

NUTRITION THAT MATTERS

Shaping Children's choices in Andhra Pradesh



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Foreword

Children in India face a complex and evolving nutrition landscape, where undernutrition, micronutrient deficiencies, and the rising prevalence of overweight and obesity coexist. These multiple burdens are shaped not only by household factors but increasingly by the broader food environments children are exposed to in their daily lives. Addressing this spectrum of challenges requires a more comprehensive understanding of the determinants influencing children's dietary behaviours and nutrition outcomes.

Schools, where children spend a significant part of their formative years, are critical in this context. The food environments within and around schools directly influence what children eat, their food preferences, and long-term dietary habits. Recognizing and strengthening these environments is essential for designing effective, context-responsive public health interventions that promote healthy diets and improve nutrition outcomes among children and adolescents.

In this context, I am pleased to present this report on the School Food Environment Assessment conducted across Andhra Pradesh in collaboration with the state education departments. The assessment contributes important evidence on how school ecosystems influence food choices and identifies opportunities to better nurture these environments to support healthier behaviours among children and adolescents.

The findings of this assessment highlight both encouraging progress and persistent gaps in creating enabling school food environments. It examines key dimensions, including food availability, adherence to existing guidelines, nutrition awareness among students, and the broader institutional and policy landscape. Importantly, the report brings forward perspectives from students, teachers, and school administrators, offering grounded insights into the behavioral and systemic factors that shape food choices.

UNICEF remains committed to supporting the governments of Andhra Pradesh/ Telangana/ Karnataka in translating these insights into actionable strategies. Strengthening policy frameworks, improving implementation mechanisms, and advancing nutrition education will be critical to ensuring that all children have access to safe, healthy, and nutritious food within school settings.

I commend the efforts of all partners, state departments and stakeholders who contributed to this assessment. It is my hope that this report will serve as a valuable resource for policymakers and practitioners, and as a catalyst for sustained action to improve nutrition outcomes for children and adolescents.



EXECUTIVE SUMMARY

School Food Environment Assessment in Andhra Pradesh

1. Background and Rationale

Adolescents constitute a critical demographic for human capital formation in Andhra Pradesh. Evidence from national and state-level surveys indicates a persistent dual burden of malnutrition among adolescents, characterized by undernutrition, micronutrient deficiencies—particularly anemia—and a rising prevalence of overweight and diet-related non-communicable disease risk factors. Schools, where adolescents spend a significant portion of their formative years, represent a strategic platform for shaping dietary behaviours, health awareness, and long-term lifestyle choices.

While Andhra Pradesh has implemented several national programs such as PM POSHAN (Mid-Day Meal Scheme), Anemia Mukh Bharat, Weekly Iron and Folic Acid Supplementation (WIFS), and Menstrual Hygiene Management (MHM) initiatives, there is limited consolidated evidence on how effectively these interventions interact with the broader school food and health environment. There has been a gap in understanding students' actual food choices, exposure to unhealthy food environments, and the role of school-level infrastructure, policies, and practices in influencing adolescent behavior.

To address this evidence gap, UNICEF supported the application of the Nutrition Environment Assessment Toolkit for Schools (NEAT-S) in Andhra Pradesh to systematically assess school food environments, nutrition services, WASH facilities, physical activity provisions, and adolescent dietary behaviours across diverse school settings.

2. Study Objectives

The study aimed to:

- Assess the availability, quality, and management of school meal programs across government, private, residential, and Madrasa schools.
- Examine nutrition diversity, food safety practices, and use of fortified foods in school meals.
- Evaluate the status of micronutrient supplementation, deworming, and health assessments.
- Assess WASH infrastructure and menstrual hygiene management services in schools.
- Examine food environments within and around school premises, including exposure to unhealthy foods.
- Understand adolescent snacking behaviours, food preferences, and nutrition awareness.
- Identify system-level gaps and opportunities to strengthen school-based nutrition and health interventions.

3. Methodology

3.1 Study Design

A mixed-method, convergent parallel design was adopted to capture both quantitative indicators and contextual insights. The assessment was conducted using a contextualized version of the NEAT-S toolkit.

3.2 Coverage and Sample

- **Schools surveyed:** 556 schools across Andhra Pradesh
- **School types:** Government (non-residential), private, residential (Tribal/SC/ST welfare), and Madrasas
- **Geographical spread:** Urban, rural, and tribal areas across 12 districts across 4 administrative zones
- **Respondents:** School administrators, kitchen staff, teachers, and students

3.3 Data Collection Tools

- Administrative and infrastructure assessment tools
- Kitchen and food safety observation checklists
- Student questionnaires on food consumption and perceptions
- Researcher observations of school surroundings and food vendors

4. Results

Nearly half of the schools surveyed were private (45%), followed by government non-residential schools (37%), residential schools (17%), and Madrasas (2%). Most schools were located in rural areas (59%), with 33% in urban areas and 8% in tribal regions. Most schools catered to primary and upper-primary grades, with a smaller proportion extending to high school levels.

School Meal Programs (PM POSHAN and Residential Meals)

Availability and Coverage

48% of schools surveyed reported having a school meal program. Coverage varied sharply by school type: 94% of residential schools and 86% of government schools reported meal provision, compared to just 10% of private schools. Among the government schools, pre university colleges did not report any meal schemes for students. Among schools with a meal program, 98% served meals to all enrolled students, indicating strong equity once programs are in place.

Meal Acceptability and Student Perceptions

Among students receiving school meals, 97.8% reported liking the meals either always or sometimes, while only 2.2% reported rarely or never liking them. 83% of students reported satisfaction with the texture and quality of rice, though 13% noted inconsistent cooking quality. Acceptance of supplementary items was high, with 92% liking peanut chikki and 85% liking ragi malt, underscoring the acceptability of traditional, locally familiar foods.

Meal Diversity and Nutritional Content

Cereals were included in meals in 85% of schools, vegetables or fruits in 86%, and pulses in 79%. Dairy products were included in only 39% of schools, with large variation by school type—72% in residential schools compared to 21–22% in government schools and Madrasas. Deep-fried foods were observed in 13% of schools, and sugary drinks in 19%, which may be in the form of an evening snack or different types of sweet drinks such as ragi malt being provided to the students.

Food Procurement and Kitchen Gardens

Nearly 48% of schools received rice from government sources while procuring other ingredients locally, and 21% procured all ingredients from local markets. Only 35% of schools reported having a functional kitchen garden, while 65% had none, representing a missed opportunity for nutrition education and dietary diversification.

Monitoring and Food Safety

Meal preparation occurred within school premises in 84% of schools. Daily Quality check with taste testing was conducted by school administration in 78% of schools, with 78% reporting daily sampling and monitoring. However, only 6% of schools conducted laboratory testing of meals, indicating limited external quality assurance.

Cooking Infrastructure and Meal Service

Most schools had on-site kitchens, with adequate basic facilities such as water supply and utensil washing areas. However, staffing adequacy varied, with tribal and residential schools reporting the greatest constraints. Only about 40% of schools felt that cooking costs were sufficient.

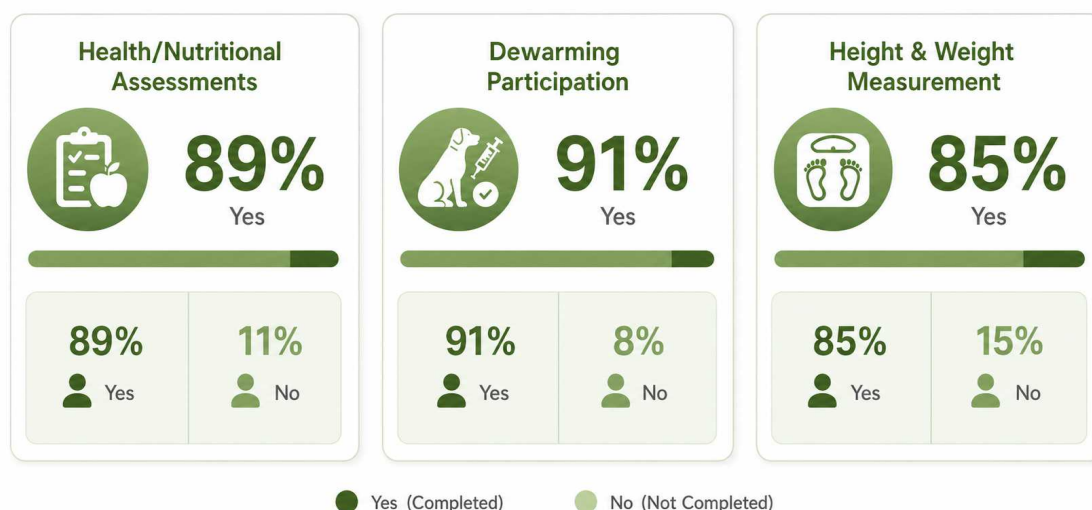
Designated dining spaces were unevenly available, with many government schools lacking proper eating areas, forcing students to eat in classrooms or open spaces.



Micronutrient Supplementation and Health Assessments

Health or nutritional assessments were reported in 89% of schools, with 92% participating in deworming programs. Weight and height measurements were conducted in 85% of schools, hemoglobin testing in 70%, and general health check-ups in 76%. Assessments were conducted every two months in 47% of schools, biannually in 34%, and annually in 19%.

Micronutrient supplementation was available in 64% of schools, with higher coverage in government (78%) and residential schools (75%) compared to private schools (49%). Among schools providing supplementation, 70% distributed IFA tablets, 47% provided calcium, and 47% provided multiple micronutrient supplements. Supplements were provided to all students in 88% of schools, rather than being targeted to nutritionally vulnerable groups.



Water, Sanitation and Hygiene (WASH) Menstrual Hygiene Management (MHM)

Drinking water was available in 92% of schools, primarily through RO systems (63%) or municipal supply (20%). However, 8% of schools reported no drinking water source. Water quality testing was conducted in 64% of schools, most commonly once every two months (56%).

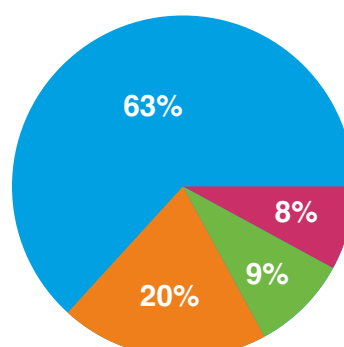
Handwashing stations were present in 81% of schools, yet only 71% had both water and soap available. 22% had water but no soap, and 4% lacked both, with gaps most pronounced in tribal schools. Functional toilets were available in 98.6% of schools, and 74% maintained student-toilet ratios of 50 or fewer students per toilet. Daily cleaning of toilets and handwashing areas was reported by 92% of schools, though this fell to 74% in tribal areas.

Approximately 74% of schools reported having a menstrual hygiene management program. Among these, 62% provided free sanitary napkins monthly along with MHM education, while 32% offered only annual MHM or gender education without regular pad provision. Comprehensive MHM services were most common in residential schools (87%) and Madrasas (86%), compared to 67% in government schools and 47% in private schools.



Drinking Water Sources in Schools

- RO Systems (63%)
- Municipal Supply (20%)
- Other/Not Specified (9%)
- No Drinking water (8%)





Food Environment Around Schools

A significant proportion of schools were surrounded by vendors selling chips, fried snacks, sugary drinks, and bakery items.

Although many schools restricted students from purchasing outside food during school hours, very few ensured the availability of healthy, affordable alternatives.

Nutrition Education and Physical Activity

Most schools reported having a nutrition education curriculum, but delivery was largely dependent on untrained teachers or external health workers. Engagement with parents was limited, and monitoring of education sessions was inconsistent.

While most schools had physical education policies and playgrounds, actual implementation of structured playtime was weak, particularly in government schools where academic pressures often displaced physical activity.

Adolescent Snacking Behaviours

Overall, 85% of students reported consuming snacks in addition to school meals. Biscuits were consumed by 75% of students, fresh fruits by 58%, homemade snacks by 50%, and chips by 39%. Nearly 49% of students consumed snacks daily, while 26% purchased snacks from outside vendors and 62% brought snacks from home.

Among students who regularly purchased snacks, 56% received ₹100 or more per week as pocket money. Despite 80% of adolescents demonstrating awareness of healthy foods, frequent consumption of processed snacks persisted, highlighting the dominant role of taste preference, peer influence, and food availability.

Strategic Recommendations

Actionable Recommendations for Strengthening School Nutrition Systems

1. Strengthening Enforcement of FSSAI Guidelines

To ensure availability of healthy foods near schools, it is critical to implement and strengthen the regulations from Food Safety and Standards Authority of India (FSSAI) that prohibit the sale, marketing, and distribution of High Fat, Salt, and Sugar (HFSS) foods within a 50-meter radius of school premises. While these provisions are clearly laid out in the Gazette, their on-ground enforcement remains limited. Monitoring mechanisms should therefore be reinforced by actively involving School Management Committees (SMCs), local health departments, and designated school-level health and wellness teams to ensure sustained compliance and accountability. Enforcement efforts may be further strengthened through convergence with local governance structures (Urban Local Bodies/Panchayats) and law enforcement agencies, particularly for regulating vendors operating outside school premises, where schools alone may have limited authority.

2. Nutrition Education

Schools need to be encouraged to strengthen age appropriate and relevant nutrition awareness through curricular and extra-curricular activities to influence healthy choices in children.

3. Improve PM Poshan Implementation

The PM Poshan scheme should incorporate robust quality control measures, including institutionalized external food safety testing to maintain hygiene and nutritional standards. Addressing supply chain gaps in fortified product delivery and integrating menu diversity based on regular student feedback can enhance both the nutritional value and acceptability of school meals.

4. Promote Healthy Snacking and use of Kitchen Gardens

Schools should be supported to establish kitchen gardens using local produce, promoting farm-to-table awareness and practical nutritional education. Healthy snack kiosks, backed by peer-led promotion and school-led initiatives, can provide affordable, culturally relevant alternatives to processed snacks while reinforcing positive dietary habits.



INTRODUCTION



Adolescents represent a key demographic in India's public health agenda, yet they continue to face significant nutritional challenges. In Andhra Pradesh, 36% of adolescents are underweight with 8% being overweight, 60% adolescent girls in the age group of 15-19 years are anemic reflecting a dual burden of malnutrition. Additionally, 24% of adolescents suffer from vitamin B12 deficiency and 79% from folate deficiency, surpassing national averages. Rising levels of HbA1c and triglycerides further signal increasing exposure to ultra-processed foods and poor dietary habits.

