National Board of Examination - Journal of Medical Sciences
Volume 2, Issue 3, Pages 219–232, March 2024
DOI 10.61770/NBEJMS.2024.v02.i03.005

ORIGINAL ARTICLE

Evaluating Anemia Counseling: A Study among Pregnant Women and Adolescent Girls in Bhanvad Taluka, DevBhoomi Dwarka, Gujarat

Mithun Sanghavi,[1] Swati Misra,[2,*] Eshwar Kumar Gupta[2] and Dipesh Parmar[3]
[1]*Assistant Professor, Department of PSM, M P Shah Government Medical College, Jamnagar, Gujarat*
[2]*Senior Resident, Department of Community Medicine, M P Shah Government Medical College, Jamnagar, Gujarat*
[3]*Professor & Head of Department of Community Medicine, M P Shah Government Medical College, Jamnagar, Gujarat*

Accepted: 06-February-2024 / Published Online 27-February-2024

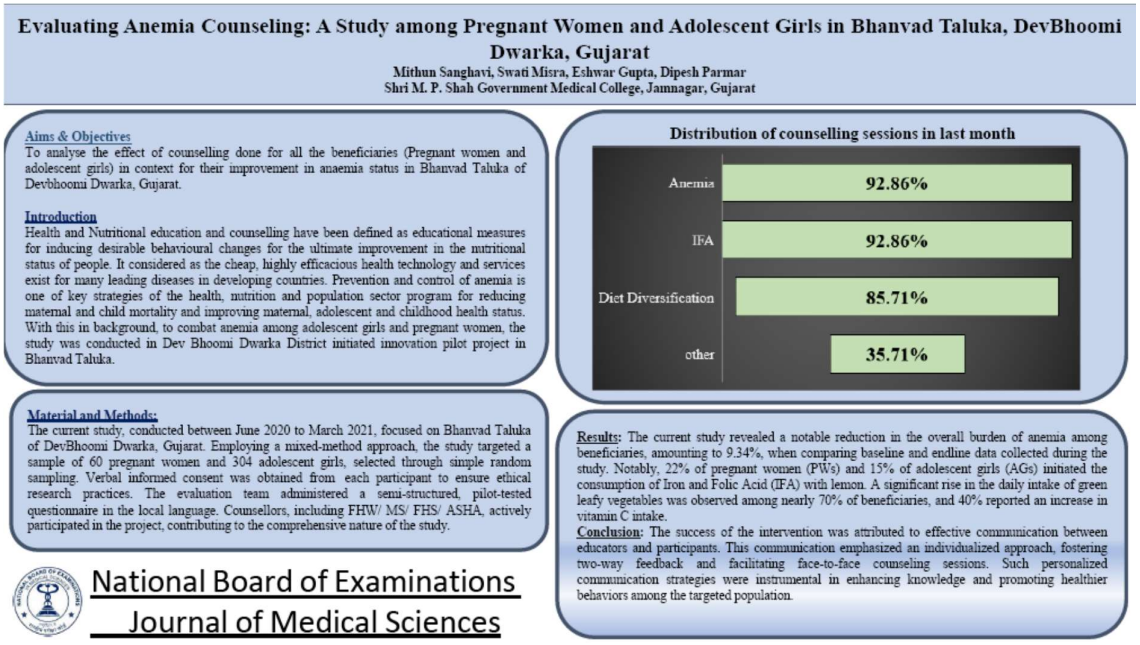
Abstract

Introduction: The iron requirement of the body increases during this period and resulting into anemia. National Family Health Survey-5 (2019-20), about 65% women (15-49 y) and about 62% of pregnant women were suffering from various degrees of anemia in Gujarat. Current study is the part of the innovation pilot project in which counselling was very important component. It motivated the beneficiaries to increase uptake of project services. Thus, the current paper is designed with the aim and objective to analyse the effect of counselling done for all the beneficiaries (Pregnant women and adolescent girls) in context for their improvement in anaemia status. **Materials and Methods:** The current study, conducted between June 2020 to March 2021 in Bhanvad Taluka of DevBhoomi Dwarka, Gujarat, is part of the innovation pilot Anaemia Project under ICDS. Utilizing a mixed-method approach, the study focused on 60 pregnant women and 304 adolescent girls, selected through simple random sampling. Verbal Informed Consent was obtained from each participant, and a semi-structured, pilot-tested questionnaire was administered in the local language by the evaluation team. The active involvement of counsellors, including FHW/ MS/ FHS/ ASHA, added a crucial dimension to the project, enhancing its effectiveness and outreach. **Results:** it was found that overall anemia burden among beneficiaries was reduced (9.34%) considering baseline and endline data taken during the study. This reduction was more seen among PWs (18.33%) as compared to AGs (7.56%). **Conclusion:** The results showed that nutrition education and counselling positively influenced the intake of dietary iron and vitamin C-rich foods.

Keywords: Counselling, Anaemia, IFA, Diet Diversification

*Corresponding author: Swati Misra
Email: swati.d100@gmail.com

Graphical Abstract



Introduction

