

# Health-promoting school initiative in Ashram schools of Wardha district

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## ABSTRACT

**Background.** We studied the effect of a health-promoting school-based intervention for disadvantaged children in the residential Ashram schools of rural Wardha, Maharashtra.

**Methods.** At baseline, 1287 children in 10 Ashram schools were examined using a locally adapted Global School-based Student Health Survey questionnaire. The haemoglobin level of all children was estimated using the haemoglobin colour scale. Body mass index and physical activity score for each child were calculated. The intervention was carried out through school health committees. After 1 year, 1226 children were examined using the same questionnaire.

**Results.** There was significant improvement in personal hygiene and reduction in hygiene-related morbidity among the children. The median haemoglobin level of the children increased from 10.7 g/dl to 11.4 g/dl. There was also a significant increase in the proportion of children with body mass index that was normal for age (5th–85th percentile) from 32.2% to 38.5%.

**Conclusion.** The need-based participatory health-promoting school initiative for disadvantaged children in Ashram schools led to an improvement in their personal hygiene and health.

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## INTRODUCTION

School-based health programmes are widely used to improve the health and nutrition of schoolchildren in developed countries. However, little effort has been made in developing countries to provide preventive and promotive school health programmes in rural areas, while in urban areas the focus is on a curative approach for health problems.<sup>1</sup> In India, since Independence, attempts have been made to improve the educational status of underprivileged children in remote rural areas. The 'Ashram schools' are meant for children from very poor local tribal families. These schools are residential and provide lodging and boarding, uniforms, books, notebooks and other educational materials to the students.<sup>2</sup> Most children in tribal areas have poor health and different health needs. In addition, there is a high prevalence of anaemia and malnutrition among them.<sup>3</sup>

The focus of school health and nutrition programmes in low-income countries has been shifting over the past 2 decades from a medical approach to improvement in health and nutrition. In 1995, the WHO launched its Global School Health Initiative to foster the development of health-promoting schools.<sup>4</sup> Little is known about the effect of such need-based programmes on the health of children in rural residential schools. We assessed the effect of health-promoting school-based interventions for children in the residential Ashram schools of rural Wardha district, Maharashtra.

## METHODS

### Study area

This participatory action research was done in Wardha district, Maharashtra, India. Of the 20 Ashram schools in Wardha, 10 schools within 19–90 km from the district headquarter were selected.

### Ethics

Permission from the district education department and written informed consent of the concerned school principals were obtained. Ethical principles were adhered to.

### Baseline assessment

A health check-up was done for children in the selected schools. All children who were present on the day of the check-up in the school were interviewed using a pre-designed and pre-tested questionnaire and examined by a team comprising a doctor, medical interns, auxiliary nurse midwife and social workers. At least 2 visits were made to increase coverage. Of 1847 children, we examined 1287 children (69.6%) using the Global School-based Student Health Survey questionnaire, which was adapted to local needs.<sup>5</sup> It covered information on personal hygiene, physical status, nutrition, environment, substance abuse, risk behaviour, life skills and other areas. Children  $\geq 12$  years of age were also asked about their friendships and awareness about HIV/AIDS.

Haemoglobin levels were measured using the haemoglobin colour scale (HCS), a reliable and rapid method suitable for primary healthcare settings in developing countries.<sup>6,7</sup> Based on their haemoglobin levels, anaemia was classified as per WHO standards.<sup>6</sup> Students who were not willing to give a blood sample were excluded from the haemoglobin level estimation. Children with severe anaemia were referred for further investigation and treatment. The Centers for Disease Control and Prevention (CDC) 2000 reference was used to group the children into various body mass index (BMI) categories.<sup>8</sup> Physical activity score for each child was calculated and classified to ascertain the status of physical activity. A scoring system by Ramachandran *et al.* was

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modified for schoolchildren and used to quantify physical activity.<sup>9</sup> Anthropometric measurements such as height and weight of each child were obtained. All children with minor ailments at the time of examination were given treatment. The data were entered and analysed using the Epi\_info (version 6.04d) software package.

### Intervention

The intervention was done by the school health committee of the respective school. The intervention comprised two steps: (i) formation of the school health committee and development of a school health plan, and (ii) activities of the school health committee.

