

A Cross-sectional Study to Evaluate the Acceptance of Non-pharmacological Interventions to Control Anaemia among Adolescent Girls and Lactating Mothers in a District of Gujarat, India

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Abstract

Background: To combat Iron deficiency anemia, an innovative pilot project, anemia prevention among adolescent girls and lactating mothers through nonpharmacological measures has been started at few places in Gujarat. To evaluate the acceptability of intervention kits provided to the beneficiaries. **Material and Methods:** A cross-sectional study design where 182 beneficiaries were randomly selected for interview from 12 randomly selected Anganwadi centers of intervention taluka of Junagadh district. **Results:** Information Education and Communication (IEC) material though available was unread by majority of beneficiaries. Iron utensils were used by 65% of beneficiaries for cooking. Only few beneficiaries (7%) daily use the provided moringa powder. Only half of the beneficiaries (53%) had grown some of the crops from the kitchen garden kit provided and knowledge of beneficiaries regarding iron-rich food was satisfactory in less than one-fifth (19%) of them. **Conclusion:** Study results concluded that providing nonpharmacological material is of little use until beneficiaries were properly guided and motivated by regular follow-up visits and addressing their problems; otherwise, it just stands as a mere matter of rock only.

Keywords: IEC materials, iron deficiency anemia, iron utensil, kitchen garden, moringa powder

INTRODUCTION

Iron deficiency anemia (IDA) is a global public health problem with prevalence ranging from 30% to 70% across all ages around the world.^[1] Adolescent girls and women of reproductive age groups are particularly vulnerable possibly due to increased demands of iron, menstrual loss, childbirth, infections, and infestations. According to the National Family Health Survey-V (2019-2020), the prevalence of anemia among adolescent girls and women of the reproductive age group was 57%.^[2]

Till date Government of India (GOI) has made several efforts to tackle the problem of IDA through the Integrated Child Development Scheme (ICDS), National Nutritional Anaemia Control Programme, Weekly Iron and Folic Acid Supplementation, National Iron Plus Initiative, etc., but with limited success.^[3] Moreover, the compliance with IFA tablets remains poor (30%–40%).^[4,5] Hence, the GOI decided to adopt

newer cost-effective strategies to deal with IDA. This led to the Anaemia Mukt Bharat campaign that was launched in September 2018 focusing on innovative nonpharmacological strategies to combat IDA in addition to strengthening the existing mechanisms.^[6]

Under the National Nutrition Mission, ICDS branch of Jilla panchayat, Junagadh had conducted an “Innovation Pilot Project - Anaemia prevention among adolescent girls and lactating mothers through the use of iron utensils and

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How to cite this article: Lodhiya KK, Brahmbhatt KR, Govani KJ, Chhaya J. A cross-sectional study to evaluate the acceptance of non-pharmacological interventions to control anaemia among adolescent girls and lactating mothers in a district of Gujarat, India. *Indian J Community Med* 2022;47:579-82.

Received: 25-01-22, **Accepted:** 24-04-22, **Published:** 14-12-22

Access this article online

Quick Response Code:



Website:
www.ijcm.org.in

DOI:
10.4103/ijcm.ijcm_82_22

promotion of kitchen garden,” with aim to combat the problem of IDA in Bhesan Taluka of Junagadh district. Under this project, all the adolescent girls and lactating mothers of Bhesan taluka were provided with a kit containing iron kadai, iron tavi, 250 g of moringa powder, seeds of various vegetables for preparation of kitchen garden along with relevant IEC materials such as anemia pamphlet, kitchen garden booklet, anemia control booklet, recipe booklet on iron-rich foods, and recipe booklet for moringa powder. The kit was provided through the ICDS department in the last quarter of 2020. The ICDS department had chosen GMERS Medical College, Junagadh, for a third-party evaluation of the project which was carried out in February–March 2021. The objective of this evaluation was to study the acceptability and use of various materials provided to the beneficiaries.

MATERIALS AND METHODS

This was a cross-sectional study conducted in – Chuda, Mendpara, and Ranpur – three Primary Health Centers during February–March 2021. Four Anganwadi centers (AWC) were randomly selected from each of the three PHCs. A total of 15 beneficiaries were randomly selected for interview from each of the twelve selected AWCs purposively ensuring two-thirds of the participants were adolescent girls and the remaining one-third of the participants were lactating mothers. If the required number of adolescents or lactating mothers were not available then other lactating mothers or adolescents from the same Anganwadi were included to meet the required sample size of 15 beneficiaries per AWC. A total of 182 beneficiaries were interviewed for the study and a brief methodology is described in Figure 1.

