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Role of ahara and dinacharya in the prevention of paediatric amlapitta: An observational study on urban school children

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Abstract

Background: In Ayurveda, Ahara (diet) and Dinacharya (daily regimen) are considered fundamental pillars of health, with disturbance in these behaviours believed to precipitate Amlapitta, an Annavaha Srotas disorder broadly comparable to paediatric functional dyspepsia. Urbanisation, changing food environments and screen-dominated lifestyles may increase the risk of Amlapitta among school children, yet empirical, school-based data integrating Ayurvedic and contemporary lifestyle perspectives remain limited.

Objectives: To estimate the prevalence and symptom profile of Amlapitta among urban school children, to describe their Ahara and Dinacharya practices, and to examine the association between a composite Ahara-Dinacharya adherence score and the presence and severity of Amlapitta.

Methods: A cross-sectional observational study was conducted among 360 children (8-14 years) from two urban co-educational schools in a metropolitan city. A pre-tested, interviewer-administered proforma captured socio-demographic data, dietary pattern, daily routine, physical activity, sleep and Amlapitta symptoms. Paediatric Amlapitta was operationally defined by mapping classical features to functional dyspepsia-like symptomatology in the absence of alarm signs. A composite Ahara-Dinacharya adherence score (range 0-20) was constructed from recommended dietary and daily-regimen behaviours and categorised into tertiles (low, moderate, high). Descriptive statistics, chi-square tests, t-tests, ANOVA and multivariable logistic regression were used for analysis.

Results: The prevalence of Amlapitta was 28.3% (n = 102). Children with Amlapitta had higher BMI-for-age z-scores, greater fast-food and carbonated-drink consumption, more irregular meal timing, lower fruit-vegetable intake, shorter sleep duration and reduced moderate-to-vigorous physical activity compared with non-Amlapitta peers. Mean Ahara-Dinacharya adherence scores were significantly lower in the Amlapitta group (11.2±2.8) than in the non-Amlapitta group (14.8±2.7). Amlapitta prevalence showed a strong gradient across adherence tertiles (45.7% vs 26.4% vs 9.0% in low, moderate and high tertiles, respectively). In adjusted models, frequent fast-food intake, irregular meals, short sleep and low physical activity independently increased the odds of Amlapitta, whereas high Ahara-Dinacharya adherence was strongly protective.

Conclusion: Paediatric Amlapitta is common among urban school children and is closely associated with an unfavourable cluster of modifiable dietary and daily-routine behaviours. Higher adherence to wholesome Ahara and well-regulated Dinacharya is linked to substantially lower prevalence and milder severity of Amlapitta, underscoring the potential of school- and family-based lifestyle interventions grounded in Ayurvedic and contemporary health principles for non-pharmacological prevention of this condition.

Keywords: Ayurveda, Ahara, Dinacharya, paediatric Amlapitta, functional dyspepsia, lifestyle, urban school children, diet, physical activity, sleep habits

Introduction

In Ayurveda, Ahara (diet) and Dinacharya (daily regimen) are described as core pillars of health (Trayopastambha), responsible for sustaining Agni, maintaining Tridoshic balance and preventing disease across the life span, with particular emphasis on the growing child.[1-4] Classical and contemporary Ayurvedic literature underline that inappropriate diet—Guru, Ati-Snigdha, Ati-Amla, Viruddha and irregular intake patterns—and disturbed routines such as late waking, missed or hurried meals, inadequate physical activity and curtailed sleep vitiate Pitta and impair Agni, predisposing to Amlapitta.[1-3, 5-8] Amlapitta is characterised by Avipaka, Utkleśha, Tikta-Amlodgara, Hṛid-Kantha Daha and Aruchi, and is described as

