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Original Article

Prevalence and Factors Influencing the Use of Herbal Medicines During Pregnancy in Libya: A Cross-Sectional Study

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ABSTRACT

Background: Herbal medicines (HM) are commonly used during pregnancy worldwide, but safety concerns exist due to limited regulation and evidence. This study assesses the prevalence, knowledge, attitudes, and practices of HM use among pregnant women in Libya. **Materials and Methods**: A cross-sectional survey was conducted between March and June 2025, sampling 500 women across various regions in Libya. Participants completed a questionnaire evaluating their demographic characteristics, HM usage, and perceptions of safety and efficacy during pregnancy. **Results**: The results revealed that 50.8% of participants had used HM during pregnancy, with the third trimester being the most common period for use (44.6%). Cultural beliefs, perceived safety, and accessibility were key factors influencing the use of HM, with 77.8% relying on family or friends for advice. Alarmingly, 68.4% of women did not consult healthcare providers about their use of HM. Despite a general awareness of the side effects (88.6%), there was considerable uncertainty about the relative safety of HM compared to conventional medicine, with 26.2% of respondents unsure. The study showed that education level significantly influenced practices, with higher levels of education associated with less frequent use of HM during pregnancy ($p < 0.05$). The number of children, previous pregnancies, and history of abortion have a significant effect on the increased use of HM ($p < 0.05$). **Conclusion**: The study emphasizes the importance of improving patient education and provider engagement in the use of HM during pregnancy to reduce risks and promote safety. It also calls for regulatory frameworks to monitor HM use and prevent adverse outcomes, especially in vulnerable groups like pregnant women.

Keywords: Herbal Medicine, Libya, Pregnancy, Knowledge, Attitude, Practice

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INTRODUCTION:

Herbal medicine has been used for centuries across various cultures as an alternative or complementary therapy [1]. Herbal medicine is widely used globally, especially in developing countries, despite limited scientific evidence for its safety and efficacy [2,3]. According to the World Health Organization (WHO), an estimated 80% of Africans use traditional medicine to meet their healthcare needs [4]. Such treatments are gaining momentum in developed countries and are known as complementary alternative medicine (CAM) [5–7]. In Australia, approximately 49% of people use one or more non-prescription alternative medicines, excluding calcium, iron, and prescribed vitamins [8]. In the USA, for instance, one out of five adults has used herbal products [9]. Pregnant mothers often turn to herbal medicines to meet their healthcare needs, as they are commonly viewed as safe and natural alternatives to conventional treatment drugs. Pregnant women widely use HM to alleviate various pregnancy symptoms, such as nausea, vomiting, and improvement of fetal growth, as well as for cold and flu symptoms and skin problems [10–12]. The use of herbal medicines during pregnancy is more common in developing countries due to their easy availability, low price, poor access to modern medicines, and the view that herbs are not more harmful to the fetus than modern medicine [13]. Generally, HM use among pregnant women in African countries is higher compared to other parts of the world, with a prevalence of up to 90% reported [14–16]. In the Middle East, herbal medication use during pregnancy is relatively common, too. A review in nine Middle Eastern countries found that the use of herbal medications during pregnancy ranged from 22.3% to 82.3%, with peppermint, ginger, thyme, chamomile, sage, aniseeds, fenugreek, green tea, and garlic being the most commonly used herbs [17]. The popularity of herbal medicines among pregnant women can be mainly attributed to the belief that herbal products, being natural, are safe with fewer adverse events (AEs) compared to conventional drugs [18, 19]. Despite this common perception of safety, herbal medicines may have potent pharmacological actions and can consequently produce adverse effects (AEs), including teratogenicity [12]. A recent systematic review on herbal medicine safety, including 74 studies with 1,067,071 pregnant or postnatal women, found significant links: topical almond oil with preterm birth, oral raspberry leaf with cesarean delivery, and heavy licorice consumption (over 500 mg/week) with early preterm birth [20]. The use of herbal remedies with conventional medicines can lead to synergistic effects or drug interactions, resulting in increased toxicity and decreased efficacy of modern medicine [21].For example, consuming green tea concurrently with folic acid results in diminished folic acid bioavailability [22]. In a review of the herbs used for morning sickness, chamomile and peppermint were reported as unsafe in 6% of studies, and ginger and raspberry leaf were cited as unsafe in 12% and 15% of the studies, respectively [23]. In addition, the excessive use of peppermint is contraindicated in early pregnancy due to its emmenagogue effects [24]. Fenugreek should be consumed with caution during pregnancy due to its hypoglycemic effect and its stimulatory effect on oxytocin secretion, which can result in uterine contractions [25]. The low awareness about the possible dangers of some herbs during the pregnancy period, combined with the fact that natural herbs and dietary supplements are not subjected to the FDA evaluation process required for prescription drugs, increases the risk of unwarranted side effects [26]. The widespread use of herbal medicines during pregnancy necessitates regulating these drugs for safety and efficacy. Understanding public attitudes, knowledge, and practices regarding herbal medicine in Libya, where traditional medicine is widely practiced, is crucial for ensuring safe and informed use. Libya boasts a vast array of medicinal plants scattered across a significant portion of the country, particularly in the Al-Jabal Al-Akhtar region, which accounts for approximately 50% of the country's total plants [27, 28]. In contrast, other percentages of plants are distributed in regions such as El-Jabel El Garbi (Gharian), Ghadames, Awbari, and Tarhona. In Libya, the use of medicinal plants has been deeply rooted in the cultural and traditional practices of the population. The Libyans have utilized medicinal plants for the treatment of various conditions, including skin disorders and gastrointestinal and respiratory diseases, for centuries. More than 150 species are used for medicinal purposes in native and urban communities [29]. Like many countries in the region, the use of herbal medicine in Libya is relatively high. According to a recent study, 73% of the sample population used HM during the COVID-19 pandemic [30]. In another study, 33.1% of 308 diabetic female respondents at the National Centre for Diabetes and Endocrinology in Tripoli, Libya, have used herbal medicine to treat their illness. A separate study revealed a high prevalence of herbal medicine use among senior-year students from both pharmacy and medical faculties in Benghazi, Libya [31]. In addition, a 2024 cross-sectional study among community pharmacists in Libya found that 88.5% believed herbal products have beneficial effects, and 81% reported using them for self-

treatment. Commonly dispensed herbs included *Hedera helix*, chamomile, thyme, senna, fenugreek, ginger, and clove [32]. No previous research has assessed herbal medicine use among pregnant women in Libya. This study aimed to determine the prevalence and factors influencing herbal medicine use during pregnancy in Libya. Given the high prevalence of herbal medicine use in the region, it was hypothesized that there would be a similarly high frequency during pregnancy, particularly in the early stages, to alleviate nausea and vomiting symptoms. Understanding public attitudes, knowledge, and practices about medicinal plants is crucial for promoting health, preserving traditional healing methods, and informing healthcare policies. The aim and objectives of this study are to assess the attitudes of women in Libya towards the use of herbal remedies during pregnancy, evaluate their knowledge about the safety and efficacy of these remedies, and analyze the practices related to the use of herbal remedies by pregnant women in Libya.

MATERIALS AND METHODS:

1.1. Study Design and Setting

This study is a cross-sectional, online-based survey of pregnant women. This study aims to assess the general knowledge, attitudes, and practices of pregnant women regarding herbal medicine in Libya. The survey was conducted between March 6th and June 15th, 2025.

