

PEER REVIEW HISTORY

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ARTICLE DETAILS

TITLE (PROVISIONAL)	Medicinal plants used among pregnant women in a tertiary teaching hospital in Jimma, Ethiopia: a cross-sectional study
AUTHORS	Ahmed, Seid Mussa; Sundby, Johanne; Aragaw, Yesuf; Nordeng, Hedvig

VERSION 1 – REVIEW

REVIEWER	Novotna, Barbora Charles University
REVIEW RETURNED	29-Dec-2020

GENERAL COMMENTS	<p>This article is highly relevant due to the scarcity of material on the use of medicinal plants during pregnancy in Africa. This is an important area of interest, since pregnancy is particularly vulnerable period for the woman and the healer (or popular knowledge). The study points to plants that are potentially harmful despite being used during pregnancy, but could point to other plants or other aspects that could reveal it was potentially safe. Despite rather large sample of respondents, the study maintains sensitive critical, analytical and thoughtful character.</p> <p>I will therefore make only few comments. First, there is a repetition of the same information in the chapter on Maternal diseases, pregnancy-related illness and treatments. The line 87 to 90 and 95 to 97 seems almost identical to the information provided within the lines 33-37. Instead, these could be elaborated together to avoid repetitions and enhance clarity. Secondly, I would be interested in more data or analysis on abortions, as its the potential countereffect of use of certain medical plants and more complex social dimensions on the use of medical plants in pregnancy. Lastly, the conclusion could be more detailed and outline at least some important details, as it seems very general and less informative than the rest of the article.</p>
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REVIEWER	Khanijahani, Ahmad Duquesne University
REVIEW RETURNED	19-Jan-2021

GENERAL COMMENTS	<p>Comments to the Authors</p> <p>bmjopen-2020-046495: Medicinal plants used among pregnant women in a tertiary teaching hospital in Jimma, Ethiopia: a cross-sectional stud</p> <p>Thanks for providing me with this opportunity to read and review this manuscript. This study aimed to estimate the use of different medicinal herbs among pregnant women in Ethiopia. I began</p>
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reading the manuscript with eagerness and enthusiasm. Although authors have written a reasonably well-organized manuscript, the manuscript's weaknesses are more prevalent in two areas: 1- Design and methods, 2- clarifications in reporting. I have provided my detailed comments below:

Abstract

The abstract is well-structured and is informative enough.

Strengths and limitations of this study

Consider including in the limitations:

Face-to-face interviews can potentially underestimate the use of any medicinal herbs or plants that are culturally unacceptable, or the consumption can be prosecuted as an illegal drug. Authors need to acknowledge this issue at least as a limitation of the study.

Similarly, the reports related to khat chewing and alcohol consumption might be biased or underestimated, especially among the Muslims (that constitute about 1/3 of the country's population and 65.4% of the study population) or any other religious or cultural ethnics or minorities believe that condemn or dislike the habit.

Background

The frontend is well-developed and concise. It also covers the majority of the required content.

Study design and setting

There is a need for a short paragraph explaining the similarities and differences of the population served by this hospital compared to the whole country. Authors have mentioned that this hospital is a referral for about 20 million residents, which is about over 1/5 of the total population of Ethiopia. It will be helpful to give more information about the representativeness and differences of the population compared to the whole country in terms of educational attainment, poverty/income, religious practices, or anything unique to the region or similar to the other regions of the country.

Moreover, the hospital that serves 20 million population appears to have more complicated cases referred from other healthcare settings. This might suggest that women hospitalized in this hospital might represent those with (probably) higher complications than a typical pregnant woman.

Study population and sample size

Lines 141, "a random, but convenience sample" is contradictory. Please expand this part.

Lines 141-146: These inclusion and exclusion criteria can undoubtedly affect the prevalence estimations. This needs to be expanded in the discussion section.

Given that about 65.4% of participants were Muslim, this does not appear to be nearly representative of the whole country which has about 33% Muslim population. Other characteristics also seem disproportionate. This should also be highlighted in the study design and setting.

