Short Communication

Food and Nutrition Bulletin
2017, Vol. 38(3) 447-452

DOI: 10.1177/0379572117712791
journals.sagepub.com/home/fnb
SAGE

Applying Positive Deviance for Improving Compliance to Adolescent Anemia Control Program in Tribal Communities of India

Vani Sethi, MSc, PhD[1], Monique Sternin, MA[2], Deepika Sharma, MPH, MBA[3], Arti Bhanot, MSc, MPhil[4], and Saba Mebrahtu, MSc, PhD[4]

Abstract

Background: Positive deviance (PD) is an asset-based social and behavior change communication strategy, utilizing successful outliers within a specific context. It has been applied to tackling major public health problems but not adolescent anemia.

Objective: The study, first of its kind, used PD to improve compliance to adolescent anemia control program in Jharkhand, India, where anemia prevalence in adolescent girls is 70%, and program compliance is low.

Methods: With leadership of state government, the study was designed and implemented by a multidisciplinary 42 member PD team, in Khunti district, in 2014. Participatory appraisals were undertaken with 434 adolescent girls, 18 frontline workers, 15 teachers, and 751 community leaders/parents/relatives. Stakeholders were interviewed to identify positive deviants and PD determinants across 17 villages.

Results: Perceived benefits of iron folic acid tablet and nutritional care during adolescence are low. Positive deviants exist among adolescent girls (26 of 434), villages (2 of 17), and schools (2 of 17). Positive deviant adolescent girls consumed variety of iron-rich foods and in higher frequency, consumed iron folic acid tablets, and practiced recommended personal hygiene behaviors. Deviant practices in schools included supervision of students during tablet distribution among others.

Conclusion: Government-led PD approach uncovered local solutions and provided a forum for government functionaries to listen to and dialogue with, and an opportunity to adapt the program according to the needs of the affected communities, who are missing partners in program design and management.

Keywords

positive deviance, adolescents, anemia

[1] Child Development and Nutrition Section, UNICEF India Country Office, New Delhi, India
[2] Positive Deviance Initiative, Tufts University, Boston, MA, USA
[3] UNICEF State Office of Madhya Pradesh, Bhopal, India
[4] Independent consultant

Corresponding Author:
Vani Sethi, Child Development and Nutrition Section, UNICEF India Country Office, 73 Lodhi Estate, New Delhi 11000, India.
Email: vsethi@unicef.org

Introduction

In India, home to nearly 113 million adolescent girls, the prevalence of anemia in this age-group is estimated at 56%.[1,2] In some states, like Jharkhand, the prevalence of anemia in adolescent girls is much higher than the national average at 78%.[3] To address this problem, the Adolescent Anemia Control Program was first initiated in the year 2004 in 5 districts of Jharkhand including Khunti and scaled up state-wide within 5 years to cover both in- and out-of-school adolescent girls across the state.[4] In 2010, the program received a setback due to supply deficiency of iron folic acid (IFA) tablets in the state. Coincidently, a national level comprehensive program to address adolescent anemia through weekly iron and folic acid supplementation (WIFS) as a partnership of the Ministry of Health and Family Welfare, Ministry of Women and Child Development, and Ministry of Human Resource Development was initiated which gave an impetus to the anemia control program in Jharkhand. The WIFS program extends to girls up to 19 years of age, and schoolgoing adolescent boys' grades 6th to 12th. The WIFS program is implemented through the local Anganwadi center or the village platform for delivery of Integrated Child Development Services by the Anganwadi worker (AWW) for out-of-school girls, and through the middle and high schools via the selected nodal teacher with support from 1 or 2 nodal girl students for all schoolgoing girls.[5] However, program coverage reports showed a decrease in coverage of out-of-school girls since November 2013. Reviews of IFA supplementation programs have reported side effects, such as nausea, vomiting, and giddiness post-IFA consumption or fear of these side effects, the lack of awareness about IFA benefits and failure to remember routine intake of tablets as common reasons for low compliance to IFA.[6-8]