Iron deficiency anaemia is the most common form of malnutrition among pregnant women and adolescents. The iron requirement of the body increases during this period and resulting into anemia [1,2]. Anemia is associated with poor cognitive and motor development outcomes in children, can cause fatigue and low productivity, and, when it occurs in pregnancy, is associated with poor birth outcomes (including low birth weight and prematurity) as well as maternal and perinatal mortality [3]. Anemia is a health problem that caused most disability in India over a decade (2005-2016) according to the Global Burden of Disease study. India has the maximum number of anemic women and children in the world. As per the recent National Family Health Survey-5 (2019-20), about 65% women (15-49 y) and about 62% of pregnant women were suffering from various degrees of anemia in Gujarat [4]. Therefore, the importance anemia as a public health problem has been increasingly recognized by health authorities and policy makers.

Health and Nutritional education and counselling have been defined as educational measures for inducing desirable behavioural changes for the ultimate improvement in the nutritional status of people. It considered as the cheap, highly efficacious health technology and services exist for many leading diseases in developing countries. Prevention and control of anemia is one of key strategies of the health, nutrition and population sector program for reducing maternal and child mortality and improving maternal, adolescent and childhood health status. With this in background, to combat anemia among adolescent girls and pregnant women, the study was conducted in Dev Bhoomi Dwarka District initiated innovation pilot project in Bhanvad Taluka. Various strategies like screening of beneficiaries,

distribution of Iron utensils, counselling, development of kitchen garden, drug distribution etc were implemented under this innovation pilot project. Prevalence of anemia in pregnant woman and adolescent girls can be decreased by some actions, start from promotive, preventive, and curative actions. The preventive and curative action cannot run smoothly without the promotive action. Therefore, counselling was chosen as the main action in promoting healthy life which could directly increase participant's awareness regarding diet for anaemia, so that the each participant become more concern about their health and disease status.

Current study is the part of the innovation pilot project in which counselling was very important component. It motivated the beneficiaries to increase uptake of project services. Thus, the current paper is designed with the aim and objective to analyse the effect of counselling done for all the beneficiaries (Pregnant women and adolescent girls) in context for their improvement in anaemia status.