Schools, where adolescents spend a substantial part of their day, offer a strategic platform to influence nutrition-related behaviours and promote healthier lifestyles. Current interventions—such as the PM Poshan scheme and Anemia Mukh Bharat—primarily focus on meal provision and iron-folate acid supplementation, with limited integration of broader food environment strategies. Existing regulations restricting the sale of unhealthy foods near schools are promising but require stronger enforcement and contextual adaptation. Furthermore, there is limited information on children's actual food choices and preferences, making it challenging to design effective, targeted interventions.

National programs and regulatory frameworks have been established to improve school nutrition across India. However,

the school food environment continues to exhibit significant variability and gaps in systematic monitoring. Public, private, and residential schools differ widely in infrastructure, vendor presence, and institutional priorities, which limits the effectiveness of standardized interventions. Adolescents' growing autonomy in food choices, combined with peer influence and aggressive marketing of unhealthy products, further complicates efforts to promote healthier dietary behaviours. Data on the availability, accessibility, and appeal of nutritious food options within and around school campuses remain limited, and no standardized tools are widely used to comprehensively assess these environments. This presents a critical challenge in designing context-specific strategies that address the diverse realities of school settings.

To address this data gap, the Nutrition Environment Assessment Toolkit for Schools (NEAT-S) was globally designed to assess and optimize school food environments and support healthier dietary practices in middle childhood and adolescence. UNICEF has adopted the NEAT-S tool for Andhra Pradesh to systematically evaluate school food environments, generate evidence, and inform context-sensitive policy solutions. The study aims to inform policy recommendations, strengthen implementation frameworks, and contribute to creating supportive environments that foster healthier dietary behaviours among adolescents.

Creating Evidence: Assessing School Food Environments

The **School Food Environment Assessment** Study systematically evaluated food environments in and around schools across Andhra Pradesh, with a focus on adolescent dietary behaviours and institutional readiness to promote healthy eating. Recognizing the diversity of school settings—public, private, and residential—a Mixed Methods-Convergent Parallel approach was employed to capture the contextual realities influencing nutrition practices.

A contextualized version of the **Nutrition Environment Assessment Toolkit for Schools (NEAT-S)** was used to assess six critical domains: PM Poshan scheme implementation, micronutrient supplementation, WASH infrastructure, physical and nutrition education, adolescent dietary patterns, and the surrounding food environment. Data collection involved structured observations, stakeholder interviews, and focus group discussions with adolescents.

The study identified key barriers and enablers to healthy food access, policy enforcement gaps, and opportunities to strengthen school-based nutrition strategies. Importantly, it generated actionable evidence underscoring the need to improve food safety standards, enhance nutrition literacy through curriculum integration, and implement age-appropriate engagement strategies within schools. The assessment also highlighted the critical role of establishing stronger regulatory frameworks and promoting community-led accountability mechanisms to ensure sustained compliance with healthy food standards in and around school premises.

Collectively, these findings provide a robust evidence base to inform strategic policy decisions, drive programmatic redesign, and support advocacy efforts that aim to create enabling environments for healthier dietary behaviours among adolescents.

Methodology

Phase 1: Contextual Adaptation

An exploratory qualitative approach was adopted to adapt NEAT-S for southern Indian contexts. A desk review examined national policies, regulatory frameworks, and evidence related to school nutrition, including guidelines from education departments, FSSAI, and public health programs.

Findings informed semi-structured in-depth interviews (IDIs) exploring school food procurement systems, institutional norms, dietary practices, and enforcement challenges. Insights were used to refine tool constructs and indicators.

Phase 2: Pilot Testing

The adapted toolkit was pilot tested in 5 government schools across 2 selected districts in the state. Three instruments were administered:

- School Administrator Questionnaire
- Kitchen Checklist
- Student Attitudes and Perceptions Survey

Respondents included 5 administrators, 5 kitchen staff, and 10 students (Grades 6–12). Tools were administered through interviews and classroom surveys using Kobo Toolbox for digital data capture.

Feedback highlighted the need to simplify terminology, add locally relevant food examples, and improve question flow. Revisions were incorporated to enhance clarity and feasibility while retaining core domains.

Data collection tool

The digital data collection platform Kobo Toolbox was utilized across both phases of the study, including the pilot testing of tools and the subsequent large-scale survey implementation, to ensure standardized, efficient, and real-time data capture.

Phase 3: Large-Scale Implementation

Following validation, the refined toolkit was implemented across three states using a mixed-methods convergent parallel design. Quantitative school assessments and surveys were conducted alongside qualitative inquiry to enable triangulation.

Coverage included:

- Andhra Pradesh: 556 schools (5,286 respondents) across 12 districts from 4 administrative zones Government, private, and residential schools in rural and urban areas were included. A multi-stage sampling strategy ensured geographic and institutional representation. Administrators were purposively selected, and students were randomly sampled within eligible grades.

Data collectors received structured training on tool administration, observation protocols, ethics, and quality assurance. Formal approvals were obtained from state and district authorities, and written institutional consent was secured at school level and individual level. Student surveys were anonymous, and confidentiality was maintained.

Structured observations documented infrastructure, WASH facilities, meal preparation areas, and vendors within a 50-meter radius of schools. Quantitative data was digitized and cleaned, with quality checks including back-verification and logical validation.

Qualitative data were transcribed and thematically analyzed under NEAT-S domains to interpret findings, identify implementation bottlenecks, and highlight behavioral and governance challenges.



RESULTS & DISCUSSION

School Characteristics

The survey included 556 schools, nearly half of which were private (45%), followed by government non-residential schools (37%), residential tribal/SC/ST schools (17%), and madrasas (n=10; 2%). Most schools offered primary and upper-primary grades (44%), while about one-fifth offered only upper primary (20%). A majority of the schools were in rural areas (59%), one-third were in urban settings (33%), and about 8% were in tribal regions (Table 1).

Table : Characteristics of schools (Admin tool)

Characteristics	%	n
School type		
Residential (Tribal welfare, SC/ST)	16.6	92
Government (non-residential)	36.5	203
Private	45.1	251
Madrasa	1.8	10
Curriculum offered		
Primary and upper primary	44.2	246
Only upper primary	19.8	110
Both (Upper primary & High school)	15.5	86
High school	15.1	84
Primary to high school	5.4	30
Location		
Urban city	33.1	184
Rural	59.4	330
Tribal	7.6	42
Total	556	

Theme 1: School meal program management and services

Availability of meal program

Nearly half of the schools (48%) reported having a school meal program. Among the schools offering meals, the majority relied on government-funded schemes (64%), while about one-third were residential schools providing regular meals as part of their routine. Only a very small proportion depended on NGO/CSR support or community events, and paid meal programs in private schools were minimal. Importantly, almost all schools with a meal program served meals to all children (98%) (Table 2).

Table : Availability and type of school meal program (Admin tool)

About school meal program	%	N
School meal program available	48.0	267
Type of meal program*		
Govt. funded scheme	64.4	172
Regular meals at residential schools	31.5	84
NGO/CSR supported scheme	1.5	4
Community events	0.4	1
Paid program	2.3	6

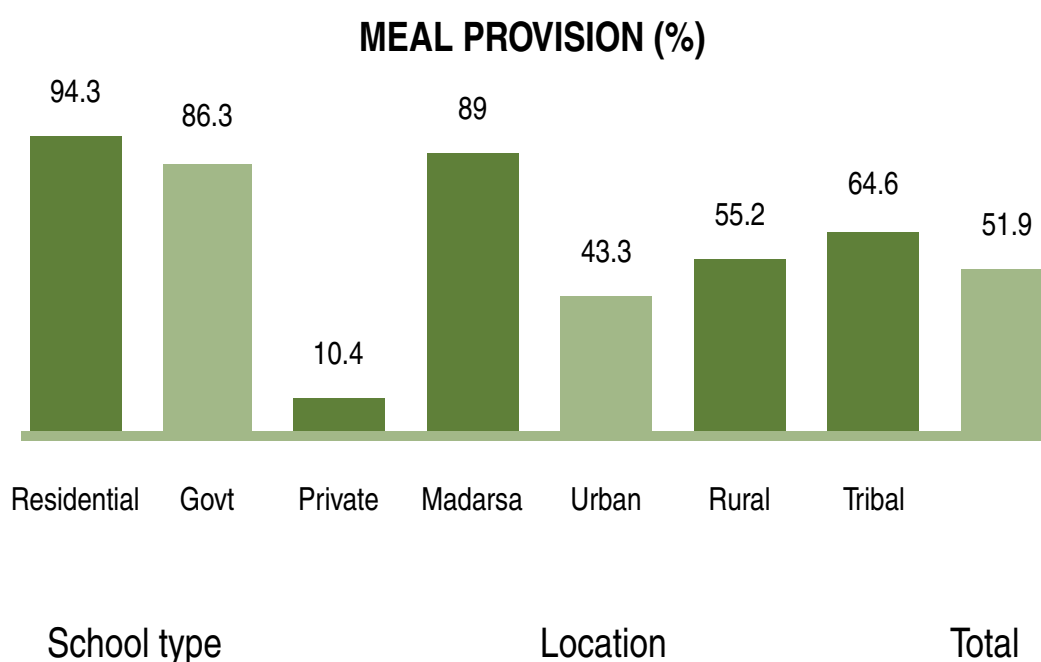
Beneficiaries*		
All children	97.8	261
Paid program and charge some amount	2.2	6

Note: Among those schools where meal program available (267)

Similar to the school administrators, about half of the students reported provision of meal program in schools (52%) (Figure 1). Almost all students in residential schools (94%) and most in government schools (86%) reported receiving meals, whereas only a small proportion of students in private schools (10%) reported the same. Students in Madrasa also indicated high meal provision (89%). By location, more students in rural (55%) and tribal (65%) areas reported receiving meals compared with those in urban areas (43%) possibly due to the more than half of the selected schools being in rural areas and some in tribal. (Figure 1).

As expected, meal availability was highest in government and residential schools and markedly lower in private schools, reflecting policy mandates and funding structures. Encouragingly, nearly all schools providing meals served all enrolled students, supporting the equity goals of the PM Poshan (MDM) scheme.

Figure : Meal provision in schools (Individual)



Most students who eat school meals reported they like the meals “sometimes,” and only about 2% reported rarely or never liking the meals. Perceptions of rice quality were also largely positive, with 83% liking the texture and quality. About 13% indicated that rice is sometimes not cooked properly, and a small proportion (3%) felt the taste differs from what they usually eat. Students also showed strong preference for supplementary items such as peanut chikki (92%) and ragi malt (85%) (Table 3).

These findings align with previous evidence that meal acceptability is crucial for sustained uptake and nutritional impact of school feeding programs. However, reports of occasional issues with rice quality and taste variability indicate the need for continued attention to cooking practices and ingredient quality, particularly in high-volume government kitchens.

Table : Student's perception about the meal program (individual tool)

About school meal	%	N
Like meal provided by school		
Yes, always	12.1	315
Yes, sometimes	85.7	2224
Very rarely	1.2	31
Not at all	1.0	26
Like texture & quality of rice		
Yes, like	83.1	2157
Yes, sometimes as rice not cooked properly	13.1	341
Don't like as taste differ from normal rice	3.1	81
Other	0.7	17
Like below items		
Peanut chikki	91.9	
Ragi malt	85.2	2387
Total	2596	2212

Note: Those students who report on eating school meals

Meal diversity and food group inclusion

Across the 267 schools with a meal program, the included food items were cereals (85%) and vegetables or fruits (86%), followed by pulses (79%). Dairy products were included in fewer schools (39%), with substantial variation by school type, high in residential schools (72%) but very low in government and Madrasas (around 21–22%). Sweets were more commonly included (33%), particularly in Madrasas (78%) (table 4).

Table : Type of food included in the meal in schools (Admin tool observation)

Type of food	Residential	Govt.	Private	Madarsa	Total%(N)
Cereals	91.1 (72)	81.1 (129)	85.0 (17)	100.0 (9)	85.0 (227)
Pulses	92.4 (73)	73.6 (117)	65.0 (13)	77.8 (7)	78.7 (210)
Vegetables/Fruits	91.1 (72)	83.0 (132)	90.0 (18)	77.8 (7)	85.8 (229)
Dairy	72.2 (57)	21.4 (34)	50.0 (10)	22.2 (2)	38.6 (103)
Deep fried food	13.9 (11)	10.1 (16)	30.0 (6)	11.1 (1)	12.7 (34)
Sweets	31.7 (25)	30.2 (48)	35.0 (7)	77.8 (7)	32.6 (87)
Total	79	159	20	9	267

Note: Multiple response; Among those where meal program available (267)

Sugary drinks and salary packaged foods were observed in few schools, mostly bought by students themselves and not offered from the school meal program.

Sources of food procurement

Among the 223 schools where meals were prepared on-site, most relied on a mix of government supplies and local markets. Nearly half (48%) reported receiving rice from the government while procuring other ingredients locally, and about one-fifth (21%) procured all raw materials from the local market. Smaller proportions depended entirely on contractor agencies (8%) or received fortified rice or other commodities such as oil and salt from the government (11%). Regarding kitchen gardens, two-thirds of schools (65%) did not have a functional garden. Only about one-third (35%) reported having a functional kitchen garden.

