recommendations

The findings of this study have important public health implications, particularly in the design of educational interventions for pregnant women. Given that higher education and a medical background were strong predictors

of awareness levels, targeted health literacy programs should focus on women with lower educational attainment and those without prior medical exposure. Additionally, pharmacists' underutilization as a source of medication information presents an opportunity to enhance maternal health education efforts. Pharmacists should be more actively involved in antenatal care, offering counseling sessions on safe analgesic use and medication risks. Further, public health campaigns should aim to dispel misconceptions about NSAIDs and promote evidence-based guidelines for pain management during pregnancy. Moreover, self-medication practices, particularly in the first trimester, raise concerns about medication safety and the accuracy of informal sources of information. Educational efforts should emphasize the risks associated with self-medication, particularly in early pregnancy, and encourage consultation with healthcare professionals before using analgesics.

## CONCLUSION AND RECOMMENDATION

This study highlights gaps in analgesic awareness among pregnant women in the UAE. While education level and medical background strongly associate awareness, self-medication remains prevalent, emphasizing the need for targeted health literacy efforts. The findings suggest that pharmacists and evidence-based materials should play a more significant role in maternal health education to ensure that all pregnant women, regardless of background, receive accurate, evidence-based guidance on safe analgesic use.

## AUTHORS CONTRIBUTION

Conceptualization: LAK, DKA

Data curation: LAK, DKA

Formal analysis: EM, MOA

Investigation: DKA, LAK

Project administration: DKA, MOA

Supervision: DKA

Writing-original draft: LAK, MOA, DKA

Writing-review & editing: MOA, EM, DKA

## CONFLICT OF INTEREST

No conflict of interest associated with this work.

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