Adolescent female and lactating mothers who were willing to participate and gave consent were included in the

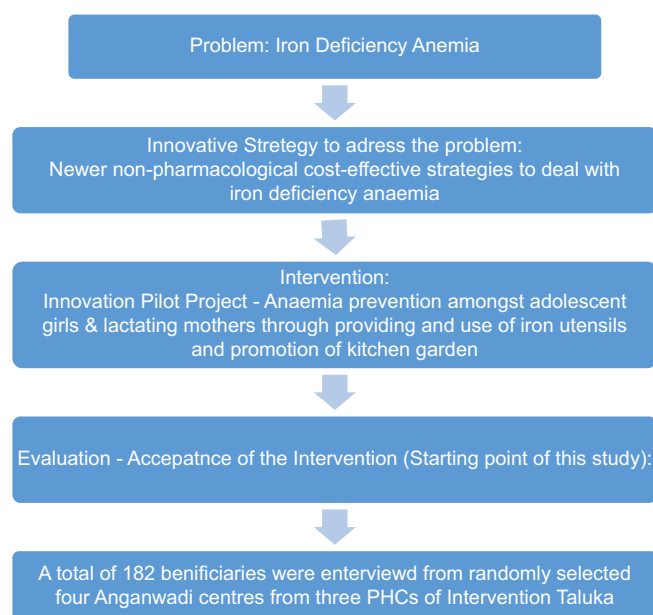


Figure 1: A brief description of methodology

study. Beneficiaries with any comorbidity or any sickness, nonconsenting beneficiaries, or nonavailability of beneficiaries at the time of data collection were excluded from the study.

The data collection tool included questions on availability of provided logistics, use of provided materials such as iron utensils and moringa powder, current status and challenges of preparation of kitchen garden, and knowledge of beneficiaries regarding food and dietary iron. The content validity of the questionnaire was determined by senior faculties of the Community Medicine Department, GMERS Medical College, Junagadh, Gujarat. The interview pro forma was pre-tested necessary corrections were made. Faculties of the department were trained for data collection. Written informed consent was taken from participants before the interview. Confidentiality and privacy of the participants were maintained.

Since this study was an observational study that required third-party evaluation of an intervention done earlier, ethical approval was not required. Data entry was entered into an Excel sheet and analyzed using SPSS version 13.0. Descriptive statistics was used to represent the results.

RESULTS

A total of 182 beneficiaries were interviewed from 12 AWCs of 3 PHCs. Nearly two-thirds of the beneficiaries (64.84%) were adolescents (118) and the remaining (35.16%) were lactating mothers (64). The mean age of adolescents was 16.9 ± 1.1 years and the mean age of lactating mothers was 27.4 ± 4.9 years. The mean year of schooling was 10.2 ± 2.0 years and 9.2 ± 4.6 years for adolescents and lactating mothers, respectively. Details on physical verification of the availability of logistics with the beneficiaries at the time of survey are given in Table 1.

Around 69.8% of the beneficiaries had also cooked food, at least once, in iron utensils in the past 3 days. Around 7% of the beneficiaries had never used the iron utensils [Table 2].

Regarding the use of moringa powder, around 14% of the beneficiaries had never used it and only 8% of the beneficiaries practiced daily using of moringa powder in their diet [Table 3].

The study also revealed that only 47.80% of the beneficiaries had read kitchen garden booklet and nearly half (53.85%) of the beneficiaries had grown some of the crops from kitchen garden kit. Space for the kitchen garden (34.62%), water scarcity (29.67%), maintenance time (24.18%), and prevention of crops from domestic animals (12.64%) were the problems highlighted by the beneficiaries in the preparation of the kitchen garden. Only 33.52% knew the importance of having a kitchen garden. However, after discussing the benefits of kitchen garden majority of the beneficiaries (86.26%) had agreed to prepare and maintain kitchen garden.

The knowledge of the beneficiaries was also very limited in terms of listing of iron-rich foods (19.23), foods that inhibit iron absorption (7.69%), and foods that promote iron absorption (4.40%).

Table 1: Availability of logistics with the beneficiaries at the time of survey

Logistics availability	Beneficiaries (n=182), n (%)
Iron kadai and tavi	182 (100)
Moringa powder	139 (76.4)
Moringa recipe booklet	154 (84.6)
Anemia pamphlet	154 (84.6)
Seeds kit of kitchen garden	139 (76.4)
Kitchen garden booklet	143 (78.6)
Anemia control booklet	158 (86.8)
Take home recipe booklet	160 (87.9)

Table 2: Use of Iron utensils by the beneficiaries

Use of iron utensils by the beneficiaries	Beneficiaries (n=182), n (%)
Iron utensils look unused	12 (6.6)
Regularly cook food in iron utensils	119 (65.4)
Use iron utensils at least once in the last 3 days	127 (69.8)
Change in taste or color due to cooking in iron utensils	33 (18.1)
Knows the significance of cooking food in iron utensils	103 (56.6)
Willing to use regularly in future	180 (98.9)

Table 3: Use of moringa powder by the beneficiaries

Use of moringa powder by the beneficiaries	Beneficiaries (n=182), n (%)
Ever used moringa powder	157 (86.3)
Daily use of moringa powder by the beneficiaries	14 (7.7)
Use of moringa powder exclusively by beneficiaries	18 (9.9)
Read moringa powder recipe booklet	112 (61.5)
Ever prepared various moringa powder recipe	79 (43.4)
Likes the taste of moringa powder recipe or with other food	122 (67)
Knows the significance of moringa powder in diet	67 (36.8)
Willing to use it regularly in future	176 (96.7)