Methodology

The research was conducted in Bhanvad Taluka of DevBhoomi Dwarka, Gujarat, spanning from June 2020 to March 2021, and forms a segment of the innovative Anaemia Project under ICDS. Utilizing a mixed-method approach, the study focused on 60 pregnant women and 304 adolescent girls, selected through simple random sampling. This initiative aimed to comprehensively address anemia and contribute valuable insights to inform future interventions and public health strategies. The inclusion criteria for the study encompassed individuals identified as anemic during baseline screening. Additionally, participants who demonstrated a willingness to provide consent were considered eligible for inclusion. This dual criterion aimed to ensure that individuals with a specific health condition, anemia, were included in the study, and that their active consent was obtained, emphasizing both health status and voluntary participation. The exclusion criteria for the study involved individuals who were not identified as anemic during baseline screening and those who did not express a willingness to provide consent. This twofold criterion was established to exclude participants who did not meet the specific health condition of anemia and those who chose not to participate voluntarily. By delineating these criteria, the study aimed to ensure a focused and willing participant pool, emphasizing the relevance of anemia status and active consent in the research. Each participant provided Verbal Informed Consent, and a Semi-Structured, Pilot-Tested questionnaire was administered in the local language by the evaluation team. The project involved the participation of counsellors such as FHW/ MS/ FHS/ ASHA, who underwent training before being instructed to provide counseling to beneficiaries at their respective premises. The evaluation team actively engaged with counsellors during field visits, assessing the quality of counseling services. Additionally, the team conducted inquiries with beneficiaries to gather feedback on project activities. Counsellors implemented Nutrition Counselling as an intervention for the study participants, emphasizing nutrition education. The focus of education included information on anemia, identification of sources of iron-

rich foods, guidance on iron-enhancing and iron-inhibiting foods, and proper hygiene practices. Participants, organized in groups of 6–8, received education through interactive discussions facilitated by tools such as pamphlets, flip books, play cards, etc. Each counselling session lasted for 30 minutes per participant, carefully designed to ensure a conducive and informative environment (Figure 1).

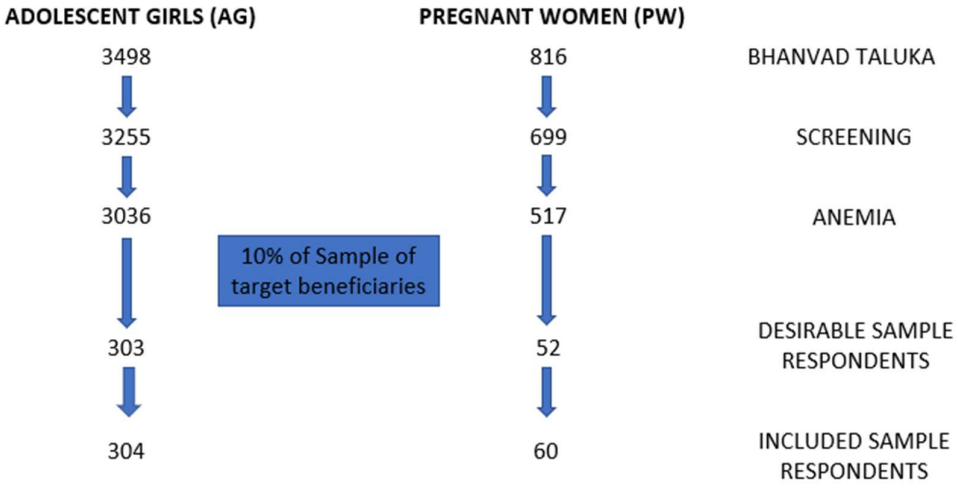


Figure 1. Sampling frame

During the counselling sessions, participants were directed to recognize locally available iron-rich and iron-enhancing foods, along with guidance on the optimal ways to combine them for enhanced iron absorption. Emphasis was placed on promoting proper dietary habits and discouraging poor dietary practices. End-line data collection took place immediately after the intervention to assess the impact of the guidance provided. The data entry process utilized MS Excel, and subsequent analysis was carried out using the Statistical Package for Social Science (IBM SPSS Statistics version 26) and MS Excel. The presentation of data included statistics such as frequency, percentages, mean, standard deviation, and mean difference. Statistical significance was determined by a p-value of <0.05 in all analyses.

