



BMJ Open Understanding the traditional values and use of okra among pregnant women in western Ethiopia: a qualitative study

Efrem Negash Kushi ^{1,2}, Tefera Belachew ¹, Dessalegn Tamiru¹

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ABSTRACT

Objectives This study explored the traditional values and use of okra among pregnant women, how okra plants are obtained, prepared and used by pregnant women, and the associated beliefs and meanings attached to it in western Ethiopia.

Design Qualitative research.

Setting Rural areas of western Ethiopia.

Participants A purposive sampling technique was used to select a total of 86 pregnant women (14 for in-depth interviews and 72 for focus group discussions) in western Ethiopia.

Results Traditionally okra is used as a source of income and is a common food for guests visiting homes. In line with this, pregnant women in the western part of Ethiopia mainly consumed okra pods. For future consumption and preservation for a long period, they usually transform okra into powder.

Conclusions Other parts of the okra plant rather than pods are not known as a food source and are the most neglected food sources in rural districts of western Ethiopia. The study provides evidence that supports nutritional behavioural change communication interventions on promoting the utilisation of different parts of okra and awareness creation on the nutritional values of okra.

INTRODUCTION

Women in developing countries face malnutrition because of limited intake of a diversified diet.¹ Access to and intake of a diverse diet is a cost-effective strategy to overcome this problem.²⁻³ Rural communities depend on indigenous plants to satisfy the diversity of their food through traditional knowledge.⁴ Likewise, wild food resources play a role in increasing the dietary diversity of pregnant women.⁵

Various wild and edible plant foods are available, particularly in developing countries.⁶ Moreover, the use of wild plants in native diets, religious ceremonies, and for medicinal purposes is common and widespread in Ethiopia.⁷ One of the most common staple diets for the indigenous people of Assosa district, West Ethiopia, is a plant locally known as ‘Kenkase’. It was

STRENGTHS AND LIMITATIONS OF THIS STUDY

- ⇒ This study used in-depth interviews to strengthen the evidence generated through focus group discussions.
- ⇒ Data collection tools were pretested and the native language was considered.
- ⇒ Traditional values and beliefs related to okra consumption were considered.
- ⇒ This study did not explore taboos related to food from the okra plant.
- ⇒ There could be interviewer bias and social desirability bias.

commonly called ‘Okra’ (*Abelmoschus esculentus*).⁸ Okra was first found in Ethiopia and later distributed to other parts of the world while gaining popularity in the West.⁹

Edible plants such as okra play a critical role in ensuring food security and are commonly consumed in food-insecure areas.¹⁰ Okra is an important vegetable crop cultivated in tropical, subtropical and warm-temperature regions of the world.¹¹ It plays an important role in the human diet as a good source of essential nutrients.¹² Furthermore, it is especially important for pregnant women for its folate content and prevents both macronutrient and micronutrient deficiency problems.¹²⁻¹³ For this reason, the consumption and demand of okra increased, which brings more income to the local farmers.¹⁴ On the other hand, most diets in developing countries lack this plant.¹⁵ In line with this, different parts of okra are underused due to a lack of knowledge of their nutrient composition.¹⁶

Okra seed flour has different nutritional compositions (proteins, fat and minerals) and antioxidative potentials which are used for food fortification.¹⁷⁻²⁰ However, okra leaves showed a predominance of carbohydrates, fibres, proteins and minerals that were not significantly affected by food processing.²¹ Thus, the nutritional and biochemical contents of okra are higher



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¹Department of Nutrition and Dietetics, Jimma University, Jimma, Ethiopia

²Department of Public health, Mettu University, Mettu, Ethiopia

Correspondence to

Efrem Negash Kushi;
negashefrem96@gmail.com

in the leaves than in the fruits.^{22 23} On the other hand, dietary fibre, mainly insoluble dietary fibre, is the most abundant macronutrient content of okra pods, followed by total carbohydrates, proteins and different minerals.^{24 25} In line with this, okra pods are rich in active ingredients which are antioxidant, anti-inflammatory, hypoglycaemic, hypolipidaemic and so on.^{26 27}