1.2.Study Population and Sample Size

The study population consisted of pregnant women aged 18 years or older who were currently pregnant or had previously been pregnant. To determine the prevalence of herbal medicine use among the pregnant population in the country, the sample size was calculated based on the number of females of reproductive age, which was 2,083,681 females aged 18-45 in Libya **(Statistics Times, Knoema, Country Meters)** [33,34]. The minimum sample size was calculated using a Raosoft sample size calculator (http://www.raosof.com/samplesize.html) with an acceptable margin of error (5%) and a confidence level of 95%. The target sample size was set at 384 females. However, participant recruitment was continued even after reaching the desired sample size, since larger sample sizes lead to more reliable conclusions.

1.1.Data collection tool

An online questionnaire in Arabic was used for data collection. An English-language questionnaire was initially developed to assess the prevalence of herbal medicine use during pregnancy, as well as practice and knowledge regarding potential health risks. The questionnaire was adapted from similar cross-sectional studies conducted in other countries [35–39]. The study questionnaire consists of 44 items, divided into four sections: one to assess participants' demographic characteristics and three others to evaluate their knowledge, attitudes, and practices regarding the use of herbal medicine during pregnancy. Subsequently, the questionnaire was translated into Arabic by proficient Arabic speakers and revised to ensure its suitability for the general population. The researcher distributed the questionnaire to two family medicine consultants and one obstetric and gynecological consultant to validate it. Additionally, a pilot study involving 100 women was conducted to further validate the questionnaire. After making corrections based on the feedback from the initial pilot study, the modified questionnaire was distributed to an additional 30 participants to ensure clarity and confirm that no further modifications were necessary. The online questionnaire was sent via social media platforms (Telegram®, Facebook®, Instagram®), and 500 respondents were collected to minimize errors and increase the study's reliability.

1.3.Data Analysis

The collected data were entered, coded, treated, and analyzed using Microsoft Excel and Statistical Package for Social Sciences (SPSS Statistics for Windows, Version 27, IBM Corporation, Armonk, New York). Descriptive statistics were adopted in the form of frequency and percentage for categorical variables and mean ± standard deviation (SD) for continuous variables. The association between independent variables, including the study major and demographic data, as well as herbal medicine attitude, knowledge, and practice, was tested using the t-test and one-way ANOVA. The level of significance was determined at P values (equal to or < 0.05). However, the reliability of the questionnaire was tested using Cronbach's α test. Ethical approval was obtained from the Biosafety and Bioethics Committee at the Liban Medical Research Center (number: NBC:018.H.24.14).

RESULTS:

1.2.Demographic characteristics

The demographic characteristics of the sample are presented in Table 1. The majority of participants (43.6%) fell within the age range of 25 to 35. Additionally, 31.2% of participants were older than 35 years, and 23.2% were between 18 and 24 years old. The wide range of ages represented in the sample indicates that the study captured diverse perspectives on the use of herbal medicines during pregnancy in Libya. Table 1 also presents the marital status of the study participants. The vast majority (96.2%) of the 500 participants were married. A small percentage were either divorced

(1.8%) or widowed (2.0%). The predominance of married participants suggests that the sample was composed mainly of individuals who may have had personal experiences or perspectives on the use of herbal medicines during pregnancy, which is the focus of the study. Furthermore, Table 1 presents the distribution of the sample by participants' place of residence. The majority of the 500 participants (62.6%) were from the city of Zawia. Substantially smaller proportions were from the cities of Tripoli (14.0%), Sabratha (7.8%), Benghazi (4.8%), Misrata (4.2%), Zwara (2.6%), Sabha (1.4%), Zintan (1.6%), and Sirt (1.0%). The inclusion of participants from various regions across Libya, including both larger cities and smaller towns, enhances the diversity of the sample and increases the potential generalizability of the findings regarding knowledge, attitudes, and practices related to the use of herbal medicine during pregnancy. The majority of the 500 participants (69.6%) had a university-level education. An additional 20.2% had completed higher education beyond the university level. Smaller proportions had secondary-level education (8.0%) or only primary-level education (2.2%). The preponderance of participants with university or higher educational attainment suggests that the sample was relatively well-educated. The employment status of the study participants is shown in Table 1. The majority of the 500 participants (62.2%) were employed in the public sector, while 12.8% were employed in the private sector. A significant proportion (25.0%) were unemployed. Moreover, Table 1 shows the distribution of the sample according to participants' monthly income levels. The most significant proportion of participants (40.6%) reported a monthly income between 500 and 1,500 Libyan dinars. Additionally, 36.2% of participants had a monthly income between 1,500 and 3,000 Libyan dinars, while 16.4% reported a monthly income of less than 500 Libyan dinars. A smaller percentage (6.8%) had a monthly income exceeding 3,000 Libyan dinars. The distribution of the sample according to participants' pregnancy status is shown in Table 1. The majority of the 500 participants (75.8%) reported having had a previous pregnancy, while 24.2% were currently pregnant at the time of the study. Additionally, Table 1 presents the distribution of the 121 participants who were currently pregnant at the time of the study, categorized by their stage of pregnancy. The largest proportion (36.4%) was in the first trimester, followed by 32.2% in the second trimester and 31.4% in the third trimester. The inclusion of participants across all three trimesters of pregnancy allows for the potential examination of any differences in knowledge, attitudes, and practices regarding the use of herbal medicine that may be influenced by the stage of pregnancy. The most significant proportion of participants (33.0%) reported having four or more children, while 30.4% had one child, 21.2% had two children, and 15.4% had three children. The wide range of parental experience represented in the sample, from first-time parents to those with larger families, is a notable strength of the study. Besides, Table 1 presents the distribution of participants according to their history of previous abortions. Of the 500 participants, 38.4% reported having experienced a previous abortion, while 61.6% had not. The inclusion of participants with and without a history of abortion provides valuable diversity in the sample's reproductive experiences. This aspect of the study is crucial, as it may influence participants' knowledge, attitudes, and practices regarding the use of herbal medicine during pregnancy. Information on the reported reasons for abortion among the 192 participants who had experienced a previous abortion is also stated in Table 1. The majority of these participants (70.3%) reported that the cause of their abortion was unknown, while 29.7% indicated a known cause. This distribution highlights a significant gap in understanding the etiology of abortions among the study population. Table 1 displays the distribution of participants according to their chronic disease status. Among the 500 participants, 18.6% reported suffering from chronic diseases, while the majority (81.4%) did not. This information provides essential context for understanding the health status of the study population and its potential influence on herbal medicine use during pregnancy. Finally, diabetes was the most prevalent chronic disease, affecting 38.7% of this subgroup. This was followed by respiratory system diseases (28.0%) and hypertension (25.8%). A smaller proportion of participants reported cardiac disease (4.3%) and polycystic ovary syndrome (3.2%) (Table 1).