To ascertain the reasons for poor compliance and gaps in coverage a participatory rural appraisal using the positive deviance (PD) was implemented in Khunti district. In contrast with need-based approaches that attempt to solve problems by introducing solutions from outside, usually through external expertise, PD is an asset-based approach that is predicated on the existence of expertise within the communities.[9] Positive deviance in research has been applied to childhood malnutrition for nearly 4 decades with consistent discoveries of "unlikely innovators" in very poor families who have thriving young children (PDs) in very vulnerable communities and finding the determinant factors that enable these few families to prevent malnutrition in their young vulnerable children.[10-13] However, PD has been used sparingly for addressing childhood anemia in Senegal and in Palestine.[14,15] This article aims to identify uncommon but visibly successful behaviors and strategies that enable both providers and adolescent girls to comply with the WIFS program in district Khunti of Jharkhand, India.

Methodology

The PD methodology involves 5 iterative steps carried out with the community or organization concerned: (1) defining the problem, its causes and outcomes, (2) identification of PDs (individuals or groups), (3)uncovering their uncommon but successful behaviors or strategies to prevent or overcome the problem, (4) developing a plan of action, activities, and protocols based on the findings, and (5) monitoring the progress and impact of the new PD-informed initiative with a focus on behavior and social change.[16] This study focuses on the first 3 steps of PD methodology providing options for promoting successful behaviors on IFA compliance and informing the State's Social and Behavior Change Communication Strategy (action plan) for WIFS program. The tribal district of Khunti was purposely selected for implementing the PD methodology as it has an online reporting system for WIFS and is in close proximity to the state capital, Ranchi. The study was conducted between October and December 2014. This called for 3 visits to the same community to facilitate the research: the first visit to get to know the communities, carry out hemoglobin testing on all adolescent girls with their consent and feedback on their collective anemia status, and explore the current

situation regarding adolescent girls' health; the second visit focused on PD inquiries among the identified PD girls and their parents as well as 1 non-PD girl; and the third visit was dedicated to review the findings with the entire community with an emphasis on what works (positive behaviors) and to discuss possible community-generated activities to improve compliance to WIFS program.

The PD Facilitators Teams

A multidisciplinary team of 42 PD facilitators, conversant with local language was assembled and trained in the PD methodology. Team included staff and/consultants from the department of health, women and child development, education, medical colleges, local nongovernment organization, and United Nations Children's Fund. The teams worked in groups of 9 to 10 people in each village.

Sampling

Using a purposive approach, blocks that reported high IFA compliance as per the WIFS reporting system 3 months prior to the study—Karra, Murhu, Torpa, and Khunti Sadar were selected. Seventeen villages at least 30 km away from the district town were selected across these 4 blocks. All schools in these villages were covered in the study.

Criteria for Selection of PD Villages, Schools, and Adolescent Girls

Villages with at least 8 out-of-school girls enrolled in the WIFS program, with reported IFA compliance rate of >90% in previous 3 months based on WIFS reporting data were selected. Schools with a minimum of 50 girls, aged 15 to 19 years enrolled in the WIFS program and having a compliance rate of >90% were selected. Girls out of school, aged 14 to 19 years, postpuberty either nonanemic (hemoglobin >12 g/dL) or mildly anemic (hemoglobin between 10 and 11.9 g/dL) were selected as PDs.[17] Socioeconomic exclusion was also used as criteria, with preferential selection of nonanemic and mildly anemic girls from higher vulnerability households.

Tools and Techniques for Participatory Rural Appraisal

The PD facilitation team used mixed-methods including the PD inquiry in the selected villages and schools. In the villages, the tools combined transect (observations) walk, social mapping of all adolescent girls in communities, consented hemoglobin testing using finger prick method of out-of-school girls, seasonal calendar to understand dietary patterns, and group discussion with parents and village leaders, as well as in-depth interviews with the AWW. In schools, the activities were undertaken on the scheduled IFA tablet distribution day. The activities included structured observation of the school campus, wash room, water and sanitation facilities, and the IFA tablet distribution activity. In addition, interviews with the headmaster, nodal teacher, and girls were carried out, along with focus group discussions with adolescent girls and boys.

