



## Use of herbal medicine during pregnancy and attitudes of pregnant women in Jos, Nigeria

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### Abstract

Herbal medicines have been used for disease prevention and treatment for both humans and animals worldwide. The present study was designed to determine the herbs used during pregnancy in Jos and to evaluate attitudes of pregnant women. The survey was carried out in antenatal clinics. Information was obtained from pregnant women (17-60 years) through both informal, unstructured conversations and the use of structured questionnaire. Botanical data were focused on the name and part of the herbs or plant used during pregnancy including herbs, herbal preparations and finished products having medicinal properties. In total, 300 pregnant women were enrolled for this study. The respondents were farmers (33.3 %), housewives (26.7%) and students (23.3 %). The most commonly used herbs were, garlic (16.7 %), pawpaw (13.6 %), ginger (13.0 %) and Moringa (8.0 %). Among the parts, bulb was the most used (16.7 %) followed by fruits (14 %). The most common reasons for the use were: herbal medicine is more effective than conventional medicine for some medications (20 %) and more easily accessed than conventional medicine (20 %). Most of the women were advised by family (31.3 %) and believed herbs had fewer side effects. The findings revealed their knowledge on medicinal plants. The women used one or more herbal medicine during pregnancy.

**Keywords:** Pregnant women; Herbal medicine; Medicinal plants; Jos; Nigeria

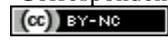
### INTRODUCTION

Herbal medicines include herbs, herbal preparations and finished products that contain as active ingredients parts of plants or other plant materials or combinations perceived to have therapeutic benefits [1]. About 80% of the populations worldwide use a variety of traditional medicines including herbal medicine, for the diagnosis, prevention and treatment of illnesses, and for the improvement of general wellbeing [2]. Herbal medicine has

been used for disease prevention and treating ailments worldwide. It is known that between 65 % and 85 % of the world population used herbal medicine as their primary form of health care [2]. Pregnancy is a condition associated with immense physiological alterations resulting in problems, including nausea, vomiting, constipation, and heartburn. Pregnancy is a special physiological condition where drug treatment presents a special concern because the physiology of pregnancy

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affects the pharmacokinetics of medications used and certain medications can reach the fetus and cause harm. Total avoidance of pharmacological treatment in pregnancy is not possible and can be dangerous because some women enter pregnancy with medical conditions that require ongoing and episodic treatment (e.g. asthma, epilepsy, hypertension.). Also during pregnancy new medical problems can develop and old ones can be exacerbated (e.g. migraine, headache) requiring pharmacological therapy. The fact that certain drugs given during pregnancy may prove harmful to the unborn child is one of the classical problems in medical treatment [3]. These conditions usually result in pregnant women self-medicating using over the counter (OTC) medications or herbs [4].

In pregnancy, mothers and doctors are concerned about all medications including herbal medicine. Herb use during pregnancy is common across regions and countries. The prevalence of herbal medicine use during pregnancy ranges from 12 to 82.3 % [5]. A multinational study conducted in different countries also showed that 28.9 % of pregnant women used herbal medicine during pregnancy [6]. A literature review from the Middle East revealed that up to 82.2 % of the women used herbal medicine at some point during pregnancy. In Australia, 36 % of the women took at least one herbal medicine during pregnancy [8]. Studies done in Africa showed that the prevalence of herbal medicine use during pregnancy was 12 % to 73.1 % [9]. The most commonly consumed herbal medicine during pregnancy include; ginger, cranberry, valerian, raspberry leaf, [7]. Eucalyptus, tenaadam (*Rutachalepensis*), damakees (*Ocimum lamiifolium*), palm kernel oil, bitter kola and dogonyaro (*Azadirachta indica*) are also other herbal medicine used during pregnancy [10].

There is crucial need for research into these medicinal plants or herbs to know the part used reasons for use and to know if the

herbal medicine is more effective than conventional medicine and its safety during pregnancy. The current study aimed at determining the attitudes, knowledge and herbs used during pregnancy in Jos North and South Local Government Areas of Plateau state.

