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Original Research Article

Poshan Sanjha Chulah approach: impact on nutrition status of children aged 6-59 months in urban slum of Bhopal city

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ABSTRACT

Background: The National Family Health Survey-5 reveals the prevalence of stunting 35.5%, underweight 32.1%, and wasting 19.3% among under 5 children. Madhya Pradesh reported stunting, underweight, and wasting 37.5%, 33%, and 19% respectively which is higher than national average.
Methods: A community based approach "Poshan Sanjha Chulah (PSC)" was introduced to address underweight among the children of Bhopal Urban slums, Madhya Pradesh. PSC programme aimed at achieving weight gain by 400 gm in a month and 900 gm by the end of 3rd month. Additional energy 600-800 kcal, protein 25-27 gm, and iron-10 mg and other nutrients were provided during this programme. The counselling visits were made to children in every 15 days until 3 months followed by monthly visits until 12 months by community health workers.
Results: The PSC Programme was implemented in the communities with the prevalence of underweight children more than 30 percent. This study was conducted on 224 children which includes 39 (7.5%) severe underweight and 185 (35.5%) moderate underweight children. At the end of the PSC programme the mean weight gain was 328 gm for all children. In a period of 6 months, the boys and girls gained mean weight of 2325 gm and 2225 gm respectively. The highest weight gain was observed in the age group of 13-24 months on the 12th day. At the end of 6th month 164 children (73.2%) graduated to normal nutrition category (≥-2 SD).
Conclusions: Underweight has become a major concern of public health particularly in developing countries. Prevalence of underweight not only indicates the poor nutritional status of children but also reflects the poor socio-economic condition of the families.

Keywords: Weight gain, Underweight, Children under 5 years, Positive deviant hearth

INTRODUCTION

The National Family Health Survey-5 (2019-2021) reveals the prevalence of stunting 35.5%, underweight 32.1%, and wasting 19.3 % among children under 5 years at the national level. During the same period. Madhya Pradesh state, with a population of 72,626,809 and 52 districts, has a higher prevalence of undernutrition than the national average of stunting, underweight, and wasting 37.5%, 33%, and 19%, respectively. Bhopal district reported 29.1% underweight, wasting 20.6%, and stunting 19.9% among children under 5 years, National Family Health Survey-5, 2019-2021. A community based approach "Poshan Sanjha Chulah (PSC)" was introduced to address underweight among the children under 5 years. This programme was implemented primarily in rural areas in two states namely Uttar Pradesh and Madhya Pradesh.

PSC is built on the experience of Positive Deviance/Hearth (PDH). PDH is a community-based programme focused on improving the nutritional status of malnourished (Underweight) children in the context of their own homes. This approach enabled identification and understanding of 'positive deviant families' and learning what they were doing differently in their health-

seeking behaviours and practices compared to WASH and nutrition practices from the caregivers of malnourished children in the same village/community. PD Hearth targeted underweight children (with mild, moderate, and severe underweight) between 6 and 36 months of age In the PSC programme, World Vision International initiated PD Hearth approach in Guatemala and Honduras in 1999 and about 30 countries implemented PD Hearth throughout Asia and Africa later. Multi-country study (2016) on PD Hearth highlights good recovery rates for underweight children.[1] The Department of Women and Child Development (DWCD) West Bengal India also implemented Positive Deviance (PD) approach in 355 projects. Evidences from two pilot districts indicated a steady reduction in the moderate and severe level of malnutrition among children under 3 years of age.[2]

Based on the key learning from global and West Bengal experiences, positive deviant approach was modified by World Vision India considering the diversity, geography, and cultural sensitivity of the communities and Poshan Sanjha Chulah (PSC) approach was evolved. The Poshan Sanjha Chulah (PSC)programme aimed to improve nutritional status and contribute to a shift from severe to moderate and from moderate to normal nutrition category. PSC is a community-based programme to rehabilitate moderate and severe underweight children aged 6–59 months in the community set up. Under the PSC program strategy, Community health workers identifies locally available and affordable foods followed by meal planning for 12 days PSC programme by the mothers/care givers. The recommended massive dose vitamin-A supplement and deworming was administered to the children who were enrolled in the PSC programme. Children with weight for age (<-2SD) were enrolled in the PSC programme for 2 hours each day for 12 days. ANMs/ASHAs supported to administer Vitamin-A and deworming of children as per the government protocol. Children who did not gain weight by the 12th day were sent to the health facility for further assessment and treatment. Health workers followed up the children at their home once a month until one year. PSC aimed to achieve weight gain by 400 grams in one month and 900 grams by the end of the third month of all children enrolled in the PSC programme.