Table : Sources of meal and snack preparation in surveyed schools (Admin)

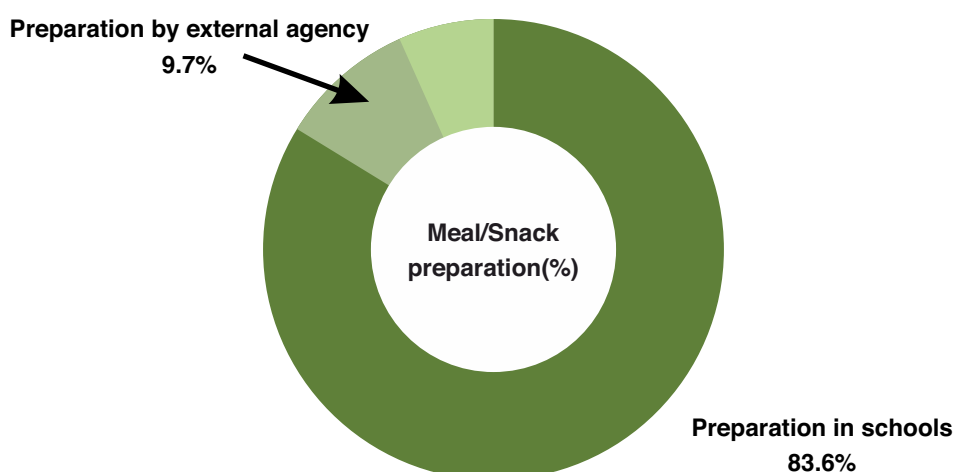
Procurement sources	%	%
Raw materials procured from*		
Everything from local market	20.6	46
Get all the supplies from the contractor agency	7.6	17
Receive fortified rice from the PDS shop, we procure all other things from market	7.6	17
Receive rice from government and other products from local market	47.9	107
Receive fortified rice, oil salt from government	10.8	24
Don't know	5.4	12
Kitchen garden		
School has functional kitchen garden	19.7	44
School has a functional kitchen garden	15.3	34
No kitchen garden	65.0	145
Total	223	

Note: *Among those schools where meals are prepared in school kitchen (223)

Monitoring of meal scheme

Most schools prepared meals or snacks within the school premises, with 83.6% reporting in-school preparation. A smaller proportion (9.7%) relied on external agencies for meal or snack preparation and remaining 7% had canteens in schools (Pre university campuses) (Figure 2).

Figure : Meals/Snacks preparation in schools (Admin)



Supervision and quality monitoring were primarily carried out by school administration, reported in 78% of schools. School management committees were involved in monitoring in 17% of schools, while student committees played only a minor role (5%). Daily sampling and quality checks were the most common monitoring practice, reported by 78% of schools, indicating regular oversight of meal quality. Around 17% conducted random spot checks twice a month, and only 3% checked meals once a month. A very small proportion (3%) reported no checking at all. Laboratory testing of meals was rare—only 6% of schools conducted lab tests, while the vast majority (94%) did not engage in this level of quality assessment.

Table : Meal scheme supervision and quality monitoring practices (Admin

Meal scheme monitoring	Residential	Govt.	Private	Madarasa	Total % (N)
Monitoring done by					
School administration	83.5	76.3	70.0	66.7	77.9 (208)
School management committee	8.9	18.8	25.0	33.3	16.9 (45)
Student management committee	7.6	4.4	5.0	0.0	5.2(14)
Frequency of checking meals					
Random spot checking - twice a month	16.5	16.4	20.0	22.2	16.8 (45)
Once a month	5.1	2.5	0.0	0.0	3.0 (8)
Daily sampling & monitoring quality	75.9	81.1	65.0	55.6	77.5 (207)
No checking	2.5	0.0	15.0	22.2	2.6 (7)
Lab test for meals					
Yes	5.1	5.7	5.0	11.1	5.6 (15)
No	94.9	94.3	95.0	88.9	94.4 (252)
Total	79	159	20	9	267

Note: Among those schools where meal program available

Qualitative responses on the PM Poshan program by Administration

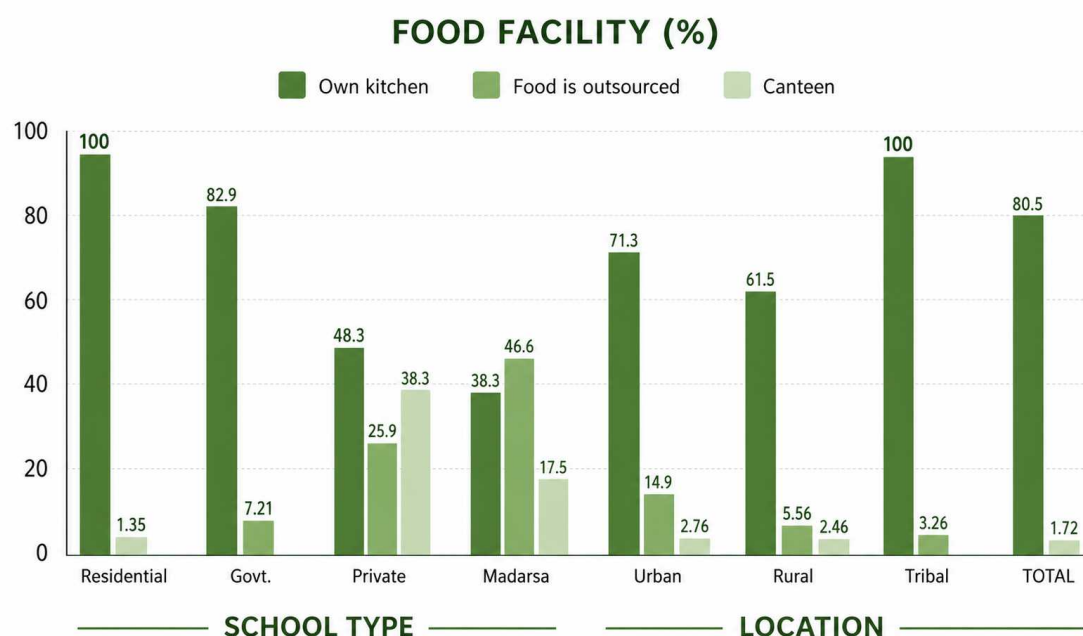
The qualitative findings highlight three key cross-cutting issues within school food environments. First, financial constraints emerge as a notable concern, with 53% of respondents reporting that cooking costs are insufficient and 6.0% explicitly recommending increased funding. Second, human resource gaps were reported, with staff shortages reported as a challenge by 4.1% of respondents and 2.2% suggesting the need for additional personnel such as cooks and helpers. Finally, there is a high degree of contextual variability in responses, with over 90% of inputs on implementation gaps and recommendations such as **increasing funding so we can serve better, more nutritious meals in proper facilities, improving Food quality and menu diversity - adding eggs, fruits, milk; improve taste and nutrition; more variety**. This reflects substantial school-level differences, limited standardization in reporting, and underscores the need for context-specific and localized approaches to strengthening school food environments.

Meal preparation and cooking infrastructure

Cooking facilities and structure

Across schools, 80.5% had their own kitchen, making it the most common food facility. Outsourced food was reported by 12.4% of schools, mostly private (46.8%) and some Madrasas (25%). Canteens were limited (7.2% overall), appearing mainly in private (14.9%). Tribal schools had full coverage with own kitchens (100%) (Figure 3).

Figure : Type of food facility in schools (Kitchen tool)



Among schools with a kitchen, most (78%) had a basic staffing structure of three members (head cook, helper, and serving staff), while about 15% had five staff members and only 6% had more than seven. The number of children served daily varied, with roughly equal proportions serving 100–200 students (29%) and 200–300 students (29%), while 25% served fewer than 100 and 16% served more than 400 students. Meal preparation patterns showed that 58% of schools cooked only one meal (lunch), while smaller proportion of schools provided two meals (5%) or three meals (11%) (Table 7).

Table : Kitchen structure and meal preparation in schools

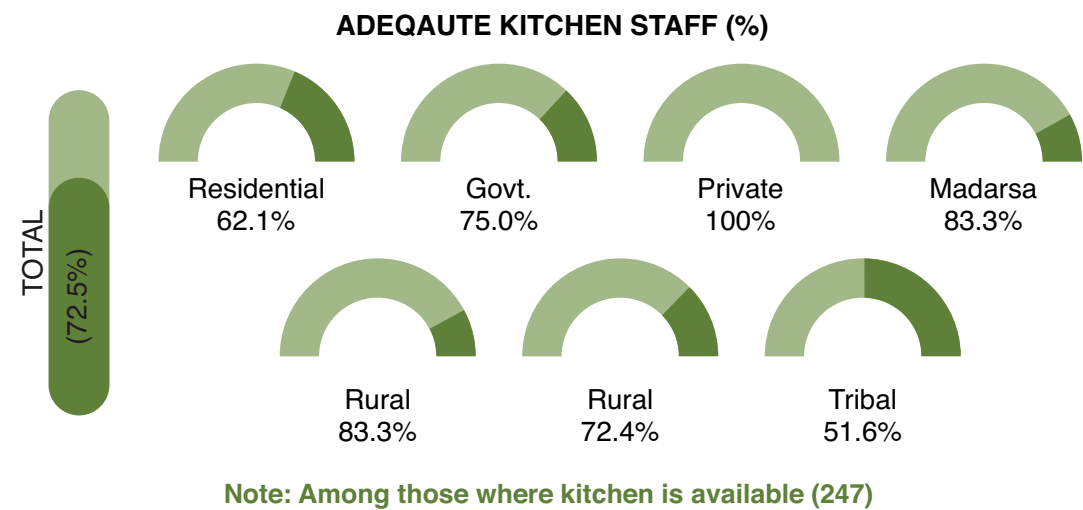
Kitchen infrastructure	%	n
No. of staff		
3 (Head cook, Helper, Serving member)	78.1	193
5 (2 Head cooks, 1 helper, 2 serving members)	14.9	37
More than 7 staff	5.7	14
Don't know	1.2	3
No. of children served daily		
<100 students	24.7	61
100-200 students	29.2	72
200-300 students	28.7	71
More than 400 students	16.2	40
Don't know	1.2	3
No. of meals cooked daily		
One meal (lunch only)	57.9	143
Two meals (breakfast and lunch)	4.9	12
Three meals (breakfast, lunch and evening snacks)	10.5	26
Four meals (breakfast, lunch, snacks and dinner)	26.3	65
Don't know	0.4	1
Total	247	

Note: Among those where kitchen is available (247)

Perceptions of kitchen staff adequacy varied across school types and locations. Overall, 72.5% of schools reported having adequate kitchen staff. By school type, adequacy of kitchen staff was highest in private schools (100%), followed by Madrasas (83.3%) and government schools (75%). Residential schools reported moderate adequacy at 62.1%. By location, adequacy was highest in urban

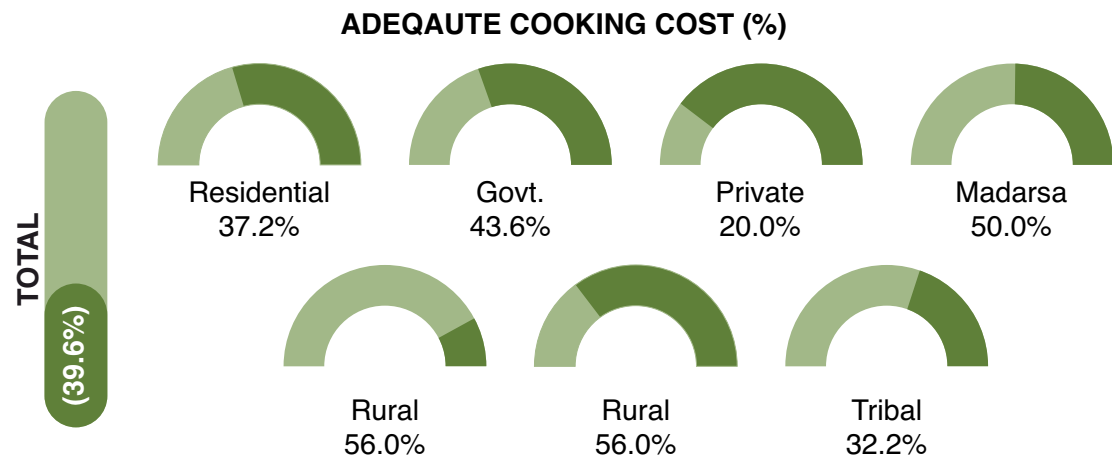
schools (83.3%), followed by rural schools (72.4%). The lowest adequacy was reported in tribal-area schools (51.6%) (Figure 4).

Figure : Perceived adequacy of kitchen staff by school type and location (kitchen tool)



Overall, 39.9% of schools reported that the cooking cost was sufficient. Madrasas reported the highest sufficiency at 50%, followed by Government schools (43.65) and residential schools (37%). In private schools, only 20% felt the cooking cost was sufficient (Figure 5).

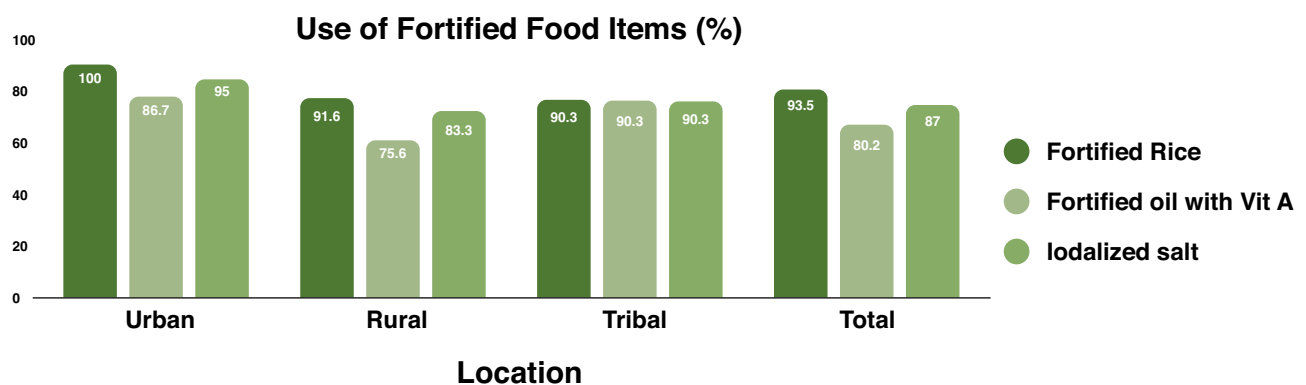
Figure : Proportion of schools reported cooking cost as sufficient (reported by administrators)



Use of fortified items in cooking

Availability of fortified items was generally high across locations. Fortified rice had the highest coverage, reported by 100% of urban, 92% of rural, and 90% of tribal schools (overall 94%) (Figure 6). Availability of iodized salt was also high, with 95% in urban, 83% in rural, and 90% in tribal schools (overall 87%). Fortified oil with Vitamin A was less used, particularly in rural areas (76%), compared with urban (87%) and tribal (90%) schools (overall 80%).