*Formation of the school health committee and development of the school health plan.* A school health committee was formed in each Ashram school. The committee had 10–14 members including the school principal, superintendents (male and female) who are the students' caretakers in the school, physical education teachers, cook, sweeper and 5 willing students. During a 1-day orientation programme, committee members were briefed about the children's health needs and guidelines for the development of a school health plan. Our social worker acted as the convener of each committee, visited all the schools, and facilitated formation of the school health committee, its regular monthly meeting, collective decision-making and implementation of the decisions. The process of committee formation, allocation of responsibilities and decision-making was a flexible participatory exercise to strengthen the action–experience–learning cycle of school teachers, staff and students to ensure future sustainability. For better transparency, the list of members was displayed on the school notice board along with their responsibilities. School teachers were given training and standard guidelines printed in Marathi for management of minor ailments and administering first-aid. Each school was provided a first-aid box containing essential drugs such as cotrimoxazole, paracetamol, chloroquine, antiseptic solutions, benzyl benzoate lotion, ointments and bandages. A need-based flip book on health education of schoolchildren was developed and a copy given to each school for delivery of health messages.

*Activities of the school health committee.* The monthly activities of the school health committee were focused on personal hygiene, tobacco use, environmental cleanliness, nutrition, physical activity, life-skills education and awareness about HIV/AIDS. The school health committee ensured better personal hygiene, hand-washing with soap, nail trimming, treatment of head lice with shampoo, wearing clean washed clothes, appropriate physical activity and nutrition and followed an anti-tobacco policy. An essay and drawing competition on the adverse effects of tobacco products on health was undertaken in each school. After deworming with albendazole (400 mg, single oral dose), the schoolchildren were given an iron–folic acid tablet (60 mg elemental iron and 0.5 mg folic acid) once a week under the supervision of trained school teachers for a period of 3 months. This was based on the guidelines of the International Nutritional Anaemia Consultative Group.<sup>10</sup> To ensure quality and stability (e.g. avoidance of cracking, disintegration and absorption of moisture) of iron tablets before distribution, teachers were asked to check expiry dates on the packing and ensure storage in tight containers in a cool and dry place. Teachers had to keep a record of consumption of the tablet for each student. Students were advised to take tablets 3 hours after meals, or with meals if they had intolerance. Apart from this, students, teachers and kitchen staff were educated about locally available iron-rich foods and citrus fruits by showing them pictures. School teachers were asked to improve the physical activity of the children and ensure iron- and vitamin A-rich food in the children's diet. As a step towards improving the children's immediate environment, plants with nutritional value such as lemon, guava, drumsticks, etc. were given to each school. Our trained auxiliary nurse midwife, doctor and social worker facilitated a 1-day workshop in each school for adolescents on menstrual hygiene, life-skills education and HIV/AIDS.

### Follow up assessment

After 1 year, a follow up assessment of 1226 (66.4%) children was done. The same questionnaire was used. Haemoglobin level, BMI and physical activity were assessed as before.

TABLE I. Age, sex and caste distribution of schoolchildren

Variable	Boys		Girls		Total		p value
	Baseline	Follow up	Baseline	Follow up	Baseline	Follow up	
<i>Age (in years)</i>							
6–12	391 (54)	375 (51.7)	289 (51.3)	252 (50.4)	680 (52.8)	627 (51.1)	0.395
>12	333 (46)	351 (48.3)	274 (48.7)	248 (49.6)	607 (47.2)	599 (48.9)	
<i>Group</i>							
Scheduled caste	40 (5.5)	43 (5.9)	33 (5.9)	32 (6.4)	73 (5.7)	75 (6.1)	0.086
Scheduled tribe	594 (82)	570 (78.5)	476 (84.5)	405 (81.0)	1070 (83.1)	975 (79.5)	
Nomadic tribe	65 (9)	80 (11.0)	29 (5.2)	41 (8.2)	94 (7.3)	121 (9.9)	
Other backward class	25 (3.5)	33 (4.6)	25 (4.4)	22 (4.4)	50 (3.9)	55 (4.6)	
<i>Personal hygiene</i>							
Uncombed dirty hair	32 (4.4)	6 (0.9)	39 (6.9)	13 (2.3)	71 (5.5)	19 (1.5)	0.001
Untrimmed dirty nails	327 (45.2)	297 (43.5)	249 (44.2)	215 (37.3)	576 (44.8)	512 (40.7)	0.036
Dirty clothes	156 (21.5)	76 (11.1)	57 (10.1)	36 (6.2)	213 (16.6)	112 (8.9)	0.001
Unclean teeth	507 (70)	449 (65.8)	253 (44.9)	219 (38.0)	760 (59.1)	668 (53.1)	0.002
<i>Conditions related to poor personal hygiene</i>							
Head lice	132 (18.2)	58 (7.9)	178 (31.6)	188 (37.6)	310 (24.1)	246 (20.1)	0.015
Scabies	50 (6.9)	17 (2.3)	36 (6.4)	14 (2.8)	86 (6.7)	31 (2.5)	0.001
Multiple boils	81 (11.2)	47 (6.5)	29 (5.2)	11 (2.2)	110 (8.6)	58 (4.7)	0.001
Fungal infection	45 (6.2)	17 (2.3)	30 (5.3)	16 (3.2)	75 (5.8)	33 (2.7)	0.001
Dental caries	91 (12.6)	125 (17.2)	67 (11.9)	71 (14.2)	158 (12.3)	160 (13.1)	0.519
Worm infestation	31 (15.9)	1 (0.1)	35 (21.1)	1 (0.2)	66 (18.3)	2 (0.2)	0.001