Table 1. Demographic Characteristics

Variables	Category	Frequency Percentage (%)
Age	Less than 18	10 (2.0%)
	18-24	116 (23.2%)
	25-35	218 (43.6%)
	More than 35	156 (31.2%)
Marital status	Married	481 (96.2%)
	Divorced	9 (1.8%)
	Widow	10 (2.0%)
Place of residence	Zawiya	313 (62.6%)
	Tripoli	70 (14.0%)
	Sabratha	39 (7.8%)
	Zwara	13 (2.6%)
	Zintan	8 (1.6%)
	Misrata	21 (4.1%)
	Sirt	5 (1.0%)
	Sabha	7 (1.4%)
	Benghazi	24 (4.8%)
Educational level	Primary	11 (2.2%)
	Secondary	40 (8.0%)
	University	348 (69.6%)
	Higher education	101 (20.2%)
Employment status	Public sector employee	311 (62.2%)
	Private sector employee	64 (12.8%)
	Unemployed	125 (25.0%)
Monthly income	Less than 500	82 (16.4%)
	500-1500	203 (40.6%)
	1500-3000	181 (36.2%)
	More than 3000	34 (6.8%)
Pregnancy status	Previous	379 (75.8%)
	Current	121 (24.2%)
Stage of pregnancy	First trimester	44 (36.4%)
	Second trimester	39 (32.2%)
	Third trimester	38 (31.4%)
number of children	1	152 (30.4%)
	2	106 (21.2%)
	3	77 (15.4%)
	4 or more	165 (33.0%)
Previous abortion	Yes	192 (38.4%)
	No	308 (61.6%)
Reason for abortion	Unknown cause	135 (70.3%)
	Known cause	57 (29.7%)
Do you suffer from any chronic diseases?	Yes	93 (18.6%)
	No	407 (81.4%)
If the answer is yes, what is it?	Diabetes	36 (38.7%)
	Blood pressure	24 (25.8%)
	Respiratory system diseases	26 (28.0%)
	Cardiac disease	4 (4.3%)
	Polycystic ovary syndrome	3 (3.2%)

1.1.General Attitude of Women Towards the Effects of Herbal Medicine Usage During Pregnancy in Libya

Table 2 summarizes the participants' responses to statements that reflect their beliefs and attitudes about the use of herbal medicines (HM) during pregnancy, providing insights into their perceptions of safety, efficacy, and use of HM during pregnancy. Regarding safety, 49.2% of participants either strongly agreed or agreed that herbal medicines are safe due to their natural origin. However, a notable 26.2% were unsure, indicating a degree of ambivalence in the sample. In addition, the participants' perceptions of the efficacy of HM compared to conventional medicine were mixed, with 29.2% agreeing or strongly agreeing that herbal medicines are more effective. In comparison, 36.6% disagreed or strongly disagreed with the statement. The largest group (34.2%) was unsure, suggesting considerable uncertainty on this issue. Moreover, concerning herbal medicine use during pregnancy, only 24.4% agreed or strongly agreed that it is helpful, while 36.6% disagreed or strongly disagreed. The high percentage of uncertain responses (39.0%) indicates a lack of clear consensus on this topic. However, there was a strong agreement among participants (82.2%) that using herbal medicines during pregnancy without medical advice may be harmful to the mother or fetus. This suggests a recognition of potential risks associated with unsupervised use of HM. Finally, participants showed a strong preference for healthcare provider recommendations of HM, with 71.2% agreeing or strongly agreeing that herbal medicines are more effective when recommended by healthcare providers. In contrast, only 16.2% of participants shared the same views about the recommendations from HM as their family and relatives, while the others (47.0%) disagreed or strongly disagreed with the recommendations of their family and friends Table 2. These findings reveal a complex attitude towards herbal medicines, characterized by a mix of perceived safety due to natural origin, uncertainty about efficacy compared to conventional medicine, caution regarding the use of HM during pregnancy, and a strong preference for professional medical advice.

Table 2. General Attitude of Women Towards the Effects of Herbal Medicine Usage During Pregnancy in Libya.

Variables	Strongly Agree Frequency (%)	Agree Frequency (%)	Not Sure Frequency (%)	Disagree Frequency (%)	Strongly Disagree Frequency (%)
Herbal medicines are safe because they come from nature.	63 (12.6%)	183 (36%)	131 (26.2%)	99 (19.8%)	24 (4.8%)
Herbal medicines are more effective than conventional medicine.	23 (4.6%)	123 (24%)	171 (34.2%)	157 (31.4%)	26 (5.2%)
Herbal medicines are helpful during pregnancy.	14 (2.8%)	108 (21%)	195 (39.0%)	141 (28.2%)	42 (8.4%)
The use of herbal medicines during pregnancy may cause harm to the mother or the fetus if used without medical advice.	201 (40.2%)	210 (42%)	68 (13.6%)	18 (3.6%)	3 (0.6%)
Herbal medicines are more effective if recommended by healthcare providers	105 (21.0%)	251 (50%)	101 (20.2%)	36 (7.2%)	7 (1.4%)
Herbal medicines are more effective if recommended by family and relatives.	19 (3.8%)	62 (12.4%)	184 (36.8%)	179 (35.8%)	56 (11.2%)

1.2.General Knowledge of Women About the Effects of Herbal Medicine Usage During Pregnancy in Libya

Table 3 provides insights into participants' knowledge and perceptions regarding various aspects of herbal medicine use, particularly in the context of pregnancy. The vast majority of participants, 88.6% acknowledged that herbal medicines have side effects, indicating a high level of awareness about potential risks. However, perceptions about the relative safety of herbal medicines compared to conventional medicine were more varied. While 27.6% believed that herbal medicines have fewer side effects, 35.8% were uncertain, and 20.8% admitted they didn't know. Moreover, regarding accessibility, 47.6% of participants considered herbal medicines more easily accessible than conventional medicine, and a substantial 66.0% believed they were easily accessible without a doctor's prescription. This highly perceived accessibility without medical oversight could have implications for usage patterns and potential risks. In addition, the cost of HM was also a factor, with 65.8% of participants viewing herbal medicines as less expensive than conventional medicine. This perception of affordability, combined with easy accessibility, might influence the choices regarding herbal medicine use during pregnancy. Interestingly, opinions were divided on the speed of effects, with 39.2% believing herbal medicines can act faster than conventional medicine in some cases, while 19.4% disagreed, and 22.0% were uncertain. When it comes to pregnancy-specific concerns, A (52.8%) of participants did not prefer using herbal medicines for certain conditions during pregnancy, suggesting a degree of caution. However, knowledge about potential birth defects associated with herbal medicine use during pregnancy was limited, with only 24.2% claiming awareness of such risks, 38.8% stating no awareness, and a considerable 27.0% admitting they didn't know. These findings reveal a complex landscape of knowledge and perceptions regarding the use of herbal medicine during pregnancy. While there is a general awareness of side effects, considerable uncertainty remains about comparative safety, efficacy, and specific risks during pregnancy (Table 3). The high perceived accessibility and affordability of herbal medicines, coupled with limited awareness of pregnancy-related risks, underscore the importance of comprehensive education and guidance from healthcare providers regarding herbal medicine use during pregnancy.

Table 3. General Knowledge of Women About the Effects of Herbal Medicine Usage During Pregnancy in Libya.

