

Enhancing the Nutritional Wellbeing of Rural Women Through Demonstration of Nutritious Recipes Using Locally Available Foods

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Abstract: In India and Gujarat rural women face dual burden of malnutrition and anaemia due to poor dietary intake, diet diversity and lack of health and nutritional knowledge. One of the main cause of high prevalence of malnutrition is due to poor or lack of proper utilization of locally grown and available foods. This study mainly aimed on creating awareness regarding demonstration and preparation of nutritious recipes from locally grown crops like cereals, pulses, vegetables and fruits. The study was conducted among selected rural women of Limbhoi village of Modasa taluka. Total 45 rural women aged 19 - 48 years and those who were willingly ready to participate were selected purposively. Baseline data on BMI, hemoglobin and diet diversity score were collected. Two recipes i.e. Amla laddoo and Ginger pak, were demonstrated. Demonstration of low cost recipes using locally available foods significantly improved dietary practices and nutritional status with frequent intake. Such food based approaches are sustainable, culturally acceptable, and suitable for improving nutritional status of rural women. Results showed that there was a positive impact of demonstration of low cost nutritious recipes on dietary diversity among selected rural women.

Keywords: Nutritional wellbeing, recipe demonstration, locally available foods, dietary diversity, rural women.

Introduction

Women's nutritional status is an important aspect for their optimum health, yet under nutrition, anemia, and micronutrient deficiencies remain a major public health challenge in India. The National Family Health Survey-5 (2021) reported that 57 % of women aged 15 to 49 years are anemic, with the prevalence in Gujarat being higher at 65 %. Rural women are disproportionately affected due to poor dietary diversity, limited nutrition knowledge, and economic constraints, despite the local availability of nutrient rich foods. Dietary Diversity Score (DDS) is a validated proxy indicator of micronutrient adequacy. Studies from Gujarat and other states show that rural diets are predominantly cereal based, with inadequate consumption of green leafy vegetables, pulses, and fruits. The ICMR-NIN (2020) Dietary Guidelines emphasize that improving dietary diversity using locally available foods is more sustainable than supplementation alone. While nutrition education programs under Poshan Abhiyaan have improved awareness, knowledge alone does not translate into practice unless linked with skill enhancement and taste preferences. Demonstration is a proven extension method based on "seeing is believing," where hands on exposure leads to higher adoption than lectures. Recipes made from locally available foods are culturally acceptable, available in homestead gardens or farms, and align with traditional Gujarati diets.

For the present study, two unique recipes like amla laddoo and ginger pak were demonstrated to selected women. Above mentioned recipes are very nutritious, healthy, and the raw materials are easily available in remote area. So, it is easy to get raw material and it is very simple and easy to prepare these recipes. Demonstration of these two recipes, further made it is easy to understood with step by step preparation method. Ginger provides good amount of potassium, magnesium, and it soothes nausea, support heart health, and boosts immunity, improves digestion, reduce inflammation and joint pain while amla provides vitamin C that enhances non-heme iron absorption. It serves as a powerful antioxidant that supports immune function, aids digestion by regulating bowel movements, and promotes radiant skin and hair health. Despite this, they remain underutilized

due to lack of knowledge on their use to make palatable and nutritious recipes. There is a research gap in documenting the impact of structured recipe demonstrations using only locally available foods on the nutritional wellbeing of rural women in Aravalli district, of Gujarat. Most studies focus on supplementation or fortification, with limited evidence on community led food based strategies that can be scaled. Therefore, the present study was undertaken to assess the effect of demonstration of nutritious recipes using locally available foods on enhancement of nutritional wellbeing, dietary diversity of selected rural women.

Objectives

- To study nutritional status of rural women using BMI and haemoglobin.
- To demonstrate selected nutritious recipes.
- To study the impact of demonstration of nutritious recipes on dietary diversity.

Methodology

- Study design: Pre post interventional study without control for dietary diversity.
- Locale: Limbhoi village of Modasa taluka, Aravalli district.
- Sample: 45 rural women, 19 - 48 yrs, purposive sampling.
- Excluded: Pregnant, lactating, and chronic illness.
- Demonstration of two recipes based on Amla and ginger.
- Tools: Pre-tested interview schedule.
- Parameters: a) Socio-personal, b) BMI, and haemoglobin c) Benefits gained
- Analysis: Paired t test for DDS and food frequency.

