Use of herbal medicines during pregnancy in a group of Bangladeshi women

Sadia Jahan a,⁎, Zannatul Mannuna Mozumder a, Diponkor Kumar Shill b

a Department of Pharmacy, Faculty of Science, Comilla University, Bangladesh
b Department of Pharmacy, Faculty of Science and Engineering, East West University, Bangladesh

ARTICLE INFO

Keywords:
Herb
Pregnancy
Bangladesh

ABSTRACT

Background: Pregnancy-related illnesses are commonly treated by herbal medicines in our country as well as around the world.

Objectives: The purpose of this study was to find out how common herbal use is among Bangladeshi pregnant women, what factors influence it, and how it affects pregnancy outcomes.

Methods: Random sampling was done among women who gave birth between July and September 2021 in the maternity ward of an NGO-based clinic and were requested to participate in the face-to-face questionnaire-based survey.

Results: 275 women (71.80%) out of 383 used herbs during their pregnancy. Only 27.42% of women who used herbs informed their doctors, and 91.03% of users reported no side effects. Most users thought that herbs were safer than allopathic medications (71.8%). The ground behind the choosing herb was suggestion from family members or self-medication (34.73% and 31.83%, respectively). Ginger (Zingiber officinale Roscoe) (73.10%), lemon (Citrus limon L. Burm. F) (71.27%), black seed (Nigella sativa) (66.55%), mustard oil (Brassica Juncea Mane Kancor) (65.45%), and prune (Prunus domestica) (41.45%) were the most widely utilized herbs. The majority of women used herbs on a daily basis. There were statistically significant differences in several socio-demographic characteristics and pregnancy outcomes between herb users and non-users.

Conclusions: The usage of herbs throughout pregnancy is quite prevalent amid Bangladeshi womenfolk, according to this study. Herbs appear to be safe when used often during pregnancy. Furthermore, physicians or medical practitioners have to play a vital role in ensuring the safe usage of herbs among pregnant women.

1. Introduction

Herbal medications are commonly viewed by pregnant women as a safe, natural substitute for conventional drugs, and they are frequently used to maintain their health or manage non-life threatening issues (Illamola et al., 2020). Herbal remedies are herbs, herbal components, herbal supplements, and final herbal goods that comprise plant materials as active substances (Organization, 2020). Despite minimal scientific evidence demonstrating the safety profile of herbal therapy, it is widely used in various regions of the world, notably in developing countries (Aljofan and Alkhamaisheh, 2020). Herbal medicines are often used as an adjunct to conventional drugs rather than as a replacement (Kennedy et al., 2013). Management of gastrointestinal infections as well as cold and flu symptoms seem to be the most main triggers for use. Herbal treatments are chosen over contemporary medicine because they are thought to be safer for the unborn child (John and Shantakumari, 2015). Ginger, cranberry, raspberry leaf, chamomile, peppermint, thyme, green tea, sage, anise, garlic, and aloe vera are the most commonly used herbs (Laelago, 2018). The prevalence of utilization of herbal medicine during pregnancy fluctuates according to region, ethnicity, educational and socioeconomic status (El Hajj and Holst, 2020). The wide variety of herbal therapies and their practices across countries makes scientifically assessing and governing them exceedingly difficult (Benzie and Wachtel-Galor, 2011). Regardless of the fact that the use of herbal is on the rise during pregnancy, clinical evidence characterizing their frequency and supporting their risk/benefit profile is scant (Vitalone et al., 2021).

Herbs can cause serious fetal abnormalities, interact with prescription drugs, and have unanticipated side effects during pregnancy and childbirth. So, details of herb use during pregnancy along with duration and frequency of usage are important to know for the well-being of both mother and baby. However, there is relatively little documented data on the use of herbal products during pregnancy in Bangladesh. The aim of this study is to see if herbal intake has an impact on pregnancy

⁎ Corresponding author.
E-mail address: sadiajahan@cou.ac.bd (S. Jahan).

https://doi.org/10.1016/j.heliyon.2022.e08854
Received 10 December 2021; Received in revised form 29 December 2021; Accepted 25 January 2022
2405-8440/© 2022 The Author(s). Published by Elsevier Ltd. This is an open access article under the CC BY-NC-ND license (http://creativecommons.org/licenses/by-nc-nd/4.0/).
Table 1. Association between socio-demographic features as well as the use of herbs throughout pregnancy period.

