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Original Research Article

From participation to transformation: adolescents' narratives of health and nutrition behavior change in a community-based project

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ABSTRACT

Background: Adolescent girls are vulnerable to malnutrition, anaemia, and infections due to a lack of awareness and availability of services, putting them at a high risk of poor health, nutrition, and hygiene status. Hence, community-based interventions need to be implemented to spread awareness using different behavior change models. This study aimed to assess participants' awareness, perceptions, and experiences with health, nutrition, hygiene, and environmental initiatives implemented under the Jagriti program in rural and urban areas.
Methods: Focus group discussions were conducted with adolescent girls. We performed thematic analysis to explore participants' knowledge, practices, and feedback related to awareness campaigns, kitchen gardens, community-based events, digital interventions, and stakeholder meetings.
Results: Participants showed awareness of anemia, menstrual hygiene, nutrition, sanitation, and early marriage. The establishment of kitchen gardens improved dietary diversity and supported livelihood. Traditional and culturally accepted methods such as nukkad natak, rangoli making, and folk-art improved community engagement and knowledge retention. The digital interventions provided health education, but with limitations such as shared phone access and gender disparities. In addition, village and stakeholder meetings discussed waste segregation, cleanliness and hygiene, and air pollution for disease prevention; however, attendance remained a challenge.
Conclusions: The results emphasized the significance of multi-faceted, participatory strategies to increase awareness of health through cultural performances, digital interventions, and community involvement. Addressing barriers such as gender disparities, digital access limitations, and time constraints remains crucial to increasing the effectiveness of the program and its sustainability.

Keywords: Adolescents, Nutrition, Health hygiene, Kitchen garden

INTRODUCTION

Adolescents undergo a transformative journey of physiological, social, behavioural, and mental health changes. Adolescence marks the second significant growth spurt in an individual's life. It is the phase when lifelong attitudes and behaviours are established.[1-5] Lack of awareness, accessibility, and availability of health services and nutrition contribute to long-term consequences of malnutrition, anemia, and vulnerability to infections, along with intergenerational transmission. While negotiating with the environment, adolescents face significant challenges and threats to their health, nutrition, and hygiene. Beckwith et al identified sixteen high-priority areas for adolescent health and well-being.[6]

Adequate nutrition is pivotal for positive health outcomes during adolescence. Adolescents are prone to energy imbalances, protein, and micronutrient deficiencies.[4] The energy and protein requirements of adolescent males are

more than those of females due to greater increases in height, weight, and lean body mass.[5] Requirements of calcium increase and those of vitamin D are crucial to achieve optimal bone accretion and peak bone mass.[5,7] Apart from its well-known role in vision, vitamin A is crucial for optimum growth, immunity, and reproductive development, leading to sexual maturity in adolescents.[7] Increase in muscle mass and higher haemoglobin levels necessitate an increase in iron requirements in both boys and girls. In order to compensate for menstrual blood loss, girls require more iron.[4] Despite these physiological needs of adolescents, malnutrition prevails to cause a health crisis among them.

Although adolescents have one of the lowest mortality rates, this can be misleading as it overlooks their significant disease burden, creating a false impression of health.[4] The National Family Health Survey 2019-2021 (NFHS-5) of India, reports a high prevalence of anemia among adolescents (15-19 years), with almost 60 % of adolescent girls being anemic as compared to 31.1 % adolescent boys.[8] Anemia negatively impacts health and hinders development. In adolescents, it can irreversibly impair growth, development, and productivity.[9] Furthermore, the comprehensive national nutrition survey (CNNS) from 2016-2018 found that 28.4% of adolescents (10-19 years) were anemic. The double burden of malnutrition was found in 0.8% of adolescents, who were simultaneously stunted (26.4%) and overweight (4.1%).[10] Adolescents face health issues beyond nutrition, including sexual, reproductive, and hygiene challenges, often influenced by social and cultural factors.[11]

With such a high disease burden, it becomes essential to address these challenges using participatory, community-based approaches that empower adolescents to take charge of their own health and nutrition behaviour change. This is precisely where behavior change communication (BCC) and comprehensive community interventions are vital. As a strategic process, BCC is vital for the promotion of behaviors by influencing knowledge, attitudes, and practices (KAP). They represent a "paradigm shift from the existing clinic-based services to promotion and prevention" and involve reaching out to adolescents in their own environment.[12]

Studies have consistently demonstrated the effectiveness of this BCC approach in imparting health and nutrition education to adolescents. Nutrition education and counselling programs effectively reduced fat and calorie intake while increasing protein and controlling weight gain in adolescents (11-14 years), creating significant improvements in KAP.[13,14] Infotainment-based BCC in Assam improved adolescent girls' reproductive and sexual health understanding.[15] Investing in adolescent health benefits them, improves their future, and positively impacts subsequent generations through knowledge and health.[16]

A qualitative approach utilizing adolescents' narratives is crucial for comprehending the transition from participation in a program to genuine transformation. By investigating their personal narratives, we can elucidate the 'how' and 'why' of their behavioural transformations, discovering the psycho-social determinants of their health decisions.[17] This study aimed to assess girls' views, knowledge, and experiences of the awareness program (Jagriti) on health, nutrition, hygiene, and gender issues.