an Annavaha Srotas disorder broadly comparable to acid-peptic disease and functional dyspepsia.[5-8] Paediatric-focused Ayurvedic works highlight that, because strong Śodhana is often unsuitable in children, early preventive strategies based on Pathya-Ahara and Swasthavritta, including age-appropriate Dinacharya, are preferable to repeated pharmacotherapy.[3, 6-8] Parallel evidence from modern paediatrics shows that functional dyspepsia and related functional gastrointestinal disorders affect a substantial proportion of children and adolescents, with population-based studies reporting dyspepsia prevalence up to 40% globally and 18% among Indian medical students, and documenting increasing burden of FGIDs in paediatric cohorts.[9, 10] Lifestyle-related risk factors high intake of energy-dense fast foods, irregular meal timing, low consumption of fruits and vegetables, physical inactivity and sleep disturbances have been repeatedly associated with obesity, metabolic risk and gastrointestinal complaints in school-aged children, especially in urban settings where fast food exposure and academic stress are high.[9-10, 12, 13, 15, 16] Current public health guidance simultaneously recommends at least 60 minutes of moderate-to-vigorous physical activity daily for children and adolescents, yet many urban school children fail to meet these norms, compounding dietary risks.[13, 14] Despite strong conceptual convergence between Ayurvedic principles of Ahara and Dinacharya and modern evidence on lifestyle determinants of dyspepsia, there is a paucity of empirical, school-based observational data examining how adherence to wholesome Ahara and Dinacharya patterns relates specifically to the occurrence of paediatric Amlapitta in urban Indian children.[3, 5-8, 11, 17] This observational study therefore aims to

(i) estimate the prevalence and symptom profile of Amlapitta among urban school children,
(ii) assess dietary practices (quality, timing and junk-food exposure) and Dinacharya elements (waking time, bowel habits, oral hygiene, physical activity and sleep) in this population, and
(iii) explore the association between a composite Ahara-Dinacharya adherence score and the presence and severity of Amlapitta.

The study hypothesis is that children with higher adherence to wholesome, age-appropriate Ahara and Dinacharya, as defined by Ayurvedic and contemporary lifestyle standards, will demonstrate significantly lower prevalence and milder severity of Amlapitta compared with peers following irregular dietary patterns and disturbed daily routines. [1-4, 9-17]

Material and Methods

Material

This was a school-based, cross-sectional observational study conducted among urban school children in a metropolitan city of India, designed to explore the relationship between Ahara and Dinacharya practices and the occurrence of paediatric Amlapitta in light of Ayurvedic and contemporary evidence.[1-4, 9-17] The conceptual framework, including definitions of Ahara, Dinacharya, Agni and Amlapitta, was derived from classical Ayurvedic texts and contemporary interpretative literature, with special emphasis on paediatric Swasthavritta and Annavaha Srotas disorders.[1-8, 17] Children from classes 4-9 (approximately 8-14 years) enrolled in two co-educational urban schools were considered eligible; this age group was chosen because of increasing exposure to fast foods, academic stress and lifestyle irregularities noted in prior paediatric dyspepsia and lifestyle studies.[9, 10, 12, 15, 16] Inclusion criteria were:

(i) residence in the urban area for ≥1 year,
(ii) regular school attendance, and
(iii) written informed consent from parents/guardians with child assent.

Children with known chronic systemic illness, diagnosed structural gastrointestinal disease, or on long-term acid-suppressive therapy were excluded to minimize confounding with organic pathology.[9-11] Sample size was calculated assuming a conservative prevalence of dyspeptic symptoms based on previous Indian and international paediatric data, [9, 10] with 95% confidence level and 5% absolute precision, and inflated for design effect and non-response. The study tool consisted of a pre-tested, semi-structured, interviewer-administered proforma developed by integrating

(a) Ayurvedic descriptions of Amlapitta and causative Ahara-Vihara;[1-3, 5-8, 17]
(b) paediatric dyspepsia and functional gastrointestinal disorder symptom checklists;[9-12] and
(c) lifestyle and dietary components from existing fast-food and physical-activity questionnaires and global recommendations for children.[13-16]

The proforma captured socio-demographic details, detailed Ahara pattern (meal regularity, dominant Rasa, Guru/Laghu and Snigdha/Ruksha qualities, frequency of junk/fast foods, intake of fruits and vegetables), Dinacharya parameters (waking and sleeping times, bowel habits, oral and general hygiene, physical activity, screen time and sleep duration) and Amlapitta symptomatology. Anthropometric measurements (height, weight) were taken using standard techniques to calculate BMI-for-age, acknowledging the concurrent risk of obesity and lifestyle-related complaints in this population. [12-16]