About 85% of households in rural areas of the world use a diversity of wild edible plants to meet their daily food requirements.²⁸ Likewise, different parts of the okra plant can be processed in various forms for consumption in the Western parts of the world.⁹ Even though okra is the backbone of dietary diversity in developing countries, utilisation of its different parts is neglected and underused.²⁹ In addition to this, evidence is too limited that explore the traditional values and use of okra among pregnant women in resource limited settings including western Ethiopia. Furthermore, preliminary assessment of the utilisation of okra among pregnant women in western Ethiopia indicated that only okra pods were used as food and other parts of the plant were neglected.

Edible plants have the potential to play a central role in addressing food insecurity in sub-Saharan Africa.³⁰ The promotion and utilisation of nutritive indigenous plants like okra could be a cost-effective and sustainable method of preventing nutritional problems.³¹ Similarly, the promotion and consumption of okra could help mitigate household food insecurity and alleviate malnutrition in developing countries like Ethiopia.^{9 16 32} However, studies showed that the consumption of wild edible plants in Ethiopia is very low covering only 5% of the country's region.³³

This calls for further evidence that might have inputs that support efforts of sustainable development goals such as ending hunger, achieving food security, and improving nutrition among nutritionally vulnerable groups such as pregnant women.³⁴ It could also increase awareness and the incomes of small-scale food producers (especially women) with the help of proper research and advocacy.

Therefore, employing a qualitative research method, this study explored the traditional values of the okra plant and its utilisation by pregnant women in the study area. Furthermore, this study aimed to explore how okra was obtained, prepared and consumed as an edible food staple by pregnant women and the associated beliefs and meanings attached to it in western Ethiopia.

METHODS AND MATERIALS

Study setting

This study was conducted in the Sherkole and Assosa districts of western Ethiopia. The Assosa zone is located in the Benishangul-Gumuz regional state of Ethiopia. The indigenous communities in the region are Berta, Gumuz,

Shinasha, Mao and Komo. The staple diet of the community was okra. The regional city is Assosa town which is 670km away from the capital city of Ethiopia with a total population of 405 466.³⁵ There were a total of 8324 and 30049 women in the reproductive age group of Berta communities found in the Sherkole and Assosa districts, respectively.

The climate of the Assosa zone is tropical.³⁶ The livelihood of the study area is subsistence farming which accounts for nearly 95% of the population.³⁷ Similarly, the magnitude of food insecurity in the region (16%) is nearly comparable to that of the national prevalence of food insecurity (23%).³⁸ In line with this, 20.1%, 6.9% and 19.2% of women of reproductive age in the study area are thin, overweight and anaemic, respectively.^{39 40}

Study design

This study used qualitative research to understand how okra plants are obtained, prepared and consumed by pregnant women. In line with this, this study was performed from a constructivist point of view using an interpretative phenomenological perceived eating experience of okra among pregnant women of western Ethiopia. The Standards for Reporting Qualitative Research (SRQR) guidelines were used as well.⁴¹

Sampling procedure

One kebele (the smallest administrative unit of Ethiopia, contained within a district) was selected purposively from each district. Following the selection of kebeles, women with known pregnancies were identified using registry books from health posts and health extension workers in each kebele.⁴²

Selection of study participants

Purposive sampling was used to select participants for this study. Thus, pregnant women of comparable educational status and age were purposively recruited in the focus group discussion (FGD). Similarly, pregnant women who were older than the others and those who had the potential to explore issues were purposively selected for in-depth interviews (IDIs).

Data collection tool

IDIs and FGD guides were used for data collection. The FGD guide was developed to identify parts of the okra used during food processing. They also identified any part of the plant not used and its reason, and the traditional values of the okra part. Each FGD consisted of 8–12 participants and a total of 72 pregnant women were included in the FGD. Similarly, a total of 14 pregnant women were interviewed. The topic guides for each tool were initially prepared in English and translated into the local language (Rutanegna: the language used by the native or indigenous communities of the study area) by a language expert, then back to English to check the consistency of the tool. In line with this, IDI and FGD guides were developed (online supplemental file 1). Both tools (FGD and IDI) were used to triangulate individual and group-level opinions towards parts of the okra plant being used and

its traditional values.⁴³ Finally SRQR guidelines were used (online supplemental file 2).