Data collection and procedures

Given that about 34% of participants were illiterate, it makes sense to use interviewers rather than questionnaires completed by them. However, for the remainder of the patients, a questionnaire filled by the patients (an ensured anonymously) could yield better and sound estimations about the outcome (prevalence) or other characteristics that are not culturally acceptable.

Line 163: It should be indicated that if the authors/researchers developed the questionnaire from scratch or used (customized) a previously-validated questionnaire.

Line 169: I wonder why researchers did not use the same hospital for pilot testing as the one used in the main study. All of these 30 participants were pregnant women or the general public? It should be indicated if it's a different population.

Lines 171-142: Did interviewers have any other tools such as pictures of the plants beside the list of local/regional names to help the patients identify the right plant/herb? (mentioned in line 211).

Measures

Suggest beginning this section with the variable/measure of interest, which is "Use of medicinal plants."

Statistical analysis

Grouping all respondents as users versus nonusers can be further developed by comparing the users of safe and unsafe plants/herbs (additional logistic models).

Several subgroups have very limited observations that can be problematic in the analysis. For example, *Marital status* (Others) only five respondents used medicinal plants. Moreover, *Access to health facility* (No) has only 6 and 4 observations, which widens the Confidence intervals. Maybe subcategorization (detailed grouping) could be helpful here. For example, Instead of "access to health facility" could use (Access to primary care only; access to primary and secondary care; etc.)

Patient and public involvement

Lines 256-258: This study certainly needs ethical approval. However, I can not deduce these lines if the study was reviewed and approved by an IRB. Please include IRB review and Approval code/number and a clear statement indicating the IRB approval.

Results

Line 263: The response rate of 98.6% is very high. I wonder if women perceived that not responding to the interviewers can potentially adversely impact their treatment course. This high response rate needs to be explained and justified, including in the methods section.

Lines 261 through 270 and table 1: I stated earlier that the population is clearly not even a close representation of all country's population. This can be seen by disproportionate Muslim, Oromo ethnic, and many other characteristics. I believe proportionate matching (e.g., propensity Score Matching) techniques could produce better and more representable results. Otherwise, this should be clearly highlighted in the Abstract, Methods, and discussion sections as the significant limitation of the study.

Line 275: please avoid paraphrasing like "Nearly three out of ten women". 28.6% is explanatory enough.

Lines 318 to 320: **Important-** I believe one of the major implications of this study comes from the section that is expected to estimate the prevalence of safe/unsafe herbs (a potentially amount used/consumed). This can help public health policymakers recognize unsafe herbs (contrary to the traditional/popular belief that almost all herbs are safe). Unfortunately, the authors did not expand this part enough.

Discussion

Line 341-343 implies that these findings can represent the general public (all pregnant women in Ethiopia). However, as I pointed out earlier, this is not a good sample of the whole population. This needs to be clarified throughout the manuscript.

340- 342: Authors claimed that there is not a similar study in Ethiopia in a hospital setting. However, reference # 14 cited here is a study conducted among pregnant women in a healthcare setting in the same region.

Lines 347: This is an extensive range (ranging from 0.9% to 96.0%). Additionally, authors need to clarify if this range belongs to Ethiopia or the whole world (given that authors claim there is no such a study and how they justify this wide range). Two cited articles (refs # 14 and 15):# 14 estimates indicate "most commonly *Ocimum lamiifolium* (basil) (37.2%) and *Zingiber officinale* (ginger)

	(36.7%)" among pregnant women in Addis Ababa and Bati, Ethiopia. #15 does not have any study about Ethiopia.
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VERSION 1 – AUTHOR RESPONSE

Responses to reviewers I

Q1). This article is highly relevant due to the scarcity of material on the use of medicinal plants during pregnancy in Africa. This is an important area of interest, since pregnancy is particularly vulnerable period for the woman and the healer (or popular knowledge).

A1). Thank you for your positive feedback.