METHODS

Study areas

The cross-sectional qualitative study was conducted in the rural and urban areas. The study areas included Jamui and Khagaria districts of Bihar, Sahebganj district of Jharkhand, Bolangir and Kalahandi districts of Odisha, Varanasi, Chitrakoot, Bahraich, and Kaushambi districts of Uttar Pradesh, Hanumangarh and Dholpur districts of Rajasthan, East Delhi, Nagpur district of Maharashtra, and Chamba and Mandi, Himachal Pradesh. The study was a part of the project that aimed to improve the health, nutrition, and hygiene of adolescent girls, with an enabling environment from parents and other key stakeholders (Figure 1).

Different approaches were adopted in the intervention, including group education sessions, mid-media and mass media approaches, and digital approaches to deliver information in an interactive and participatory way. The information was delivered using a culturally and geographically contextualized manner by the field staff.

The staff was pre-trained on the content of the education sessions, trainings, and meetings. We developed different educational tools like flipbooks with content and pictures in the local language (Hindi or Oriya), pamphlets (menstrual hygiene and anemia), and videos (Table 1). The content of the intervention was vetted by nutritionists, public health specialists, and social workers from the community. The study was conducted in the month of February 2024.

Data collection

The data were collected by a team of 8 investigators after the three-year intervention (Jagriti). Out of 8, 4 were men and 4 were women investigators. The mean age of the investigators was 39 years. All the investigators were graduates and postgraduates (MA, MBA, MSW, PgDip, and MD) with experience in conducting qualitative data collection in the past.

These researchers were not a part of the intervention, and the participants met them for the first time. The investigators introduced themselves at the beginning of the discussion and explained the objectives of the study.

Data analysis

Content analysis was performed based on themes decided a priori. Convenient sampling method was adopted. The focus group discussions (FGD) were held face-to-face at a common place (most likely Anganwadi center or a village community center). Only the participants eligible for the study were present during the discussions. We adopted a semi-structured questionnaire that had questions, prompts, and guides provided by the investigators to the participants. The tools were pilot tested. The discussions were recorded in a dictaphone; however, we did not repeat the discussions. The field notes made by the investigators were considered during the transcript preparation. We did not return the transcripts to participants for comments.