Data collection procedure

Data were collected from 1 June 2020 to 30 June 2020 by six trained nursing professionals who had experience in qualitative interview techniques. Homogeneous participants of FGDs were gathered at suitable places for discussion. Likewise, the data collectors welcomed the participants, invited them to introduce themselves, and introduced the purpose of the discussion. Thus, IDIs were also conducted at the convenience of each participant. Finally, both FGDs and IDIs were conducted in the local language (Rutanegna). The FGD guide consisted of themes of traditional and health benefits of okra for pregnant women, parts of the okra plant being used, and cultural practices related to okra food processing.

Audio tape recorders and field notes were used during both FGD and IDI sessions. Finally, transcribed verbatim, 45–50 min were used for each FGD while 25–30 min were used for each IDI to be covered. Moreover, the FGDs and IDIs were continued until saturation of information. Thus, a total of seven FGDs, three from Sherkole district and four from Assosa district, were used. Likewise, 14 IDIs, 6 from Sherkole district and 8 from Assosa district, were also considered for this study.

Data quality control

Trustworthiness of the data was ensured with a pretest of both FGD and IDI guidelines carried out at Bambasi district in Assosa zone. Furthermore, the participant discussions and interviews were recorded in the local language to minimise any ambiguities. In line with this, triangulation with the focus group data was used to broaden the in-depth information from the individual-level IDIs in the analysis. In addition to this, clarification for any ambiguities was given to them by the research assistant. Moreover, training of the data collectors and their supervision were also considered.

Patient and public involvement

No patient was involved.

Data processing and analysis

After each FGD and IDI session, an audio-taped voice recorder was replayed to participants to listen and make the necessary correction to the data. Furthermore, data collected in the local language were first translated into English and transcribed by two different language experts. Then their translations were compared for consistency. In line with this, the FGD results were confirmed with those of the IDI.

An inductive approach was used, where the researchers read and reread the transcripts three times to get a good understanding of the context. Transcripts were coded line by line by the researchers and categories were developed, discussed and synthesised to develop broader themes and subthemes. Any discrepancies regarding the codes, categories, themes and subthemes were corrected through team discussions. Then three themes of consumption

Table 1 Sociodemographic characteristics of study participants (n=86), West Ethiopia, 2022

Variable (category)	Data collection method	
	In FGD, number (%)	In IDI, number (%)
District		
Assosa	42 (58.3)	8 (41.7)
Sherkole	30 (41.7)	6 (58.3)
Educational status		
No formal education	22 (68.8)	10 (31.2)
Primary school	50 (92.6)	4 (7.4)
Marital status		
Married	61 (84.7)	9 (64.3)
Widowed	5 (7.0)	3 (21.4)
Divorced	6 (8.3)	2 (14.3)
Religion		
Muslim	70 (97.2)	13 (92.8)
Orthodox	2 (2.8)	1 (7.2)
Age in years		
≤31	59 (81.9)	5 (35.7)
32–43	13 (18.1)	9 (64.3)

FGD, focus group discussion; IDI, in-depth interview.

of okra by pregnant women, cultural practice related to okra food processing and traditional and health benefits of okra for pregnant women were identified. In line with this, six subthemes were identified as well. Finally, thematic analysis was used, where interpretation of the content of the themes and subthemes was carried out.

RESULTS

Sociodemographic characteristics of study participants, West Ethiopia

A total of 86 participants (72 FGD and 14 IDI) were involved in this study. The majority (97.2%) of the FGD participants were Muslim. On the other hand, out of the total participants of IDIs, only four (7.4%) attended primary school (table 1).