Q2). The study points to plants that are potentially harmful despite being used during pregnancy, but could point to other plants or other aspects that could reveal it was potentially safe. Despite rather large sample of respondents, the study maintains sensitive critical, analytical and thoughtful character. I will therefore make only few comments. First, there is a repetition of the same information in the chapter on maternal diseases, pregnancy-related illness and treatments. The line 87 to 90 and 95 to 97 seems almost identical to the information provided within the lines 33-37. Instead, these could be elaborated together to avoid repetitions and enhance clarity.

A2). Thank you for the thorough review of our manuscript. We have carefully reviewed this comment and believe that there is no repetition for the following reasons:

1. "Lines 33-37" are in the abstract and provide highlights of the main outcome measures, Methods and Results of the study.
2. "Lines 87 to 90" in the background section and establish the reasons why women rely on medicinal plants for their primary healthcare in Ethiopia.
3. Lines 95 to 97 in the background section give a brief overview of what is currently known from prior studies about the most commonly used medicinal plants, reasons for use and predictors of use during pregnancy.
4. Lines 186 to 197 in the methods section measures, "maternal diseases, pregnancy-related illness and treatments', and provides a methodological description of how data on maternal diseases, pregnancy-related illness and treatments were collected.

We hope that this explanation is satisfactory. Please feel free to clarify if we have misunderstood your comment. These points have slightly changed row numbers: 1). Page 2, lines 33-37; 2). Page 4-5, lines 100-103; 3). Page 5, lines 107-109, and 4). Page 10-11, lines 234-251.

Q3). Secondly, I would be interested in more data or analysis on abortions, as its the potential counter effect of use of certain medical plants and more complex social dimensions on the use of medical plants in pregnancy.

A3). Thank you for this. We agree that this indeed is interesting, and have now elaborated on these results as follows:

“Among the 125 women admitted to the gynaecology wards, 106 (84.8%) were admitted due to elective terminations and/or miscarriages and 19 (15.2%) were admitted due to various pregnancy-related illnesses. Among the women with elective terminations and / or miscarriages, 19 (17.9%) women used one or more medicinal plants during pregnancy (range 1-3): 16 used safe, 9 used medicinal plants requiring cautious, 5 potentially harmful and 11 safety unknown medicinal plants. The 5 women who used potentially unsafe medicinal plants used *Trigonella foenum-graecum* (potential risk of uterine contraction and hypoglycemia), *Ruta chalepensis* (potential risk of uterine contraction and emmenagogue), *Cinnamomum verum* (potential risk of foetal malformation and uterine contraction), *Artemisia abyssinica* (potential risk of toxicity, uterine contraction and emmenagogue), *Croton macrostachyus* (potential risk of toxicity and uterine contraction), *Echinops kebericho* (potential risk of cytotoxicity) and *Hagenia abyssinica* (potential risk of toxicity and uterine contraction) (Supplementary table 4). ” Page 13, Lines 305-317.

Q4). Lastly, the conclusion could be more detailed and outline at least some important details, as it seems very general and less informative than the rest of the article.

A4). We agree with the reviewer and we have expanded the conclusion with more information about our findings. It now reads:

“Almost a third of women at the tertiary hospital in Ethiopia used medicinal plants during pregnancy, most frequently to prepare, induce, reduce the intensity or shorten duration of labour. Seeds and dry plant material was mostly used, sugar the most common excipient and oral route of administration was predominant. The most frequently used medicinal plants were *Linum usitatissimum* L. (flaxseed– use with caution) (22.0%), *Ocimum lamiifolium* L. (damakessie– safety unknown) (3.6%), and *Carica papaya* L. (papaya– use with caution) (3.1%). *O. lamiifolium* was mainly used for treatment of an illness a culturally common illness in Ethiopia called “Mitch”, a febrile illness believed to develop after exposure to excessive sunlight. Few women reported safety concerns regarding medicinal plant use in pregnancy. The most important factors associated with use of medicinal plants in pregnancy were lack of access to health care facilities, hospitalization in the maternity ward and social drug use. Given that women use unsafe plants during pregnancy, increased awareness about potential benefits or risks of medicinal plants use during pregnancy among health care professionals and patients, and increased access to health care facilities are important in order to promote safer pregnancies and better health outcomes for women and their unborn children.” Page 20-21, lines 484-498.