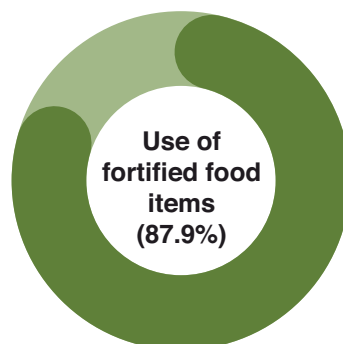
Figure : Use of fortified rice, oil and iodized salt in meals (kitchen tool)



About 88% of school administrators reported to use fortified rice, vitamin A fortified cooking oil and double fortified salt. Most schools (81.6%) reported regular use of fortified items, while 16% used them only when available. Very few schools (2.4%) did not use fortified items at all. Regarding supply, 62.7% of schools received fortified items regularly, whereas

22.6% experienced irregular supply. About 10.8% reported regular supply but with quality issues, and 3.8% were not aware of the supply status (Table 8).

Table : Use and supply of fortified food items (reported by school administrator)

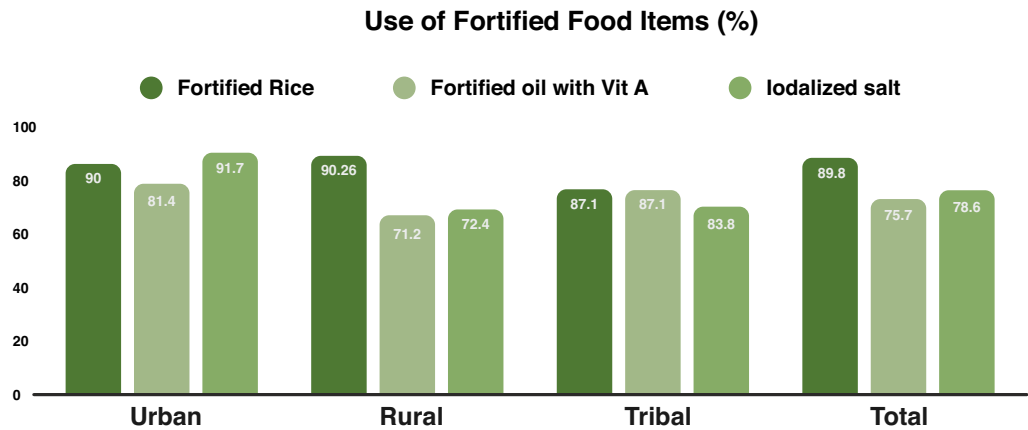


Use of fortified items	%	n
Frequency		
Use always	81.6	173
Depends on availability	16.0	34
Don't use fortified items	2.4	5
Supply		
Irregular supply	22.6	48
Regular supply	62.7	133
Regular supply but quality issues	10.8	23
Don't know	3.8	8

Note: Among those who use fortified cooking items (212)

As observed by researchers, fortified rice was widely available across all areas (around 90% in urban and rural, and 87% in tribal schools). Availability of fortified oil with Vitamin A was lower overall (76%), with the lowest presence in rural schools (71%) and higher levels in urban (81%) and tribal (87%) areas. Iodized salt showed strong availability in urban schools (92%), but lower in rural (72%) and moderate in tribal areas (84%), resulting in an overall availability of 79% (Figure 7).

Figure : Use of fortified rice, oil and iodized salt (Researcher observation)

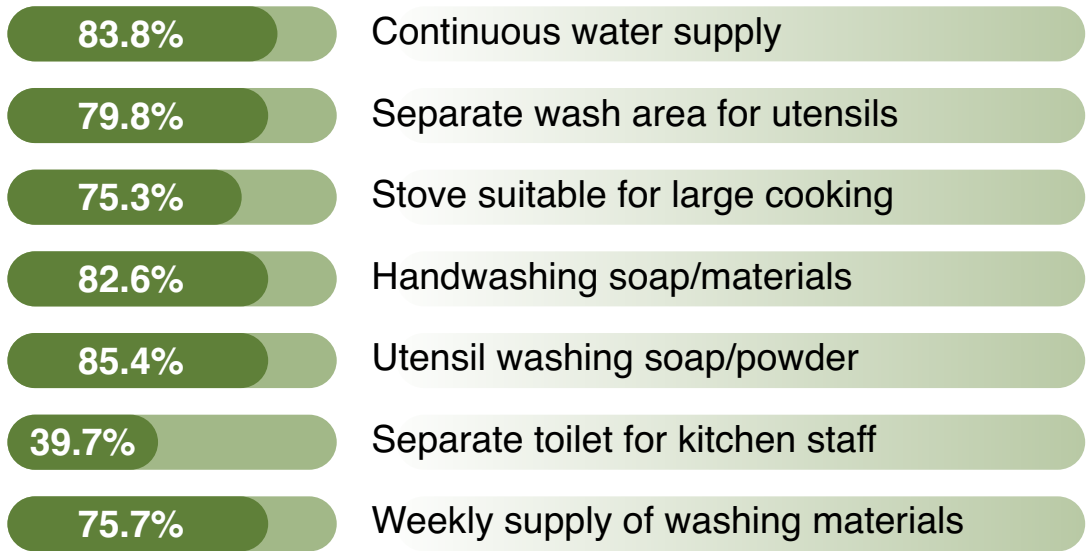


Overall, all school staff reported high use of fortified food items in schools. The widespread use of fortified rice, iodized salt, and fortified oil represents a major strength of the program and aligns with national strategies to address micronutrient deficiencies. However, discrepancies between administrator reports and researcher observations—particularly for iodized salt and fortified oil in rural and tribal schools—suggest inconsistencies in supply chains and possible gaps in awareness or compliance. Irregular supply and quality concerns reported by over one-third of schools further highlight the need for strengthened procurement monitoring and quality assurance mechanisms.

Kitchen equipment and sanitation facilities (Kitchen tool)

More than 80% of schools had basic facilities available in kitchen such as utensil washing soap/powder (85%), continuous water supply (84%), and handwashing soap/materials (83%). About 80% of schools had separate wash area for utensils, followed by weekly supply of washing materials (76%), and stoves suitable for cooking (75%) (Figure 8).

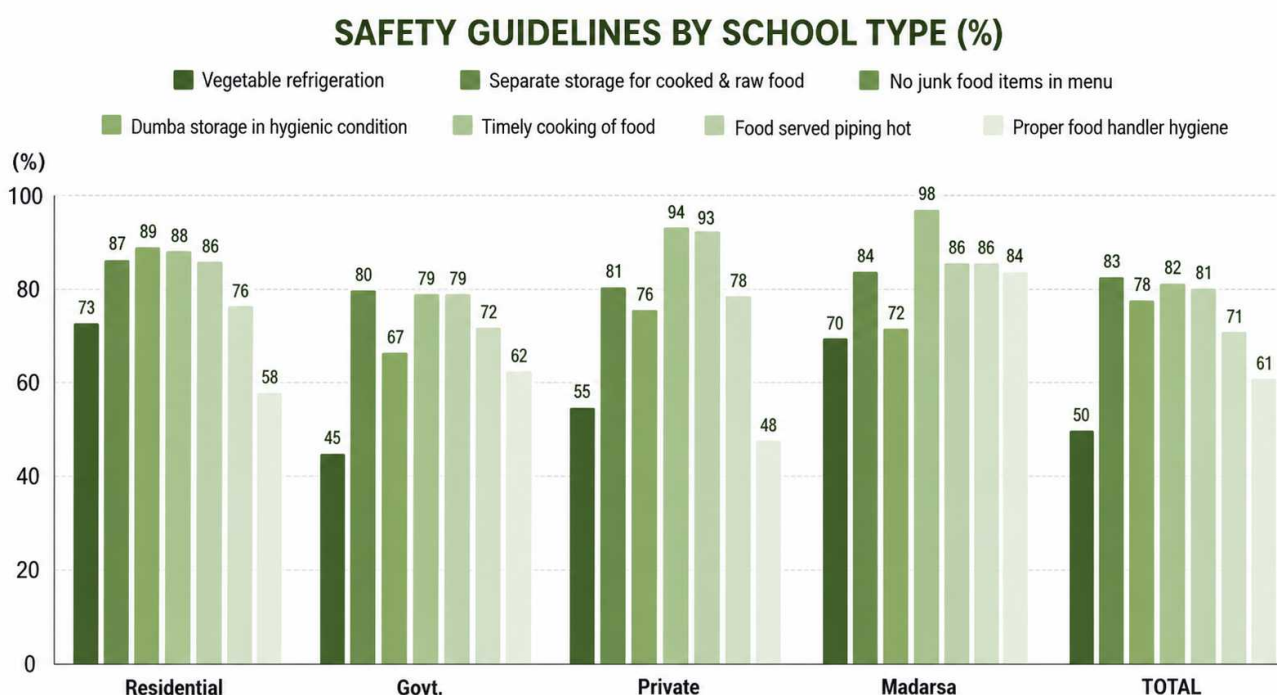
Figure : Facilities available in school kitchen (kitchen tool)



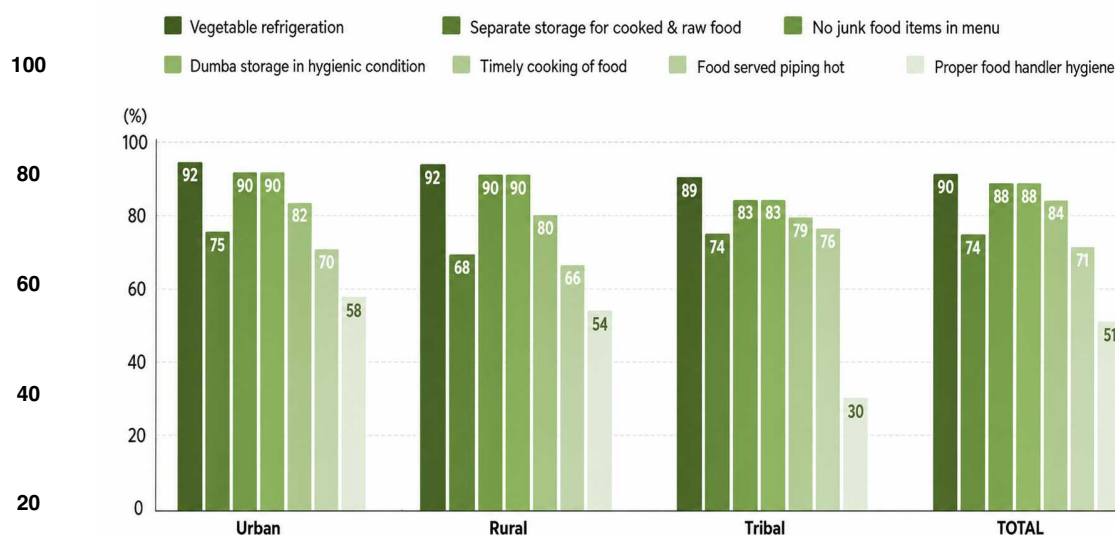
Adherence to safety guidelines in kitchen

Across all schools, 39% had updated medical certificates for staff, 81% had potable water and handwashing areas, 68% maintained canteens that were pest-free, and 80% had clean cooking areas. Separate cooking and storage areas were observed in 80% of schools, 67% used enough food covers or containers, and just over half (53%) of staff wore hairnets, gloves, or aprons. Madrasas scored highest on most hygiene indicators, including 100% having clean cooking areas, while private schools excelled in clean cooking areas and separate storage. Residential schools had moderate compliance, and government schools generally had lower percentages across indicators. Further, urban and rural schools show similar compliance with most hygiene and safety measures, with 52% of urban and 38% of rural schools having updated medical certificates, and around 81–82% having potable water and handwashing areas. Clean cooking areas were reported in over 80% of urban and rural schools, while tribal schools had slightly lower compliance (74%). Tribal schools had the lowest proportion of staff wearing hairnets, gloves, or aprons (23%), though they performed relatively well in providing enough food covers/containers (70%).

Figure A Adherence to safety guidelines in kitchen (Researcher observation)



SAFETY GUIDELINES BY SCHOOL TYPE (%)



Designated area to eat meals

The availability of designated spaces for students to eat meals varied notably across school types. Dining halls with chairs and tables were most common in residential schools (79.4%), followed by private (48.2%) and Madrasas (50%), while government schools had the lowest availability (40.9%). Eating in open playgrounds was reported mainly in government schools (25.1%), with lower levels in residential (10.9%), private (12.8%), and madrasa schools (10%) (Table 9).

Table : Availability of designated place to eat meals (Admin observation)

Infrastructure to eat	Residential	Govt.	Private	Madarsa	N
Dining hall with chairs and tables	79.4	40.9	48.2	50.0	50.7 (282)
No proper place, students take meals in classes	9.8	33.9	39.0	40.0	32.4 (180)
Open playground, students sit on ground and eat meals	10.9	25.1	12.8	10.0	16.9 (94)
Total	92	203	251	10	556

Management of outsourced food

Among the 38 schools where meals were outsourced, most served freshly prepared hot meals without storage (68.4%), while smaller proportions stored and reheated food (13.2%) or served it directly in insulated containers (18.4%). About one-third of schools (31.6%) had students eat in open areas, while others used dining areas in batches (28.9%) or large halls (18.4%); around 21% served meals inside classrooms. Just over half the schools (52.6%) had sufficient utensils for meal service, whereas others managed with limited utensils (18.4%) or relied solely on insulated containers (28.9%). Utensil handling practices were mixed—52.6% washed utensils after each meal, while 36.8% simply rinsed and returned them to the provider. Researcher observations showed that most schools maintained hygienic storage areas for food packs (76.3%) and used clean, well-packed food items (63.2%). However, fewer schools ensured immediate feeding upon receipt of food (55.3%) or adherence to hygiene protocols for food handlers (44.7%).



Table : Management of outsourced food in schools (kitchen)

Outsourced food management	%	%
Storage process		
No storage- served hot fresh meals	68.4	26
Stored in kitchen, reheated and served later	13.2	5
Served directly in insulated utensils without re-heating	18.4	7
Serving place		
Dining area where students come in batches	28.9	11
Large hall, all students came once and served meals	18.4	7
Students take the meals to their classes from the kitchen	10.5	4
Meals served in classes	10.5	4
Students sit in open area in school	31.6	12
Availability of utensils		
Sufficient utensils for each meal serving	52.6	20
Limited utensils, clean every time before next meal	18.4	7
No serving utensils used and use of insulated utensils	28.9	11
Handling of utensils		
Utensils are washed after each meal	52.6	20
Utensils are cleaned with water and sent back to provider	36.8	14
Clean utensils with soap/water and providers take them back	10.5	4
Guidelines for packed meals (researcher observation)		
Well-ventilated, clean, and pest-free storage area for the received food packs	76.3	29
Food products are hygienically packed in environment-friendly bags	63.2	24
Highest standard of hygiene in the preparation and serving of food is being practiced	63.2	24
Feeding activities commence stocks are received from the suppliers as soon as food	55.3	21
Food handlers wear hair net, face mask/mouth shield, apron, disposable plastic gloves	44.7	17
Total	Total	Total

Note: Of those where food is outsourced (38)

Management of leftover food

Most schools, whether cooking in-house or receiving outsourced meals, prepared food based on the student head count to minimize leftovers (82.6% and 78.9%, respectively). A small proportion of schools allowed kitchen staff to take the food home (11.3% in in-house kitchens and 7.9% in outsourced settings), in case of leftover food. Community distribution of leftover food was more common in schools with outsourced meals (13.2%) compared to those with in-house kitchens (4.5%).