Values in parentheses are percentages p values are for the total number of children

## RESULTS

At baseline, of 1287 children examined, 724 (56.3%) were boys and 563 (43.7%) were girls. In the follow up assessment, of 1226 children examined, 726 (59.2%) were boys and 500 (40.8%) were girls. About half the children were 6–12 years of age and the rest were above 12 years. A majority (79.5%) of the children belonged to scheduled tribes. There was no significant age and caste differential among boys and girls examined at baseline and at follow up. There was significant improvement in personal hygiene and reduction in related morbid conditions (Table I). However, there was no improvement in the prevalence of dental caries, sty in the eyes and wax in the ears of the schoolchildren (Table I).

The percentage of current tobacco users declined significantly ( $p=0.001$ ) as did the use of *nus<sup>1</sup> tapkir* (snuff) for cleaning teeth. Although there was a decline in the number of current tobacco users, there was a shift in the choice of tobacco products among those who consumed it. The use of *gutka* (a preparation of crushed areca nut, tobacco, catecher, etc.) declined but the use of *kharra* (another tobacco-based preparation) and dry tobacco increased (Table II).

The percentage of children with sedentary and moderate physical activity also declined significantly from 746 (57.9%) to 334 (27.3%), and 93 (7.2%) to 9 (0.7%), respectively ( $p=0.001$ ).

The percentage of children who never felt lonely in the past 12 months increased significantly from 195 (25.2%) to 406 (61.5%). Those who felt lonely on rare occasions, sometimes and most of the time declined significantly from 362 (46.8%) to 169 (25.6%), 183 (23.6%) to 75 (11.4%) and 34 (4.4%) to 10 (1.6%), respectively ( $p=0.001$ ). Although, during the follow up survey significantly more children (513 [77.7%]) said that they had heard about HIV/AIDS, none of them could recount all the modes of transmission of the disease. However, the number of those who could tell at least one mode of transmission increased from 21 (2.7%) to 136 (20.6%;  $p=0.001$ ).

The median haemoglobin level of the children increased from 10.7 g/dl to 11.4 g/dl ( $p=0.001$ ). There was also a significant decline in mild and moderate anaemia ( $p=0.001$ ; Table III).

There was significant improvement in consumption of green leafy vegetables and fruits among students. During the follow up survey, almost all children (98.7%) said that they had consumed green leafy vegetables during the past 7 days (only 0.5% at the baseline survey). Similarly, the percentage of children who had not eaten a fruit during the past 7 days also declined from 715 (55.6%) to 193 (15.7%;  $p=0.001$ ). There was also an increase in the number of children with normal BMI for age (Table IV).

TABLE II. Tobacco use among schoolchildren

Item	Boys		Girls		Total		p value
	Baseline n=724	Follow up n=726	Baseline n=563	Follow up n=500	Baseline n=1287	Follow up n=1226	
Consumed any tobacco product in the past 1 month	393 (54.3)	190 (26.2)	113 (20.1)	20 (4.0)	506 (39.3)	210 (17.1)	0.001
Use of <i>nus</i> for teeth cleaning	118 (16.3)	46 (6.3)	60 (10.7)	13 (2.6)	178 (13.8)	59 (4.8)	0.001
<i>Type of product used</i>							
<i>Kharra</i>	59 (15.0)	65 (34.2)	4 (3.5)	2 (10.0)	63 (12.5)	67 (31.9)	0.001
<i>Gutka</i>	216 (54.9)	90 (47.4)	63 (55.7)	10 (50.0)	279 (55.1)	100 (47.6)	
Dry tobacco	118 (30.0)	69 (36.3)	46 (40.7)	8 (40.0)	164 (32.4)	76 (36.2)	

Values in parentheses are percentages p values are for the total number of children

TABLE III. Iron deficiency anaemia among schoolchildren

Severity of anaemia	Boys		Girls		Total		p value
	Baseline n=718	Follow up n=725	Baseline n=552	Follow up n=500	Baseline n=1270	Follow up n=1225	
None	144 (20.1)	307 (42.3)	72 (13.0)	170 (34.0)	216 (17.0)	477 (38.9)	0.001
Mild	481 (67.0)	400 (55.2)	381 (69.0)	301 (60.2)	862 (67.9)	701 (57.2)	0.001
Moderate	88 (12.3)	17 (2.3)	97 (17.6)	29 (5.8)	185 (14.6)	46 (3.8)	0.001
Severe	5 (0.7)	1 (0.1)	2 (0.4)	0 (0)	7 (0.6)	1 (0.1)	0.051