Variables	Yes Frequency (%)	No Frequency (%)	I think so. Frequency (%)	I don't know. Frequency (%)
Do you know that herbal medicine has side effects?	443 (88.6%)	57 (11.4%)	0 0	0 0
Does herbal medicine have fewer side effects than conventional medicine?	138 (27.6%)	79 (15.8%)	179 (35.8%)	104 (20.8%)
Is herbal medicine more easily accessed than conventional medicine?	238 (47.6%)	112 (22.4%)	108 (21.6%)	42 (8.4%)
Are herbal medicines less expensive than conventional medicine?	329 (65.8%)	31 (6.2%)	96 (19.2%)	44 (8.8%)
Is it easily accessible without a doctor's prescription?	330 (66.0%)	48 (9.6%)	91 (18.2%)	31 (6.2%)

In some cases, are the effects of herbal medicine faster than conventional medicine?	196 (39.2%)	97 (19.4%)	110 (22%)	97 (19.4%)
Prefer the use of herbal medicine for some conditions during pregnancy?	152 (30.4%)	264 (52.8%)	56 (11.2%)	28 (5.6%)
Are you aware of any birth defect(s) associated with the use of herbal medicines during pregnancy?	121 (24.2%)	194 (38.8%)	50 (10.0%)	135 (27.0%)

1.3.The General Knowledge of Women About the Side Effects of Herbal Medicine Usage During Pregnancy in Libya

The study presents participants' perceptions of the potential side effects of herbal medicines on maternal and fetal health, as well as the sources of recommendations for the use of herbal medicine during pregnancy. Regarding maternal health risks, a significant majority of participants (77.8%) identified abortion as a possible side effect of herbal medicine use during pregnancy Table 4. This high percentage suggests a widespread awareness of the potential risks of herbal medicines interfering with pregnancy. Additionally, 18.6% of participants recognized the possibility of minor to serious health problems, while a small proportion (2.0%) acknowledged the potential for maternal death. Moreover, concerning fetal health risks, preterm birth was the most commonly recognized potential adverse effect of HM, cited by 57.0% of participants. This was followed by structural deformities in neonates (22.4%) and neonatal death (11.4%). A smaller percentage (6.4%) identified serious neonatal illness as a possible outcome of using HM during pregnancy. The recognition of these severe potential outcomes suggests a degree of awareness about the risks that herbal medicines may pose to fetal development. Table 4 also reveals that family and friends were overwhelmingly the most common source of herbal medicine recommendations, cited by 77.8% of participants. This finding underscores the substantial role of social networks in disseminating information about the use of herbal medicine during pregnancy. Other pregnant women were the second most common source of HM recommendations (13.4%). In contrast, healthcare professionals, such as gynecologists (4.4%) and pharmacists (2.0%), were cited much less frequently as sources of HM recommendations Table 4. These findings underscore several essential points, such as the high awareness of potential serious risks associated with herbal medicine use during pregnancy, both for maternal and fetal health. In addition, the high reliance on family, friends, and other pregnant women for herbal medicine recommendations suggests a potential gap in professional medical guidance on this topic. Finally, the relatively low involvement of healthcare professionals in recommending herbal medicines may indicate a need for increased communication between pregnant women and their healthcare providers regarding herbal medicine use during pregnancy.

Table 4. The General Knowledge of Women About the Side Effects of Herbal Medicine Usage During Pregnancy in Libya.

Variables	Category	Frequency Percentage (%)
What are the possible side effects of herbal medicines on maternal health?	Abortion	389 (77.8%)
	Minor to serious health problem	93 (18.6%)
	Maternal death	10 (2.0%)

	Other	8 (1.6%)
What are the possible adverse effects of herbal medicines on neonatal health?	Preterm birth	285 (57.0%)
	Neonate with structural deformity	112 (22.4%)
	Serious neonatal illness	32 (6.4%)
	Neonatal death	57 (11.4%)
	Other	14 (2.8%)
What is the recommended source of herbal medicine? (n=678)	Family/friend	389 (77.8%)
	Pharmacist	10 (2.0%)
	Other pregnant women	67 (13.4%)
	Gynecologist	22 (4.4%)
	Other	12 (2.4%)

1.4.Participants' practice related to herbal medicines (HM)

The study provides comprehensive insights into the practices and attitudes related to herbal medicine use among the study participants, particularly in the context of pregnancy. Approximately half of the participants (50.8%) reported having used herbal medicines during their pregnancy. Among users, the third trimester was the most common stage for herbal medicine use (44.6%), followed by the first trimester (22.6%). Notably, A (19.2%) reported using herbal medicines throughout all stages of pregnancy (Table 5). The frequency of use varied, with occasional use being the most common (42.0%), followed by one-time use (27.6%). In addition, the primary reasons for using herbal medicines were belief in their effectiveness (31.2%), family tradition/culture (29.8%), and perceived safety (27.6%) (Table 5). This suggests that cultural factors and personal beliefs play a significant role in the decision to use herbal medicines d««uring pregnancy. However, a concerning finding is that 68.4% of participants had not discussed their use of herbal medicines with their healthcare providers. The main reasons for this are the lack of communication with healthcare providers and the perception that it was not important (54.0%) or that the doctor did not ask (32.6%). This highlights a significant gap in patient-provider communication regarding the use of herbal medicine. Figure 1 revealed that herbal medicines were used to treat a variety of conditions during pregnancy, with facilitating childbirth being the most common (22.0%), followed by cold/flu (14.0%), abdominal pain (12.4%), and cough (10.6%). In addition, Figure 2 stated that the internet (38.2%) and family/friends (35.4%) were the primary sources of information about herbal medicines, while healthcare professionals, such as physicians (5.4%) and pharmacists (1.8%), were rarely consulted. This reliance on non-professional sources for health information is concerning and may lead to a decline in information quality. Figure 3 shows the most medicinal plants used by participants during their pregnancy. The most commonly used herbs during pregnancy were olive oil (41.10%), mint (37.90%), and cinnamon (30.60%), and the least widely used were castor oil (3.20%), clove oil (9.50%), and lavender (2.70%). However, wormwood (0.80%) was the least commonly used.

Table 5. Participants practice related to herbal medicines (HM)

Variables	Category	Frequency Percentage (%)
Have you ever used herbal medicines before?	Yes	254 (50.8%)
	No	246 (49.2%)
	first trimester	113 (22.6%)

At what stage did you use herbal medicine?	second trimester	68 (13.6%)
	third trimester	223 (44.6%)
	At all stages of pregnancy	96 (19.2%)
How often do you use the herbal medicines during pregnancy?	Daily	11 (3.0%)
	Occasionally	15 (42.0%)
	Weekly	34 (6.8%)
	Only used it once	138 (27.6%)
	Twice or more a week	51 (10.2%)
	Other	52 (10.4%)
What is the reason for using herbal medicines?	I believe it is safe	138 (27.6%)
	I believe it is effective	156 (31.2%)
	Family tradition/culture	149 (29.8%)
	It is cheap and accessible	20 (4.0%)
	Unsatisfied with modern medicine	37 (7.4%)
Have you discussed the use of herbal medicines with your health care providers?	Yes	158 (31.6%)
	No	342 (68.4%)
The reason for not discussing herbal medicines use with your health care providers?	The doctor did not ask	163 (32.6%)
	It was not important	270 (54.0%)
	Afraid of the doctor's response	41 (8.2%)
	Other	26 (5.2%)