Results

The current study revealed a notable reduction in the overall burden of anemia among beneficiaries, amounting to 9.34%, when comparing baseline and endline data collected during the study. This reduction was more pronounced among Pregnant Women (PWs) at 18.33% compared to Adolescent Girls (AGs) at 7.56%. Furthermore, a comparison with baseline screening findings indicated a substantial decrease in anemia prevalence by 22.91%, 7.64%, and 9.74% among PWs, AGs, and both groups collectively, respectively, by the end of the project. The consistent provision of regular counselling by counselors to all beneficiaries played a crucial role in achieving these positive outcomes. Table 1 reflects comprehensive counselling efforts reaching almost all beneficiaries, spearheaded by AWW and supported by FHW (Figure 2). The sessions covered crucial subjects including

Iron and Folic Acid (IFA) supplementation, diet diversification, and the intricate connection between diet and anemia (Figure 4). The emphasis on these topics during counselling aimed to empower beneficiaries with knowledge and practices that contribute to mitigating anemia prevalence. Table 2 illustrates the utilization of pamphlets, flip books, and badges as Information, Education, and Communication (IEC) materials during counseling sessions. The stock of Iron and Folic Acid (IFA) tablets, along with albendazole tablets, consistently ranged between 90% and 95%, ensuring regular availability. Counselors exhibited diverse experience levels, with 29% having less than 5 years, 36% possessing 5 to 10 years, and approximately 7% boasting more than 25 years of counseling experience. This varied experience contributed to the overall effectiveness of the counseling intervention. (Table 3) (Figure 1). Table 4 illustrates the impact of counseling on dietary behavior within the study population. Notably, 22% of pregnant women (PWs) and 15% of adolescent girls (AGs) initiated the consumption of Iron and Folic Acid (IFA) with lemon. A significant rise in the daily intake of green leafy vegetables was observed among nearly 70% of beneficiaries, and 40% reported an increase in vitamin C intake. Moreover, 33% of PWs and 55% of AGs experienced a heightened daily protein intake. Figure 3 delves into the training status of counselors, revealing that approximately 86% received proper project training, and about 57% reviewed the relevant documents. This data underscores the positive influence of counseling interventions on dietary habits among the target population.