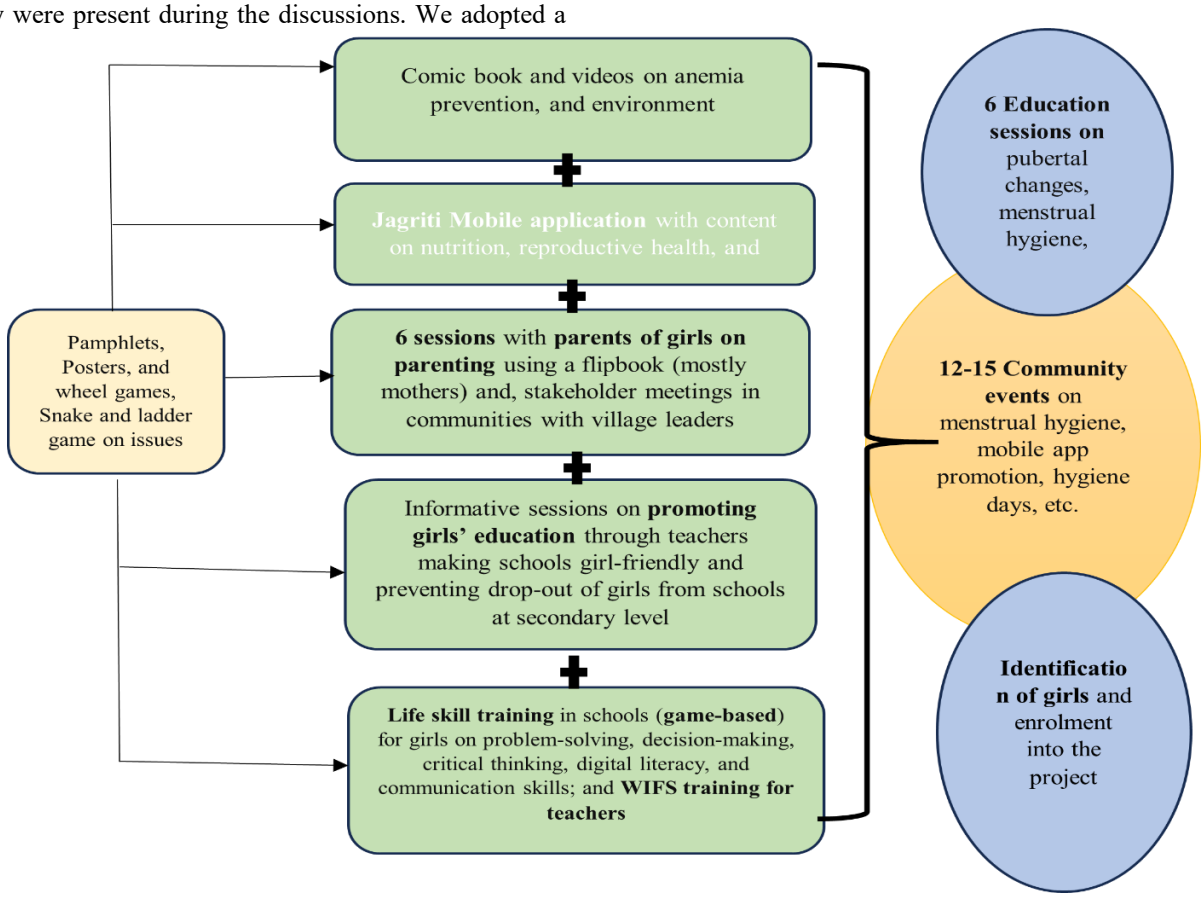

Figure 1: Intervention design for adolescent girls in Project Jagriti.

NCD: Non-communicable diseases; MHM: menstrual hygiene management; WIFS: weekly iron-folate supplementation

Table 1: Use of different education tools in the intervention.

Type	Topics (contents)	Mode of delivery
Flipbook on adolescent health and nutrition (*Yauvan*, which means adolescence)	Pubertal changes, nutrition, balanced diet, non-communicable diseases, anemia, reproductive health, menstrual hygiene, personal hygiene, mental health, violence prevention, prevention of early marriage, and life skills	Group education sessions (a small group of 25-30 girls in the community)
Flipbook on promoting girls' education and making schools girl-friendly	Different government schemes to promote girls' education, importance of girls' education, voice against bullying and violence	Group education sessions (a small group of 25-30 girls in the community)
Jagriti mobile application	Nutrition, psychological disorders, mindfulness training, and reproductive health with games and exercises (quizzes)	Kiosks to promote application's use
Comic books and videos	Anemia, nutrition, environmental health promotion, menstrual hygiene, kitchen gardening, prevention of NCDs, girls' education, and balanced diet	Role plays and LED shows
Training module	A module for school teachers on weekly iron-folic acid supplementation program, anemia identification, prevention, and control, IFA tablet counselling, and deworming, and adopting gender-sensitive pedagogy principles	Onsite training in schools

Continued.

Type	Topics (contents)	Mode of delivery
Flipbook on parenting	Parenting techniques, adolescent's health, growth, and development, balanced diet, promoting physical activity, prevention of substance and digital addiction, violence, and promoting reproductive health	Group education sessions (a small group of 25-30 parents in the community)
Pamphlets and posters	Anemia, balanced diet, menstrual hygiene, gender-based violence, bullying, contraceptives, early marriage prevention	Distribution toward the end of sessions and events like street plays, folk dance, and road shows
Games	Wheel-game on menstrual hygiene and a snake and ladder game on NCD awareness	Group games

All the FGDs were recorded on dictaphones, which were transcribed and written later. The discussions were conducted in the local language (Hindi and Odiya). The transcripts were entered in English by the researchers in the Microsoft Excel sheets (Excel 2016, Redmond, Washington, United States). A qualitative matrix was developed a priori on the themes based on the objectives of the assessments. A content analysis was carried out, and the data were coded using the predetermined codes. Any information that was to be categorized using the initial coding scheme was given a new code. The data, obtained from MIS, were analyzed using Microsoft Excel. The quantitative data was expressed as frequencies and percentages. We did not share the findings with the participants for their feedback or illustration of the themes.

Study tool

The FGD guide was developed to collect information about their satisfaction/experiences with the program, learnings, and support from the program, perceived achievements and challenges, and perceived benefits of the program. FGDs were conducted with adolescent girls (10-19 years) who were residing in the same area of the study and were associated with the intervention.

Ethical clearance was obtained from MAMTA Ethical Committee (MIRB/December-2024/017).

RESULTS

A total of 131 FGDs were organized with girls across 15 districts. The mean number of participants per group was 8.7. The mean age of the girls was 15.6 years. Out of 131 girls, 30.5% were studying between 5th and 8th standards. Around 38.2% of the girls belonged to other backward classes, 42% belonged to scheduled tribes and castes, and 19.8% belonged to the general category. The mean duration of the discussions was 25.8 minutes. We segregated the data into three themes, namely awareness, approaches, and areas of intervention (Table 2).

Awareness about the project

Participants discussed their awareness about Mamta and Jagriti, and shared experiences from community meetings held in the villages. Community members were somewhat familiar with the organization and its health/environmental awareness programs. They could recall various health-related topics covered in these meetings, including anemia, blood pressure, cleanliness, nutrition, and menstruation hygiene. The group also reflected on early marriage practices, the importance of educating girls, and societal attitudes that hinder women's education and empowerment.