Table : Practices to manage leftover food in schools

Provision of leftover food	In house kitchn		Outsourced food	
	%	n	%	n
The food is made according to head count of students	82.6	204	78.9	30
The kitchen staff takes it home	11.3	28	7.9	3
The food is served in the community	4.5	11	13.2	5
Don't know	1.6	4	0.0	0
Total				
	247		38	

Management of school canteen

Canteens were largely vendor-based, with 90.9% offering readymade snacks that required no cooking, while only a few prepared or reheated food on-site. The most commonly available items were chocolates and candies (31.8%), buttermilk or lemon water (22.7%), and cold drinks or juices (18.2%), with fried snacks and chips also present. No canteen offered healthy food options, as all provided only fried or processed items. Researcher observations showed strong adherence to hygiene guidelines: all canteens had updated health certificates, and most were clean, well-ventilated, and pest-free (86.4%), with high hygiene standards during preparation and serving (81.8%). About 72.7% of food handlers followed recommended safety practices such as wearing protective gear.

Table : Canteen food preparation, hygiene and management (kitchen tool)

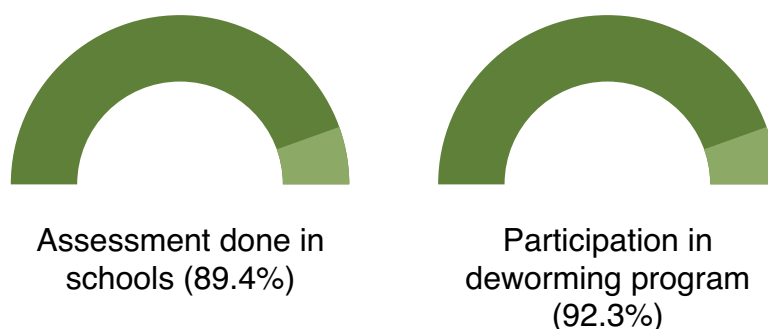
Canteen management	%	%
Food preparation in canteen		
All the food items available are prepared in the canteen	4.6	1
Only snacks available, reheated and served	4.6	1
Readymade snacks are available which require no cooking	90.9	20
Food available in canteen		
Samosa, Vada, Bonda	9.1	2
Rice, dal, roti and sabji	4.6	1
All kinds of chips and murukku	13.6	3
Chocolates, candies	31.8	7
Cold drinks, fruit juices, soda	18.2	4
Buttermilk, fresh lemon water	22.7	5
Healthy food items		
No, fried and ready-made items available	100.0	22
Guidelines for canteen (researcher observation)		
Updated health/medical certificate of food handlers	100.0	22
Well-maintained, clean, well-ventilated, and pest-free	86.4	19
Highest standard of hygiene in preparation and serving of food	81.8	18
Food handlers wear hair net, face mask/mouth shield, apron, disposable plastic gloves	72.7	16
Total	22	22

Micronutrient and deworming supplementation

Nutritional assessment

In 89% of schools, health/nutritional assessment was done and about 92% of schools reported to participate in deworming program (Figure 10).

Figure : Status of health/nutritional assessment



Most schools conducted multiple health and nutrition assessments, with the highest coverage for weight and height measurements (84.7%), followed by general health check-ups (75.7%) and hemoglobin testing (69.6%). Eye examinations were carried out in over half of the schools (56.9%), while dental checks were less common (33.6%). In terms of frequency, nearly half of the schools (46.7%) conducted assessments every two months, 33.8% did them biannually, and about one-fifth (19.5%) carried them out annually (Table 13).

Table : Health and nutritional assessments conducted in schools (Admin)

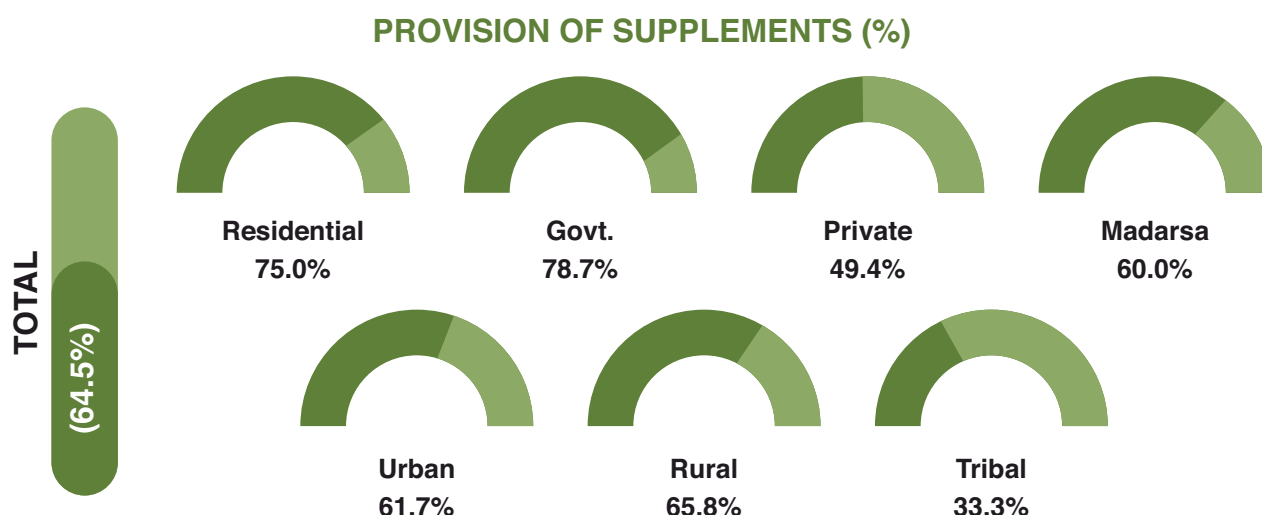
Nutritional/health assessment	#	n
Type of assessment		
Weight and height	84.7	421
HB count	69.6	346
General Health check ups	75.7	376
Eye examination	56.9	283
Dental examination	33.6	167
Frequency of assessment		
Biannually	33.8	168
Once a year	19.5	97
Every two months	46.7	232

Note: Amongst schools where health assessments are done (497)

Provision of micronutrient supplements

Overall, 64% of schools reported providing micronutrient supplementation to students. The highest coverage was in government schools (78%) and residential schools (75%), followed by madrasa schools (60%). Private schools had lower coverage, with about half (49%) offering supplementation. Further, Coverage is slightly higher in tribal schools (67%) and rural schools (66%) compared to urban city schools (61%) (Figure 11).

Figure : Percentage of schools providing micronutrient supplements



Micronutrient supplementation was available in many schools, with IFA tablets being the most provided (69.6%), followed by multiple micronutrient supplements (46.7%) and calcium tablets (46.4%). Multivitamin use was very limited (3.3%). Supplementation schedules varied with one-third of schools administered supplements monthly (32.7%), while 26.8% did so weekly and 18.2% bi-yearly. Smaller proportions followed annual (9.5%) or once-in-two-months (11.5%) schedules. Most schools (87.9%) provided supplements to all students with consent, while only 9.5% targeted malnourished students (Table 14).

Table : Provision and frequency of micronutrient supplementation (Admin tool)

Micronutrient supplements	#	n
Type of supplements		
Calcium tablets	46.4	166
IFA tablets	69.6	249
Multiple micronutrient supplementets	46.7	167
Multivitamin	3.3	11
Frequence		
Every Week	26.8	96
Once a year	9.5	34
Bi-yearly	18.2	65
Once a month	32.7	117
Once in two months	11.5	41
Don't know	1.4	5
Beneficiaries		
All student with consent	87.9	315
only malnourished student with consent	9.5	34
Don't Know	2.5	9
Total	358	

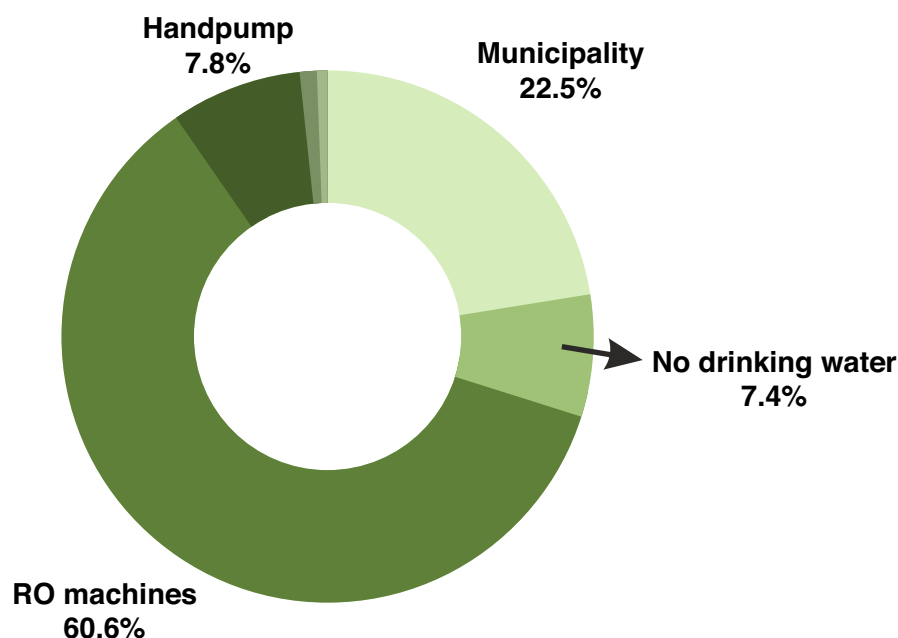
Note: Among those where micronutrient supplements were available

WASH components – Water availability, Sanitation practices

Water facilities

Most schools relied on RO water as their primary drinking water source (62.8%). Municipal or manjira water was the next most common source (20.3%). A small proportion of schools depended on hand-pumps (8.1%) or wells (1.1%). Notably, 7.7% of schools reported having no drinking water source available (Figure 12).

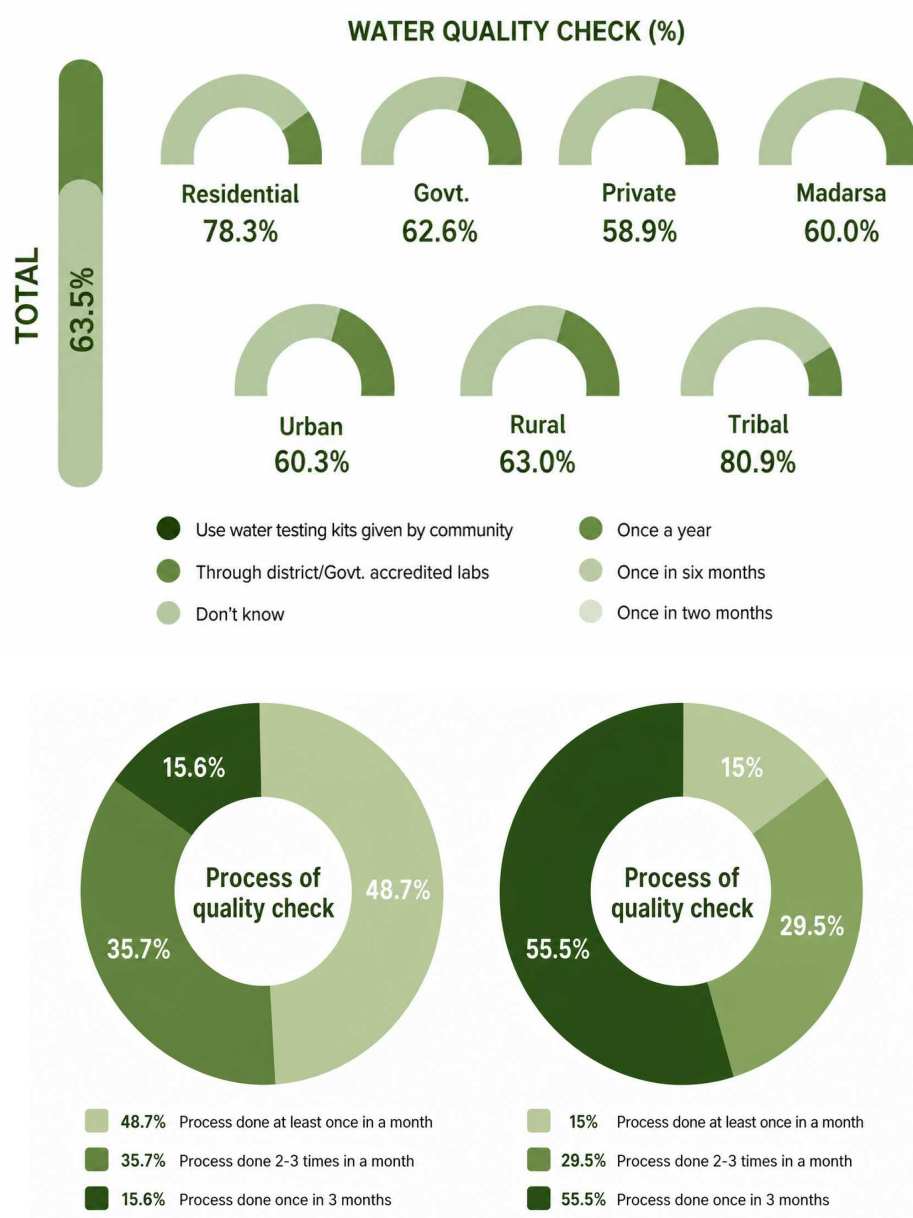
Figure : Main source of drinking water in schools (Admin)



Water quality was checked in 64% of schools as reported by administrators. In residential schools (78%) provision of water quality check was higher, while 59% of private schools reported the same. In about 60% of Govt. Schools and Madrasas, provision of water quality check was available.