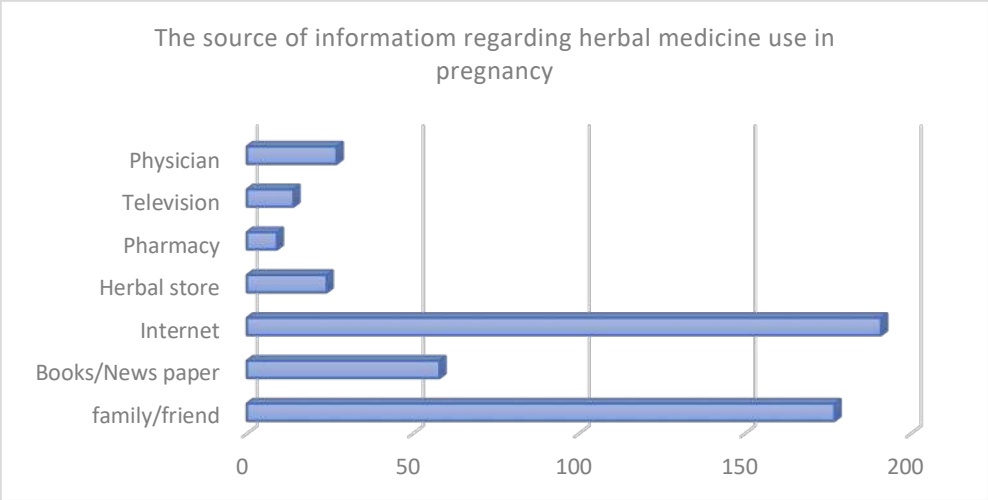

Figure 1. The source of information regarding HM use in pregnancy

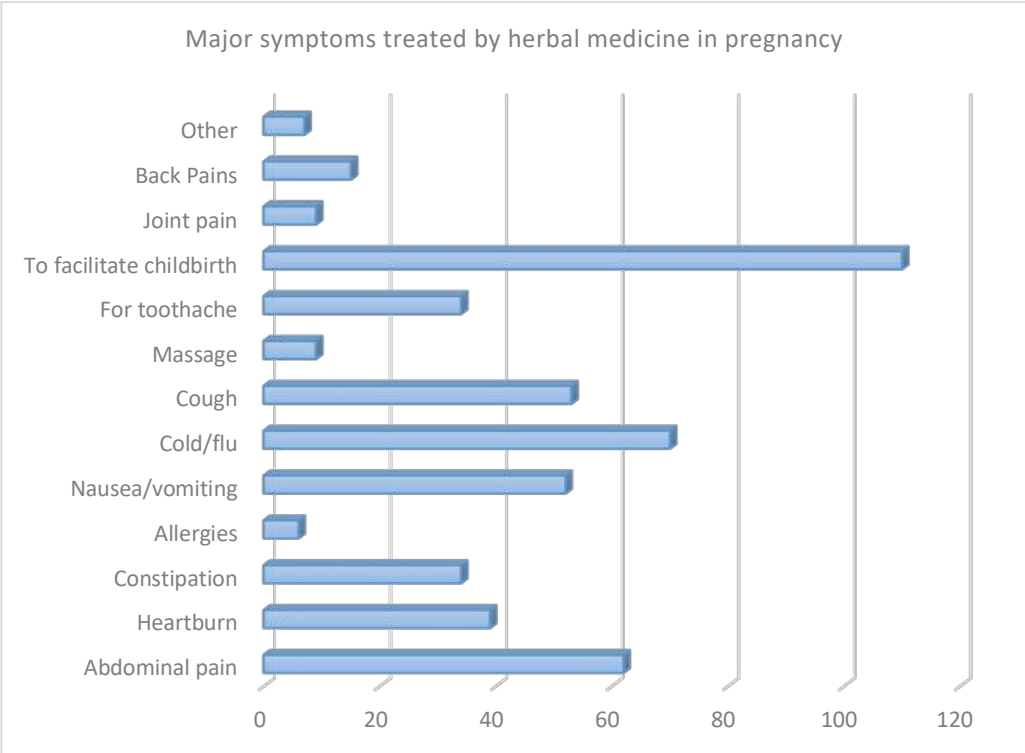

Figure 2. The primary symptoms treated by HM in pregnanc

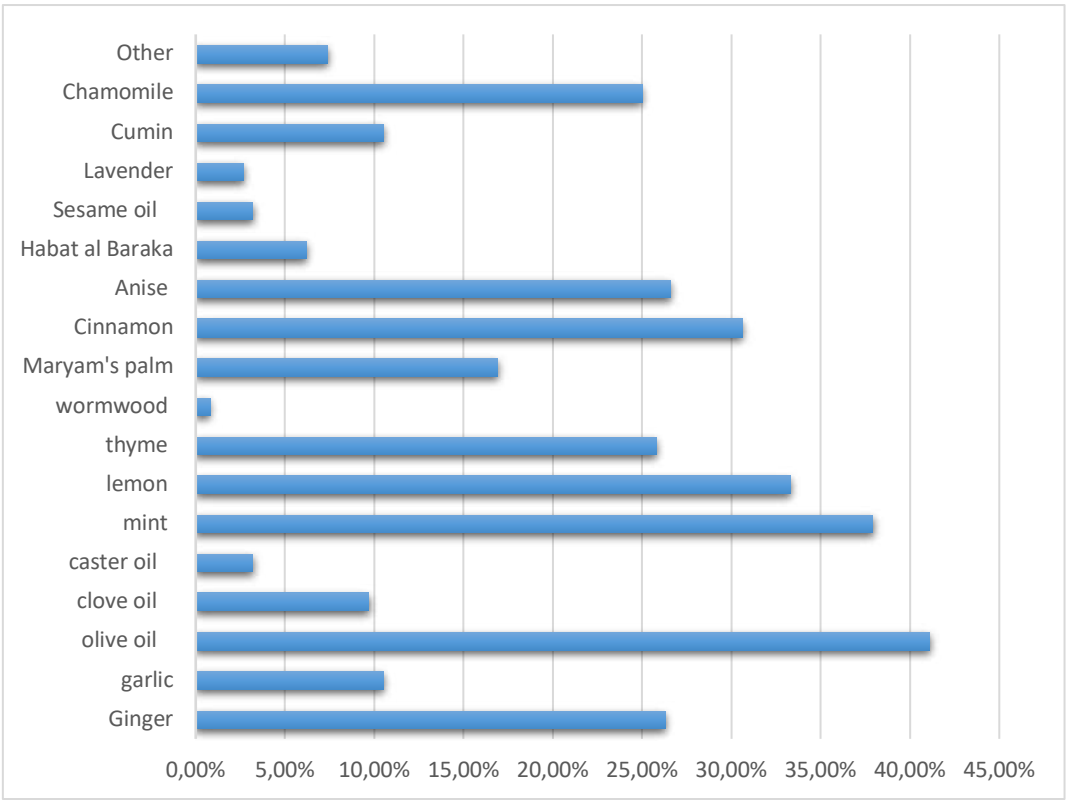

Figure 3. The most common herbal treatments used during pregnancy.