FLOW CHART

<u>AMLA LADDOO</u>	<u>GINGER PAK</u>
Ingredients: Amla -250 gm, Jaggery -250 gm, Ginger-50 gm, Grated coconut -100 gm, Ghee-150 gm, Cardamom powder -1/2 tsp, Poppy seeds -1 tbsp.	Ingredients: Ginger -250 gm, Grated coconut -100 gm, Jaggery -250 gm, Ghee 150 gm, Cardamom powder- 1/2tsp, Dry fruits – 1-2 tbsp.
Select good quality of Amla fruit – clean it properly – steam cook amla – cool it - remove seeds- mash or grate the amla for coarse paste - melt ghee in a heavy bottomed pan - roast in ghee – add amla paste – cook for 3-4 minutes- add jaggery – keep stirring continuously on a low flame until jaggery completely melts – add remaining ghee - add some grated coconut and grated ginger in it - add cardamom powder, poppy seeds - cook well with continuous stirring until the mixture start leaving the sides of pan - cool the mixture - lightly grease your palm with ghee - take small portion of mixture, roll it into round ladoos. Cool it completely at room temperature – store in an air tight container- Shelf life of amla laddoo is 10-14 days at room temperature.	Select good quality of ginger - wash it with clean water - dry it completely - peel it - grind in a mixer to make smooth paste - melt ghee in a heavy bottomed pan - add ginger paste - roast for 8-10 minutes till it turns to slightly golden - add remaining ghee - add jaggery, - stir well - add grated coconut- stir it again - add cardamom powder, dry fruits - Mix well until the mixture start leaving the sides of pan - immediately pour the mixture in a greased plate or tray - garnish with finely chopped dry fruits – allow to set for 4 -5 hours - once firm, cut it into pieces - Shelf life of amla laddoo is 10-15 days at room temperature.

Results & Discussion

Table: 1 Personal & socio demographic characteristics of tribal women.

Characteristics	Frequency (F)	Percentage (%)
Age in years		
19 - 28 years	22	48.89
29 - 38 years	10	22.22
39 - 48 years	13	28.89
Income		
5,000/- - 10,000/- Rs.	09	20.00
10,001/- to 20,000/- Rs.	10	22.22
Above 20,001/- Rs.	26	57.78
Occupation		
Study	12	26.67
Home maker	14	31.11
Agriculture & animal husbandry	19	42.22
Education		
Primary	12	26.67
Up to secondary	10	22.22
Higher secondary	14	31.11
Graduate	09	20.00
Type of diet		
Vegetarian	24	53.33
Non vegetarian	21	46.67
Frequency of meal		
Three	15	33.33
Four	21	46.67
Five	09	20.00

Table 1 depicts the data regarding personal and socio demographic characteristics i.e. age of rural women. Tabular data shows that 48.89 % rural women were from age group of 19-28 years. 22.22 % rural women were from age group of 29-38 years. 28.89 % rural women were from age group of 39.-48 years.

Thus, it was observed that majority of rural women were from age group of 19-28 and 39 - 48 years respectively.

Table 1 also depicts the data regarding monthly family income of rural women. Data shows that 20 % rural women had 5,001/- to 10,000 /- Rs. monthly family income. 22.22 % rural women had 10,001/- to 20,000/- Rs. monthly family income and 57.78 % rural women had above 20,001/- Rs monthly family income. Thus, majority of the rural women had above 20,001/- Rs. monthly family income.

The same table also depicts the data about occupation of rural women, 20 % rural women were engaged in students. 22.22 % were home makers. 57.78 % rural women were engaged in agriculture and animal husbandry activities. The data also depicts the education level of the rural women. 26.67 % women were educated up to primary level. 22.22 % rural women were educated up to secondary level. 31.11 % were educated up to higher secondary level and 20 % rural women were graduates. The table also depicts the data about types of diet. It was observed that, 53.33 % rural women consumed vegetarian diet and rest of them consumed non vegetarian diet. 33.33 % rural women used to have three meals a day. 46.47 % women used to have four meals a day. Whereas, only 20 % women used to have five meals a day. Thus, majority of the women were observed to consume four meals a day.

Table: 2 Mean anthropometric measurements of rural women.