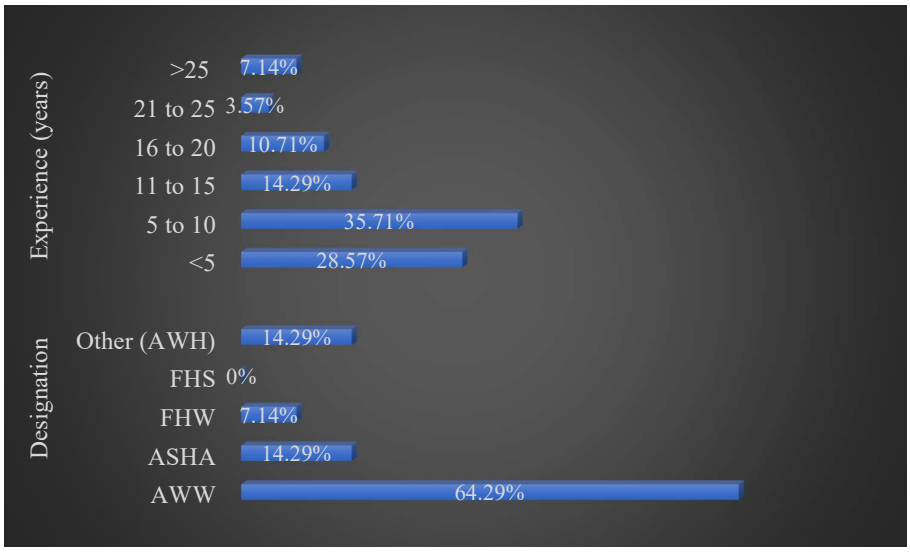


Figure 2. Designation and experience in jobs of counselors

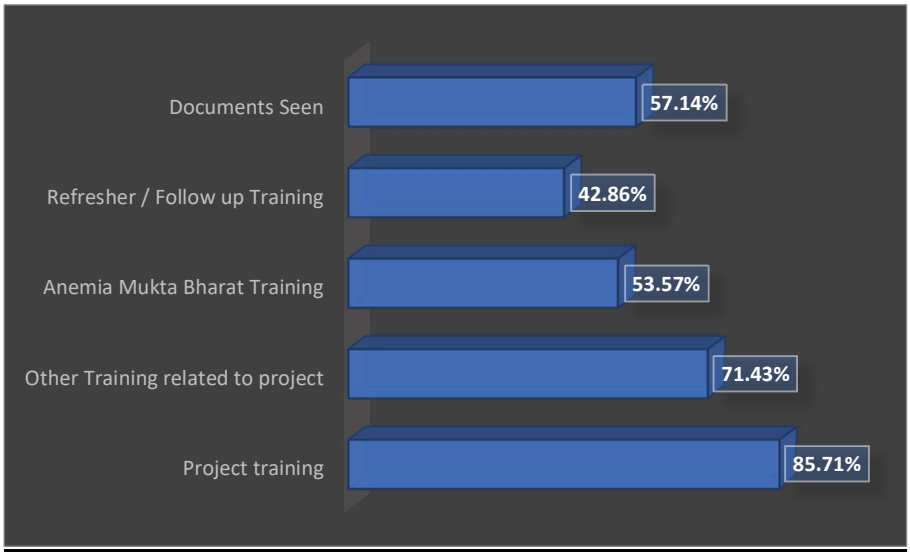


Figure 3. Training status of counselors

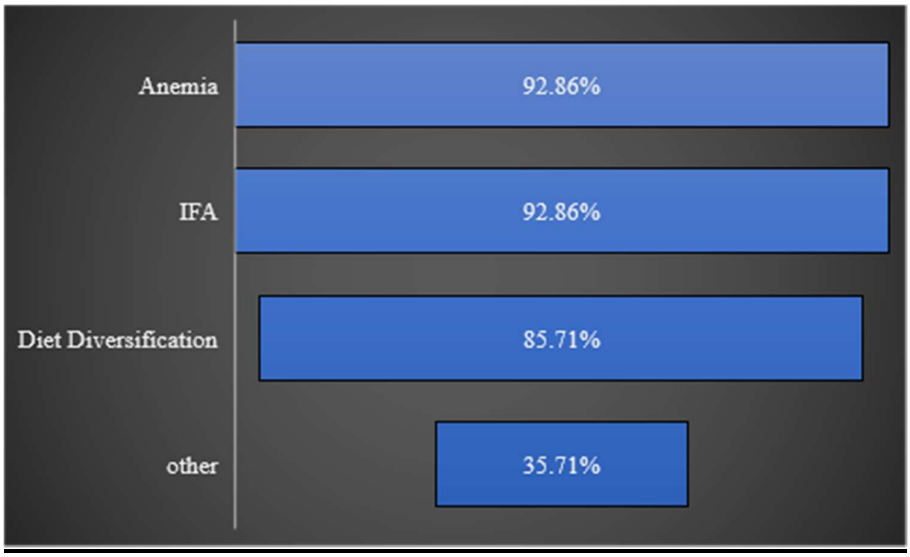


Figure 4. Distribution of counselling sessions in last month

Table 1: Details of Counselling done among Study Sample

		PW		AG	
		N=60	%	N=304	%
Counselling	Counselling done	60	100.0	294	96.71
	Beneficiaries benefitted	58	96.67	274	90.13
	Any IEC Material given	40	66.67	198	65.13
Counselling done by	AWW	51	85.00	270	88.82
	ASHA	18	30.00	70	23.03
	FHW	25	41.67	67	22.04
	Other	1	1.67	-	-
Counselling session in last month	0	9	15.00	21	6.91
	1	36	60.00	154	50.66
	2	14	23.33	83	27.30
	3	1	1.67	22	7.24
	4	-	-	14	4.61
Topic covered in counselling session	Anemia	40	66.67	243	79.93
	IFA	53	88.33	244	80.26
	Diet Diversification	30	50.00	98	32.24
	Diet	58	96.67	181	59.54
	other	5	8.33	9	2.96
Mean Counselling session in last month		1.12		1.5	
SD		0.67		0.91	