"Girls need to be educated because they have to run two houses. One is their mother's house and the other is their in-laws' house. So, girls need to be educated. And girls' parents don't let them study."

"They think that they can go out and do their work. But they don't believe in women. They should believe in women. They believe in men, but they don't believe in women. That's why they don't send them out. If they don't send them out, then women won't have any information."

"In the past, I was not allowed to study. I was not allowed to get married. I was not even able to take care of the house. When you get married at a young age, you cannot take care of yourself. When you have children, you will be more troubled."

Approaches

Kitchen gardening

Participants reported receiving seeds for vegetable cultivation from Jagriti, which helped them grow their own produce, saving money, and promoting healthier diets.

"As long as we use external chemicals, our health will deteriorate. That's why he told us not to use external fertilizers. And if we don't use external fertilizers, we will be healthy. We should use domestic fertilizers. He also told us how to make fertilizers."

"I used to get at least Rs. 500-600 for this type of sow. I used to get saag, pumpkin seeds, mustard seeds, and everything else. You also have to feed yourself. I also have to feed my mother-in-law. I don't have an uncle, so I have

to feed my mother-in-law. If I feed my mother-in-law outside, I won't be able to feed my mother-in-law."

"If we grow vegetables from outside, we will save money."

Table 2: Demographic data of the study participants.

Variables	N (n=131)
Mean age (years)	15.59
Education status categories	
Primary school (1-4th class)	39 (29.8)
Middle school (5th-8th class)	40 (30.5)
Secondary school (9-10th class)	39 (29.8)
Senior secondary school (11th-12th)	10 (7.6)
Graduate	3 (2.3)
Social class	
Scheduled tribe	14 (10.7)
Scheduled caste	41 (31.3)
Other backward classes	50 (38.2)
General	26 (19.8)

Mid-media events

A drama about environmental health, specifically the harmful effects of burning wet wood indoors and the benefits of using gas stoves, was discussed. Participants indicated that language played a crucial role in communication effectiveness, expressing a preference for local dialect (Bhojpuri) over standard Hindi (Khadi) for better comprehension.

Girls highlighted that "Nukkad Natak" (street plays), learning art ("Kala"), and dancing, are a spruce of entertainment and a means of acquiring new skills. Incorporating street plays, dances, rangoli art, and other culturally relevant activities was perceived helpful in making health education more relatable and memorable. These methods stimulated engagement, encouraged participation, and catered to different learning styles, thus improved the overall impact of awareness campaigns. The atmosphere was informal, encouraging honest responses without fear of right or wrong answers, fostering open dialogue and reflection on the programs' impact on their lives. Children's ability to recall specific events, campaigns (such as "Babli Puchhe Sawali" and "Munni Campaign"), and details about health messages indicated successful penetration of the programs. Active involvement in multiple initiatives boosts ownership and encourages the adoption of healthier behaviors. Soliciting children's opinions on what worked well and what could be improved in the programs highlighted the importance of participatory evaluation.

Local dramas and sit-ins were used as effective tools to engage villagers on cleanliness and health topics. Waste segregation education included differentiating wet and dry garbage, reflecting growing environmental awareness. Air pollution from household coal use and vehicle emissions was recognized as a health concern.

Digital approach

We explored the use of mobile phones for educational purposes, revealing that while most participants used phones, few have accessed health or nutrition information digitally. Girls shared their experiences about attending events, receiving SMS alerts, and using the "Jagriti" app for health education. The conversation also touched on the effectiveness and reach of these programs, suggestions for improvement. It was perceived that the Jagriti mobile app's ease of use and comprehensive information on topics such as puberty, hygiene, and health practices could help young users to learn independently and share knowledge with their families, thus amplifying program reach. However, a few adolescents reported to not have accessed the application.

Use of SMS alerts and social media platforms like WhatsApp and Facebook demonstrated a multi-channel communication strategy. This approach ensured that health messages could reach children and their families repeatedly, reinforcing behavioral change and maintaining continuous engagement. Mobile phone usage was common but mostly shared, with limited personal ownership and low app engagement. Most rely on family members' phones, particularly their fathers', to access mobile content.

Stakeholder meetings

The interview reveals mixed levels of engagement, with some villagers attending meetings and others unaware. Topics discussed include menstrual hygiene, waste segregation, air pollution, disease prevention. The villagers share their experiences with local dramas depicting health and environmental themes, emphasizing cleanliness as a key factor in disease prevention. The conversation also touches on logistical challenges related to meeting attendance due to school and work schedules and the limited personal ownership of mobile phones. Overall, the interview highlights the ongoing efforts to educate rural communities on health and environmental issues through grassroots programs, while also revealing gaps in outreach and digital engagement.

Cleanliness was repeatedly emphasized as the most crucial factor in preventing diseases. Scheduling community meetings was a challenge due to school and work commitments, impacting participation. The villagers mention difficulties in attending meetings due to school hours and other commitments, suggesting that program timing significantly affects participation rates. Strategic scheduling and flexible, inclusive approaches are needed to ensure greater community involvement, especially among youth and working individuals.