Responses to reviewers II

Q1). Thanks for providing me with this opportunity to read and review this manuscript. This study aimed to estimate the use of different medicinal herbs among pregnant women in Ethiopia. I began reading the manuscript with eagerness and enthusiasm. Although authors have written a reasonably well-organized manuscript, the manuscript's weaknesses are more prevalent in two areas: 1- Design and methods, 2- clarifications in reporting. I have provided my detailed comments below:

A1). Thank you for your constructive criticism. We have tried to address them to the best of our ability.

Abstract

Q2). The abstract is well structured and is informative enough.

A2). Thank you.

Strengths and limitations of this study

Q3). Consider including in the limitations: Face-to-face interviews can potentially underestimate the use of any medicinal herbs or plants that are culturally unacceptable, or the consumption can be prosecuted as an illegal drug. Authors need to acknowledge this issue at least as a limitation of the study.

A3). We agree with the reviewer and now we have acknowledged this potential limitation in the discussion section. It now reads:

“Thirdly, data were collected based on pregnant women’s self-report and thus depended on their accuracy of recall and reporting as well as willingness to disclose utilization. It may well be that the use of medicinal plants is underestimated due to poor recall or underreporting. This may be especially important during face-to-face interviews for certain medicinal herbs, recreational or illicit drugs that are culturally unacceptable. Actual medicinal plant use in pregnancy may therefore be higher in real life, and/or different in other populations and regions in Ethiopia”. Pages 20, lines 475-481.

Q4). Similarly, the reports related to khat chewing and alcohol consumption might be biased or underestimated, especially among the Muslims (that constitute about 1/3 of the country's population and 65.4% of the study population) or any other religious or cultural ethnics or minorities believe that condemn or dislike the habit.

A4). Thank you. We agree with the reviewer and now we have included this in the discussion section. It now reads:

“Secondly, as this study was based in southwest Ethiopia, participants were mostly Muslims and from the Oromo ethnic group. These groups had a lower use of medicinal plants in pregnancy compared to participants who were Orthodox and from the Dawuro ethnic group. Our results will consequently not be generalizable to the entire country. This finding underpins the importance of including ethnic and religious background information in studies on medical plants, as it will have large impacts on utilization and reporting patterns. Thirdly, data were collected based on pregnant women’s self-report and thus depended on their accuracy of recall and reporting as well as willingness to disclose utilization. It may well be that the use of medicinal plants is underestimated due to poor recall or underreporting. This may be especially important during face-to-face interviews for certain medicinal herbs, recreational or illicit drugs that are culturally unacceptable. Actual medicinal plant use in pregnancy may therefore be higher in real life, and/or different in other populations and regions in Ethiopia.” Pages 19-20, lines 469-481.

Background

Q5). The frontend is well-developed and concise. It also covers the majority of the required content.

A5). Thank you for your positive feedback.

Study design and setting

Q6). There is a need for a short paragraph explaining the similarities and differences of the population served by this hospital compared to the whole country. Authors have mentioned that this hospital is a referral for about 20 million residents, which is about over 1/5 of the total population of Ethiopia. It will be helpful to give more information about the representativeness and differences of the population compared to the whole country in terms of educational attainment, poverty/income, religious practices, or anything unique to the region or similar to the other regions of the country.

A6). Thank you for this suggestion. Now we expanded the background description of Ethiopia with information that is especially relevant for this study. It now reads:
“Ethiopia is a landlocked country with a population of approximately 110 million [6]. It is a multi-ethnic, multicultural and multi-religious nation where Christians predominate in the northern highlands and central Ethiopia and Muslims predominate in the north-east, east, south-east and southwest [7]. More than 80% of the population lives in rural areas and 70% of the population are employed in agriculture [6]. The birth rate is 31 births per 1000 inhabitants and infant mortality rate is 35 deaths per 1000 live births [6]. Maternal mortality rate is high with 4 deaths per 1000 live births (world ranking 26th) [6]. Total fertility rate is 4 children born per woman, and mother’s mean age at first birth is 20 years [6]. Physician density is only one per 12,500 inhabitants [6]. Around 80% of the population in Ethiopia use traditional medicine, of which over 95% are of plant origin [8].” Page 4, lines 84-93.