## EXPERIMENTAL METHODS

**Study area.** This study was carried out in Jos North and South Local Government Areas of Plateau state, Nigeria (Figure 1). Jos North Local Government Area of Plateau State is one of its seventeen Local Government Areas and its main metropolis. It extends over an area of 291 km<sup>2</sup> with a total population of 429,300, projected from 2006 National Population and housing Census. Jos South is also a Local Government Area of Plateau State. Its headquarters is the town of Bukuru at 9°48'00 N 8°52'00 E. It has an area of 510 km<sup>2</sup> and a population of 306,716 at the 2006 census. The survey was done in hospitals, one on one meeting of pregnant women and primary health clinics where pregnant women go for antenatal and regular checkups. Hospitals and primary health care centers visited were as follows: Plateau Specialist Hospital, Bingham University Teaching Hospital, Rayfield primary health clinics, Angwan Rogo primary health clinic and Mary-sol specialist hospital.

**Respondents.** Pregnant women were considered to be the best source of information for this study. Field work was carried out in antenatal clinics and pregnant women attending antenatal within Jos North and South local government areas of Plateau State, Nigeria. Contact and interaction with the pregnant women were facilitated by the nurses in charge of the antenatal clinics within the study areas. The respondents were grouped between ages of 17 to 60 years. Prior informed consent from the informants was obtained before commencing the survey. Information was obtained through both informal, unstructured conversations and the use of

structured questionnaires. The informal open discussion provided the opportunity for pregnant women to talk about their experience and to provide as much detail as they wished. This flexible approach also eliminated the pressure to provide answers to rigid questions, which might have led to artificial responses, given purely to satisfy the researcher. The pregnant women gave information relating to the identification of plants, their medicinal uses, parts used, doses for the preparation and comparison between orthodox and traditional medicine.

## RESULTS

**Demographic data.** The demographical data are given in table 1. A total of 300 women were interviewed during the survey. Most of the respondents were between 17 to 30 years (59.7 %) followed by those 31-40 years old (30.0 %). Most of the interviewed women were farmers (33.3 %) and housewives (26.7 %). Most of the respondents were not formally educated (40 %) while 23.3 % attended higher educational institutions.

**Ethnobotanical data.** The majority of the pregnant women used herbal medicine during the first trimester of their pregnancy (30 %) and the use decreased to 18.6 - 4.0 % in the second and third trimester respectively (Table 2). Those who stayed away from any form of herbal medication is represented by 47.3 %. By talking about the plants used, nine species belonging to nine families were recorded (Table 3). These plants are used for several indications of pregnancy such as increasing immunity, nausea, morning sickness, stomach discomfort, preventing gestation diabetes, stretch mark, stress and anxiety (Table 4). The most commonly used plants were *Allium sativum* (Garlic) and *Carica papaya* (Pawpaw) with 16.7 % and 13.6 % respectively followed by *Zingiber officinale* (Ginger) and *Moringa oleifera* (Moringa) with 13.0 % and 8.0 % respectively (Table 4). Among the plant parts used, the bulb and the fruit were most

represented by 16.7 % and 14.3 % respectively (Table 5). The majority of the preparations or recipes were blended (15.7 %). The preparations are mainly used for pain, morning sickness, stretch mark, stomach discomfort, headache, immunity, blood pressure control, cold and flu (Table 6). The literature revealed that these medicinal plants contain some active constituents which support their use for the above mentioned ailments among pregnant women (Table 7).

### **Women's sources of advice for the treatment of ailments during pregnancy.**

Use of herbal medicine was most commonly initiated after recommendations from family (31.3 %) and other pregnant women (26.7 %). Only 1 % of the respondents got advice from health professionals (pharmacists) (Table 8).

**Women's attitudes.** The reasons for using herbal medicine are noted in table 9. The study showed that only 5 % of the pregnant women thought the herbal medicine is more effective than conventional medicine. Among the respondents, 20 % reported that herbal medicine more effective than conventional medicine for some medications. Only 5 % found herbal medicine together with conventional medicine more effective. The reason of 6.6 % for using herbal medicine was that herbal medicine has fewer side effects than conventional medicine. Among the informants, 20 % reported that herbal medicine is more easily accessed than conventional medicine. The reason of 6.6 % of the users was that herbal medicine is less expensive than conventional medicine while 16.7 % found that herbal medicine is more accessible without Doctor's prescription. In total, 15 % of the women found that herbal medicine acts faster than conventional medicine in some conditions. The findings revealed that 5 % of the women preferred the use of herbal medicine for some conditions during pregnancy. In total no-respondent was aware of any birth defect(s) associated with the use herbal medicine during pregnancy.