Emerging themes and subthemes

Thematic analysis of the transcripts resulted in three themes and six subthemes including okra plant parts consumed, knowledge about okra (its nutritional benefits), how okra is obtained, how okra is prepared, beliefs about okra, and traditional values of okra among pregnant women.

Consumption of okra by pregnant women

Okra plant parts consumed

The results of this study showed that all the study participants had a common practice of using only okra pods as a food source. As a 35-year-old participant of this study stated:

Only the pods of Okra are prepared in different forms to be used as food. No other parts of the Okra plant were utilized. (pregnant woman, FGD)

Furthermore, another participant in this study, aged 30 years, explained:

I am not using other parts of Okra rather than Pods. Until now I have not seen any person consuming other parts of Okra. (Health Extension Worker (HEW), FGD)

Almost all study participants shared common practices in the utilisation of the okra plant part as a food source. In addition to the aforementioned practices of okra plant part utilisation, a 22-year-old woman also stated:

I never practice any parts of the Okra plant as a food rather than its Pods. How can other parts of the plant be edible? How could it be eaten? In my life as well as in my experience no one used other parts of Okra except its Pods. And even I didn't hear this before. (pregnant women, FGD)

This was also supported by the experience of a 25-year-old participant in this study:

Only the Pods of Okra were eaten while the leaves and the stem of Okra were not. Those parts of the plant were not suitable and not known before as a food source. We didn't have any experience of using such parts of Okra. (pregnant women, FGD)

The practice of okra plant part utilisation, which was explored by different FGD members, was also supported by individual-level IDIs. Accordingly, one 28-year-old participant of this study explained:

The seeds, leaves, and the stem of Okra were not eaten. I as well as all my family used only Pods of Okra. Even my grand families were using only Pods of Okra. (pregnant woman, IDI)

Knowledge about okra (its nutritional benefits)

The communities of western Ethiopia used pods of okra for their mucous and viscosity which increases the palatability of okra to be used as food. This was stated by one 37-year-old pregnant woman:

Rather than Pods of Okra, the leaves, and stem of the Okra plant were not eaten because they didn't have any mucous and viscosity. They didn't have also benefits. The mucous nature of okra pods increases my appetite to eat more food. (pregnant woman, IDI)

This study also found that other parts of the okra plant, except the pods, didn't have any nutritional value. This was explained by a 29-year-old pregnant woman:

The pods of okra had many importance or values. I used to prepare it with different food items to make my food delicious. No other parts of the plant had importance like pods. (pregnant woman, IDI)

Cultural practice related to okra food processing among pregnant women

How okra is prepared (forms of diet and preservation)

According to the results of this study, there were different practices of pods (commonly edible parts of okra) of okra during food processing. One 25-year-old respondent in this study explained okra food processing as:

The Pods of Okra were first harvested and sundried, grind to a fine powder. Then prepared as a wot, porridge and eaten along other food groups. In addition to this, salt, oil, and onion were added to Okra during its processing to make it easy for cooking and palatable. (pregnant woman, FGD)

In addition, pods of okra were prepared along with other food groups, as stated by a 35-year-old respondent of this study:

I prepared the flour of Okra Pods along with smoked meat, beans, and tomato which made those foods delicious. But I never prepared with Shiro since the mucous nature of Okra is disappeared and become tasteless. (pregnant woman, FGD)

Moreover, okra pods could be preserved for a long period for use after harvest by making them dry and powdered. This was explained by one 32-year-old respondent:

I made okra pods sundried and ground them to a fine powder to preserve it for a long period. If not sundried, it becomes spoiled. In addition to this, it is not recommended to store the powder Okra on wet surfaces. I only store it on dry surfaces because if the storage place is dry, okra can be preserved for one year. Then the powder of Okra Pods was prepared with dry meat, and beans but not used with cabbage and Potato. (pregnant woman, FGD)

How an okra pod is obtained

According to the findings of this study, the pods of okra were harvested before drying, and precautions were required to be taken during the harvest. This made it comfortable and palatable for use as food. This was explained by a 40-year-old pregnant woman as follows:

During harvest time, I used gloves for my hand prepared locally to prevent my hand from injury. Pods of okra were collected from its plant before it becomes dry. If it became dried on the plant, it loses its mucous and is not comfortable to feed. (pregnant woman, IDI)

Traditional and health benefits of okra for pregnant women

Traditional values of okra

As explored by this study, okra had different traditional and health benefits for pregnant women. It relieved the pain related to gastritis and related problems. As indicated by a 19-year-old participant in this study:

Okra is important for health specifically to get relief of pain when I suffered from abdominal (gastric) pain. It increases my appetite. When I eat foods with Okra, I was taking more amount of food as compared to food taken without Okra. We also used it when we suffer from abdominal pain rather than going to the health facility. We prefer to use Okra for abdominal pain treatment. (pregnant woman, FGD)

According to the findings of this study, okra also gives good strength, improves health and is used to increase life expectancy. As one 41-year-old participant in this study said:

The secret of my strength and my age is Okra. I am still strong enough. While I am eating food prepared from okra pods in the morning, it protects my stomach from any burning sensation. (pregnant woman, IDI)

Accordingly, okra may have a role in neutralising stomach acids. As stated by a 28-year-old participant:

Okra is used to build my body, to provide energy for me, to soften my stool during defecation. Okra is the most comfortable food for me as compared to other food sources. Furthermore, Okra gives me energy during delivery and makes my labor easy. (pregnant woman, FGD)

Okra is also used to increase the income of rural communities in western Ethiopia, especially for pregnant women. As explained by one 40-year-old participant of this study:

In addition to use as a food source, okra also increases our income. For example, one Alkela (local serving material used for measurement) of okra was sold with 400 Ethiopian Birr. (pregnant woman, IDI)

Beliefs of pregnant women about okra

As per the findings of this study, there were different cultural beliefs related to okra. Accordingly, one 32-year-old participant of the study explained:

Okra was added to our daily food, and nothing was eaten without okra in our culture. If there was no okra, we did not eat enough food. Even we invite Okra food when guests come to our home. (health extension worker, FGD)

In line with this, okra could also be used to express happiness and belongingness in the communities of western Ethiopia. As explained by one of the pregnant women:

When there was okra in my dish, I was very happy and also invited this food for whom I want to express my belongs. (pregnant woman, IDI)

DISCUSSION

According to the findings of this study, pregnant women in western Ethiopia used only the pods of okra. However,

different parts of okra were used in different parts of the world.¹² Fresh leaves, buds, pods, stems, seeds and immature fruits can be prepared in different forms as vegetables as compared with only pods of okra eaten in western parts of Ethiopia.⁹ However, those were missed in the diets of pregnant women in western Ethiopia.

The pregnant women in western Ethiopia used pods of okra for their mucous and viscosity which increases the palatability of the okra plant to be used as food. This was consistent with scientific evidence as okra provides mucilaginous consistency after cooking which has medicinal applications when used as a plasma replacement and others.⁹ Thus, the mucous of okra pods during food preparation may increase the taste of the food and make it delicious.

According to the results of this study, there were different practices of pods of okra food processing among pregnant women. The pods of okra were prepared along with other food groups. Moreover, okra pods could be preserved for a long period for use after harvest by making it dry and powdering it. This was consistent with different evidence. Dried okra seed flour is rich in nutrients, which could be used for baking and fortification of foods.⁴⁴ Similarly, the addition of dried okra fruit powder can increase the palatability of different food products.⁴⁵ On the other hand, okra is exported both in fresh as well as in dried form, so size reduction and drying of okra pods can facilitate easy packaging, storage and transport.⁴⁶ Therefore, the traditional preservation method of okra pods among pregnant women in western Ethiopia had different importance which was supported by the aforementioned scientific evidences.