Q7). Moreover, the hospital that serves 20 million population appears to have more complicated cases referred from other healthcare settings. This might suggest that women hospitalized in this hospital might represent those with (probably) higher complications than a typical pregnant woman.

A7). We agree with the reviewer and now we have included this in the discussion section. It now reads:
“Firstly, JUMC is a tertiary referral hospital with a larger proportion of women with pregnancy complications. Our findings may not be representative of women in secondary or primary care.” Page 19, lines 467-469.

Study population and sample size

Q8). Lines 141, "a random, but convenience sample" is contradictory. Please expand this part.

A8). We have revised this section to avoid contradictions. It now reads:
“Participants were consecutively informed about the aim and procedures of the study and written informed consent was obtained from each study participant.” Page 7, lines 151-153.

Q9). Lines 141-146: These inclusion and exclusion criteria can undoubtedly affect the prevalence estimations. This needs to be expanded in the discussion section.

A9). We agree that inclusion and exclusion criteria will impact the prevalence of medicinal plant use in pregnancy. We have revised the discussion to specifically state that difference in prevalence rates between studies can be due to difference in study inclusion and exclusion criteria. It now reads:
“Variation in prevalence may be explained by several factors including differences in study populations and settings, study inclusion and exclusion criteria as well as data collection methods and definitions of medicinal plants.” Page 16, lines 383-385.

Q10). Given that, about 65.4% of participants were Muslim, this does not appear to be nearly representative of the whole country, which has about 33% Muslim population. Other characteristics also seem disproportionate. This should also be highlighted in the study design and setting.

A10). Thank you. We have highlighted it in the background; and we have also described it in the discussion. It now reads:

In the background:

“Ethiopia is a landlocked country with a population of approximately 110 million [6]. It is a multi-ethnic, multicultural and multi-religious nation where Christians predominate in the northern highlands

and central Ethiopia and Muslims predominate in the north-east, east, south-east and southwest [7].”
Page 4, lines 84-87.

In the discussion:

“Secondly, as this study was based in southwest Ethiopia, participants were mostly Muslims and from the Oromo ethnic group. These groups had a higher use of medicinal plants in pregnancy compared to participants who were Orthodox and from the Dawuro ethnic group. Our results will consequently not be generalizable to the entire country. This finding underpins the importance of including ethnic and religious background information in studies on medical plants, as it will have large impacts on utilization and reporting patterns.” Page 19-20, lines 469-475.

Data collection and procedures

Q11). Given that about 34% of participants were illiterate, it makes sense to use interviewers rather than questionnaires completed by them. However, for the remainder of the patients, a questionnaire filled by the patients (an ensured anonymously) could yield better and sound estimations about the outcome (prevalence) or other characteristics that are not culturally acceptable.

A11). We agree with the reviewer that interviews are necessary to be able to include illiterate individual in the study. However, as medicinal plant use is complex to capture and to enable participants to ask clarifying questions, we believe that interview was the most appropriate way to ensure comprehension and completeness of the questionnaire. Moreover, we did not discriminate and use different data collection methods within one study.

Q12). Line 163: It should be indicated that if the authors/researchers developed the questionnaire from scratch or used (customized) a previously-validated questionnaire.

A12). We agree with the reviewer and we have indicated how it was developed. It now reads: “After a thorough review of the literature [9, 12, 22, 26, 27], with special focus on prior studies in African countries, the authors developed the survey questionnaire. It was developed in English and then translated into Amharic and Afan Oromo languages (the predominant local languages) to suit the target population.” Page 8, lines 175-178.”