**Table 1: Age Distribution**

Age	Frequency	Percentage
17-30	176	59.7
30 – 40	90	30.0
40 – 40	30	10.0
50 – 60	1	1.0

**Table 2: Trimester of herbal medicinal use**

Trimester	Frequency	Percentage
First	90	30.0
Second	56	18.6
Third	12	4.0
None	142	47.3

**Table 3: Herbal Medicines used During Pregnancy in Jos North and Jos South LGA's**

S/N	Plants	Family	Local Names	Common Names	Parts Used
1	<i>Allium sativum</i>	Liliaceae	Tafarnuwa (Hausa)	Garlic	Bulb
2	<i>Zingiber officinale</i>	Zingiberaceae	Chetta (Hausa)	Ginger	Rhizome
3	<i>Carica papaya</i>	Caricaceae	Gwanda (Hausa)	Pawpaw	Fruits
4	<i>Mangifera indica</i>	Anacardiaceae	Mangoro (Hausa)	Mango	Fruits
5	<i>Azadirachta indica</i>	Meliaceae	Dogonyaro (Hausa)	Neem	Leaves
6	<i>Moringa oleifera</i>	Moringaceae	Zogale (Hausa)	Moringa	Leaves
7	<i>Psidium guajava</i>	Myrtaceae	Goba (Hausa)	Guava	Fruit
8	<i>Ocimum gratissimum</i>	Labiaceae	Efirin (Yoruba)	Scent leaf	Leaves
9	<i>Mentha piperita</i>	Lamiaceae	Ewe (Yoruba)	Peppermint	Leaves

**Table 4. Plants and their indication for use**

Herbal medicine	Frequency	Percentage	Part used	Indication for Use
Garlic	50	16.7	Bulb	For increasing immunity
Ginger	39	13.0	Rhizome	Nausea
Pawpaw	41	13.6	Fruit	Morning sickness
Peppermint	4	1.3	Leaves	Help relieve stress and anxiety
Scent leaves	9	3.0	Leaves	Stomach discomfort
Guava	1	0.3	Fruits	Prevent gestation diabetes
Moringa	24	8.0	Leaves	Help in breast milk production
Neem plant	2	0.6	Leaves	Reduces stretch mark
Mango	1	0.3	Fruit	Source of energy
None	129	43.0	---	---

**Table 5: Parts of Plant Used**

Part Used	Frequency	Percentage
Leaves	39	13.0
Fruits	42	14.0
Rhizome	39	13.0
Bulb	50	16.7

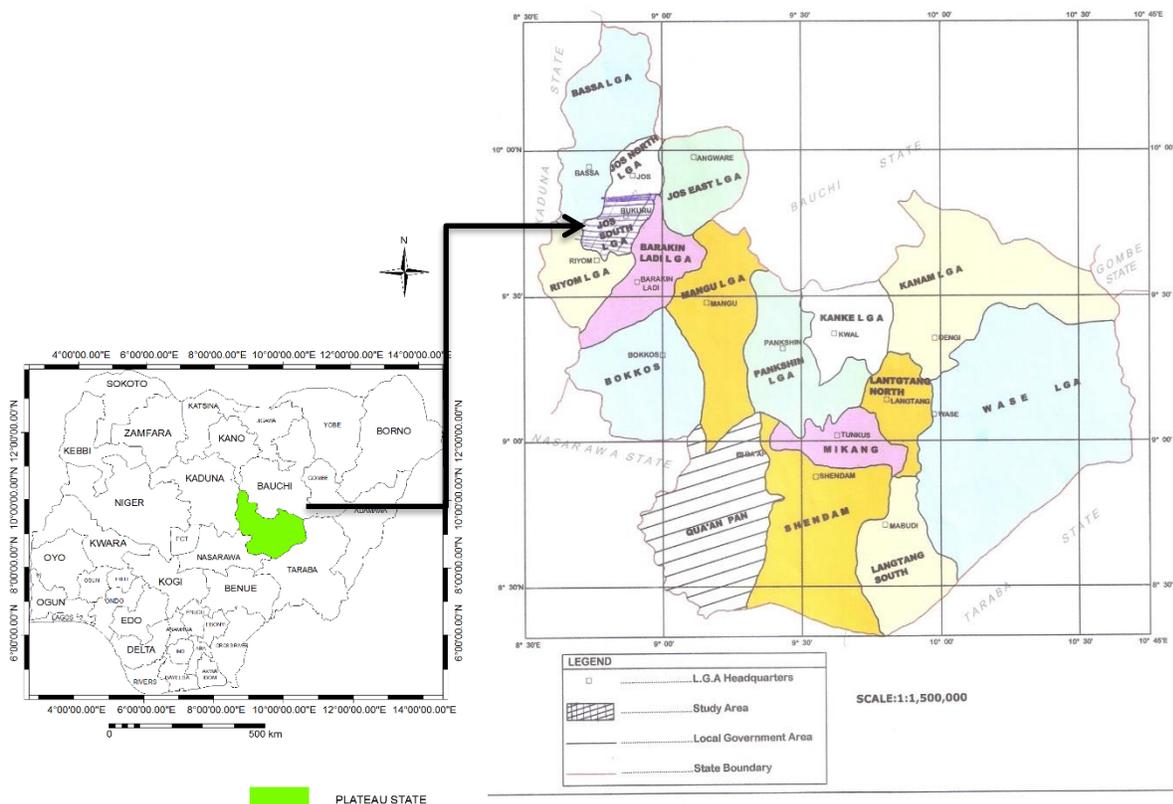
## DISCUSSION:

The current study revealed that herbal medicine is used among women during their pregnancy. As compared with a study on prevalence of herbal medicine use among pregnant women from the Middle East which varied from 22.3 % to 82.3 % [11]. Most

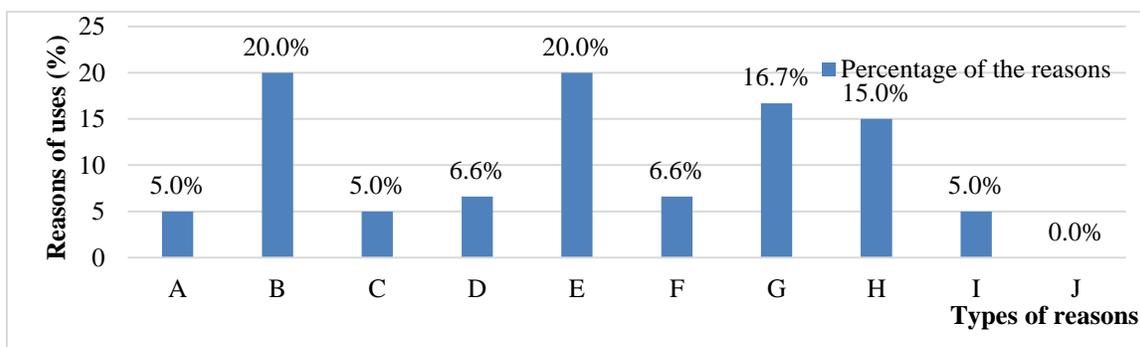
women in the studies were farmers (33.3 %), housewives (26.7 %), students (23.3 %) and civil servant of which their educational level was not above secondary school. These demographics have no impact on the use of herbal medicine. In Mali, a study found that maternal demographic characteristics were not

associated with use of medicinal plants in pregnancy [12]. Commonly used herbs were ginger, garlic, pawpaw, scent leaves, guava leaves, Moringa, mango leaves and

peppermint. On the other hand the herbs most commonly used in Australia, Norway, and Tuscany were raspberry, fennel, and St. John's Wort [8].



Source: Cartographic Section Ministry of Land Survey and Town Planning, Jos  
**Figure 1:** Map of Plateau State in Nigeria and the study area



**Figure 2:** Reasons for Use of Herbal Medicine During Pregnancy

**A**=More Effective than Conventional Medicine; **B**= More Effective than Conventional Medicine for some Medications; **C**= Herbal Medicine together with Conventional Medicine more effective; **D**= Herbal Medicine has fewer side effects than Conventional Medicine; **E**= Herbal Medicine is easily accessed than Conventional Medicine; **F**= Herbal Medicine is less expensive than Conventional Medicine ; **G**= Herbal Medicine is more accessible without Doctor's prescription; **H**= Herbal Medicine effects faster than Conventional Medicine in some conditions; **I**= Prefer the use of Herbal Medicine for some conditions during pregnancy. **J**= Not aware of any birth defect(s) associated with the use Herbal Medicine during Pregnancy