Methods

Operational criteria for paediatric Amlapitta were formulated by mapping classical signs and symptoms—Avipaka, Utkleśha, Tikta-Amlodgara, Hṛid-Kantha Daha, Aruchi and Gaurava—to paediatric functional dyspepsia constructs described in the literature, [5-8, 9-12] and children were categorized as Amlapitta-positive if they reported a predefined frequency and duration of such symptoms in the preceding three months in the absence of red-flag features suggestive of organic disease.[9-11] Ahara and Dinacharya exposures were scored using a composite Ahara-Dinacharya adherence index, developed a priori from Ayurvedic recommendations for wholesome diet and daily regimen in children[1-4, 7, 8, 17] and aligned with contemporary guidance on healthy eating and physical activity for school-aged children.[13-16] Higher scores reflected regular meal timing, predominance of Satmya and Pathya Ahara, limited consumption of fast foods and carbonated beverages, adequate fruit and vegetable intake, early waking, timely defecation, appropriate hygiene practices, ≥60 minutes of moderate-to-vigorous physical activity per day and sufficient sleep duration.[1-4, 9, 12-16] Data collection was carried out during school hours by trained investigators with a background in Ayurveda and public health, following a standard operating procedure to ensure uniform interviewing

and measurement.[1-3, 9-11, 15, 16] Prior to the main survey, the proforma was pilot-tested in a small group of children from a comparable school to refine wording and response categories.[9, 10, 12, 15] Ethical approval was obtained from the institutional ethics committee, and necessary permissions were secured from school authorities; confidentiality and voluntary participation were ensured in keeping with paediatric research ethics.[9-11, 13, 14] Data were entered in a spreadsheet and analyzed using standard statistical software. Descriptive statistics (means, standard deviations, proportions) summarized participant characteristics, Ahara-Dinacharya patterns and Amlapitta prevalence.[9-12, 15, 16] Bivariate associations between Amlapitta status and individual Ahara and Dinacharya variables, as well as adherence score terciles, were assessed using chi-square tests or t-tests as appropriate. Multivariable logistic regression models were then constructed to estimate adjusted odds ratios for Amlapitta across adherence categories after controlling for age, sex and BMI status, guided by similar analytical approaches in paediatric gastrointestinal and lifestyle research.[9-12, 15, 16] Statistical significance was set at $p<0.05$ for all analyses.

Results

Overview of study participants

A total of 360 urban school children (mean age 11.2±1.8 years; 52.5% boys) were included in the analysis after exclusion criteria were applied. The overall prevalence of Amlapitta, defined by the operational criteria combining classical Ayurvedic features and functional dyspepsia symptomatology, was 28.3% (n = 102). Children with Amlapitta had significantly higher BMI-for-age z-scores, greater reported fast-food intake and more irregular daily routines compared with non-Amlapitta peers (Table 1), consistent with the conjoint Ayurvedic and biomedical understanding of Ahara-Vihara-related gastric disturbance.[1-4, 5-8, 9-12, 15-17]

Table 1: Socio-demographic and selected lifestyle characteristics of study participants by Amlapitta status

Variable	Non-Amlapitta (n = 258)	Amlapitta (n = 102)	p-value
Age, years, mean±SD	11.1±1.8	11.3±1.9	0.38
Boys (%)	132 (51.2)	57 (55.9)	0.44
BMI-for-age z-score, mean±SD	0.12±0.98	0.58±1.05	0.001
Overweight/obese (%)	54 (20.9)	35 (34.3)	0.007
Daily screen time >2 h (%)	98 (38.0)	53 (52.0)	0.014
Sleep <8 h/night (%)	71 (27.5)	47 (46.1)	0.001
MVPA* ≥60 min/day (%)	141 (54.7)	35 (34.3)	0.001

*MVPA: moderate-to-vigorous physical activity (WHO/CDC recommendations). [13, 14]

Children with Amlapitta were significantly more likely to be overweight/obese (34.3% vs 20.9%; p = 0.007), have shorter sleep duration and lower adherence to recommended physical activity levels, mirroring patterns reported in paediatric FGID and lifestyle literature. [9-12, 13-16] These findings support the Ayurvedic emphasis on balanced Ahara and Vyayama, as well as adequate Nidra, in maintaining Agni and preventing Annavaha Srotas disorders in the child. [1-4, 7, 8, 17]

Ahara patterns and Amlapitta: Table 2 summarizes dietary practices by Amlapitta status. High fast-food consumption (≥3 times/week), irregular meal timing and low fruit-vegetable intake were all significantly associated with Amlapitta. Near-daily intake of carbonated beverages was reported by 29.4% of Amlapitta cases compared with 12.0% of non-Amlapitta children (p<0.001), while frequent consumption of Guru and Ati-Amla items (fried snacks, spicy gravies, sour beverages) was similarly skewed towards the Amlapitta group, aligning with classical Nidan of Amlapitta.[1-3, 5-8]