Q13). Line 169: I wonder why researchers did not use the same hospital for pilot testing as the one used in the main study. All of these 30 participants were pregnant women or the general public? It should be indicated if it's a different population.

A13). Thank you. With regard to pilot testing, we have now made it clearer. It now reads:

“The data collection tool was then piloted on a sample of 30 hospitalized pregnant or lactating women at Shenen Ghibe district hospital found in Jimma city, and based on the results from the pilot, list of 25 commonly used medicinal plants and open-ended questions were included.” Page 8, lines 181-183.

With regard to why we did not use the same hospital for pretesting: To prevent information contamination, we pretested the tool in a separate hospital, Shenen Ghibe district hospital, found in Jimma city.

Q14). Lines 171-142: Did interviewers have any other tools such as pictures of the plants beside the list of local/regional names to help the patients identify the right plant/herb? (Mentioned in line 211).

A14). We did not use pictures of the plants, but used local names of plants to facilitate comprehension and recollection. The face-to-face interviews were important to help to identify the medicinal plants used by the women during pregnancy.

Measures

Q15). Suggest beginning this section with the variable/measure of interest, which is "Use of medicinal plants."

A15). Thank you for this suggestion. We have moved the section on "Use of medicinal plants" to the beginning of Measures. Page 8, line 195.

Statistical analysis

Q16). Grouping all respondents as users versus nonusers can be further developed by comparing the users of safe and unsafe plants/herbs (additional logistic models).

A16). Thank you. We have now provided more descriptive details about the use of safe and unsafe medicinal plant during pregnancy. It now reads:
"Of those pregnant women who used medicinal plants, 14.4% used safe, 12.2% harmful, 3.4% both safe and harmful and 69.9% used one or more medicinal plants that requires cautious use or safety information unavailable. Many women who used safe or harmful medicinal plants have also used one or more plants that requires cautious use or safety information unavailable." Page 15, lines 351-354.

Since there are women who used safe, harmful, and both safe & harmful medicinal plants, the utilization pattern is not amenable for additional logistic regression analysis. Thus, we prefer not to add these to the current study.

Q17). Several subgroups have very limited observations that can be problematic in the analysis. For example, marital status (Others) only five respondents used medicinal plants.

A17). Thank you. We understand that subgroups that have very limited observations can be problematic in the multivariate analysis. We took several measures to address this: 1) Categorization of variables onto larger groups (see table 1). 2) We have reviewed that categorization of variables with low counts in one of the categories (marital status, access to health facility), but have no better way of categorizing these two variables, 3) We have made a careful selection of variable to be included in the multivariable model (based on findings in univariable analyses) and 4) We have checked the robustness of the multivariable model using the Hosmer–Lemeshow test. We retained 100% of participants in the multivariable model.

We indicated we have done the Hosmer–Lemeshow robustness test in the methods section. It now reads: "Robustness of the multivariable model was checked using the Hosmer–Lemeshow test." Page 11, lines 268.

Q18). Moreover, Access to health facility (No) has only 6 and 4 observations, which widens the Confidence intervals. Maybe subcategorization (detailed grouping) could be helpful here. For example, Instead of "access to health facility" could use (Access to primary care only; access to primary and secondary care; etc.).

A18). Please see our reply above, i.e. A17.

Patient and public involvement

Q19). Lines 256-258: This study certainly needs ethical approval. However, I cannot deduce these lines if the study was reviewed and approved by an IRB. Please include IRB review and Approval code/number and a clear statement indicating the IRB approval.

A19). This of course is true. Details of the ethics approval were already indicated in the text, page 21, lines 518-521. It reads:

“Ethics approval: This study was approved by Jimma University Institute of health Institutional Review Board (IRB) (ref. no. IHRPGC 7206/07) in Ethiopia, and Regional Committees for Medical and Health Research Ethics (REK Sør-Øst B) (Ref.no. 2015/2135) in Norway.”

Results

Q20). Line 263: The response rate of 98.6% is very high. I wonder if women perceived that not responding to the interviewers can potentially adversely impact their treatment course. This high response rate needs to be explained and justified, including in the methods section.