1.1 Comparison between samples in attitude, knowledge, and practice with demographic characteristics

1.1.1 Comparison between samples in attitude, knowledge, and practice in terms of their age, marital status, education level, employment status, income, number of children, and stage of pregnancy

The one-way ANOVA results presented in Table 6.1 indicate no statistically significant differences in attitude, knowledge, and practice towards herbal medicines during pregnancy among different age groups in Libya ($p > .05$ for all comparisons). For attitude, $F (3, 496) = 1.392$, $p = .244$; for knowledge, $F (3, 496) = 0.911$, $p = .436$; and for practice, $F (3, 496) = 1.179$, $p = .317$. These findings suggest that age does not significantly influence Libyan women's attitudes, knowledge, or practices regarding herbal medicine use during pregnancy. Moreover, Table 6.1 presents the results of a one-way ANOVA comparing attitudes, knowledge, and practices towards herbal medicines during pregnancy across different marital status groups in Libya. The analysis reveals no statistically significant differences among marital status groups for any of the three variables ($p > .05$ for all comparisons). For attitude, $F (2, 497) = 2.217$, $p = .110$; for knowledge, $F (2, 497) = 0.395$, $p = .674$; and for practice, $F (2, 497) = 1.483$, $p = .228$. These findings suggest that marital status does not significantly influence Libyan women's attitudes, knowledge, or practices regarding herbal medicine use during pregnancy. Table 6.2 presents the results of a one-way ANOVA comparing attitudes, knowledge, and practices regarding herbal medicines during pregnancy across different educational levels in Libya. The analysis reveals mixed findings across the three variables. For attitude, there was no statistically significant difference among education levels, $F (3, 496) = 2.209$, $p = .086$. Similarly, knowledge did not differ significantly across education levels, $F (3, 496) = 1.021$, $p = .383$. However, a statistically significant difference was found in practices related to herbal medicine use during pregnancy among individuals with different educational levels, $F (3, 496) = 3.503$, $p = .015$. This suggests that education level may influence the actual use or application of herbal medicines during pregnancy among Libyan women. Additionally, Table 6.2 presents the results of a one-way ANOVA comparing attitudes, knowledge, and practices regarding herbal medicines during pregnancy across different employment status groups in Libya. The analysis reveals no statistically significant differences among employment status groups for any of the three variables ($p > .05$ for all comparisons). For attitude, $F (2, 497) = 0.371$, $p = .690$; for knowledge, $F (2, 497) = 0.918$, $p = .400$; and for practice, $F (2, 497) = 0.480$, $p = .619$. These findings suggest that employment status does not significantly influence Libyan women's attitudes, knowledge, or practices regarding herbal medicine use during pregnancy. Table 6.2 presents the results of a one-way ANOVA comparing attitudes, knowledge, and practices regarding herbal medicines during pregnancy across different income groups in Libya. The analysis reveals no statistically significant differences among income groups for any of the three variables ($p > .05$ for all comparisons). For attitude, $F (3, 496) = 0.091$, $p = .965$; for knowledge, $F (3, 496) = 0.834$, $p = .476$; and for practice, $F (3, 496) = 1.626$, $p = .183$. These findings suggest that income level does not significantly influence Libyan women's attitudes, knowledge, or practices regarding herbal medicine use during pregnancy. In addition, Table 6.3 presents the results of a one-way ANOVA comparing attitudes, knowledge, and practices towards herbal medicines during pregnancy across groups with different numbers of children in Libya. The analysis reveals mixed findings across the three variables. For attitude, there was no statistically significant difference among groups with different numbers of children, $F (3, 496) = 0.233$, $p = .873$. Similarly, knowledge did not differ significantly across these groups, $F (3, 496) = 0.038$, $p = .990$. However, a statistically significant difference was found in practices related to herbal medicine use during pregnancy among groups with different numbers of children, $F (3, 496) = 2.667$, $p = .047$. This suggests that the number of children a woman has may influence her actual use or application of herbal medicines during pregnancy. These findings indicate that while attitudes and knowledge about herbal medicines during pregnancy are relatively consistent regardless of the number of children, the practices differ significantly. Table 6.3 also presents the results of a one-way ANOVA comparing attitudes, knowledge, and practices towards herbal medicines across different stages of pregnancy in Libya. The analysis reveals no statistically significant differences among pregnancy stages for any of the three variables ($p > .05$ for all comparisons). For attitude, $F (2, 117) = 0.740$, $p = .480$; for knowledge, $F (2, 117) = 0.070$, $p = .933$; and for practice, $F (2, 117) = 0.067$, $p = .935$. These findings suggest that the stage of pregnancy does not significantly influence Libyan women's attitudes, knowledge, or practices regarding herbal medicine use during pregnancy.

Table 6-1. Comparison of samples in terms of attitude, knowledge, and practice, considering their age and marital status.

Comparison between samples in attitude, knowledge, and practice in terms of their age						
	Source of variation	DF	Sum of squares	Mean sum of squares	F	P -value
Attitude	Between-group	3	46.842	15.614	1.392	0.244
	Within group	496	5561.596	11.213		
	Total	499	5608.438			
Knowledge	Between-group	3	49.736	16.579	0.911	0.436
	Within group	496	9029.214	18.204		
	Total	499	9078.950			
Practice	Between-group	3	73.989	24.663	1.179	0.317
	Within group	496	10376.979	20.921		
	Total	499	10450.968			
Comparison between samples in attitude, knowledge, and practice in terms of marital status						
	Source of variation	DF	Sum of squares	Mean sum of squares	F	P-value
Attitude	Between group	2	49.593	24.796	2.217	0.110
	Within group	497	5558.845	11.185		
	Total	499	5608.438			
Knowledge	Between group	2	14.426	7.213	0.395	0.674
	Within group	497	9064.524	18.238		
	Total	499	9078.950			
Practice	Between group	2	61.986	30.993	1.483	0.228
	Within group	497	10388.982	20.903		
	Total	499	10450.968			

Table 6.2. Comparison between samples in attitude, knowledge, and practice in terms of their education level, employment status, and income.

Comparison between samples in attitude, knowledge, and practice in terms of education level						
	Source of variation	DF	Sum of squares	Mean sum of squares	F	P-value
Attitude	Between group	3	73.946	24.649	2.209	0.086
	Within group	496	5534.492	11.158		
	Total	499	5608.438			
Knowledge	Between group	3	55.725	18.575	1.021	0.383
	Within group	496	9023.225	18.192		
	Total	499	9078.950			
Practice	Between group	3	216.818	72.273	3.503	0.015
	Within group	496	10234.150	20.633		
	Total	499	10450.968			
Comparison between samples in attitude, knowledge, and practice in terms of employment status						
	Source of variation	DF	Sum of squares	Mean sum of squares	F	P-value
Attitude	Between group	2	8.360	4.180	0.371	0.690
	Within group	497	5600.078	11.268		
	Total	499	5608.438			

Knowledge	Between group	2	33.399	16.699	0.918	0.400
	Within group	497	9045.551	18.200		
	Total	499	9078.950			
Practice	Between group	2	20.141	10.070	0.480	0.619
	Within group	497	10430.827	20.988		
	Total	499	10450.968			
Comparison between samples in attitude, knowledge, and practice in terms of income						
	Source of variation	DF	Sum of squares	Mean sum of squares	F	P-value
Attitude	Between group	3	3.076	1.025	0.091	0.965
	Within group	496	5605.362	11.301		
	Total	499	5608.438			
Knowledge	Between group	3	45.560	15.187	0.834	0.476
	Within group	496	9033.390	18.212		
	Total	499	9078.950			
Practice	Between group	3	101.750	33.917	1.626	0.183
	Within group	496	10349.218	20.865		
	Total	499	10450.968			

Table 6.3. Comparison between samples in attitude, knowledge, and practice in terms of their number of children and stage of pregnancy.