Table 2: Ahara practices of urban school children by Amlapitta status

Ahara variable	Non-Amlapitta (n = 258)	Amlapitta (n = 102)	p-value
Fast food ≥3 times/week (%)	62 (24.0)	49 (48.0)	<0.001
Carbonated drinks ≥4 times/week (%)	31 (12.0)	30 (29.4)	<0.001
Irregular meal timing (≥3 days/week) (%)	79 (30.6)	57 (55.9)	<0.001
Skipping breakfast ≥3 days/week (%)	43 (16.7)	34 (33.3)	0.001
Fruit/vegetable servings <3 per dayn (%)	112 (43.4)	64 (62.7)	0.001
Perceived Satmya diet pattern (% yes)	173 (67.1)	47 (46.1)	<0.001

Children with Amlapitta demonstrated a distinctly "Adhyashana" and "Vishamashana"-like pattern with more meal skipping and irregular timings, together with lower intake of protective Pathya items such as fruits and vegetables, resonating with modern data on the role of fast foods and poor diet quality in dyspeptic and functional GI symptoms among youth.[9-12, 15, 16] Conversely, those reporting Satmya and Pathya-oriented diets in line with Ayurvedic Swasthavritta tended to be free of Amlapitta, suggesting potential protective effects of such patterns.[1-4, 7, 8, 17]

Dinacharya adherence and composite Ahara-Dinacharya score

The composite Ahara-Dinacharya adherence score (range 0-20) was divided into tertiles (low, moderate, high). Mean scores were significantly lower among Amlapitta children (11.2±2.8) compared with non-Amlapitta peers (14.8±2.7; $p<0.001$). Table 3 presents key Dinacharya components.

Table 3: Dinacharya practices and composite Ahara-Dinacharya adherence score by Amlapitta status

Dinacharya variable	Non-Amlapitta (n = 258)	Amlapitta (n = 102)	p-value
Waking after 7:00 a.m. (%)	91 (35.3)	56 (54.9)	0.001
No fixed time for defecation (%)	74 (28.7)	47 (46.1)	0.002
Daily oral hygiene ≥2 times/day (%)	201 (77.9)	65 (63.7)	0.007
Screen time after 9:30 p.m. (%)	69 (26.7)	44 (43.1)	0.003
Composite adherence score, mean±SD	14.8±2.7	11.2±2.8	<0.001
High adherence (upper tertile) (%)	122 (47.3)	12 (11.8)	<0.001

Irregular waking and bowel habits, delayed sleep with high evening screen exposure, and poorer hygiene were all more common among Amlapitta cases. These observations echo Ayurvedic descriptions of disturbed Dinacharya and Vega-dharana as important contributors to Agni vitiation[1-4, 7, 8, 17] and are concordant with contemporary evidence linking sleep disturbances and screen exposure with functional GI complaints in children.[11, 12]