A20). As indicated in the Supplementary table 1 (Consent form and Questionnaire), Participation in this study was voluntary and it is indicated in the consent form that withdrawal or not willingness to take part in the study will not have any consequences for their further treatment. It is indicated there:

“Voluntary participation

Participation in this study is voluntary. You can withdraw your consent to participate in the study at any time and without stating any particular reason. This will not have any consequences for your further treatment. If you wish to participate, please sign the declaration of consent at the bottom of this page. In case if you are not able to give written consent (i.e. due to literacy and /or cultural reasons), your oral consent will be sought and documented as equal to a written consent. There are no consequences for women who decide not to participate in this study. The patient’s decision to participate or not will have no impact on the treatment(s) that she receives.”

We believe this text ensures that participants give an informed consent.

With regard to the high response rate, we have included justifications in the Strengths and limitations; and have also described it methods sections. It now reads:

Strengths and limitations:

“The data collectors, pharmacists and nurses, were from the study area with previous data collection experience. Their knowledge about the healthcare system, culture, local languages, and medicinal plants was vital for the personal interviews with the women and clearly contributed to improving the response rate and the quality of collected data.” Page 3 lines 60-64.

Methods:

“Nine trained pharmacists and nurses from the study area, with close supervision of one of the investigators, conducted all interviews and data extractions. ” Page 7, lines 170-172.

Q21). Lines 261 through 270 and table 1: I stated earlier that the population is clearly not even a close representation of all country’s population. This can be seen by disproportionate Muslim, Oromo ethnic, and many other characteristics. I believe proportionate matching (e.g., propensity Score Matching) techniques could produce better and more representable results. Otherwise, this should be

clearly highlighted in the Abstract, Methods, and discussion sections as the significant limitation of the study.

A21). Thank you. We have elaborated on this both in the introduction and in the discussion.. It now reads:

Introduction:

“Ethiopia is a landlocked country with a population of approximately 110 million [6]. It is a multi-ethnic, multicultural and multi-religious nation where Christians predominate in the northern highlands and central Ethiopia and Muslims predominate in the north-east, east, south-east and southwest [7]. More than 80% of the population lives in rural areas and 70% of the population are employed in agriculture [6]. The birth rate is 31 births per 1000 inhabitants and infant mortality rate is 35 deaths per 1000 live births [6]. Maternal mortality rate is high with 4 deaths per 1000 live births (world ranking 26th) [6]. Total fertility rate is 4 children born per woman, and mother’s mean age at first birth is 20 years [6]. Physician density is only one per 12,500 inhabitants [6]. Around 80% of the population in Ethiopia use traditional medicine, of which over 95% are of plant origin [8].” Page 4, lines 84-93.

Discussion:

“...Secondly, as this study was based in southwest Ethiopia, participants were mostly Muslims and from the Oromo ethnic group. These groups had a lower use of medicinal plants in pregnancy compared to participants who were Orthodox and from the Dawuro ethnic group. Our results will consequently not be generalizable to the entire country. This finding underpins the importance of including ethnic and religious background information in studies on medical plants, as it will have large impacts on utilization and reporting patterns”. Page 19-20, lines 469-475.

Moreover, as difference in religious and ethnic groups were limited, we do not believe that use of propensity scores would reveal any different results. Please see table 1.

Q22). Line 275: please avoid paraphrasing like "Nearly three out of ten women". 28.6% is explanatory enough.

A22). We have amended the text as suggested.

It now reads: “In total, 28.6% women had used one or more medicinal plant during their current pregnancy, with an average of 1.5 medicinal plants per woman (range 1 to 8).” Pages 12, lines 290-291.

Q23). Lines 318 to 320: Important- I believe one of the major implications of this study comes from the section that is expected to estimate the prevalence of safe/unsafe herbs (a potentially amount used/consumed). This can help public health policymakers recognize unsafe herbs (contrary to the traditional/popular belief that almost all herbs are safe). Unfortunately, the authors did not expand this part enough.