"We should not throw so much garbage in the house. We should throw only the garbage that is left. We were told the color of the garbage. Blue and green. It should be put in wet or dry. If you want to put the garbage in wet, then

you can put water in the dustbin and make it wet. No, just like that."

"We are talking about the air pollution in your village. There are chimneys in our village. There are at least two bikes in everyone's house. Due to that, there is a lot of smoke. Most of our houses are made of coal. The smoke comes out of that as well. That is also a source of pollution. How can we get rid of it? If there is air pollution in the house, what are the consequences? What? If there is air pollution in the house, then there is a fire"

The data highlighted the importance of face-to-face interaction and culturally relevant activities in rural outreach, where digital penetration may be limited. However, the inconsistency in attendance indicated that relying solely on physical meetings may exclude some community members, suggesting a need for diversified communication channels. The use of drama and sit-ins to convey messages about cleanliness, health, and the environment was a culturally sensitive and engaging method. Participants recalled these events positively, noting involvement of women and children. This method likely helped in simplifying complex health concepts and encouraging community dialogue, proving that participatory approaches could be effective in rural health promotion.

Areas of intervention

Villagers demonstrated an understanding of waste management principles, including the separation of wet and dry waste and the importance of not littering excessively. The mention of color-coded garbage bins (blue and green) indicated exposure to formal waste segregation campaigns. The participants recognized common sources of air pollution, such as coal-based stoves and emissions from motorcycles, linking these to respiratory issues such as coughing and allergies. The dialogue revealed a tension between health risks and the necessity of traditional cooking methods, underscoring a key challenge in rural health interventions: balancing cultural practices and economic realities with environmental health goals. Consistently, participants emphasized cleanliness—as personal hygiene, household sanitation, and environmental cleanliness—as fundamental to preventing diseases like cough and skin ailments. This insight aligns with public health principles and indicates that community health messaging has successfully prioritized hygiene, though sustained behavior change remains essential.

Participants discussed their knowledge and experiences related to these programs, such as the importance of protein in diet, hygiene practices, prevention of diseases like malaria and human immunodeficiency virus/acquired immunodeficiency syndrome (HIV/AIDS), and environmental concerns like waste disposal. Challenges such as lack of educational resources and barriers to accessing health information were acknowledged.

"We have to take care of our diet. We should take protein. We should have protein-rich food"

"HIV and AIDS is a very dangerous disease. This disease is caused by someone else."

"They have lost their education because of all this. They wanted to study but it is difficult because of this. There are no good teachers here. That's why they don't go to college. I want to go to school."

The conversation touched upon the adoption of learned skills into everyday life and the value of these teachings. The discussions reflected a narrative centered on community engagement, youth empowerment, cultural integration, and the use of digital tools for education and communication within the Mamta organization.

Participants shared their experiences attending meetings, receiving training, and applying learned knowledge, especially in cultivating nutritious vegetables and maintaining cleanliness. They discussed the challenges faced, including family restrictions and the need for broader community involvement. The session also touched on the influence of social media among adolescents, the role of school programs in awareness, and the importance of spreading information within families and neighborhoods. Participants expressed positive feedback about the training, requested more information on health and nutrition, and suggested that such programs be expanded in schools and villages to reach more people.

The women expressed their concerns about maintaining good health, including worries about low blood levels and protein intake. The session also touched upon the mental health benefits of attending the Masik Chakra (monthly health meetings). Participants shared how these tools have influenced their eating habits, especially increased protein consumption, and improved their awareness of personal and family health. The dialogue also revealed personal stories about early marriage and its impact on health and wellbeing. The dialogue revealed that the program covered critical topics such as bodily changes during puberty, menstrual hygiene management, healthy eating habits, waste segregation, and pollution awareness. The discussion also touches on the importance of early education for younger girls about menstruation to better prepare them for physical changes.

They have participated in multiple events, including International Women's Day, anemia screening, life skills sessions, nutrition months, and adolescent health programs. Feedback on the programs and applications is generally neutral or non-committal, with no explicit recommendations or criticisms. We used mind-mapping exercise to summarize the approaches, areas, and awareness. The details of the 3A framework are summarized in Figure 2.