Nearly half of respondents (49%) use community-provided water testing kits to test their water. About one-third (36%) rely on district or government-accredited laboratories, while 16% are unsure about how their water is tested. The majority of respondents (56%) test their water once every two months, 30% test it once in six months, and only 15% test it once a year (Figure 13).

Figure A Provision of checking water quality by school type and location (Admin tool)



Note: Among those where water quality is checked

Handwashing facilities

Handwashing stations were the primary facility across all locations, used by 84.8% of urban, 78.8% of rural, and 78.6% of tribal schools (overall 80.8%). Less structured options such as buckets/mugs were more common in tribal schools (11.9%) compared with rural (7.6%) and urban (5.4%) schools. A small proportion of schools reported handwashing inside toilets (6.1% overall) or using handpumps (2.7%). Regarding supplies, water and soap were available in most schools, 73.4% of urban, 74.9% of rural schools, and 71.4% of tribal schools (overall 71.1%). However, 22.1% had only water without soap, and 3.8% lacked both water and soap, with tribal schools showing the highest gaps (9.5%).



Table : Handwashing facilities in schools (admin)

Hand washing Facilities	Urban	Rural	Tribal	Total
Place of washing hands				
Hand washing station	84.8	78.8	78.6	808 (449)
Bucket/mug, basin/mug	5.4	7.6	11.9	7.2 (40)
Hand washing in toilet/bathroom	7.6	6.1	0.0	6.1 (34)
Hand pump	1.1	3.6	2.4	2.7 (15)
No proper place	1.1	3.9	7.1	3.2 (18)
Availability of water and soap				
Both water and soap available	73.4	74.9	71.4	71.1 (412)
Water available but no soap	25.5	20.6	19.1	22.1 (123)
No water and soap is available	1.1	4.6	9.5	3.8 (21)
Total	184	330	42	556

Toilet facilities

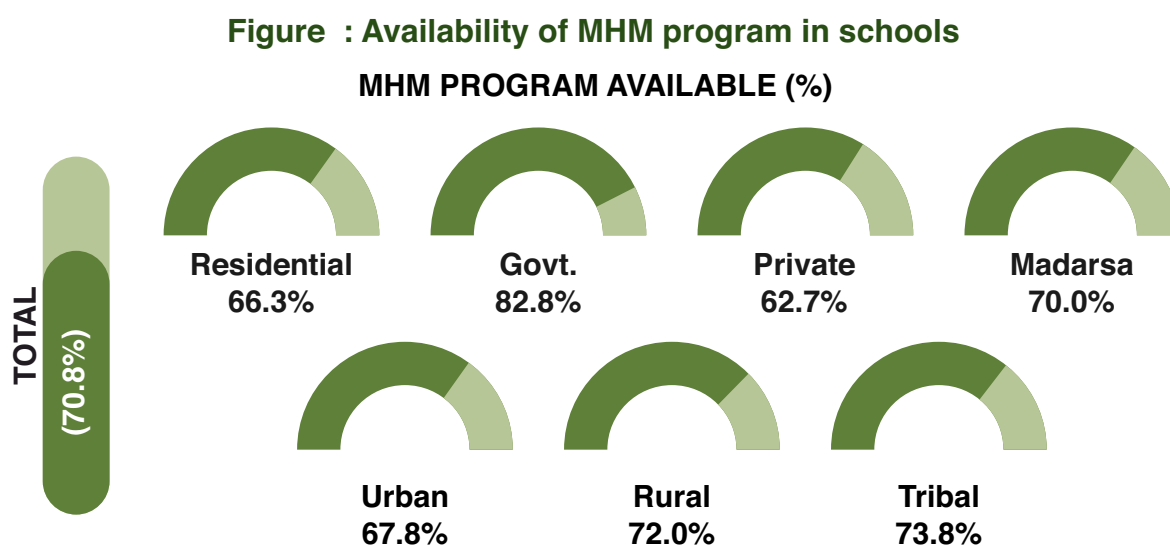
Most schools had functional toilet facilities, with Indian toilets being the most common (38.1%), followed by schools that had both Indian and western toilets (47.7%). Only 1.4% of schools reported having no toilet facility. Student-toilet ratios were generally adequate, with 73.7% of schools having 50 or fewer students per toilet. Around 18.2% had 50–100 students per toilet, and 8.1% exceeded 100 students per toilet. Toilet and handwashing station cleaning was reported to be regular, with 91.9% of schools cleaning daily. However, tribal schools showed weaker maintenance, with only 73.8% cleaning daily compared with over 93% in urban and rural areas (Table 16).

Table : Toilet facilities in schools (Admin tool)

Hand washing Facilities	Urban	Rural	Tribal	Total
Type of toilet				
Western toilet/commode	15.8	12.1	4.8	12.8(71)
Squatting toilet	46.7	31.5	52.4	38.1 (212)
No toilet (bush, Field, river)	0.5	2.1	0.0	1.4 (8)
Both western and Indian toilet	36.9	54.2	42.9	47.7 (265)
Student toilet ratio				
100 students or higher per toilet	8.2	9.1	0.0	8.1 (45)
50 to 100 students per toilet	17.9	17.9	21.4	18.2 (101)
50 students or less per Toilet	73.9	73.0	78.6	73.7 (410)
Frequency of cleaning toilets and hand washing station				
Daily	94.0	93.0	73.8	91.9 (511)
Every other day	2.7	3.9	14.3	4.3 (24)
Twice a week	2.7	0.9	4.8	1.8 (10)
Once a week	0.5	2.1	7.1	1.9 (11)
Total	184	330	330	556

Menstrual health management

About 74% of schools reported availability of MHM programs in schools. By school type, availability of MHM program was higher in Madrasas (70%) and relatively lower in residential (66%) and private (63%) schools.



Most schools offering menstrual hygiene programs provided free sanitary napkins along with MHM education (62.2%). This service was highest in residential (86.9%) and madrasa schools (85.7%), but lower in government (66.7%) and private schools (46.8%). About one-third of schools (31.6%) offered only annual gender/MHM education without sanitary pad provision, with private schools showing the highest reliance on this approach (48.1%). A small share (6.1%) provided sanitary napkins only twice a year without any MHM education (Table 17).

Table : Type of services available under menstrual hygiene program

MHM program services	Type of school				Total (N)
	Residential	Govt.	Private	Madarsa	
Only gender MHM education once a year	6.6	26.2	48.1	14.3	31.6 (124)
Free provision of sanitary napkins monthly with MHM education	86.9	66.7	46.8	85.7	62.2 (244)
Provision of sanitary napkins twice a year without MHM education	6.6	7.1	5.1	0.0	6.1 (24)
Total	61	168	156	7	392

Note: Among those schools where menstrual hygiene program available (392)

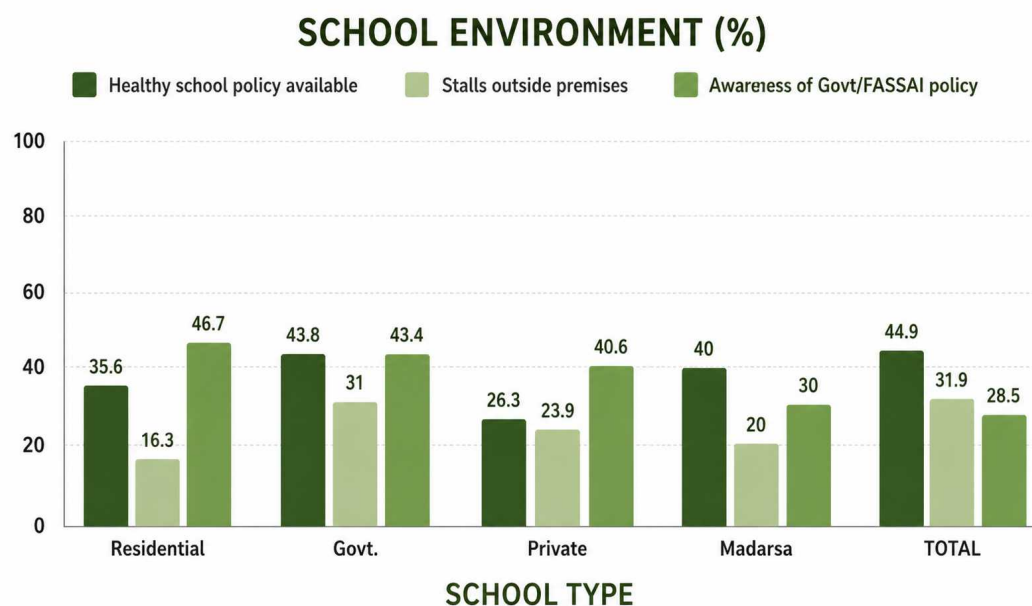


Healthy school food and physical environment

Overall, awareness and availability of health-related school policies varied across school types. Government schools showed the highest availability of a healthy school policy (44%), while private schools reported the lowest (26%). Stalls selling food outside school premises were most reported by government schools (31%). Awareness of government or FSSAI-related policies was highest among residential schools (47%) and lowest among Madrasas (30%). At the aggregate level, less than half of schools reported having a healthy school policy (45%), and only 29% were aware of government or FSSAI guidelines, indicating substantial gaps in policy awareness and implementation (Figure 15).



Figure : Healthy food policy and environment around schools (Admin tool)



chools reported a wide range of food stalls outside their premises, with 75% noting the presence of small shops selling chips, fried snacks, juices, and chocolates, the most common type. About one-third (33.6%) reported small bandis selling fried foods, while 25.7% mentioned fruit stalls. Ice-cream carts and bakeries were less frequently reported (16.4% each). Researcher observations showed presence of traditional Kirana shops (16.4%) and local bandis selling fried foods (12.6%, followed by fruit/vegetable markets (10.4%). Mobile street vendors (5.4%) and fast-food outlets (6.1%) were observed in smaller proportions.

Table : Type of food stalls/shop available outside schools (Admin tool)

Type of food stalls/shop	%	n
Reported by admin		
Small bandis selling fried food items	33.6	47
Shops selling seasonal fruits	25.7	36
Small shops selling chips, fried snacks, tetra pack juices chocolates	75.0	105
Ice-cream carts, seasonal ice gola etc.	16.4	23
Bakeries selling biscuits, cakes, parties, pastries, samosa, puffs etc.	16.4	23
Total	140	
Observed by researcher		
Local bandis selling fried food items	12.6	70
Traditional small food stores, kirana shops	16.4	91
Mobile vendors/street food vendors	5.4	30
Fresh vegetable/fruit market	10.4	58
Fast food restaurants (ex. pizza hut, burger, shops etc.)	6.1	34
Total	556	

Note: Multiple response

Most schools had strict policies restricting outside food. Over half (55.4%) did not allow students to purchase food while on campus, and 26.6%, mainly residential schools, prohibited outside food entirely. Only 12.1% allowed students to buy snacks from nearby stores. A large majority (81.1%) reported informing parents about the nutritional quality of outside food. However, despite these restrictions, very few schools (8.6%) ensured the availability of healthy food at cheaper prices, while 91.4% did not provide such support (Table 19).

Despite restrictions on purchasing outside food within school premises, the external food environment remained dominated by vendors selling fried and ultra-processed snacks. Awareness of healthy school food policies and FSSAI guidelines was low across all school types, and very few schools actively ensured access to affordable healthy foods. This disconnect suggests that restrictive policies alone are insufficient to influence student food choices without parallel efforts to improve healthy food availability.

Table : Policies related to outside food and healthy food availability in schools

Type of food stalls/shop	%	n
Students allowed to		
Purchase food/snacks from food stores outside school	12.1	67
Not allowed while in campus	55.4	306
Not allowed at all (residential schools)	26.6	148
Don't monitor individual purchases	6.3	35
Inform parents about nutritional Quality of outside food		
Yes	81.1	450
No	18.9	105
Ensure availability of healthy food at cheaper prices		
Yes	8.6	48
No	91.4	508
Total	556	

Nutrition education

Most schools (77.9%) reported having a nutrition education curriculum. However, delivery to parents was limited, with only 38.1% providing nutritional education annually. Celebration of Poshan Maah was reported by 22%. Among schools with a curriculum, nutrition education was mainly provided by untrained schoolteachers (53.7%) and local health workers such as PHC staff/ASHA/ANM/AWT (50.1%), while only 27.7% had a designated health and nutrition teacher. Sessions were conducted almost once every two months (48%), followed by twice a year (21.9%). Monitoring mechanisms were largely in place, with 76.9% reporting annual monitoring of education sessions, though 22.2% had no specific monitoring schedule (Table 20).

Although most schools reported having a nutrition education curriculum, delivery was inconsistent and often led by untrained teachers. Limited engagement with parents and infrequent monitoring further weaken the potential impact of these educational efforts. Students' perceptions mirrored these gaps: while many reported learning about healthy diets, far fewer felt they could access healthy foods at or near school.