Nutrient-dense menu is fed to children for continuous 12 days. The cooking demonstration are given to the mothers/caregivers on preparing nutritious food, diversity, and density of the food Additional nutrition at PSC provides energy 600-800 kcal, protein -25-27 g, and iron-10 mg and other nutrients. The meals are prepared at Sanjha Chulah, which is a common kitchen (Commonly accessible place in the community) where mothers of children, who are identified with underweight cook meals collectively using their own resources pooled from their own contribution. In the PSC implementation site, breastfeeding was noted to be generally continued for a longer time therefore emphasized more on complementing feeding practices. During the feeding sessions, mothers and caregivers learnt and practiced new skills and gained knowledge about various nutritious recipes and WASH behaviors. The programme monitors the nutritional status of children who have graduated from the PSC programme until one year with behavior change communication messages. A study was undertaken to assess the effectiveness of this progamme in an urban setting of Bhopal district, MP state. The study also assessed the impact of Poshan Sanjha Chula approach combining feeding high nutrition dense food with counseling to caregivers of children >6-59 months for improving weight gain of urban slum severe and moderate underweight children registered with the Integrated Child Development Services (ICDS) scheme.

PSC implementation

The PSC approach was implemented in slums of Bhopal city, Madhya Pradesh. The PSC programme involved identification of poor families, identification of underweight children through growth monitoring, market surveys, identification of positive deviant children in the community using the positive deviant inquiry (PDI) method. The positive deviant inquiry was conducted to learn about positive coping mechanisms adopted by positive deviant families who access the same resources and share the same risk factors.

PSC targeted underweight children (Moderate and severe underweight) between 6 to 59 months of age in the programme. The PSC programme was implemented in the villages/communities with the prevalence of moderate and severely underweight children above 30 percent. Community mobilization followed by wealth ranking and growth monitoring (weight for age) was conducted using a salter scale, and the same was plotted in a Mother-Child protection (MCP) card to identify underweight children in four slums of Bhopal city. Caregivers and mothers of children, identified children with -2SD and -3SD, were enrolled in the PSC programme.

Sanjha Chulah sessions were planned with mothers/caregivers of target children are also known as hearth sessions. Community health workers, appointed by World Vision (WV) India, trained mothers/caregivers on menu planning, preparing energy, and the protein-rich recipe for children during PSC sessions. The mothers were trained on diet diversity with a combination of micronutrients in the diet for the growth and development of children. Children were provided additional calories-600-800 kcal, protein 25-27g, and iron-10 mg per child per day during the PSC programme.

The community health workers, with the help of Anganwadi workers, made counseling visits at the home of these children post PSC programme and motivated mothers to use their skills to prepare nutritious recipes for children. The counseling visits were made in every 15 days until 3 months followed by monthly visits until 12 months.

To make the PSC programme feasible, 12 underweight children were registered in a PSC session, and the community health workers and AWWs organized 18 such

sessions. The mothers of these children cooked meals in PSC and ensured that children receive calories-600-800 kcal, protein 25-27g, and iron-10 mg per child per day. Mothers fed their children in the presence of community health workers & AWWs. The mothers were counseled to continue breastfeeding beyond two years and practice WASH practices. Breastfeeding practice was observed considerably good in the community. Therefore, breastfeeding bahviours were complemented with other behavoiur change communication messages such as complementary food, diet diversity and adequacy, hygiene and sanitation practices. All children completed a 12-day PSC session and were followed up at their homes until one year.

METHODS

A study was conducted on 521 children in 4 Urban slums of Bhopal city. The first step was to weight children and identify undernourished children (WFA Z-Score <−2 SD).

RESULTS

Out of 521 children, 39 (7.5%) children were identified with severe underweight, 185 (35.5%) children with moderate underweight and 297 (57%) children were identified with normal nutrition category. Only 224 children (Moderate and severe) were enrolled in PSC programme for 12 days feeding cum counselling sessions and then they were followed for 12 months. These children enrolled in the PSC sessions included 55% boys and 45% girls. The mean age of children who were enrolled in PSC programme was 27 months. Age distribution indicated that the highest number of children who were enrolled in PSC programme were in the age group 13-36 months. 91 children (%) in the age group of 25-36 months and 84 children (%) in the age group of 13-24 months. About 79% children with moderate and severe underweight belong to the age group of 13-36 months. About 2.6% severely underweight and 6% moderately underweight children found in the age group 6-12 months. Less number of underweight children found in the age group of 37 months and above as compared to 13-36 months.