A23). Thank you. We agree that this is an important point, and have now expanded it.

It now reads:

“Of those pregnant women who used medicinal plants, 14.4% used safe, 12.2% harmful, 3.4% both safe and harmful and 69.9% used one or more medicinal plants that requires cautious use or safety information unavailable. Many women who used safe or harmful medicinal plants have also used one or more plants that requires cautious use or safety information unavailable.” Page 15, lines 351-354.

Discussion

Q24). Line 341-343 implies that these findings can represent the general public (all pregnant women in Ethiopia). However, as I pointed out earlier, this is not a good sample of the whole population. This needs to be clarified throughout the manuscript.

A24). Thank you. Now we have addressed these generalizability concerns in the discussion section. It now reads:

“Despite the size and extensive data collection, this study has several limitations that should be taken into consideration. Firstly, JUMC is a tertiary referral hospital with a larger proportion of women with pregnancy complications. Our findings may not be representative of women in secondary or primary care. Secondly, as this study was based in southwest Ethiopia, participants were mostly Muslims and from the Oromo ethnic group. These groups had a lower use of medicinal plants in pregnancy compared to participants who were Orthodox and from the Dawuro ethnic group. Our results will consequently not be generalizable to the entire country. This finding underpins the importance of including ethnic and religious background information in studies on medical plants, as it will have large impacts on utilization and reporting patterns. Thirdly, data were collected based on pregnant women’s self-report and thus depended on their accuracy of recall and reporting as well as willingness to disclose utilization. It may well be that the use of medicinal plants is underestimated due to poor recall or underreporting. This may be especially important during face-to-face interviews for certain medicinal herbs, recreational or illicit drugs that are culturally unacceptable. Actual medicinal plant use in pregnancy may therefore be higher in real life, and/or different in other populations and regions in Ethiopia.” Page 19-20, lines 466-481.

Q25). 340- 342: Authors claimed that there is not a similar study in Ethiopia in a hospital setting. However, reference # 14 cited here is a study conducted among pregnant women in a healthcare setting in the same region.

A25). Reference #14 was conducted at antenatal care clinics at three health centers in central Ethiopia and one health centre in Northern Ethiopia, which is quite different from the inpatient setting in this study. We have slightly reworded the sentence which now reads:

“To the best of our knowledge, this paper is the first to study medicinal plant use during pregnancy among women in an inpatient setting in Ethiopia.” Page 16, lines 374-375.

Q26). Lines 347: This is an extensive range (ranging from 0.9% to 96.0%). Additionally, authors need to clarify if this range belongs to Ethiopia or the whole world (given that authors claim there is no such a study and how they justify this wide range). Two cited articles (refs # 14 and 15):# 14 estimates indicate "most commonly *Ocimum lamiifolium* (basil) (37.2%) and *Zingiber officinale* (ginger) (36.7%)" among pregnant women in Addis Ababa and Bati, Ethiopia. #15 does not have any study about Ethiopia.

A26). Thank you. The prevalence range represents the whole world (i.e. including Ethiopia) and yes, that reference #15 does not have any study about Ethiopia. Yes, it is wide and indicates the global least and the highest prevalence values. We have modified the sentence and it reads now:

“Prior studies report global prevalence of use of medicinal plants in pregnancy ranging from 0.9% to 96.0% [4, 16]. Studies from Africa, however, report prevalence of medicinal plant use in pregnancy ranging from 2% (Ethiopia) to 100% (Kenya) [4].” Page 16, lines 380-383.

VERSION 2 – REVIEW

REVIEWER	Khanijahani, Ahmad Duquesne University
REVIEW RETURNED	10-Mar-2021

GENERAL COMMENTS	The authors have responded sufficiently to my initial comments and made the changes in the updated version of the manuscript. Especially, the focus on the clarifications regarding the study setting (the country, hospital, ethnic combination, etc.) gives the reader a better understanding of the context. Moreover, the clarification of the limitations of the study and the issues with the representativeness and the generalizability of the findings makes the reader aware of the shortcoming of the study.
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