Over 2000 individuals were involved in the PD process including 751 community members (leaders, parents, and relatives of adolescent girls) and 434 in- and out-of-school girls in addition to AWWs, teachers, nodal adolescent boys and girls in schools, among others.

The topics explored with different stakeholders were divided in 2 broad categories: (1) management of the WIFS program, which was discussed mainly with service providers and (2) adolescent girls' dietary, hygiene, and health-seeking behaviors as well as compliance to IFA tablets consumption, their hobbies, social networks, and influential individuals. The PD team used triangulation to verify qualitative information on common and uncommon practices.

Results

Khunti has a total population of 530 300 with 45% belonging to the scheduled tribes and 116 665 adolescent girls aged 10 to 19 years of age.[2] It has 312 middle and high schools including private schools. With exception of 1 village, all

selected villages have electricity. However, most villages have no latrines and people practice open defecation. Most men and some women migrate out of the state for a period of 3 to 6 months annually for better income generation opportunities.

Status of Anemia Among Adolescent Girls

Of the 124 out-of-school adolescent girls (between the age of 14 to 19 years) screened for anemia, nearly 21% (26 of 124) are nonanemic, 40% mildly anemic (50 of 124), 37% (46 of 124) moderately anemic, and 2% (3 of 124) severely anemic. Iron folic acid tablet consumption is low, and commonly reported side effects are metallic taste, nausea, dizziness, constipation, and diarrhea. Both environmental and personal hygiene are poor with almost universal open defecation and restrictions on bathing and diet during menstruation. On the positive side, meals usually incorporate a wide variety of locally grown vegetables and fruits. Tea is not a commonly consumed beverage.

Deviant Behaviors of Nonanemic or Mildly Anemic Adolescent Girls

Nonanemic out-of-school girls in communities where the WIFS program was not functional follow some uncommon positive eating behaviors that contribute to the prevention of anemia. These include consuming food rich in iron, such as millets, a wide variety of leafy green vegetables, as well as seasonal fruits sourced from their kitchen garden or the forest or locally available. Frequency of consumption of animal food (fish, duck eggs, and meat) is higher among PD girls and their families. Positive hygiene behaviors include drinking only boiled water; drinking warm water during winters and rainy season; bathing more than thrice a week; washing hands with plain water (and soap in few cases) prior to processing food, eating, and after defecation; cutting nails regularly; and consistent use of slippers that prevents hookworms infestation—one of the main causes of anemia in the region. Positive deviance girls are more likely to wash sanitary cloth pads with boiled water and sun-dry them; they are also more likely to maintain routine eating and day-to-day activities during menstruation. Among PD adolescent girls, parents, especially mothers, are found to play a critical role in supervising their daughter's food intake and monitoring their health. They are more likely to consult a medical professional in case of illness than traditional healers. Where available, PD girls consistently consume IFA tablets.

Deviant Behaviors of WIFS Compliant Schools

In the PD schools, some nodal teachers had strategies to prevent the side effects (metallic taste, nausea) of the IFA tablets by distributing sweets/candies immediately after IFA tablet consumption, ensuring that children eat something right afterward and telling them upfront about the other side effects (constipation, black stools). The teachers emphasize the advantages of taking the pill and encourage regular users to narrate benefits experienced by them such as better sleep, feeling more energetic, healthier skin, and hair. However, of the 17 schools visited only 4 had regular supply of IFA tablets in the last 3 months. The biannual deworming tablets were also unevenly distributed with only 4 schools getting the supply in 2014 and only 1 school reportedly distributing the deworming tablets twice in the year as per the protocol.