Table : Availability of nutrition education curriculum and delivery (Admin tool)

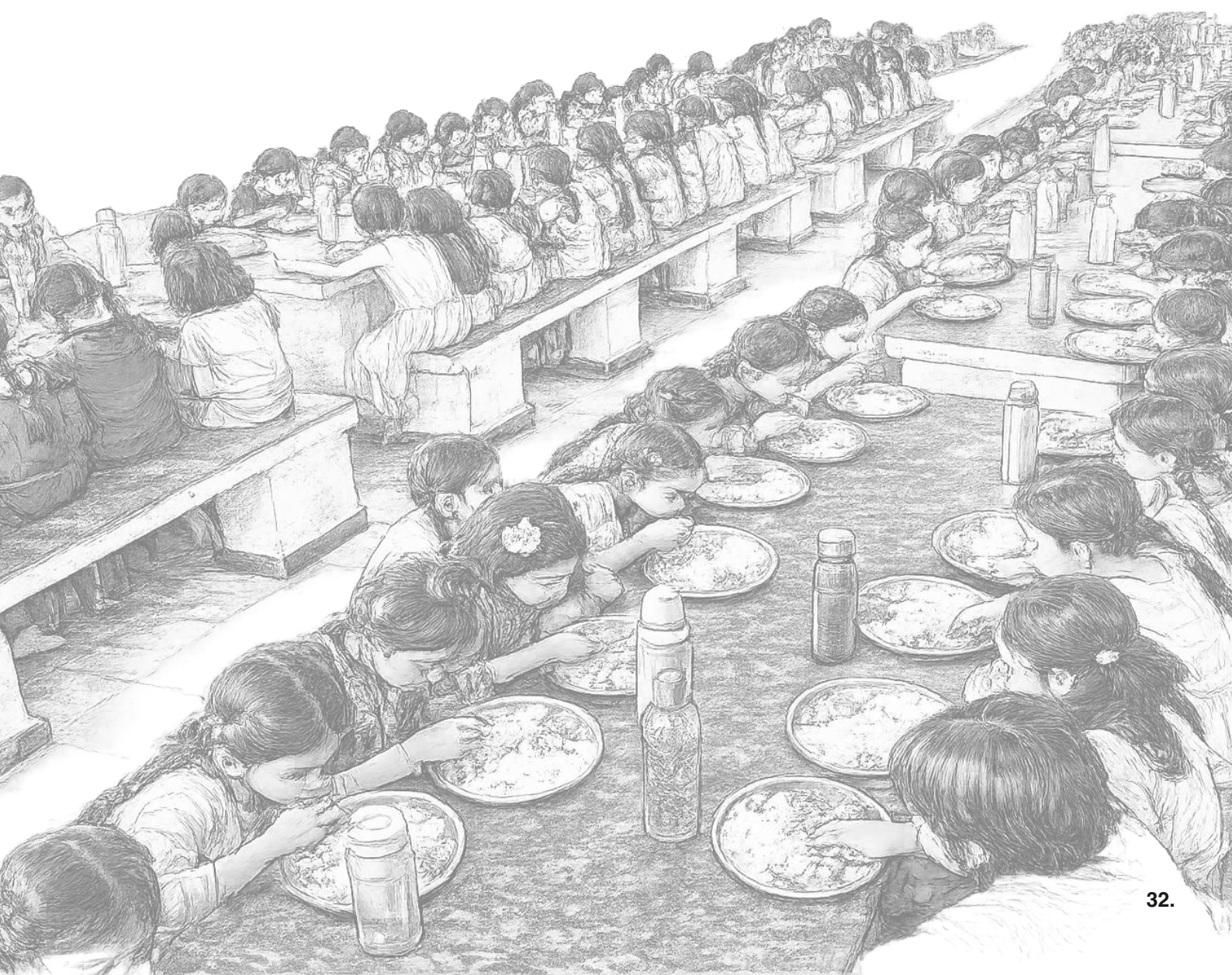
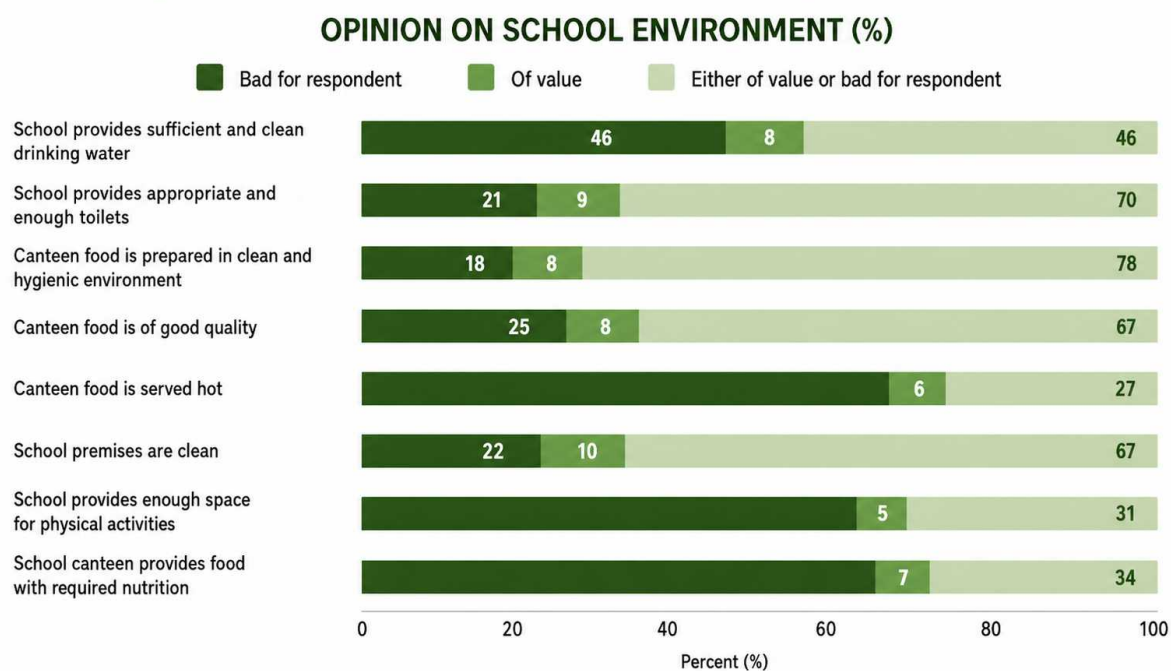
Nutrition education	%	n
Nutrition curriculum available	77.9	433
Nutrition education to parents at least once yearly	38.1	212
Celebration of poshan maah	22.0	212
Source of nutrition education*,#		
School teacher not trained in nutrition	53.7	232
Health and nutrition teacher	27.7	120
Local PHC medical officer/ASHNA/ANM/AWT	50.1	217
Nutrition education is not delivered	0.9	4
Frequency		
Yearly once	15.7	68
Yearly twice	21.9	95
Once every quarter	14.3	62
Once in every two months	48.0	208
Monitoring of education sessions*		
Yes, every year	76.9	333
No specific schedule for monitoring	22.2	96
Don't know	0.9	4

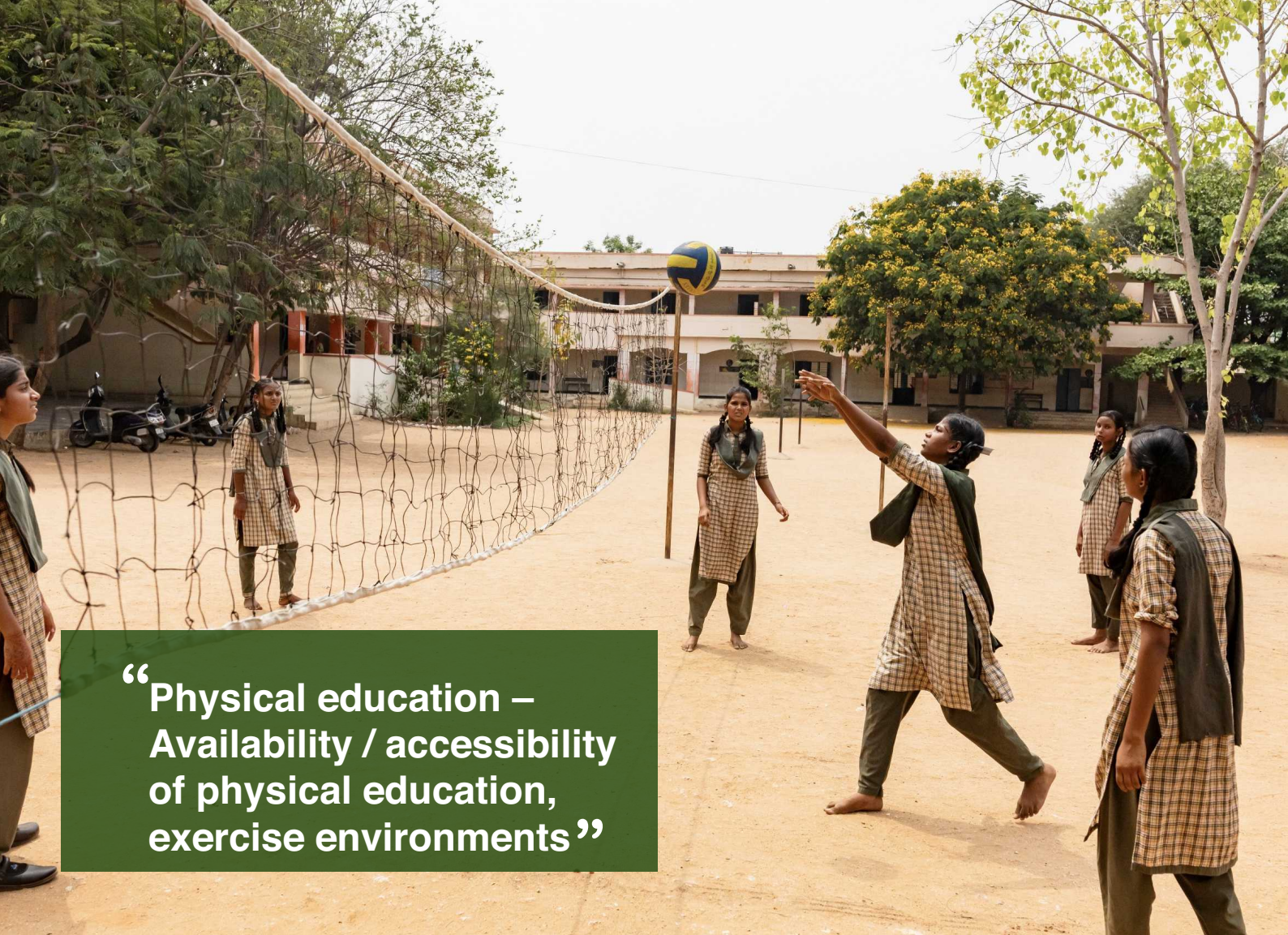
Note: Among those where nutrition education curriculum was available (433) Multiple response

Student's perception of school environment

Overall, students reported mixed experiences related to school food and physical activity environments. The highest agreement was about learning about healthy diets (68%) and having access to clean drinking water (67%), followed by opportunities to play sports (63%) and having enough space to run and play (59%). About half (49%) felt their school provided healthy and nutritious food. However, far fewer believed they could buy healthy food at school (21%) or that they use a kitchen garden (22%). Only 13% agreed that food logos or advertisements are present around the school. One-fourth (25%) felt that fewer unhealthy food vendors outside the school would make it easier to eat healthily. Overall, while students perceive good access to water and PA opportunities, access to healthy foods in and around schools remains limited (Figure 16).

Figure A. Students' opinion on school food and physical environment

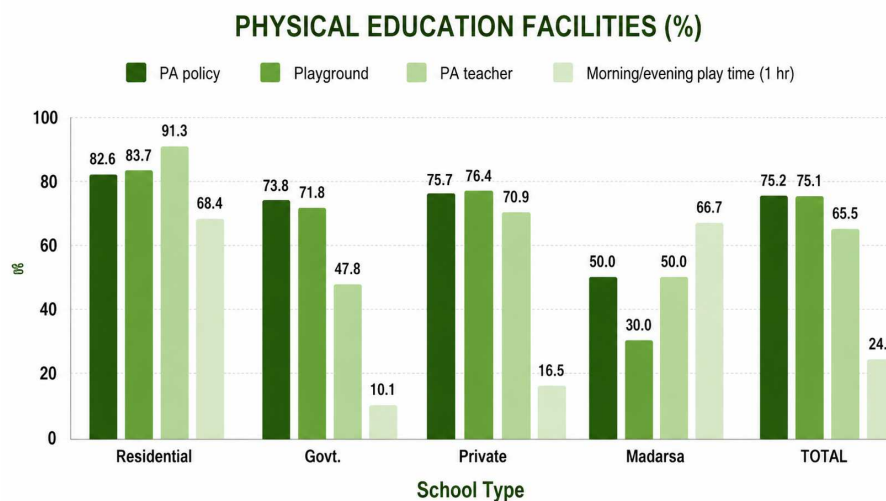




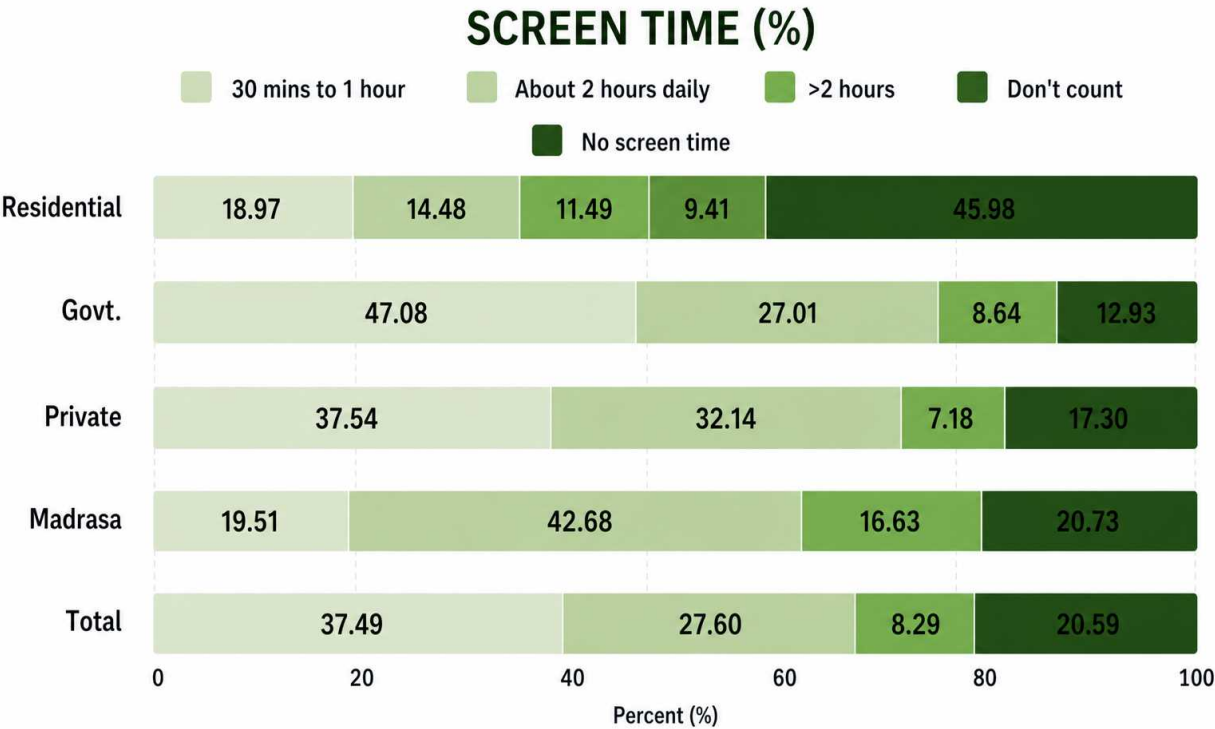
Physical Education

Residential schools reported the strongest physical activity (PA) environment, with the highest availability of PA policies (83%), playgrounds (84%), and PA teachers (91%), along with substantial morning/evening play time (68%). Private schools showed moderate support, with around three-fourths having PA policies and playgrounds, but only 16% providing dedicated play time. Government schools had lower PA support overall, particularly in provision of PA teachers (48%) and play time (10%). madrasa schools showed mixed patterns, while only half had PA policies or teachers and just 30% had playgrounds, two-thirds still reported offering daily play time (Figure 17).