Table 2. Logistics and drugs availability with counselors

		Counselor	
		(n=28)	%
IEC	Pamphlets	26	92.86
	Badges	12	42.86
	Flip Books	25	89.29
	Play cards	18	64.29
	Other counsellingmaterials (Specify)	19	67.86
IFA	IFA tablets	25	89.29
	IFA Syrup	22	78.57
	Stock adequate	25	89.29
	Supply regular	27	96.43
	Knows correct Dosefor treatment	21	75.00
	Knows correct Dosefor prophylaxis	23	82.14
	Knows Iron absorbers	25	89.29
	Knows Iron Inhibitors	23	82.14
Albandazole Tab	Albandazole tablets	27	96.43
	Stock adequate	27	96.43
	Supply regular	28	100.00
	Knows correct Dosefor prophylaxis	25	89.29
other supplements	Available	24	85.71
	Stock adequate	24	85.71
	Supply regular	24	85.71

Table 3. Counselling details in last month

		Counselor	
		(n=28)	**%**
Experience (years)	<5	23	82.14
	5 to 10	1	3.57
	11 to 15	1	3.57
	16 to 20	0	0.00
	21 to 25	1	3.57
	25 to 30	2	7.14
Topics Covered in Last Month	Anemia	27	96.43
	Diet Diversification	28	100.00
	Diet in Anemia	27	96.43
	Use of Iron utensil	28	100.00
	Role of Kitchen Garden	26	92.86
	IFA and Albendazole	27	96.43
	Compliance of IFA	27	96.43

Table 4. Effect of counselling on Dietary behavior among study population

		PW		AG	
		N=60	**%**	**N=304**	**%**
After diet Counselling	IFA taken with Lemon Juice	13	21.67	45	14.80
Daily intake of GLV like Palak, amarnath, methi, Bhaji etc.	increase	42	70.00	209	68.75
	decrease	1	1.67	0	0.00
	no change	17	28.33	95	31.25
Daily intake of Vit C rich foods Like Lemon, amala, orange etc.	increase	26	43.33	124	40.79
	decrease	1	1.67	0	0.00
	no change	33	55.00	180	59.21
Daily intake of Proteinrich food like pulses, dals, ground nut etc.	increase	33	55.00	166	54.61
	decrease	1	1.67	0	0.00
	no change	26	43.33	138	45.39

Discussion

As per the current study, one to one interview was performed with semi structured assessment checklist on total 304 adolescent girls (AGs) and 60 pregnant women (PWs). Most of PWs (81%) and AGs (88.16%) were vegetarian while were having mixed diet. Regular counselling was done to all beneficiaries under the project. Frequent training sessions are arranged for the counsellors (FHS, MS, AWWs, ASHAs and FHWs etc) for sensitization of project activities including health education and counselling of beneficiaries. All are ever counseled regarding project activities during any time of project period and majority stated that counselling is benefited them. Almost two third (2/3) of them stated that IEC materials are given to them. Most of beneficiaries stated that their counselling is mainly done by AWW and at least one time in the last month. IFA, Anemia related information, Diet and Diet diversification were included in the counselling. According to Ogunsile et al. [5] and Wang [6] implementation of nutrition education and counselling by counselors might have led to behavior change and increase in the intake of iron-rich foods which leading to improved healthy eating. According to the study done in China [6-9] nutrition behavior in adolescents was significantly improved after 6-month nutrition education program done in remote rural areas of China.