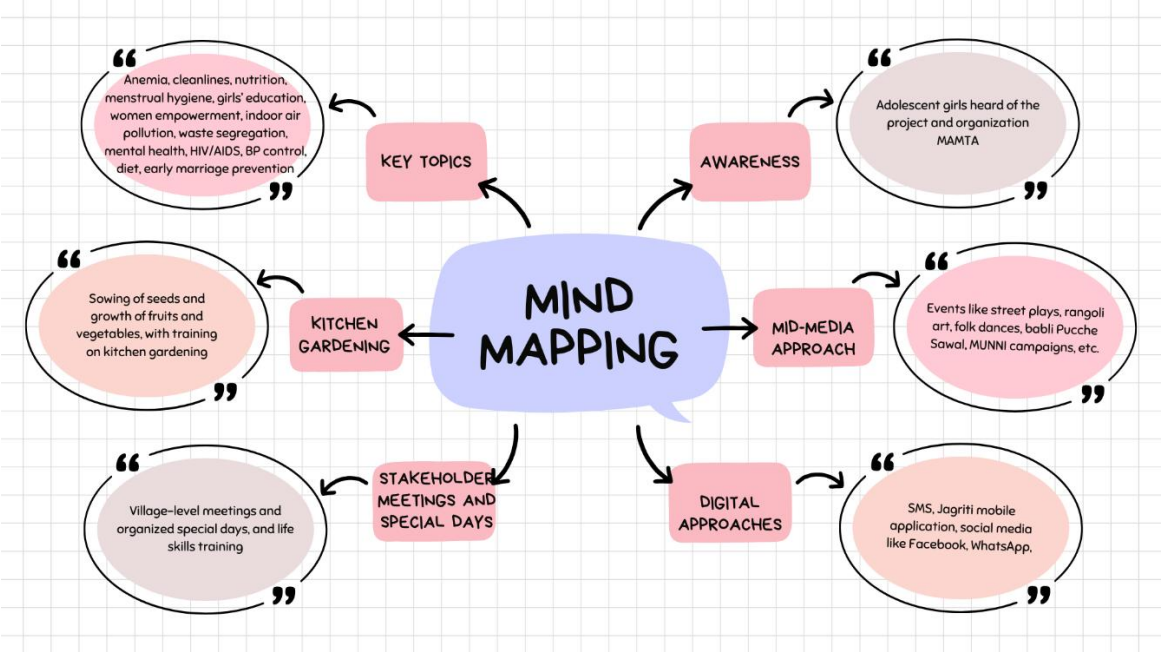

Figure 2: Mind map exercise to enumerate the 3A (awareness, approaches, and areas) findings through the discussions in the community with girls.

DISCUSSION

The findings of the present study showed that community members were aware of Mamta and Jagriti programs, remembering sessions especially conducted on anemia, blood pressure, cleanliness, nutrition, menstruation hygiene, early marriages, girl education, and societal attitudes that hinder women's education and empowerment. The findings of our study align with prior research that community meetings and dialogue-based platforms are helpful in generating awareness on health topics such as maternal and child health, sanitation and cleanliness, and nutrition.[18,19] For instance, a study conducted in rural Uttar Pradesh found that women's collectives supported by NGOs were helpful in generating awareness on reproductive and child health issues, especially iron-deficiency anemia and menstrual hygiene.[20] Similar interventions were implemented in Bihar and Madhya Pradesh, and they demonstrated that regular engagement at community meetings substantially increased women's awareness of maternal and adolescent health.[21]

Under Jagriti, the establishment of kitchen gardens near households emerged as the key intervention at the community level, beneficial in improving dietary diversity, along with providing food security and generating livelihood. The findings are consistent with the studies conducted in Odisha and Chhattisgarh, where kitchen gardens facilitated by women's self-help groups increased consumption of vegetables, which directly improved dietary diversity and enhanced decision-making power of women.[22,23] The results are in alignment with the study conducted in Nepal, which found that the availability of seeds and training on the use of organic fertilizers promoted low-cost sustainable nutritional benefits, which help in combating micronutrient deficiencies.[24]

Inclusion of community-based cultural and participatory activities such as nukkad nataks, rangoli making, and folk arts was found to be effective in engaging community members and absorption of health-related messages. Prior studies also highlighted that entertainment-centred and culturally-rooted strategies are more helpful in retaining messages, promoting community engagement, and fostering social dialogue.[25,26] Participants were able to recall campaigns like "Munni Campaign" and "Babli Pucche Sawal," which suggests that regular and culturally-specific communication strengthens knowledge and improves the long-term impact of behaviour change. The findings align with the existing research on health communication strategies in rural contexts.[27] Similarly, interactive theatre in sub-Saharan Africa increased community participation and transformed societal norms on gender and health behaviors.[28]

The present study examined the use of digital interventions such as SMS alerts, WhatsApp messaging, and mobile applications in improving the awareness among girls. However, they seemed to be beneficial only for girls who had access and ownership of the mobile phones. The findings are in alignment with the studies conducted on mHealth in India and Sub-Saharan Africa, where mobile-based health messaging improved knowledge and practices; however, they faced obstacles in access, ownership, and digital literacy.[29,30] Comparable findings were observed in Bihar among adolescent girls, demonstrating a restricted uptake of the mHealth information due to shared phone access and family restrictions.[31] However, our study reported a positive

perception of the Jagriti application. This suggests that mobile-based learning can be supportive and complementary to the traditional methods, especially when facilitated by community facilitators.[32]