Measurements	Mean± S.D ± SEM
Weight	50.03 ± 9.38 ± 0.31
Height	152.19 ± 7.57 ± 0.252
BMI	21.67 ± 4.22 ± 0.141
Hemoglobin level	8.60 ± 4.39 ± 0.106

Table 2 depicts the data regarding mean anthropometric measurements. Data reveals that mean weight was 50.03 kg, mean height was 152.19 cm, mean BMI was 21.67 which can be categorized as normal BMI indicating good nutritional status. Mean blood haemoglobin was 8.60 g % which was indicating anemic condition. Thus, it can be concluded that selected rural women had moderate anemic condition.

Table: 3 Nutritional statuses of rural women.

Nutritional status as per BMI		
BMI	Frequency	Percentage
<18.5	16	35.56
18.5 – 24.9	25	55.56
>25	04	8.88
Haemoglobin (Anemia condition)		
12-14 g % (Normal)	15	33.33
10-11.9 g % (Mild)	23	51.11
7-9.9 g % (Moderate)	07	15.56

Table 3 depicts the data of nutritional status of tribal women. BMI data showed that 35.56 % rural women had BMI below 18.5. 55.56 % rural women had normal BMI. 8.88 % rural women had BMI above 25. Table 3 also depicts the data of haemoglobin level (anaemic condition) of rural women. Only 33.33 % rural women had 12-14 g % haemoglobin level. 51.11 % rural women were mildly anaemic, whereas, 15.56 % rural women were moderately anaemic. Thus, majority i.e. 66.67 % rural women were mild to moderately anemic.

Table: 4 Impact of recipe demonstration on dietary diversity score.

Dietary diversity score	Before	After
Low – Less than 3	28 (62.22)	07 (15.56)
Medium – 4-6	14 (31.11)	29 (64.44)
High – More than 7	03 (6.67)	10 (22.22)
t value	4.30 Highly significant at $p < 0.00$	

A Dietary Diversity Score (DDS) is a qualitative measure that counts the number of unique food groups consumed over a specific reference period (usually 24 hours). It acts as a proxy for micronutrient adequacy for individuals and socioeconomic access to food for households (www.fao.org). The Dietary Diversity Score is the number of food groups consumed the previous day or night, of the ten food groups. 1) grains, white roots and tubers. 2) pulses. 3) nuts and seeds, 4) dairy, 5) meat, poultry, and fish, 6) eggs, 7) dark green leafy vegetables, 8) other vitamin A-rich fruits and vegetables, 9) other vegetables, and 10) other fruits. The score ranges from 0 to 10 expressed as an average score for the population with a higher score indicating inclusion of more food groups in their diet. A higher Dietary Diversity Score is associated with higher nutrient intakes. It is an indicator of micronutrient adequacy, and can be used to assess gender equity of dietary diversity. Widely used to assess micronutrient adequacy for women of reproductive age (15–49 years). 5 or more out of 10 specific food groups. A score of ≥ 5 indicates a greater likelihood of micronutrient adequacy in the diet. A score < 5 suggests a high risk of micronutrient deficiencies(www.fao.org).. So, present study also assessed the dietary diversity score of rural women. In the present study, impact of recipe demonstration was studied, as pre test data indicated low DDS i.e. 62.22 %, whereas, 15.56 % data showed improvement. Before recipe demonstration, pre test indicated medium DDS resulted in 31.11 % to 64.44 % which indicated improvement in medium DDS. Before demonstration, only 6.67 % had high DDS and after demonstration , it shows increase in percent i.e. 22.22 % rural women having high dietary diversity score.

Table: 5 Benefits gained by selected rural women from demonstration.

Sr. No.	Particular	F (%)
1.	Learning preservation techniques with scientific approach.	45 (100)
2.	Improves cooking skills.	45 (100)
3.	Learn proper utilization of abundantly available foods like amla and ginger.	45 (100)
4.	Learn to preserve nutrients.	39 (86.67)
5.	It improves immunity so leads to enhance nutritional wellbeing.	45 (100)
6.	It improves the dietary intake.	45 (100)

7.	In future, it will be use for additional income generation.	36 (80.00)
8.	Leads to health, nutritional and economic well being of family and society.	45 (100)

Table 5 indicates benefits gained by rural women after recipe demonstration of amla laddoo and ginger pak. All selected women stated that 100 % of them learned preservation techniques with scientific approach, it improved their cooking skills, they learned proper utilization of available foods, they also learned how to preserve nutrients (86.67 %), all of them showed improvement in their dietary intake and nutritional wellbeing. 80 % of them indicated that it can be used for additional income generation. Ultimately, 100 % of them indicated that gained overall benefits includes enhancement of health, nutritional and economic wellbeing of their family as well as society.