**Table 6.** Conditions for Taking Herbal Medicines

Condition	Frequency	Percentage	Plant Recipes	Herbal Medicine Use
Pain	11	3.6	Blended	Ginger
Stretch mark	24	8.0	Paste	Neem plant
Cold and flu	36	12.0	Blended	Ginger and garlic
Morning sickness	26	8.6	Fruit	Pawpaw
Stomach discomfort	13	4.3	Tea	Scent leaves
Headache	2	0.6	Tea	Scent leaves
Immunity	9	3.0	Bulb	Garlic
Blood pressure control	4	1.3	Bulb	Garlic
None	175	58.3	---	---

**Table 7:** Active Constituents of the Herbs Used

Herbal Medicine	Indications for Use	Active Constituents
Ginger	Nausea and vomiting	Gingerols and shogaols [29]
Garlic	Increase immunity	Alliin [30]
Pawpaw	Morning sickness	Molic acid, Vit. C, Riboflavin [23]
Mango	Source of energy	Vit. A, B6 & C, Folic acid, iron [6]
Neem	Stretch mark reduction	Azadirachtin [31]
Moringa	Breast milk production	Zinc, protein, calcium, iron [32]
Guava	Prevent gestational diabetes	Calcium, phosphorus, Vit. A & C [31]
Scent leaf	Stomach discomfort	Boron and Anetol compounds, Eugenol [33]
Peppermint	Relieve stress and anxiety	Menthol and Menthone [12]

**Table 8:** Recommendation/Informants on the Use of Herbal Medicine

Recommendation	Frequency	Percentage
Family	94	31.3
Other pregnant women	80	26.7
Pharmacist	3	1.0
None	123	41.0

## APPENDIX

### QUESTIONNAIRE USED FOR THE SURVEY

#### DEMOGRAPHIC DATA

SEX: Female

AGE: (a) 17-30 (b) 30-40 (c) 40-50 (d) 50-60.

OCCUPATION: (a) Student (B) Farmer (C) House wife (D) Civil servant

Others (please specify) \_\_\_\_\_

EDUCATIONAL LEVEL: (A) No Formal Education (B) Primary school (C) secondary school (D) Higher Education

#### PARTS AND PATTERN OF HERBAL MEDICINE USE

- Which herb(s) do you use or have used? \_\_\_\_\_
- Which condition(s) have you used or using the herbal medicine for? \_\_\_\_\_
- How often do you take the herbal medicines? \_\_\_\_\_
- Do you know the part of the plant used for the preparation of the herbal medicines? Please specify \_\_\_\_\_
- Who recommended the herbal medicine?
  - Family/friend \_\_\_\_\_
  - Pharmacist \_\_\_\_\_
  - Other pregnant women \_\_\_\_\_
  - Gynecologist \_\_\_\_\_
- Where did you get the information about the use of herbal medicine from?
  - family/friend \_\_\_\_\_
  - Books/News paper \_\_\_\_\_
  - Internet \_\_\_\_\_

- iv. Herbal store \_\_\_\_\_  
 v. Pharmacy \_\_\_\_\_  
 vi. Television \_\_\_\_\_  
 vii. Physician \_\_\_\_\_  
 7. In which trimester do you use the herbal medicine?  
 i. First \_\_\_\_\_  
 ii. Second \_\_\_\_\_  
 iii. Third \_\_\_\_\_  
 vi. None \_\_\_\_\_

#### REASONS FOR USE OF HERBAL MEDICINE DURING PREGNANCY

		NO	YES	I THINK SO	I DON'T KNOW
1.	Is herbal medicine more effective than conventional medicine?				
2.	Is herbal medicine more effective than conventional for some medications?				
3.	Is herbal medicine together with conventional medicines effective?				
4.	Are there fewer side effects with herbal medicine than conventional medicine?				
5.	Is herbal medicine easily accessed than conventional medicine?				
6.	Less expensive than conventional medicine.				
7.	More accessible without doctor's prescription.				
8.	In some conditions, herbal medicine effects are faster than conventional medicine.				
9.	Prefer the use of herbal medicine for some conditions during pregnancy				
10.	Are you aware of any birth defect(s) associated with the use of herbal medicines during pregnancy? If yes please specify				