Furthermore, stakeholder- and village-level meetings were appreciated, but they encountered challenges in timing and participation. This seemed to have resulted from the responsibilities of school-going adolescents and working adults' commitments, highlighting the need to introduce flexible and inclusive schedules, and hybrid approaches in order to promote participation.[33] Additionally, cleanliness, hygiene, and waste management emerged as the priority intervention areas. Waste segregation practices and the use of color-coded dustbins were adopted, thereby highlighting the optimistic attitude towards environmental health. The results of our study coincide with the Swachh Bharat Abhiyan research, where community meetings and village activities considerably raised awareness on waste segregation practices.[34,35] Furthermore, addressing the sources of household air pollution, such as coal use and vehicle emissions, was appreciated and adopted by girls.[36]

The study's findings should be understood while considering the following limitations. Firstly, the study reflected the perception of girls about the program, and the observations may not necessarily be generalizable. Secondly, this was not a randomized trial where the change in girls' knowledge or practices could be attributed to the project interventions entirely.

Lastly, the effect of recall bias could not be ignored, as some of the participants might have been approached 1.5-2.5 years before the endline qualitative discussions.

CONCLUSION

The findings recommend multi-disciplinary and culturally-appropriate approaches, including community meetings, digital dimensions, and school-based interventions, to improve the knowledge of girls at the community level. However, various limitations, such as gender stereotypes, limited digital access, and time constraints, continue to be significant barriers. Therefore, increasing access to mobiles, along with the expansion of mHealth tools among adolescent girls, is important. Moreover, gender-sensitive approaches should be adopted to create safe spaces for adolescent girls in villages. In addition, organizing meetings at flexible timings for school-going adolescents and working professionals is likely to ensure sustainability. Furthermore, the alignment of the program activities with the government health, nutrition, and sanitation policies is critical to improve the reach of the project and ensure its sustainability.

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REFERENCES

1. Kapur S. Adolescence: the stage of transition. Horizons of Holistic Education. 2015;2:233-50.
2. Cameron N, Bogin B. Human Growth and Development. StatPearls Publishing. 2023.
3. Pillai AK, Rs R. Adolescent health in india and development implications. Int J Dev Res. 2014;4(10):2078-83.
4. Corkins MR, Daniels SR, de Ferranti SD, Golden NH, Kim JH, Magge SN, et al. Nutrition in Children and Adolescents. Med Clin North Am. 2016;100(6):1217-35.
5. Das JK, Salam RA, Thornburg KL, Prentice AM, Campisi S, Lassi ZS, et al. Nutrition in adolescents: physiology, metabolism, and nutritional needs. Ann N Y Acad Sci. 2017;1393(1):21-33.
6. Beckwith S, Chandra-Mouli V, Blum RW. Trends in Adolescent Health: Successes and Challenges From 2010 to the Present. J Adolesc Heal. 2024;75(4):S9-S19.
7. Indian Council of Medical Research-National Institute of Nutrition. Dietary Guidelines for Indians. 2024. Available at: https://www.nin.res.in/dietary guidelines/pdfjs/locale/DGI07052024P.pdf. Accessed on 10 September 2025.
8. Ministry of Health and Family Welfare. National Family and Health Survey-4, 2015-16. 2020. Available at: http://rchiips.org/nfhs/FCTS/GJ/GJ_FactSheet_486_Vadodara.pdf. Accessed on 10 September 2025.
9. Chen Z, Yang H, Wang D, Zhao L, Liu C, Zhang Y, et al. Effect of Oral Iron Supplementation on Cognitive Function among Children and Adolescents in Low- and Middle-Income Countries: A Systematic Review and Meta-Analysis. Nutrients. 2022;14(24).
10. Ministry of Health and Family Welfare (MoHFW), Government of India, UNICEF and PC. Comprehensive National Nutrition Survey (CNNS) National Report. New Delhi. 2019.
11. World Health Organization. Adolescent Sexual Reproductive Health. Available at: https://www.who.int/southeastasia/activities/adolescent-sexual-reproductive-health. Accessed on 10 September 2025.
12. World Health Organization. Adolescent health. The New Zealand nursing journal. Kai tiaki. 1989. Available at: https://www.who.int/health-topics/adolescent-health#tab=tab_1. Accessed on 10 September 2025.
13. Ponnambalam S, Palanisamy S, Singaravelu R, Janardhanan HA. Effectiveness of a school-based nutrition education program on waist circumference and dietary behavior among overweight adolescents in Puducherry, India. J Educ Health Promot. 2022;11(1):323.
14. Ragavi M, Muthu Meenakshi P. Factors affecting eating behavior and impact of nutrition education on