As per the current study counselors used pamphlets and flip books maximum as IEC material for the counseling. Intensive Counseling was used as an intervention to change the dietary behavior among study population. The outcome of the study showed the improvement in daily intake of GLV, Vitamin C and Protein intake. Similar results were also consistent with Wiafe et al. [10], Sunuwar et al. [11] and Otoo et al. [12]. Those showed improvement in dietary iron intake within the study groups. Improvement in dietary iron intakes has been reported after the implementation of nutrition education which resulted into drop in the prevalence of anemia. Perhaps the implementation of nutrition education and counselling by counsellors might have led to behavior change as a result improving in iron-rich foods intake. Moreover, the wide variety of iron-rich foods may have increased compliance. Hence, the increased intake of this micronutrient rich foods. According to Kamalraja et al. [13] and Aazam doust Mohammad et al. [14] the nutrient like fat, energy, iron intake was significantly higher in experimental group when compared with the control group. The post intervention nutrient intake except for the intake of iron and folic acid continued to be below the RDA in both the groups. The results indicated that the lack of attitude, knowledge and practice on dietary habits and health has definitely had a negative effect on their nutrient intake.

As per Egryani et al. [15] intervention through one-to-one counseling using pamphlet as one of many methods used to promote healthy lifestyle especially prevention of anemia in pregnant women was successfully increased participant's knowledge about anemia and there was a significant difference between pregnant women's pre and post knowledge about iron tablet (p = 0,000) while as per Ghimire et al. [16] pregnant women's knowledge were correlated with high level education (p = 0.002) and ANC visits more than four

times (p = 0.007). Similarly, another study in Nepal [17] showed that pregnant women who were not consuming regular iron supplements were 18.38 times more likely to develop anemia than who had consumed regularly (AOR=18.380, with 95% CI =3.687- 91.624, p=0.005).

Conclusion

The study aimed to evaluate, how nutrition education and counseling impacted the nutritional status, specifically targeting anemia, among pregnant women (PWs) and adolescent girls (AGs). The results demonstrated a significant positive effect of the intervention on the consumption of iron and vitamin C-rich foods, leading to notable improvements in nutrient intake and a reduction in anemia prevalence among both PWs and AGs. Additionally, the incorporation of weekly iron-folic acid supplementation, along with semi-annual deworming, emerged as a feasible and cost-effective strategy for preventing anemia in AGs across various settings, be it institutional or community-based.

The success of the intervention was attributed to effective communication between educators and participants. This communication emphasized an individualized approach, fostering two-way feedback and facilitating face-to-face counseling sessions. Such personalized communication strategies were instrumental in enhancing knowledge and promoting healthier behaviors among the targeted population.

These findings underscore the importance of tailored interventions and personalized communication strategies within nutrition education and counseling programs. By addressing the specific needs and circumstances of PWs and AGs, these programs can effectively contribute to positive health outcomes, particularly in terms of improving nutritional status and combating anemia. This highlights the significance of investing in targeted interventions and communication approaches to address nutritional challenges and promote overall well-being among vulnerable populations.

Limitations and Recommendations

The evaluation of the innovation pilot project utilized an exploratory study design to conduct a quick assessment. The study acknowledged the limitation of a relatively small sample size involving 14 AWCs, highlighting that a larger sample size would enhance the external validity of the findings. Recommendations were made for multiple training sessions for both counselors and beneficiaries, recognizing that behavioral change and lifestyle modification require time and motivation. The possibility of recall bias regarding daily diet frequency, type, and the intake of IFA or albendazole was also acknowledged. The importance of extending nutrition education and counseling to the male partners of pregnant women was emphasized, focusing on the complications of the disease and the utility of supplementary diets during pregnancy. Additionally, the need for counseling on good hygiene practices to reduce infestations and infections among beneficiaries was highlighted. These suggestions aimed to enhance the effectiveness and comprehensive impact of the intervention.

Authors Contribution

The manuscript has been read and approved by us and we believe that the manuscript represents honest work.

Conflicts of interest

The authors declares that they do not have conflict of interest.