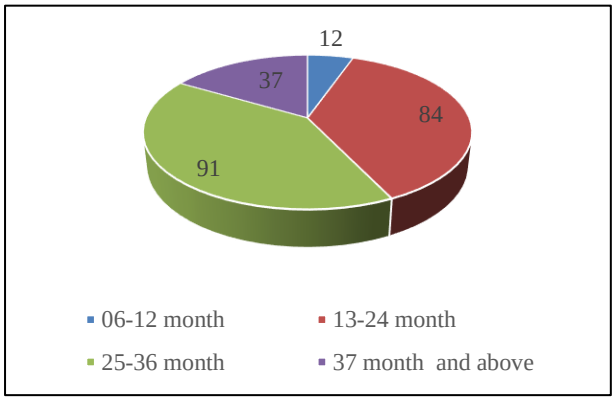

Figure 1: Age group-wise distribution of children.

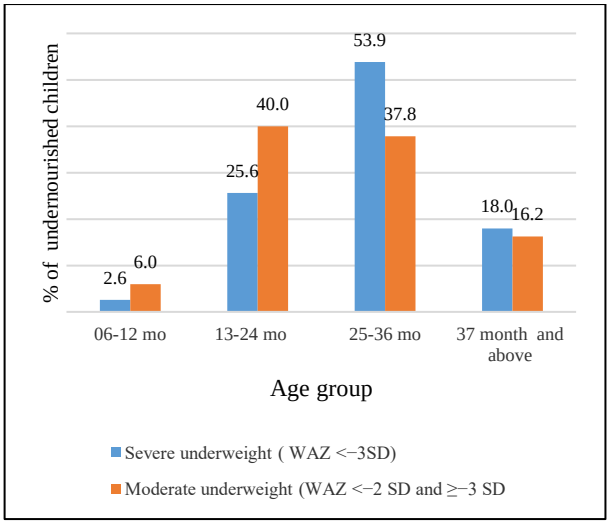

Figure 2: Prevalence of underweight children by age-group.

A little more than a half (53.9%) and a quarter (25.6%) children were severe underweight (<-3 Z-score) in the age group of 25-36 months 13-24 months respectively (Figure 2). The study findings were analysed to study the proportion of children who achieved target weight by sentinel point viz. 12th day, 30th day, 1 month and until 12th month. The mean weight gain was also analyzed for each sentinel points.

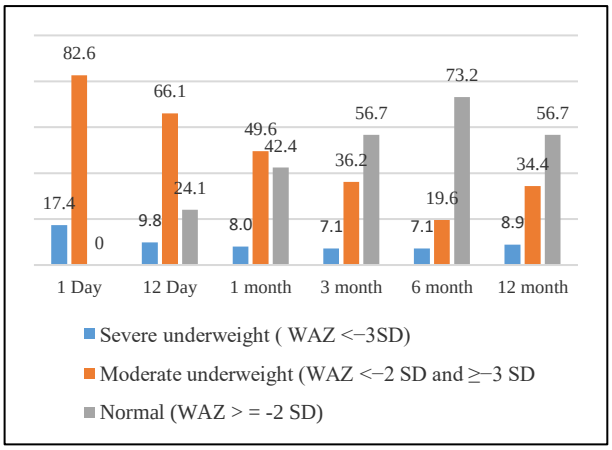

Figure 3: Nutritional status of children at different sentinel points.

A total 224 children registered in PSC programme, were followed for measuring weight for age on 12th day, 1 month, 3 months etc. Less than a quarter (24.1%) and less than half (42.4%) children graduated to normal nutritional category in 12th and 30th day respectively (Figure 3).

Figure 3 presents the impact of PSC on weight gain At 6th month, 164 children (73.2%) graduated to normal nutrition category (≥-2 SD). The percentage point reduction was observed in severe underweight children (<-3SD) between 1st day of the PSC programme and 6th month was 10.3 per cent. The data indicated that 16.5-

percentage point reduction was observed in the normal nutritional category from 73.2% in the 6th month to 56.7% in the 12th month. A relative reduction of 43.6% was observed on the 12th day in severe underweight category as compared to the 1st Day. A substantial percentage point reduction was observed in the number of severe and moderate underweight children in the same period. The empirical evidences from project area suggested that migration of families in search of livelihood was possibly one of the contributing factors for the reduction of malnutrition as majority of the children belong to such families.

At the end of the PSC programme (12th day) the mean weight gain was 328 gm for all children. The mean weight gain was 280 gm and 389 gm for boys and girls respectively.

Table 1: Weight gain among children by sentinel points and target.