| Variable          | User (N = 275, 71.80%) (n, %) | Non-user (N = 108, 28.20%) (n, %) | p-Value |
|-------------------|-------------------------------|-----------------------------------|---------|
| Age in years      |                               |                                   |         |
| Less than 20      | 37 (13.45)                    | 0 (0.00)                          | <0.001  |
| 20-30             | 225 (85.45)                   | 108 (100.00)                      |         |
| 31-40             | 3 (1.09)                      | 0 (0.00)                          |         |
| Living Place      |                               |                                   |         |
| Rural             | 177 (64.36)                   | 52 (48.15)                        | 0.067   |
| Urban             | 98 (35.64)                    | 56 (51.85)                        |         |
| Educational Level |                               |                                   |         |
| Primary           | 2 (0.73)                      | 0 (0.00)                          | <0.001  |
| High School       | 140 (50.91)                   | 98 (90.74)                        |         |
| College           | 109 (39.64)                   | 10 (9.26)                         |         |
| University Education | 24 (8.73)                  | 0 (0.00)                          |         |
| Employment        |                               |                                   |         |
| Yes               | 87 (31.64)                    | 15 (13.89)                        | <0.001  |
| No                | 188 (68.36)                   | 93 (85.11)                        |         |
| Chronic Disease   |                               |                                   |         |
| Yes               | 31 (11.27)                    | 0 (0.00)                          | <0.001  |
| No                | 244 (88.73)                   | 108 (100.00)                      |         |
| Parity            |                               |                                   |         |
| First Child       | 192 (69.82)                   | 108 (100.00)                      | <0.001  |
| More than one     | 83 (30.18)                    | 0 (0.00)                          |         |

consequences in a population of Bangladeshi women, to determine how common herbal use is among pregnant women, to recognize the most commonly used herbs, to explore the impact of socio-demographic characteristics on herbal product use, also to see if herbal intake has an impact on gestation outcomes.

2. Methods

The study was done as a questionnaire-based cross-sectional survey in the maternity ward of Surjer Hashi Clinic in Cumilla from July to September 2021, after receiving approval from the clinic’s management. A questionnaire-based cross-sectional survey was used to conduct the research. According to hospital data, the expected number of women giving birth in the maternity unit was about 400 each month, or over 1,200 throughout pregnancy period. The number and percentage of women who took herbal supplements during their pregnancy period is summed down in Table 2. The most recurrently herbs were Zingiber officinale Roscoe (ginger) (73.10%), Citrus limon (L.) Burm. f. (lemon) (71.27%), Nigella sativa (black seed) (66.55%), Brassica Juncea Mane Kancor (mustard) (65.45%), Prunus domestica (prune) (41.45%), and Allium sativum L. (garlic) (39.27%). Some females (30.81%) were frequent users, although in the majority of cases, herbs were only used as required. The most frequent reasons for using herbs were: nausea, constipation, cough, abdominal discomfort, heartburn, and to improve immunity. Almost all of the herbs were administered orally, with three cases involving topical preparations. Correlation amongst pregnancy or neonatal characteristics and the utilization of herbs throughout pregnancy is embodied in Table 3.

Two hundred and four women delivered after completing the full term (74.18%) with 98.54% of caesarian deliveries. The majority of the newborns weighed between 2 and 3 kg. Some neonates had issues at birth (25, or 8.97%). Commonly reported issues include: twelve had respiratory problems, eight suffered with rash and five neonates’ mother did not know what the exact problem was. In case of pregnancy characteristics or neonatal outcomes, there were statistically significant differences between herb users and non-users, as shown in Table 3.

4. Discussion

A large majority of pregnant women (71.80%) consumed herbs in this study, which is similar to a former study performed in Bangladesh in 2018, which reported that 70% of expectant mothers took herbs (Ahmed et al., 2018). Similar results have been reported in other countries, such as Uganda, where 70.4% used herbs during their most recent pregnancy (Muteebwa et al., 2021). However, the prevalence of herb utilization in our research is higher than in other research conducted previously. For example, in the United Kingdom, Lone Holst et al. found that among 578 mothers between November 2007 and February 2008, 334 (57.8%) reported use of herbal remedies during pregnancy (Holst et al., 2009). In another study, the percentage among a group of women in Norway was 22.5% (Nnaemeka et al., 2021). In Australia, in 2002, 16% of women reported using at least one herbal supplement throughout their pregnancy period (Pinn and Pallett, 2002) that augmented to 36% of women in 2011 (Forster et al., 2006). In a regional hospital in Nigeria, herbal medicine consumption was found to be 36.8% among pregnant and lactating mothers (Oaru et al., 2016). In Kenya, about 12% of women took herb throughout their pregnancy cycle during January and February, 2012 (Mothsapi, 2014).