the eating behaviour of adolescents (17–19 years). Nutr Food Sci. 2025;55(2):262-74.
15. Wiafe MA, Apprey C, Annan RA. Impact of nutrition education and counselling on nutritional status and anaemia among early adolescents: A randomized controlled trial. Hum Nutr Metab. 2023;31:200182.
16. Mahanta TG, Boruah M, Singh VK, Gogoi P, Rane T, Mahanta BN. Effect of social and behavior change communication by using infotainment in community perception of adolescent girls for reproductive and sexual health care in high priority districts of Assam. Clin Epidemiol Glob Heal. 2016;4(3):133-9.
17. World Health Organization. Global Accelerated Action for the Health of Adolescents (AA-HA) Guidance to Support Country Implementation. 2023. Available at: https://apps.who.int/iris/bitstream/handle/10665/255415/9;jsessionid=B309C8C56E5EEFA24FA2F606422AB847?sequence=1. Accessed on 10 September 2025.
18. Singh G, Gupta A, Anand N, Kumar R. Determinants of menstrual hygiene among adolescent school girls in a rural area of Patna, Bihar, India: A cross-sectional study. J Family Med Prim Care. 2023;12(12):3271-8.
19. Vir S. Community Based Maternal and Child Health Nutrition Project, Uttar Pradesh: An Innovative Strategy Focusing on "At Risk" Families. Indian J Community Med. 2013;38(4):234.
20. McCammon E, Bansal S, Hebert LE, Yan S, Menendez A, Gilliam M. Exploring young women's menstruation-related challenges in Uttar Pradesh, India, using the socio-ecological framework. Sex Reprod Heal Matters. 2020;28(1):1749342.
21. Saggurti N, Atmavilas Y, Porwal A, Schooley J, Das R, Kande N, et al. Effect of health intervention integration within women's self-help groups on collectivization and healthy practices around reproductive, maternal, neonatal and child health in rural India. PLoS One. 2018;13(8):e0202562.
22. Pratapagiri VG. Impact of Women Self-help Groups on Rural livelihoods in India: Issues and Challenges. J Women Empowerment Stud. 2025;5(1):1-11.
23. Perry M, Becerra F, Kavanagh J, Serre A, Vargas E, Becerril V. Community-based interventions for improving maternal health and for reducing maternal health inequalities in high-income countries: a systematic map of research. Global Health. 2015;10(1):63.
24. Osei A, Pandey P, Nielsen J, Pries A, Spiro D, Davis D, et al. Combining Home Garden, Poultry, and Nutrition Education Program Targeted to Families with Young Children Improved Anemia among Children and Anemia and Underweight among Nonpregnant Women in Nepal. Food Nutr Bull. 2017;38(1):49-64.
25. Nair N, Tripathy P, Costello A, Prost A. Mobilizing women's groups for improved maternal and newborn health: Evidence for impact, and challenges for sustainability and scale up. Int J Gynecol Obstet. 2012;119.
26. Boro B, Banerjee S. Decomposing the rural–urban gap in the prevalence of undiagnosed, untreated and under-treated hypertension among older adults in India. BMC Public Health. 2022;22(1):1-16.
27. Sharma N, Meena KK, Gaur K, Sharma D. A comparative study of knowledge and practice regarding menstrual hygiene among private and government schools of Jaipur city. Int J Community Med Public Health. 2019;6(9):3689.
28. Asante E. From Theory to Practice: The Process of Participatory Theatre in Community Development. J Soc Sci Stud. 2022;9(1):14.
29. Labrique A, Agarwal S, Tamrat T, Mehl G. WHO Digital Health Guidelines: a milestone for global health. NPJ Digit Med. 2020;3(1).
30. Sondaal SF, Browne JL, Amoakoh-Coleman M, Borgstein A, Miltenburg AS, Verwijs M, Klipstein-Grobusch K. Assessing the Effect of mHealth Interventions in Improving Maternal and Neonatal Care in Low- and Middle-Income Countries: A Systematic Review. PLoS One. 2016;11(5):e0154664.
31. Small Z, Thompson SE, Sharma A, Majumdar S, Thout SR, et al. Mobile health (mHealth) interventions for health promotion during the perinatal period in India: a scoping review. Front Glob Women's Health. 2024;5:1427285.
32. Hurt K, Walker RJ, Campbell JA, Egede LE. mHealth Interventions in Low and Middle-Income Countries: A Systematic Review. Glob J Health Sci. 2015;8(9):183.
33. Gholipour K, Shokri A, Yarahmadi AA, Tabrizi JS, Iezadi S, Naghibi D, et al. Barriers to community participation in primary health care of district health: a qualitative study. BMC Prim Care. 2023;24(1):117.
34. Barnard S, Routray P, Majorin F, Peletz R, Boisson S, Sinha A, Clasen T. Impact of Indian Total Sanitation Campaign on latrine coverage and use: a cross-sectional study in Orissa three years following programme implementation. PLoS One. 2013;8(8):e71438.
35. Water, sanitation and hygiene. UNICEF India. Available at: https://www.unicef.org/india/what-we-do/water-sanitation-hygiene. Accessed on 10 September 2025.
36. Smith KR, Bruce N, Balakrishnan K, Adair-Rohani H, Balmes J, Chafe Z, et al. Millions dead: how do we know and what does it mean? Methods used in the comparative risk assessment of household air pollution. Annu Rev Public Health. 2014;35:185-206.

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