The culture of processing of okra plants among pregnant women in western Ethiopia indicated that there was no experience of using okra seeds as roasted caffeine-free coffee. In line with this, there was no practice of fortification of okra seed flour with different cereals. Likewise, there were no benefits of okra leaves as cabbage or soup. However, okra seed flour and leaves were used in different parts of the world.^{9 47 48} Likewise, okra seeds were used to fortify different cereals to increase their nutrient contents and prevent malnutrition in developing countries.^{13 19 20} In line with this, the okra seed has significant amounts of proteins (22.14%), lipids (14.01%), and high amounts of unsaturated lipids (66.32%), especially oleic acid (20.38%) and linoleic acid (44.48%).^{17 18 49}

As explored by this study, okra had different traditional and health benefits for pregnant women, which relieved the pain related to gastritis and related problems. This is supported by different scientific evidence. Antiadhesive compounds of okra do not enhance *Helicobacter pylori* virulence which can effectively prevent bacterial adhesion and lead to reduced infection rates (gastritis).⁵⁰ In line with this, okra has a gastroprotective effect and it could be a possible therapeutic antiulcer agent.⁵¹ Accordingly, okra may have a role in neutralising stomach acids. Likewise, okra has various bioactive components used for the treatment of gastritis and ulcers comparable to the drug omeprazole.⁵² Therefore, the mucous of okra pods



produced during food processing may neutralise stomach acids and prevent the adherence of *H. pylori* bacteria to the gastric mucosal surface.

According to the findings of this study, the consumption of okra gives good strength. This is also supported by different scientific evidence. The ethanol extracts and polysaccharides of okra have antifatigue effects.⁵³ In line with this, okra seeds were the antifatigue part of okra pods; this is caused by reducing the levels of blood lactic acid and urea nitrogen and enhancing hepatic glycogen storage.⁵⁴

This study found that the consumption of okra makes pregnant women healthy, and is used to increase their life expectancy. There is evidence indicating that okra is a good source of antioxidants that prevent the formation of free radicals.¹² Likewise, okra contains a potentially rich source of natural antioxidants such as polyphenols and flavonoids.⁵⁵ Similarly, okra fruits can be used as natural antioxidants and natural inhibitors against hyperlipidaemia and hyperglycaemia in functional foods and pharmaceuticals.⁵⁶ Thus, since okra is a functional food and pharmaceutical product, and also prevents the formation of free radicals, it may make pregnant women healthy and increase their life expectancy. Therefore, the results of this study could have a clinical impact and implication on the health during pregnancy by promoting utilisation of different parts of okra to reduce different nutrition-related health problems and normal pregnancy outcomes.

Apart from these different health benefits, okra is also very important for pregnant women due to its different nutrient composition. It is especially important for pregnant women for its folate content which prevents neural tube defects.¹² It has great potential for preventing both macronutrient and micronutrient deficiency in rural communities.¹³ Furthermore, owing to its high dietary fibre content, okra is also consumed to prevent constipation, which it does by increasing peristaltic movement of the gastrointestinal tract.¹² This was consistent with the findings of this study. Finally, interviewer bias and social desirability bias could be the possible limitations of this study. In line with this, this study did not explore taboos related to the okra plant.

CONCLUSION

Utilisation of different parts of the okra plant rather than pods was not seen among pregnant women of western Ethiopia. Lack of awareness and knowledge concerning their importance and their nutritional value were the barriers to utilisation. Okra has different traditional and health benefits for pregnant women in the communities of western Ethiopia. It is a good source of different micronutrients, macronutrients, antioxidants, and has great pharmacological value. Generally, edible okra may contribute to maintaining food security to meet the demands of the fast-growing human population, especially in developing countries.

The sustainable utilisation of different parts of okra requires strong policy support based on scientific

evidence to ensure the nutritional security of pregnant women. It could help to support the sustainable development goal of 'ensuring sustainable production'.²³ Moreover, behavioural change communication to promote the utilisation of different parts of okra is recommended.

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ORCID iDs

Efrem Negash Kushi <http://orcid.org/0000-0002-3499-7019>

Tefera Belachew <http://orcid.org/0000-0001-5455-9457>

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