Zingiber officinale Roscoe (ginger), Nigella sativa (black seed), Citrus limon (L.) Burm. f. (lemon), Brassica Juncea Mane Kancor (mustard oil), Prunus domestica (prune), and Allium sativum L. (garlic) were the most commonly mentioned herbs in this study, which is similar to another study performed in our country (Ahmed et al., 2018). Ginger [4], [20], garlic [20], peppermint [5], and Chinese Okra [18] have been the most prevalent herbs in other studies. Given that common herbs vary by country and culture, this kind of variation is acceptable.
A large majority of women took ginger (73.10%) in this study, and the use of ginger during pregnancy was not linked to an increased incidence of congenital abnormalities (Heitmann et al., 2013). It is also beneficial for reducing the severity of nausea tendency during pregnancy, as per previous findings (Vutyavanich et al., 2001). Black seed was one of the most regularly used herbs during pregnancy, and supplementing with it may aid in the development of the child’s immune system and reduce the severity of atopic dermatitis (Hwang et al., 2021). Unfortunately, there are not enough scientific reports of black seed in humans about its use and safety during pregnancy. Despite the fact that lemon is a common herb, there is no evidence about its use and safety for pregnant mothers (Akalin Uruşak, 2021). There is no conclusive evidence that garlic causes stillbirth, malformation, or teratogenicity in the fetus (Ahmed et al., 2017). Intake of peppermint during pregnancy has not been demonstrated to be hazardous to the mother or the fetus in human studies (Ahmed et al., 2017). Eating too much peppermint may cause premature labor or abortion (Gruenwald et al., 2007). In this study, the most prominent reasons for using herbs during pregnancy were for illness, cough, skin care, and gastrointestinal problems. This is compatible with the results of other research (Ahmed et al., 2018).

The use of aloe on the skin by pregnant women is unlikely to be hazardous (Johnston, 2006). But, it must not be used by mouth during pregnancy because anthraquinones are present in aloe latex, that can stimulate the uterus that may cause premature labor or abortion (Gruenwald et al., 2007). The use of aloe on the skin by pregnant women is unlikely to be hazardous (Johnston, 2006). But, it must not be used by mouth during pregnancy because anthraquinones are present in aloe latex, that can stimulate the uterus that may cause premature labor or abortion (Gruenwald et al., 2007). In this study, the most prominent reasons for using herbs during pregnancy were for illness, cough, skin care, and gastrointestinal problems. This is compatible with the results of other research (Ahmed et al., 2018).

The higher prevalence of herb use during the third trimester (50.91 %) could be due to mothers’ increased concern for the development of the baby’s body structure and organ system during this period. The majority of users (71.8%) believed herbs were safer than medicines, which may be relevant considering that 91.03% of them reported no negative effects from any herb. Informal sources of information, such as their own views and friends/family, were cited by women as being critical in their decision to explore herbal treatment, which is consistent with previous findings (Kennedy et al., 2013) (John and Shantakumari, 2015) (Mothupi, 2014) (James et al., 2018). Also, only a small percentage of women (27.42%) reported notifying their doctor that they were using herbal products. So, proper guidance for pregnant women is demanded. In this case, doctors need to play a significant role in inquiring about herbal use among women, as some women may forget to inform them. In many other studies, the proportion of clinicians who

### Table 2. The most frequently used herbs and the reported reasons for use (N = 275).

| Family | Scientific Name | Traditional Name | Number (n) | Percentage (%) | Routes of Administration | Aim of Use |
|--------|----------------|-----------------|------------|----------------|--------------------------|------------|
| Lamiaceae | Mentha piperita L. | Peppermint | 44 | 16.00 | Oral | Nausea/vomiting |
| Lamiaceae | Prunus domestica | Prune | 114 | 41.45 | Oral | Constipation |
| Liliaceae | Allium sativum L. | Garlic | 108 | 39.27 | Oral | Cold flu |
| Lamiaceae | Mentha piperita L. | Peppermint | 44 | 16.00 | Oral | Cough/cold |
| Combretaceae | Terminalia chebula | Myrobalan | 42 | 15.97 | Oral | Hypertension |
| Zingiberaceae | Zingiber officinale Roscoe | Ginger | 201 | 73.10 | Oral | Nausea/vomiting |
| Rutaceae | Citrus limon (L.) Burm. F | Lemon | 196 | 71.27 | Oral | Cough/cold |
| Zingiberaceae | Cyrtomium falcatum (L.) Merr | Turmeric | 49 | 17.82 | Topical | Nausea |
| Zingiberaceae | Myrobalan | Myrobalan | 42 | 15.27 | Oral | Cough/cold |
| Zingiberaceae | Aloe barbadensis miller | Aloe vera | 78 | 28.36 | Topical, Oral | Skin Care |
| Zingiberaceae | Zingiber of Zingiber officinale Roscoe | Ginger | 201 | 73.10 | Oral | Nausea/vomiting |
| Lamiaceae | Mentha piperita L. | Peppermint | 44 | 16.00 | Oral | Cough/cold |
| Lamiaceae | Prunus domestica | Prune | 114 | 41.45 | Oral | Constipation |
| Liliaceae | Allium sativum L. | Garlic | 108 | 39.27 | Oral | Cold flu |
| Lamiaceae | Mentha piperita L. | Peppermint | 44 | 16.00 | Oral | Cough/cold |
| Combretaceae | Terminalia chebula | Myrobalan | 42 | 15.27 | Oral | Hypertension |
| Zingiberaceae | Zingiber officinale Roscoe | Ginger | 201 | 73.10 | Oral | Nausea/vomiting |
| Rutaceae | Citrus limon (L.) Burm. F | Lemon | 196 | 71.27 | Oral | Cough/cold |
| Zingiberaceae | Cyrtomium falcatum (L.) Merr | Turmeric | 49 | 17.82 | Topical | Nausea |
| Zingiberaceae | Myrobalan | Myrobalan | 42 | 15.27 | Oral | Cough/cold |
| Zingiberaceae | Aloe barbadensis miller | Aloe vera | 78 | 28.36 | Topical, Oral | Skin Care |
| Zingiberaceae | Zingiber of Zingiber officinale Roscoe | Ginger | 201 | 73.10 | Oral | Nausea/vomiting |