Comparison between samples in attitude, knowledge, and practice in terms of number of children						
	Source of variation	DF	Sum of squares	Mean sum of squares	F	P-value
Attitude	Between-group	3	7.902	2.634	0.233	0.873
	Within group	496	5600.536	11.291		
	Total	499	5608.438			
Knowledge	Between-group	3	2.108	.703	0.038	0.990
	Within group	496	9076.842	18.300		
	Total	499	9078.950	2.634		
Practice	Between-group	3	165.938	55.313	2.667	0.047
	Within group	496	10285.030	20.736		
	Total	499	10450.968			
Comparison between samples in attitude, knowledge, and practice in terms of stage of pregnancy						
	Source of variation	DF	Sum of squares	Mean sum of square	F	P value
Attitude	Between-group	2	14.731	7.365	0.740	0.480
	Within group	117	1165.261	9.959		
	Total	119	1179.992			
Knowledge	Between group	2	2.691	1.346	0.070	0.933
	Within group	117	2259.009	19.308		
	Total	119	2261.700			
Practice	Between-group	2	3.941	1.970	0.067	0.935
	Within group	117	3452.651	29.510		
	Total	119	3456.592			

1.1.2.Comparison between participants in attitude, knowledge, and practice in terms of their pregnancy status and previous abortion

Table 7 presents the results of independent samples t-tests comparing attitudes, knowledge, and practices toward herbal medicines between women

with previous pregnancies and those currently pregnant in Libya. The analysis reveals no statistically significant differences between these two groups for any of the three variables ($p > .05$ for all comparisons). For attitude, women with previous pregnancies ($M = 19.74$, $SD = 3.421$) did not differ significantly from currently pregnant women ($M = 19.50$, $SD = 3.136$), t (df not provided) = 0.670, $p = .503$. Similarly, for knowledge, there was no significant difference between women with previous pregnancies ($M = 15.39$, $SD = 4.240$) and currently pregnant women ($M = 15.49$, $SD = 2.361$), t (df not provided) = -0.230, ($p = .818$). In addition, Table 7 presents the results of independent samples t-tests comparing attitudes, knowledge, and practices towards herbal medicines during pregnancy between women with and without a history of previous abortion in Libya. The analysis reveals mixed findings across the three variables. For attitude, women with a history of prior abortion ($M = 19.66$, $SD = 3.365$) did not differ significantly from those without such a history ($M = 19.70$, $SD = 3.350$), t (df not provided) = -0.135, $p = .892$. Similarly, for knowledge, there was no significant difference between women with previous abortions ($M = 15.40$, $SD = 4.364$) and those without ($M = 15.42$, $SD = 4.210$), t (df not provided) = -0.059, $p = .953$. However, a statistically significant difference was found in practices related to herbal medicine use during pregnancy between the two groups, t (df not provided) = 2.047, $p = .041$. Women with a history of previous abortion reported higher practice scores ($M = 10.02$, $SD = 4.333$) compared to those without such a history ($M = 9.16$, $SD = 4.699$). These findings suggest that while a history of previous abortion does not significantly influence Libyan women's attitudes or knowledge regarding herbal medicine use during pregnancy, it does appear to affect their practices. The significant difference in practice scores indicates that women who have experienced a previous abortion are more likely to engage in practices related to herbal medicine use during pregnancy.

Table 7. Comparison between participants in attitude, knowledge, and practice in terms of their pregnancy status and previous abortion.

Comparison between samples in attitude, knowledge, and practice in terms of pregnancy status					
	pregnancy status	Mean	STD	T	P-value
Attitude	Previous	19.74	3.421	0.670	0.503
	Current	19.50	3.136		
Knowledge	Previous	15.39	4.240	-0.230	0.818
	Current	15.49	2.361		
Practice	Previous	9.28	4.274	-1.840	0.066
	Current	10.16	5.381		
Comparison between samples in attitude, knowledge, and practice in terms of previous abortion					
	Previous abortion	Mean	STD	T	P-value
Attitude	Yes	19.66	3.365	-0.135	0.892
	No	19.70	3.350		
Knowledge	Yes	15.40	4.364	-0.059	0.953
	No	15.42	4.210		
Practice	Yes	10.02	4.333	2.047	0.041
	No	9.16	4.699		

DISCUSSION:

In many developed countries, herbal medicines are strictly regulated by legislation to ensure the quality, safety, and efficacy of these therapeutic products [9, 40, 41]. In contrast, herbal medicines in developing countries such as Libya are usually unregulated and formulated without rigorous scientific testing or healthcare provider consultation. This increases the risk of abnormal pathologies or toxicities, especially among

vulnerable groups such as children, the elderly, pregnant women, and developing fetuses [26]. This is particularly worrisome as there is also a high rate of non-compliance with regulations that control the dispensing of prescription-only medications in community pharmacies in Libya. Therefore, there is an urgent need to establish a national regulatory body to monitor the use of herbal medicine and prevent adverse herb-drug interactions. To the best of the authors' knowledge, this study represents the first in Libya to examine the prevalence of herbal medicine use during pregnancy and the associated influencing factors. The study is expected to provide precise recommendations aimed at promoting healthy and safe practices concerning the use of HM during pregnancy.

1.1.Patterns of herbal medicine use

The results indicated a high percentage of herbal medicine use during pregnancy (50.8%), with the third trimester being the most common stage for use (44.6%). This trend is mirrored in studies from Saudi Arabia and Oman, where a similar proportion of women used herbal medicines, particularly in later pregnancy stages. For example, 33% of women in Hail, Saudi Arabia, reported HM use during pregnancy, with many using herbs to facilitate childbirth and lactation [35]. In Oman, the prevalence of HM use varied between 22.3% and 82.3%, with typical usage throughout all pregnancy stages [17]. Furthermore, this study found that the primary reasons for using herbal medicines were beliefs in their effectiveness (31.2%), family tradition or culture (29.8%), and perceived safety (27.6%). This finding is consistent with those across the Middle East, where cultural factors significantly influence the use of HM. Studies from Saudi Arabia and Oman found similar motivations, with traditional beliefs and perceived safety driving the use of HM [17, 35]. Studies conducted in Western countries such as Australia and the UK demonstrate the main reason for using HM was to address specific pregnancy symptoms, such as nausea and vomiting, rather than cultural traditions [42]. This study also revealed that 68.4% of participants did not discuss herbal medicine use with healthcare providers, citing reasons like the perception that it was not important. This aligns with Middle Eastern studies, where many women also failed to disclose their HM use to their doctors. In Iran, only 37.2% informed their physicians, while in Palestine, 65.8% disclosed such use [17]. Globally, poor communication with healthcare providers is also common. For instance, in Europe, many women do not inform their doctors, with family and friends being more influential sources of information [17, 42, 43]. In this study, 38.2% of the participants used the Internet, and 35.4% relied on family and friends for information about herbal medicine. Healthcare professionals were not consulted frequently. This pattern is similar to findings from studies in Saudi Arabia and Oman, where informal sources, such as family and friends, were the primary sources of information, and healthcare providers played a minor role [17, 35]. In Western countries, the internet serves as a significant source of information; however, healthcare professionals tend to play a more prominent role in certain studies [42, 43]. Libyan pregnant women used HM to facilitate childbirth, treat colds and flu, and treat abdominal pain. This finding is consistent with other studies conducted in Saudi Arabia, Oman, and Ethiopia, which have also utilized herbs to treat nausea, gastrointestinal problems, abdominal pain, and respiratory issues [17].