Figure : Physical education and activities policy in schools (Admin)



Screen-time patterns varied widely across school types. Government school students had the highest proportion reporting 30 minutes to 1 hour of daily screen time (47%), while private school students showed a more even distribution across categories, with notable shares reporting both 30 minutes to 1 hour (38%) and about 2 hours daily (32%). Residential school students reported the highest share of no screen time (46%). Madarsa students showed a distinct pattern, with the largest proportion reporting about 2 hours daily (43%) and very few reporting more than 2 hours (Figure 18).



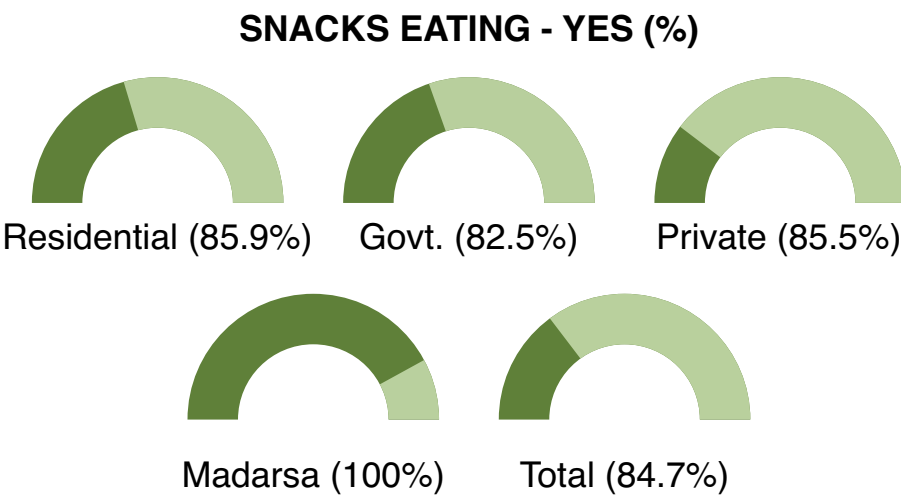
Student's Eating Habits, knowledge And Perception Towards Healthy Eating



Snacks eating among students

Overall, 85% of students reported consuming snacks apart from the meal received from school. All students from Madrasas reported to consume snacks. Consumption of snacks among students was similar among private and residential schools (86%), while 83% of students from Govt. school reported the same (Figure 19).

Figure : Snacks eating behaviour among students



Among those students who reported consuming snacks, biscuits (75.1%) and fresh fruits (57.9%) were the most consumed snacks among students, followed by homemade snacks (50.2%). A considerable proportion also reported eating chips (39.4%) and chocolates/toffees (33.4%). Consumption of sugary beverages such as coke, sodas, and packaged fruit juices was noted by 19.2%, while similar proportions consumed ice golas/ice creams (19.0%). Less frequently consumed snacks included popcorn (14.8%) and cotton candy (14.2%) (Table 21).

Table : Type of snacks consumed by students (Student tool)

Snacks	%	n
Chips	39.4	1767
Biscuits	75.1	3364
Coke/ sodas/fruit juice	19.2	859
Ice gola, ice creams	19.0	853
Popcorn	14.8	661
Cotton candy	14.2	637
Fresh fruits	57.9	2597
Chocolate/ toffies	33.4	1495
Homemade snacks	50.2	2246
Total		4479

Note: Among those who reported eating snacks (4479); Multiple responses

Nearly half of the students (49%) reported eating snacks every day, with another 16.3% snacking twice a week and 8.6% every alternate day. Most students (61.7%) brought snacks from home, while 25.7% purchased them from outside the school; a smaller share relied on parents buying snacks daily (9.5%). Among students who regularly consumed snacks and reported receiving money, 30.7% received 50 twice a week, 29.3% received 50 per week, and 25.9% received 100 or more per week, while only 1.4% received 10–50 daily (Table 22).

The widespread availability of pocket money and proximity of unhealthy food vendors likely contribute to these patterns. Importantly, the coexistence of relatively healthy snack preferences with frequent consumption of processed foods suggests that students' choices are shaped as much by availability and convenience as by knowledge.

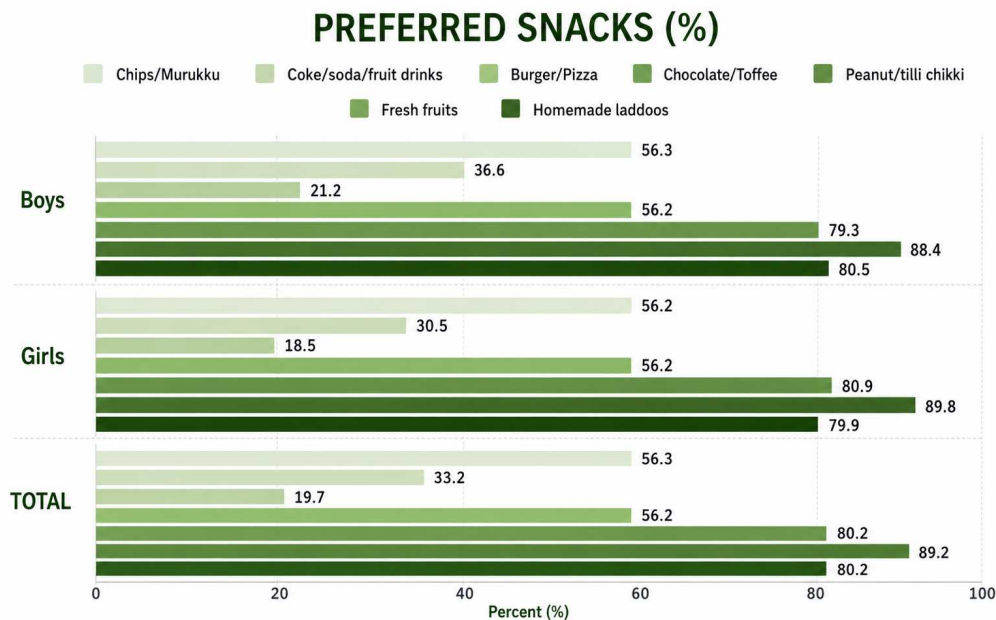
Table : Snacking practices among students

Snacking behavior	%	N
Frequency		
Everyday	49.0	2196
Twice a week	16.3	729
Once a week	9.0	403
Every alternate day	8.6	385
Rarely	13.8	618
Not reported	3.3	148
source		
Buy from outside the school	25.7	1153
Bring from home	61.7	2763
Parents buy everyday	9.5	427
Friends	1.1	50
Parents but whenever i want to eat	0.9	40
Not reported	1.0	46
Total	4479	
Amount received to buy snacks*		
Rs. 10-50 everyday	1.4	47
Rs.50 per week	29.3	955
Rs.100 or more per week	25.9	848
Rs. 50 twice a week	30.7	1003
Not reported	12.6	412
Total		3265

Note: Among those who buy snacks from outside school or bring from home and reported to have frequent consumption (rarely/ not reported excluded)

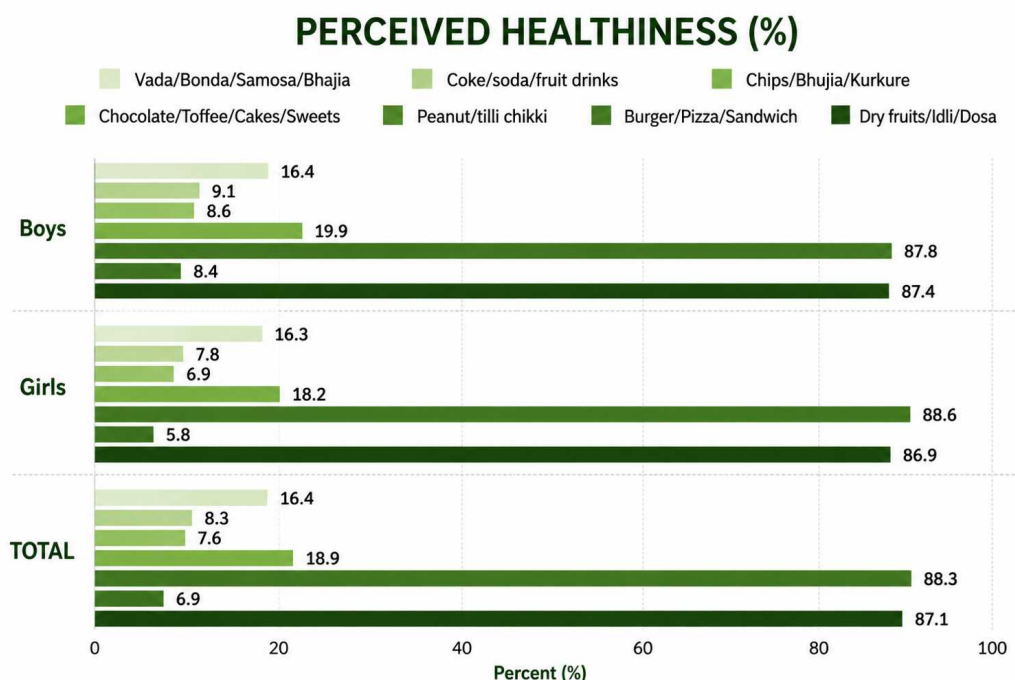
Fresh fruits were the most consumed item across both groups (around 89%), followed by peanut/tilli chikki (about 80%). Chocolates and toffees were also widely consumed (56%). Packaged snacks like chips/murukku were moderately popular (56%), while consumption of sugary drinks (33%) and fast foods such as burgers/pizza (20%) was relatively low. Boys reported slightly higher intake of sugary drinks and fast foods than girls, while girls consumed marginally more fruits. Overall, the total pattern reflects higher preference for traditional or homemade snacks compared to ultra-processed foods (Figure 20).

Figure : Preferred types of snacks among students



Awareness of healthy food items

Overall snacking patterns were similar for boys and girls. Peanut/tilli chikki (88.3%) and dry fruits/Idli/Dosa (87.1%) were the most consumed items across students. Consumption of sweets and chocolates was moderate (18.9%), while fried snacks such as vada, samosa, or bhajia were chosen by 16.4% of students. Less healthy items like chips (7.6%) and sugary drinks (8.3%) were consumed by a smaller share. Boys reported slightly higher intake of chips, chocolates, and sugary drinks than girls, whereas girls had marginally higher consumption of peanut/tilli chikki (Figure 21).



Qualitative analysis from Focused Group Discussions

A total of 8 Focus Group Discussions (FGDs) were conducted across four selected districts with both heterogeneous and homogeneous groups of adolescent boys and girls. Participants were randomly selected from grades 6 to 12, with approximately 10 students included in each FGD. The discussions were guided by a semi-structured framework and explored key domains including individual food choices, dietary preferences and their underlying determinants, snacking patterns and frequency, as well as eating behaviours within school and home environments.

Findings: Adolescent dietary habits

The FGD findings indicate a clear disconnect between nutrition awareness and dietary practices among adolescents. Students in residential schools reported limited access to on-campus snacks due to stricter regulations; however, they frequently consume processed and packaged foods during home stays, often daily. While approximately 80% of adolescents demonstrate awareness of the distinction between healthy and unhealthy foods, consumption patterns continue to be driven by taste preferences and habitual behaviours. A significant proportion (70%) correctly identified items such as chips, bhujia, and similar snacks as unhealthy, yet 85% reported a strong preference for these foods. Similarly, although 63% recognized sweets and bakery products (e.g., chocolates, biscuits, cakes) as unhealthy, their consumption remains high due to taste appeal. Notably, 40% of respondents perceived such items as healthy or moderately healthy, often attributing this to the presence of ingredients like dry fruits, indicating gaps in nutritional understanding. Additionally, around 25% of adolescents considered fruit juices, colas, and sodas to be healthy, largely due to the perception that they contain real fruit, reflecting misconceptions regarding processed beverages. Overall, the findings highlight the persistence of misperceptions and the dominant influence of taste over knowledge in shaping adolescents' food choices with influence from TV advertisements, celebrity endorsements and increasing penetration of food delivery apps even in rural areas and widespread availability of fast food near residential as well as school areas driving food choices and preferences amongst adolescent students.



CONCLUSION

This study highlights the critical role of schools as platforms for improving child nutrition, food safety, and healthy eating behaviours in Andhra Pradesh. The findings demonstrate that while substantial progress has been made in ensuring access to school meals, fortified foods, health services, and basic WASH infrastructure—particularly in government and residential schools—important gaps remain in dietary diversity, food safety compliance, policy awareness, and the broader food environment influencing students' choices.

High acceptability of school meals and widespread use of fortified staples provide a strong foundation for addressing undernutrition and micronutrient deficiencies. However, inconsistencies in supply chains, infrastructure adequacy, and adherence to food safety guidelines, especially in rural and tribal schools, may limit the nutritional impact of these programs. The limited inclusion of dairy and other nutrient-dense foods, coupled with perceived insufficiency of cooking costs and staffing in some settings, underscores the need for strengthened resource allocation and monitoring.

Despite widespread nutrition education curricula, low awareness of FSSAI gazette and government guidelines regarding healthy school food environments, combined with easy access to energy-dense, nutrient-poor foods around schools, continues to shape students' snacking behaviours. Although many students demonstrated awareness of healthy foods and consumed traditional or homemade snacks, frequent intake of packaged and processed foods suggests that knowledge alone is insufficient without supportive food environments.

Overall, the study underscores the need for a more integrated, systems-based approach to school nutrition—one that aligns meal quality, fortification, food safety, WASH, nutrition education, physical activity, and regulation of the external food environment. Strengthening implementation of the Eat Right School framework, improving convergence between education, health, and food systems, and prioritizing equity for tribal and resource-constrained schools will be essential to translating school-based interventions into sustained improvements in child nutrition, health, and lifelong eating behaviours.



For Further Information

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