The use of the herbal products varied with the trimester and associated pregnancy-related problems. Although herbal products may offer a benefit, it is important to detect even small risk that would significantly affect the risk-benefit ratio in pregnancy. Evidence on efficacy and safety in pregnancy for most of these herbs is limited. A meta-analysis reported that ginger is safe and efficacious in nausea and vomiting during pregnancy [13]. A high incidence of threatened miscarriages and preterm labor have been reported with the use of chamomile and licorice during pregnancy [11]. In a review on 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 safe in 12 % and 15 % of the studies, respectively [14]. Excessive use of peppermint is contraindicated in early pregnancy due to its emmenagogue

effects [15]. Most of the herbs are safe when used in moderation and excessive consumption can produce unknown effects [16]. For example, although the caffeine content in green tea is 30-60 % less than in coffee, it is recommended to avoid consumption of large quantities due to its interference with various metabolic processes [17]. The fact that these unsafe herbs are among those commonly used is a matter of concern.

The majority of studies reported maximum use of herbs during the first trimester; probably due to the higher incidence of pregnancy-related problems during this period. Most women are unaware that the first trimester is the most critical period of pregnancy when fetal organogenesis occurs and utmost care should be taken to reduce the risk of fetal morbidity and mortality [18]. It is a well-documented fact that the risk in

pregnancy is unknown for 91.2 % of the approved medications [19]. The use of herbal products which are not usually tested in clinical trials during pregnancy could result in immense risk to the mother and fetus [20].

Since herbal medicine is a part of traditional medicine, they are not part of the FDA (food, drug and administration) pregnancy categories giving a false impression of safety. The extracts of these herbal drugs contain numerous active molecules that could elicit adverse effects including teratogenicity [11]. Moreover, these preparations are sold as unlicensed food supplements or as over-the-counter items, which are not regulated with the same scrutiny as conventional drugs thus increasing the probability of contamination or adulteration with poisonous metals, non-declared herbs or conventional medicines [21]. Use of herbal medicine concurrently with conventional medications could result in herb-drug interactions and undesirable effects [22]. Due to the widespread use of herbal drugs during pregnancy, there is a need for regulation of these drugs to ensure their safety and determine the efficacy and constituents of the preparations.

Family and other pregnant women were the common referral/information sources in the studies representing 31.3 and 26.7 % respectively which is in agreement with Nergard and coworkers who found that the family and friends were the most represented source of recommendation [12]. There is a high prevalence of use of alternative medicine in the general population and suggestions for its use in pregnancy are typically based on individuals' own experience or of those around them [23]. The scientific rationale in using these medications have to be considered and this insight may be lacking in these cases. The studies reviewed also reported healthcare professionals as the source of information (1.0 %). In a study from Norway, 80.7 % of the physicians rated their knowledge of herbal drugs to be poor [24]. Therefore, health care

professionals should update their knowledge on the efficacy; potential risks, possible herb-drug interactions and consequences, and the key principles applied to the administration of herbs during pregnancy and should also screen their patients for use of herbal medicines [25]. Two studies, one from Iran [26] and another from Palestine [27] reported that 37.8 % and 65.8 % of pregnant women, respectively, informed their physicians about the use of herbal medicines.

Pregnant women need to inform their physician about any herbs used preferably before use. Also physicians should specifically ask about herbs usage and document it in the patient record. Pregnant women should be informed of the potential risks posed by herbs during pregnancy and advised to avoid their use.

Herbal medicines were commonly perceived to be more effective for some conditions, have fewer side effects and more accessible without doctor's prescription than conventional medicines. That is why its use by the population is over 80 %, which is in agreement with the reported work of Middle East [11]. Although they are considered safe, in reality it is known that the active ingredients in herbs can cause serious side effect as the quantity consumed is usually not known [11]. Therefore pregnant women should be trained to increase their awareness regarding the effects of herbal medications and the importance of taking guidance from their healthcare providers.

Many countries have not researched into this area of concern. The current work sheds light on the perception about the use of herbal medicine in pregnancy, reasons for use, plant parts used and efficacy of the herbal products used by pregnant women in the treatment of some conditions.

Different studies have shown that many women used one or more herbal medicine during pregnancy. Some women used herbal medicine in first trimester while

others used it in second trimester or third trimester or throughout pregnancy. The use of herbal medicine during pregnancy is a common phenomenon. However further investigations are needed to demonstrate the safety of the medicinal plants used during pregnancy.

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