Deviant Behaviors of WIFS Compliant Villages/Anganwadi Centers

Only 2 of the 17 villages visited met the criteria for PD. Observations at the Anganwadi center reveal that of the 17, only 5 AWWs had a regular and adequate supply of IFA tablets; only 6 of the 17 Anganwadi centers had a register; only 6 Anganwadi centers had been able to distribute the deworming tablets within the last 6 months. In addition to the irregular supply of IFA tablets, most AWWs cited lack of support from village leadership, many other work commitments and lack of training in counseling as obstacles to implementing the WIFS program. There is a huge gap between actual consumption of IFA tablets by girls enrolled in the program opposed to the

reported consumption. There is no system of validating the consumption of IFA tablet at the community level.

Discussion

The findings indicate that community involvement is missing in the entire design of the WIFS program. Adolescence is not viewed as a critical stage in the lifecycle and not much thought is given to the physical, mental, and emotional needs of adolescents. Perceived benefits of IFA tablets are not known by the communities; frontline functionaries (teachers and AWWs) lack scientific rigor and enthusiasm to implement the program with involvement of the communities. The advantages of weekly IFA supplementation for women of reproductive age-group and adolescent girls have been documented through several programs in and outside India.[18-20] Through the national WIFS program over 38 million adolescent girls and boys in school and out-of-school girls have been reached with regular IFA supplementation as of 2015.[21] However, for universalization, the program needs to reach several times this number. The implementation challenges at supply and demand end of the WIFS program identified in this article have also been corroborated by other researchers.[6-8] Positive deviance approach used in this study has been documented in several countries across the globe and has been found to be an effective guide to interventions relating to social and behavior change communication, particularly in the areas of maternal and child nutrition (including micronutrient nutrition), child care and feeding practices, food security, and HIV/AIDS. It has proven useful even in some situations where the problems appeared intractable.[22-25] This study builds on the evidence pool on effectiveness of PD approach in identifying solutions to problems through experts or positive deviants within the community in a new thematic area that is strengthening adolescent anemia control program in resource poor setting.

Conclusion

The PD process yet again demonstrated its effectiveness in engaging communities in a problem-solving approach, resulting in actionable outcomes to solve local problems through local solutions. In all 17 villages, the leadership and community members alike pledged to support the distribution of the IFA tablets to their adolescents via the Anganwadi center and monitor the activity themselves.

Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author(s) received no financial support for the research, authorship, and/or publication of this article.

References

1. International Institute for Population Sciences (IIPS) and Macro International. *National Family Health Survey (NFHS-3), 2005–06*. Volume II. Mumbai, India: IIPS; 2007.
2. Ministry of Home Affairs; Office of the Registrar General and Census Commissioner. *Population Enumeration Data*. 2011.
3. International Institute for Population Sciences (IIPS) and Macro International. *National Family Health Survey (NFHS-3), 2005–06*. Jharkhand, Mumbai, India: IIPS; 2007.
4. UNICEF. *The Adolescent Girls Anaemia Control Programme—Breaking The Inter-Generational Cycle Of Undernutrition In India With A Focus On Adolescent Girls*. Briefing paper series: Innovationa, Lessons and Good Practice. 2011.
5. Government of India. Operational Framework : Weekly Iron and Folic Acid Supplementation Programme. Ministry of Health and Family Welfare: New Delhi 2012. http://nrhm.gov.in/nrhmcomponnets/reproductivechild-health/adolescent-health/wifs.html. Accessed April 2016.
6. Vir SC, Singh N, Nigam AK, Jain R. Weekly iron and folic acid supplementation with counseling reduces anemia in adolescent girls: a large-scale effectiveness study in Uttar Pradesh, India. *Food Nutr Bull*. 2008;29(3):186-194.
7. Dhikale PT, Suguna E, Thamizharasi A, Dongre AR. Evaluation of weekly iron and folic acid supplementation program for adolescents in rural