1.2.Beliefs regarding herbal medicine use during pregnancy

In the current study, 49.2% of participants believed herbal medicines were safe due to their natural origin, though 26.2% were unsure. This perception of safety based on natural origins is common in studies across the Middle East and Western countries. For instance, in Saudi Arabia, many women believed herbal remedies to be inherently safer than conventional medicine, particularly during pregnancy [17]. Similarly, in Western Europe, participants also viewed herbal remedies as safe due to their perceived "natural" properties, despite being aware of potential risks [43]. Regarding the effectiveness of herbal medicine (HM), the study showed that only 29.2% of participants viewed herbal medicines as more effective than conventional treatments, while 34.2% were uncertain. This finding is consistent with studies from Saudi Arabia and Iran, where many women use herbal treatments but remain unsure about their efficacy compared to conventional medicine [17, 35]. In Australia, the belief in the effectiveness of herbal medicine is mixed. Many people turn to herbal remedies for mild symptoms but prefer conventional medicine for more serious conditions [43]. However, 82.2% of Libyan pregnant women agreed that unsupervised use of herbal medicines could be harmful, showing a strong acknowledgment of the risks involved. This concern over the dangers of unsupervised use is consistent across Saudi Arabia and Iran, where women expressed awareness of complications such as miscarriage [17, 35]. In other studies, conducted in developed nations, participants were similarly cautious, with many expressing concerns about potential interactions with conventional treatments and their impact on

fetal development [42, 43]. Interestingly, 71.2% of the study participants preferred recommendations from healthcare professionals over family advice. This trend is also observed in Saudi Arabia, where women have expressed a desire for more guidance from healthcare providers, despite relying on their families for recommendations [17]. However, in Europe, the UK, Australia, and other developed countries, there is a more substantial reliance on healthcare providers, with a greater number of women seeking professional advice. Informal networks and online resources are still frequently used [42,43].

1.3.Knowledge of Women Regarding the Effects of Herbal Medicine

Concerning the participants' knowledge of the risks associated with herbal medicine use during pregnancy, pregnant participants (88.6%) recognized the side effects of herbal medicines, reflecting high awareness of potential risks. The majority of respondents in the current study believed that HM can cause various health risks to both the mother and child, including birth defects, miscarriage, and premature labor. This is consistent with studies from Saudi Arabia and Iran, where women also exhibited strong awareness of herbal medicine side effects during pregnancy, and participants also displayed significant awareness of fetal risks associated with herbal medicine use, though the specific conditions varied. In Iran, women showed concern about miscarriage and fetal health, but the level of awareness about structural deformities was lower compared to this study [17]. Similarly, in a multinational study that included 32 countries from Europe, North America, South America, and Australia, women showed a good understanding of the risks, especially concerning the potential for miscarriage and interactions with other medications. Still, women were more likely to rely on specific research or professional advice for their knowledge [42,43]. The study participants found herbal medicines to be more accessible, with 66.0% noting that they were available without a prescription. The study showed that 65.8% of participants found herbal medicines more affordable than conventional treatments, which significantly influenced their use. This is a common theme in the Middle East, where herbal medicines are widely accessible and affordable through informal channels such as family, friends, and herbal shops [17, 35]. The study participants exhibited varying perspectives on the speed of effects, with 39.2% expressing a belief that herbal medicines have a quicker onset of action compared to conventional drugs. This viewpoint is consistent with observations in Middle Eastern studies, where herbal remedies are frequently utilized for prompt alleviation of symptoms such as nausea and bloating [17]. However, in a multinational study conducted in Western countries, herbal medicines are commonly regarded as having a slower onset of action. They are typically employed for the management of chronic conditions rather than for immediate relief [43]. Correspondingly, the study found that 77.8% of participants relied on family and friends for herbal medicine recommendations, while healthcare professionals such as gynecologists and pharmacists played a minimal role (4.4% and 2.0%, respectively). This pattern of seeking advice from informal networks is consistent with studies conducted in the Middle East, particularly in Saudi Arabia, where family and friends were the primary sources of guidance on herbal use, and healthcare professionals were rarely consulted [17, 35]. The heavy reliance on informal networks in Libya, with minimal input from healthcare providers, underscores a critical gap in professional guidance. This pattern is widely seen in the Middle East, where cultural norms often prioritize family advice over medical guidance. In Saudi Arabia, for instance, healthcare professionals were consulted in only about 7.6% of cases, indicating a need for improved communication between patients and healthcare providers [17].

1.4.Factors associated with herbal medicine use during pregnancy

The study revealed that the knowledge, attitudes, and practices regarding the use of herbal medicine among pregnant women in Libya were predominantly unaffected by demographic characteristics, except educational level, number of children, and previous miscarriages. Higher education was associated with different practices regarding the use of herbal medicine, suggesting that education influences the decision-making process in healthcare practices. However, it had no significant effect on attitudes and knowledge. Moreover, the study indicated that women with varying numbers of children exhibited different practices regarding herbal medicine, hinting at the influence of maternal responsibilities on healthcare choices. Another study was carried out in Saudi Arabia [44] and Nigeria [38]. Most of the women who used herbal medicine during pregnancy had an education level greater than high school, aligning with our findings in Libya. However, in Kenya [36]. The majority of users had either an uneducated background or a high school education. Another noteworthy finding was that women with a history of miscarriage demonstrated higher practice scores in the use of herbal remedies, suggesting that prior pregnancy experiences may significantly affect

healthcare decisions during subsequent pregnancies.

CONCLUSION:

The study reveals a significant reliance on herbal medicines during pregnancy in Libya, often without proper medical guidance. This reliance is driven by cultural factors, personal beliefs, and perceived safety and effectiveness. These findings underscore the necessity for improved patient education. Pregnant women require comprehensive information about the potential risks and benefits of herbal medicines during pregnancy, particularly concerning potential fetal health risks. Improved communication with healthcare providers is essential, too. Healthcare providers should take a proactive approach to inquire about the use of herbal medicine and offer evidence-based guidance to ensure safe practices. Additionally, it is crucial to raise awareness of professional sources. Emphasis should be placed on accessing information about herbal medicines from reputable sources such as healthcare professionals and credible scientific literature. However, in both Arabic and global contexts, herbal medicine use during pregnancy is prevalent, driven by cultural traditions, beliefs in safety, and accessibility through informal networks. The key differences lie in the specific conditions treated and the slightly higher reliance on healthcare professionals in some Western countries. In all regions, there is a consistent gap in communication between pregnant women and healthcare providers regarding herbal medicine use. In addition, the current results show mixed perceptions of herbal medicine safety and efficacy, cautious use during pregnancy, and a preference for professional guidance. However, the gaps in healthcare communication are evident globally, as many women still rely on informal networks for advice. This highlights the need for improved healthcare communication across regions. Finally, this study revealed a strong awareness of the general risks associated with herbal medicine use, but specific knowledge about pregnancy-related dangers remains limited. Accessibility and affordability continue to drive usage, particularly in the Middle East, while the need for improved communication between healthcare providers is evident globally. This points to a universal need for enhanced education on herbal medicine use during pregnancy.

STUDY LIMITATIONS

This study did not evaluate specific forms or methods of herbal product use or the prevalence of side effects following usage, as such variables were deemed beyond the scope of the study. Some participants were not pregnant at the time of the survey and therefore reported experiences and practices from their most recent pregnancy.

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CONFLICT OF INTERESTS

The authors declare that they have no conflicts of interest.

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