Sentinel points	Weight gain (in gms)	No. of children	%
12th day	No weight gain	9	4
	Upto 200 gm	99	44.2
	>200 gms	116	51.8
	Total	224	100
30th day	No weight gain	6	2.7
	Upto 400 gm	73	32.6
	>400 gms	145	64.7
	Total	224	100
3 months	No weight gain	5	2.2
	Upto 900 gm	92	41.1
	>900 gms	127	56.7
	Total	224	100
6 months	No weight gain	6	2.7
	Upto 1600 gm	61	27.2
	>1600 gms	157	70.1
	Total	224	100
12 months	No weight gain	2	0.9
	Upto 2900 gm	145	64.7
	>2900 gms	77	34.4
	Total	224	100

By the 12th day, less than a half (44.2%) children gained target weight up to 200 gm and a little more than half (51.8%) children gained weight above target of 200 gm. I in one month after completion of PSC Programme, over a quarter (32.6%) of children gained target weight up to 400 gm and less than 2/3rd (64.7%) children gained target weight more than 400 gm. In the 6th month, about 70% of children gained weight above the target weight of 1600 gm. In a period of 6 months, the boys and girls gained mean weight of 2325 gm and 2225 gm respectively. The mean weight gain by boys and girls in a total period of 12 months was 2.47 kg and 2.69 kg respectively, which is lower than (boys) other studies . The mean weight gain in the age group of 6-12 months, 13-24 months, 25-36 months, and 37 months and above was observed 258 gm, 416 gm, 278 gm, and 280 gm respectively. The highest weight gain was observed in the age group of 13-24 months on the 12th day.

DISCUSSION

The major objective of this study was to study the impact of Poshan Sanjha Chulah approach on moderate and severe underweight children in urban slums of Bhopal, India. The study findings revealed that the 43% underweight children were enrolled in the programme, which was higher than other such progamme studies conducted earlier but similar to the study conducted in Bangaldesh.[4,5] These children belonged to the poor socio-economic families who consumed nutritionally deficient and inadequate food. The study presents evidence that PSC approach is effective where prevalence of underweight children is above 40% in the population.

This study also examined the pattern of nutritional growth of children who completed 12 days PSC programme, and they were followed up till 12 months post PSC programme. The mothers learned to prepare the age-appropriate meal for children during 12 days of the PSC programme, and they adopted the desirable skills. The first 1000 days of life of a child's is critical ‘window of opportunity to practice optimal feeding and care practices to restrain the risk of being undernutrition during this period, which contributes to the physiological and cognitive development of the children, which is mostly irreversible.[6] Timely identification of undernourished children, appropriate care and feeding practices and community environment enabled children to rapidly gain weight. For optimal growth and thrive in life, minimum adequate nutritious diet is vital early in the life of children. Global evidence suggests that growth falter occurs mostly between the ages of 3 to 24 months of a child's life, which correspond to our findings as more than 2/3rd (79%) children were underweight in the age group of 13-36 month age.[7]

Less than a half (42.9%) underweight children in the age group of 6-24 months were registered in the PSC programme, which can be attributed to the poor diet diversity at the household, which can be associated with minimum diet diversity (35.6%) among breastfed children 6-23 months.[8]

Poor diet diversity during 6-23 months of a child's life is associated with poor physiological and psychological development resulting in poor learning ability, low economic productivity, which is irreversible in the future.[9]

Over 70% children graduated to normal status (≥-2 Z-Score) by the 6th month which can be attributed to PSC strategy with attention to age-appropriate complementary feeding along with behavior change communication (BCC) interventions. as these are reported to have the potential to improve child feeding practices, nutritional status, and growth of children.[10,13]

Limitation of the study

This study was conducted in slums with migrant population. Due to floating population few children were absent from 12 days PSC programme and some children were absent during the follow-up visits done by community health workers. Children were enrolled from the areas where World Vision India was operational and other slums were excluded in this study. Weekly follow-up could not be done as planned to monitor the application of learning by mothers and caregivers of children.

CONCLUSION

Underweight has become a major concern of public health particularly in developing countries. Prevalence of underweight not only indicates the poor nutritional status of children but also reflects the poor socio-economic condition of the families. This study suggest that by providing additional nutritious meal between two meals, adopting handwashing practices and regular growth monitoring of children enables them to achieve desired weight gain. The role of mothers and care-givers is very critical to understand age appropriate nutritional requirement of children and provide it regularly. Educating mothers about their children's weight and its comparison with ideal weight is a good step to sensitize the mothers and care-givers. Above all, the community participation in identifying best practices and monitoring of ICDS centres is very important to create enabling environment for such initiatives.

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