Values in parentheses are percentages p values are for the total number of children

TABLE IV. Malnutrition among schoolchildren

Body mass index category	Boys		Girls		Total		p value
	Baseline n=712	Follow up n=726	Baseline n=554	Follow up n=500	Baseline n=1266	Follow up n=1226	
Thin (<5th percentile)	536 (75.3)	517 (71.2)	319 (57.6)	228 (45.6)	855 (67.5)	745 (60.8)	0.001
Normal (5th–85th percentile)	174 (24.4)	206 (28.4)	234 (42.2)	266 (53.2)	408 (32.2)	472 (38.5)	
Overweight (85th–95th percentile)	1 (0.1)	3 (0.4)	1 (0.2)	1 (0.2)	2 (0.2)	4 (0.3)	
Obese (>95th percentile)	1 (0.1)	0 (0)	0 (0)	5 (1.0)	1 (0.1)	5 (0.4)	

Values in parentheses are percentages

## DISCUSSION

There was significant improvement in personal hygiene and reduction in hygiene-related diseases among the children. Dongre *et al.*<sup>3</sup> and Nayar *et al.*<sup>11</sup> have reported a positive effect of a school-based intervention through teachers on personal hygiene-related conditions among schoolchildren. Our approach was participatory in nature and involved school teachers, students and other staff members, including the school management. The strength of our study lies in the process of mobilization, which was crucial to foster commitment and ownership among teachers.<sup>12</sup>

Reducing tobacco consumption among students was a challenge. In the local community, parents have a pro-tobacco influence on children and tobacco products are used for medicinal purposes such as for injuries, pain in the abdomen and dental caries.<sup>13</sup> Thus, a change in the behaviour pattern of the parents was crucial. The National Health Policy of India 2002 targets schoolchildren for behaviour change communication and gives priority to school health programmes aimed at preventive health education.<sup>14</sup> Also, the school health service is one of the 8 elements of primary healthcare and is the responsibility of the primary health centre.<sup>15</sup>

This school-based intervention resulted in an increase in physical activity among the children. Apart from the emphasis on physical and recreational activities, residential school should have a counselling service for psychological support of young children who stay away from their families.

The median haemoglobin level of the children increased, as did the proportion of children in the normal range of BMI for age (5th–85th percentile). This comprehensive school-based intervention could significantly reduce morbid conditions, malnutrition and anaemia among schoolchildren. In rural Wardha, Deshmukh *et al.* found anaemia to be an important risk factor for childhood morbidity.<sup>16</sup> It is generally accepted that moderate-to-severe malnutrition results in impaired immunity. Studies have been recommended to assess the side-effects of prophylactic iron administration on apparently healthy children to prevent the development of anaemia.<sup>17</sup> The prevalence of sickle cell disorders in Wardha district was reported to be 2.9%.<sup>18</sup> Even in a population where 10%–30% people carry the sickle cell trait, the benefits of iron supplementation for the treatment of anaemia were reported to outweigh any adverse effects caused by an increased risk of malaria in children with either normal haemoglobin level or sickle cell trait.<sup>19</sup> Although the findings of our study suggested a decline in anaemia, morbidity and malnutrition, further studies to assess the iron status and morbidity status of a population group at regular intervals are required to confirm our findings.

Two agency-specific school health and nutrition programmes—Focusing Resources on Effective School Health (FRESH) and Health Promoting Schools (HPS) by WHO, and Child-friendly schools by Unicef—have emphasized policy formulation, school environment, education and school health services, and supportive partnership with teachers, education officials, parents and

community leaders.<sup>1</sup> Our study was based on the HPS approach and the results were encouraging. Our study has limitations as it had no control group and there could be an observer bias.

In conclusion, a need-based participatory HPS initiative for vulnerable children in Ashram schools improved their personal hygiene and health status.

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The scheme of Ashram School Complex for tribal students is under implementation since 1952.3 World Health Organization (WHO) launched "Global School Health Initiative"™, in 1995, to mobilize and strengthen health promotion and education activities at the local, national, regional and global levels. Hence, the objective of the study was to assess the health needs for health promoting Ashram schools in rural Wardha. Selection of Ashram schools: In July 2008, a one day orientation program was organized for principal and teacher from 20 Ashram schools of Wardha district. Out of 18 Ashram schools who were attended the program and were willing to participate in the study, we selected 10 Ashram schools depending upon accessibility and available resources.