References

1. Bothwell TH. Iron requirements in pregnancy and strategies to meet them. The American journal of clinical nutrition. 2000 Jul 1;72(1):257s-64s.
2. Okube OT, Mirie W, Odhiambo E, Sabina W, Habtu M. Prevalence and factors associated with anaemia among pregnant women attending antenatal clinic in the second and third trimesters at pumwani maternity hospital, Kenya. Open J Obstet and Gynecol. 2016 Jan 11;6(01):16.
3. Salhan S, Tripathi V, Singh R, Gaikwad HS. Evaluation of hematological parameters in partial exchange and packed cell transfusion in treatment of severe anemia in pregnancy. Anemia. 2012;2012:7
4. International Institute for Population Sciences (IIPS) and ICF. 2021. National Family Health Survey (NFHS-5), India, 2019-21: Mizoram. Mumbai: IIPS
5. S.E. Ogunsile, B.O. Ogundele, Effect of game-enhanced nutrition education on knowledge, attitude and practice of healthy eating among adolescents in Ibadan, Nigeria, Int. J. Health Promot. Educ. 54 (5) (2016) 207–216.
6. D. Wang, D. Stewart, C. Chang, Y. Shi, Effect of a school-based nutrition education program on adolescents' nutrition-related knowledge, attitudes and behaviour in rural areas of China, Environ. Health Prev. Med. 20 (4) (2015) 271–278.
7. Wang D, Stewart D. The implementation and effectiveness of school-based nutrition promotion programmes using a health promoting schools approach: a systematic review. Public Health Nutr. 2013;16:1082–100.
8. Wang D, Stewart D, Yuan Y, Chang C. Do health-promoting schools improve nutrition in China? Health Promot Int. 2013;. doi:10.1093/heapro/dat047.
9. Louise R, Oddrun S. Filling the black box of implementation for health-promoting schools. Health Educ. 2011;111:347–62
10. Michael Akenteng Wiafe a, Charles Apprey, Reginald Adjetey Annan. Impact of nutrition education and counselling on nutritional status and anaemia among early adolescents: A randomized controlled trial. Human Nutrition & Metabolism. 31 (2023) 200182. https://doi.org/10.1016/j.hnm.2022.200182
11. D.R. Sunuwar, R.K. Sangroula, N.S. Shakya, R. Yadav, N.K. Chaudhary, P.M. S. Pradhan, Effect of nutrition education on hemoglobin level in pregnant women: a quasi-experimental study, PLoS One 14 (3) (2019), e0213982.
12. G. Otoo, Y. Adam, Effect of nutrition education with an emphasis on

consumption of iron-rich foods on hemoglobin levels of pregnant women in Ghana, Faseb. J. 30 (2016) 410–412.

13. T. Kamalaja, M. Prashanthi, K. Rajeswari, Effectiveness of health and nutritional education intervention to combat anemia problem among adolescent girls, Int. J. Curr. Microbiol. App. Sci 7 (9) (2018) 3152–3162.
14. Aazam Doustmohammadian1, Seyed Ali Keshavarz, Sorayya Doustmohammadian, Eelizabeth, B. M., 2000. Developmental psychology: a life span approach, 5th Edn Tata McGraw Hill
15. N P R Egryani et al. The Effect of One-to-one Counseling to Pregnant Women's Knowledge about Anemia in Semarang. IOP Conf. Series: Earth and Environmental Science 55 (2017) 012036 doi:10.1088/1755-1315/55/1/012036
16. Ghimire N, Pandey N 2013 Knowledge and practice of mothers regarding the prevention of anemia during pregnancy, in teaching hospital, Kathmandu JCMC. 3(5):14-7
17. Mulepati Sumitra, Chaudhary Tanuja Kumari. Determinants of Anemia Among Pregnant Women Attending in a Tertiary Level Hospital, Kathmandu. MED PHoenix : An Official Journal of NMC, Birgunj, Nepal, Volume (2), Issue (1) July 2017, 24-33