### Table 3. Association between pregnancy and neonatal characteristics and the utilization of herbs throughout pregnancy.

| Variable | User (N = 275, 71.80%) (n, %) | Non-user (N = 108, 28.20%) (n, %) | p-Value |
|----------|------------------------------|---------------------------------|---------|
| Gestational age in weeks | | | |
| 38–42 | 204 (74.18) | 0 (0.00) | <0.001 |
| Less than 42 | 71 (25.82) | 108 (100.00) | | |
| More than 42 | 0 (0.00) | 0 (0.00) | | |

| Delivery type | User (N = 275, 71.80%) (n, %) | Non-user (N = 108, 28.20%) (n, %) | p-Value |
|---------------|------------------------------|---------------------------------|---------|
| Normal | 4 (1.46) | 0 (0.00) | 0.468 |
| Caeasarean | 271 (98.54) | 108 (100.00) | | |

| Medical Problems at Birth | User (N = 275, 71.80%) (n, %) | Non-user (N = 108, 28.20%) (n, %) | p-Value |
|--------------------------|------------------------------|---------------------------------|---------|
| Yes | 25 (8.97) | 0 (0.00) | 0.049 |
| No | 250 (91.03) | 108 (100.00) | | |
were informed ranged from 4.8% to 65.8% (James et al., 2018) (Holst et al., 2009) (Mothupi, 2014) (Adawi, 2012).

The oral method of administration was the most preferred among pregnant women in our study, and herbs were taken on a daily basis, indicating habitual use. As in previous studies, there were statistically significant differences between the socio-demographic characteristics of the sample and the usage of herbs (Kennedy et al., 2013) (Ahmed et al., 2018). In this study, significant statistical differences in pregnancy and neonatal outcomes were found between herb users and non-users, which is similar to findings from other studies (Guzzolini et al., 2010) (Nordeng et al., 2011). Obviously, further investigations are required to ascertain the direct relationship between herb use and pregnancy outcomes like gestational age or birth weight.

The fact that the entire survey was completed during the pandemic adds to the study’s limitations. As a result, some respondents expressed skepticism about participating in the study. Furthermore, due to the unfavorable circumstances, an in-depth analysis of the relationship between herb use and pregnancy outcome was not possible.

5. Conclusion

The usage of herbs was quite common among the pregnant women in this study. Despite the fact that women used herbs on a daily basis, no negative effects on pregnant women or newborns have been reported. Further extensive research is demanded to govern the safety profile of herbs for treating pregnancy-related issues. Physicians and other medical experts must play an essential role in ensuring that pregnant women are safe when using herbs.

Declarations

Author contribution statement

Sadia Jahan: Conceived and designed the experiments; Analyzed and interpreted the data; Wrote the paper.

Zannatul Mamnuna Mozumder: performed the experiments; contributed reagents, materials, analysis tools or data.

Diponkor Kumar Shillb: contributed reagents, materials, analysis tools or data.

Funding statement

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

Data availability statement

The authors are unable or have chosen not to specify which data has been used.

Declaration of interests statement

The authors declare no conflict of interest.

Additional information

Supplementary content related to this article has been published online at https://doi.org/10.1016/j.heliyon.2022.e08854.