DISCUSSION

The beneficiaries were provided logistics and IEC materials as a part of the innovation pilot project. However, it was noted that these IEC materials were unread in the majority of the cases as can be seen from the condition of the books. A few of the beneficiaries had also lost these IEC materials over time. This indicates that just providing IEC materials and hoping the beneficiaries to read and follow them will be waste of resources. Instead, group meetings on these topics or other forms of behavior change communication (BCC) followed by providing these additional reading materials will develop curiosity among the beneficiaries to read and follow them [Table 1].

Geerligs *et al.*^[7] in their systematic review on the use of iron pot for cooking did find its beneficial effects on hemoglobin levels of anemic individuals. It was good to see that around

two-thirds (65.38%) of the beneficiaries in the present study asserted that they regularly cook food using the provided iron utensils. The reasons for nonuse of iron utensils among the remaining beneficiaries were the preference of their nonstick cookwares over iron cookware, alterations in taste or color of foods cooked in iron kadai, or wanted to gift iron utensils to others. It is disheartening to see that nearly 40% of the beneficiaries did not know why they were given iron utensils and what is the significance of cooking in iron utensils. However, on counseling on cooking in iron utensils, almost all (99.9%) of the beneficiaries had agreed to use the iron utensils for cooking in the future. The results of the study are consistent with Geerligs *et al.*^[7] who highlighted the size of the utensils, targeted user group, whether the pot is used as an extra or replacement pot, and familiarity with cast iron pots as compliance issues faced by beneficiaries. This indicates the need for motivating the beneficiaries for using the provided iron cookware and periodic follow-up visits to address their concerns [Table 2].

Shija *et al.*,^[8] Boateng *et al.*,^[9] and Glover-Amengor *et al.*,^[10] in their study on supplementation of moringa leaf powder to participants had documented a good acceptability and a significant reduction in anemia among the intervention group. However, Govender and Siwela^[11] found that the acceptability of foods containing moringa leaf powder decreased progressively if the moringa leaf powder content was increased to more than 5%. However, all the studies consistently highlighted that moringa powder supplements can address the issues of micronutrient deficiency and anemia. In the present study, the acceptability of moringa powder was good in more than two-thirds of the beneficiaries. Over two-thirds of the beneficiaries of the present study had no idea why they were given moringa powder supplements. On discussing the benefits of the consumption of moringa powder with the beneficiaries, nearly all (96.7%) of the beneficiaries were motivated to use it daily [Table 3].

In spite of being the second-largest producer of food, India also had the second-largest malnourished population in the world. Adding to that, above half of the women have nutritional anemia which is the main reason for low birth weight and easily correlates with an unbalanced diet devoid of essential micronutrients.^[12] In this scenario, the kitchen garden can play a crucial role in enhancing food security and dietary assortment to overcome malnutrition. However, developing a kitchen garden needs several issues to be addressed. A few of the challenges for the development of kitchen gardens as identified by the researchers were poor soil, limited space, little water, fertilizers, weeds, climate-weather problem, domestic animals, too little pollination, and time requirement.^[13,14] The current study also highlights similar problems faced by participants in the development and maintenance of the kitchen garden.

In the present study, only 19.23% of study participants were able to enlist iron-rich food correctly and this result was consistent with a recent studies conducted in Palestine (10%)^[15]

and Sudan (26%).^[16] The present study found that only about 7.69% of the study population knew the common food that reduced iron absorption. This result was inconsistent with the result obtained by Angadi *et al.* (43%)^[17] and Jalambo *et al.* (25%).^[15] Similarly, only 4.40% of study participants in the present study were able to enlist common foods that promote iron absorption. This was inconsistent with the results obtained by Angadi *et al.* (74.1%)^[17] and Kotecha *et al.* (37.3%).^[18] These inconsistencies could be attributed to differences in the demographic characteristics of study participants in different studies. However, all the studies highlight limited knowledge of beneficiaries of dietary iron.

CONCLUSION

The present study highlights the need for sensitization of the beneficiaries towards harmful effects of anemia and required dietary interventions. It also stresses for BCC and periodic follow-up visits to motivate beneficiaries along with addressing their concerns regarding regular use of iron utensils for cooking, consumption of moringa powder, development and maintenance of kitchen garden, and use of provided IEC materials.

Limitation of the study

Impact assessment in the form of change in hemoglobin level of the beneficiaries could not be carried out as the duration between the intervention and its evaluation was very less.

Acknowledgment

The authors would like to express their gratitude to the faculties of the Department of Community Medicine, GMERS Medical College, Junagadh, for their assistance in data collection.

Financial support and sponsorship

This project was funded by the ICDS branch of Jilla Panchayat Junagadh.

Conflicts of interest

There are no conflicts of interest.

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