Pondicherry, India. *Int J Med Sci Public Health*. 2015;4(10):1360-1365.
8. Bhatt RJ, Mehta HK, Khatri V, Chhayya J, Rahul K, Patel P. A study of access and compliance of iron and folic acid tablets for prevention and cure of anaemia among adolescent age group females in Ahmedabad district of India surveyed under multi indicator cluster survey. *GJMEDPH*. 2011;2(4):1-6.
9. Marsh DR, Schroeder DG, Dearden KA, Sternin J, Sternin M. The power of positive deviance. *BMJ*. 2004;329(7475):1177-1179.
10. Wishik SM, Vynckt S. The use of nutritional 'positive deviants' to identify approaches for modification of dietary practices. *Am J Public Health*. 1976;66(1):38-42.
11. Lapping K, Marsh DR, Rosenbaum J, et al. The positive deviance approach: challenges and opportunities for the future. *Food Nutr Bul*. 2002;23(4 suppl):130-137.
12. Singhal A. The value of positive deviations. *Monthly Developments*, University of Texas El Paso, June 2013.
13. Sternin M, Sternin, Marsh D. Rapid, sustained childhood malnutrition alleviation through a "positive deviance" approach in rural Vietnam: Preliminary findings. In: Wollinka O, Keeley E, Burkhalter RB, Bashir N, eds. The hearth nutrition model: applications in Haiti, Vietnam, and Bangladesh. Report of a technical meeting at World Relief Corporation Headquarters, June 19-21, 1996; Wheaton, IL. Arlington, VA: BASICS;1997:49-61.
14. Stephanie Ortolano. *Interaction of Iron Deficiency & Psychosocial Care on Child Behavior & Cognitive Outcome: A Longitudinal Study of Senegalese Children*. 2012.
15. *The LIFE SKILLS 'Positive Deviance' Project and childhood anemia in Palestine*. Final Report by the United Nations World Food Program. A one year program implemented by Ard el Atfal, Palestine. 2008.
16. Positive Deviance Initiative. Basic Guide to the Positive Deviance (PD) Approach. PDI, 2009. http://www.positivedeviance.org/about_pd/Final%20revised%2006-03-09Basic_PD_Steps_2.pdf. Accessed June 2017.
17. World Health Organization. *Haemoglobin Levels For The Diagnosis of Anaemia And Assessment of Severity. Vitamin and Mineral Nutrition Information System*. Geneva, Switzerland: World Health Organization; 2011.
18. World Health Organization. *Weekly Iron–Folic Acid Supplementation (WIFS) In Women of Reproductive Age: Its Role In Promoting Optimal Maternal And Child Health*. Position statement. Geneva. Switzerland: World Health Organization; 2009.
19. Dwivedi A, Schultink W. Reducing anaemia among Indian adolescent girls through once weekly supplementation with iron and folic acid. In: United Nations Standing Committee on Nutrition, ed. *SCN News*. Sudbury, UK: Lavenham Press; 2006:19-23.
20. Casey GJ, Phuc TQ, MacGregor L, et al. A free weekly iron-folic acid supplementation and regular deworming program is associated with improved hemoglobin and iron status indicators in Vietnamese women. *BMC Public Health*. 2009;9:261.
21. Ministry of Health and Family Welfare, Government of India. *Annual Report* 2014-15. 2015.
22. Sternin J. The Vietnam story: narrated by Jerry Sternin. http://www.positivedeviance.org/about_pd/Monique%20VIET%20NAM%20CHAPTER%20Oct%2017.pdf.
23. Singhal A, Shirley S, Marston EH. The value of positive deviations. Monthly developments. http://utminers.utep.edu/asinghal/Singhal_Value%20of%20Positive%20Deviations_2013_Development%20Magazine.pdf.
24. Ahrari M, Kuttab A, Khamis S, et al. Factors associated with successful pregnancy outcomes in upper Egypt: a positive deviance inquiry. *Food Nutr Bull*. 2002;23(1):83-88.
25. Lapping K, Schroeder D, Marsh D, Albalak R, Jabarkhil MZ. Comparison of a positive deviant inquiry with a case-control study to identify factors associated with nutritional status among Afghan refugee children in Pakistan. *Food Nutr Bull*. 2002;24(4):26-33.