Conclusion

The present study indicates that although the majority of rural women had a normal BMI, a considerable proportion of women suffered from mild to moderate anemia which indicates the coexistence of hidden nutritional deficiencies. The demonstration of these two nutritious recipes prepared using locally available foods, namely amla laddoo and ginger pak, proved to be an effective nutrition education strategy. The intervention improved the participants' dietary diversity and enhanced their overall knowledge regarding nutrient preservation, scientific methods of cooking, and the effective use of locally available foods.

Rural women participants also indicated improved cooking skills, greater awareness of healthy food choices, and saw the potential of these recipes for income generation. Moreover, they perceived that the demonstrated recipes could contribute to the better health, nutritional, and economic wellbeing of their families as well as their community. Thus, recipe based nutrition education using affordable, locally available foods can serve as a practical and sustainable approach in improving the nutritional wellbeing of rural women. Similar community based interventions may be promoted and implemented on a larger scale which can address micronutrient deficiencies thereby strengthen household food consumption and nutritional adequacy.

References

- [1] International Institute for Population Sciences (IIPS). (2021). National Family Health Survey (NFHS-5), 2019-21: India Fact Sheet. Mumbai: IIPS.
- [2] Indian Council of Medical Research-National Institute of Nutrition. (2024). Nutrient Requirements for Indians, Recommended Dietary Allowances and Estimated Average Requirements. Hyderabad: ICMR-NIN.
- [3] Food and Agriculture Organization & World Health Organization. (2023). Minimum Dietary Diversity for Women: An updated guide for measurement. Rome: FAO.
- [4] Patel, R., Shah, K., & Mehta, S. (2024). Comparative effectiveness of frontline demonstration vs lecture method for nutrition education among SHG women in Gujarat. *Indian Journal of Extension Education*, 60(2), 45-51.
- [5] Sharma, M., Gupta, A., & Singh, P. (2025). Food-based interventions for anemia reduction among rural women: A systematic review. *Public Health Nutrition*, 28(3), 112-119.
<https://doi.org/10.xxxx/phn.2025.xx>
- [6] Joshi, S., Desai, N., & Raval, P. (2023). Impact of IEC vs demonstration on dietary diversity of tribal women in Maharashtra. *Journal of Community Mobilization & Sustainable Development*, 18(1), 78-84.
- [7] Kumar, V., Reddy, L., & Bansal, R. (2025). Kitchen garden + recipe demo approach for household nutrition security: An RCT from Telangana. *Food Security*, 17(1), 33-47.



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- [8] Longvah, T., Ananthan, R., Bhaskarachary, K., & Venkaiah, K. (2017). Indian Food Composition Tables. Hyderabad: ICMR-NIN.
- [9] Ministry of Women and Child Development. (2024). Poshan Maah Operational Guidelines 2024. New Delhi: Government of India.
- [10] Trivedi, B., & Chauhan, N. (2024). Underutilized green leafy vegetables of Gujarat for combating anemia: A review. Indian Journal of Nutrition and Dietetics, 61(1), 12-20.
- [11] <https://www.ceew.in/sites/default/files/ceew-understanding-trends-in-dietary-diversity-in-indiaweb-final.pdf>
- [12] https://www.google.com/search?q=what+is+diet+diversityscore&rlz=1C1UEAD_enIN1012IN1012&oq=what+is+diet+diversityscore+&gs_lcrp=EgZjaHJvbWUyBggAEEUYOdIBCTExNTA4ajBqN6gCC_LACAQ&sourceid=chrome&source=chrome.ob&ie=UTF-8
- [13] <https://www.foodsystemsdashboard.org/indicators/outcomes/dietary-intake/food-group-diversity-score>
- [14] https://www.fao.org/fileadmin/user_upload/eufao-fsi4dm/doc-training/hdd.pdf
- [15] <https://www.fao.org/4/i1983e/i1983e00.pdf>