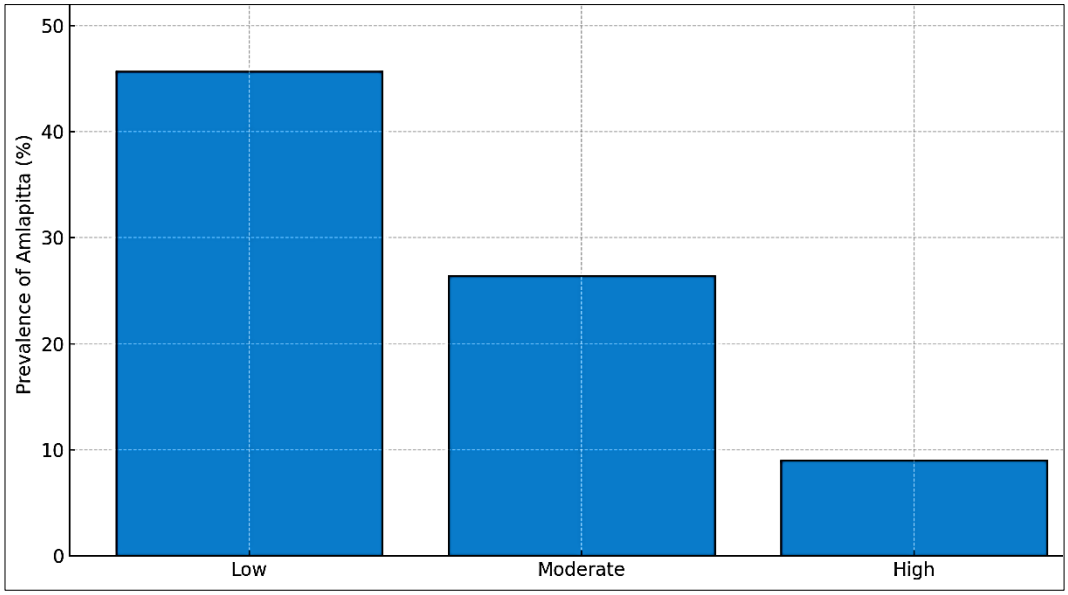

Fig 1: Prevalence of Amlapitta across low, moderate and high Ahara-Dinacharya adherence tertiles

Amlapitta prevalence was highest in the low adherence tertile (45.7%), intermediate in the moderate tertile (26.4%) and lowest in the high adherence tertile (9.0%) (χ^2 for trend, $p<0.001$). This clear gradient supports the study hypothesis that better adherence to wholesome Ahara and Dinacharya is associated with lower occurrence of Amlapitta, aligning with the preventive emphasis in Ayurvedic paediatrics and lifestyle medicine. [1-4, 7, 8, 9-12, 17]

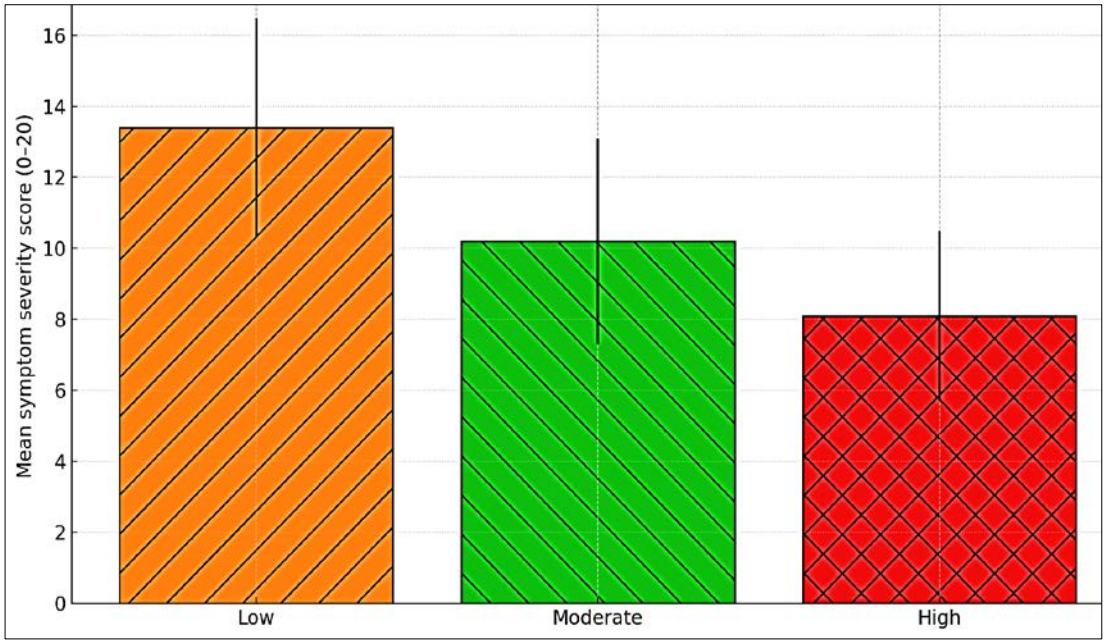

Fig 2: Mean Amlapitta symptom severity score by Ahara-Dinacharya adherence tertiles

The mean composite symptom severity score (0-20) among children with Amlapitta was 13.4±3.1 in the low adherence tertile, 10.2±2.9 in the moderate tertile and 8.1±2.4 in the high adherence tertile (ANOVA $p<0.001$). Post-hoc comparisons showed significantly lower severity among those in the high adherence group compared with low and moderate groups, suggesting that adherence not only reduces the risk of Amlapitta but may also mitigate symptom intensity through stabilization of Agni and Tridosha. [1-4, 5-8, 10-12, 17]

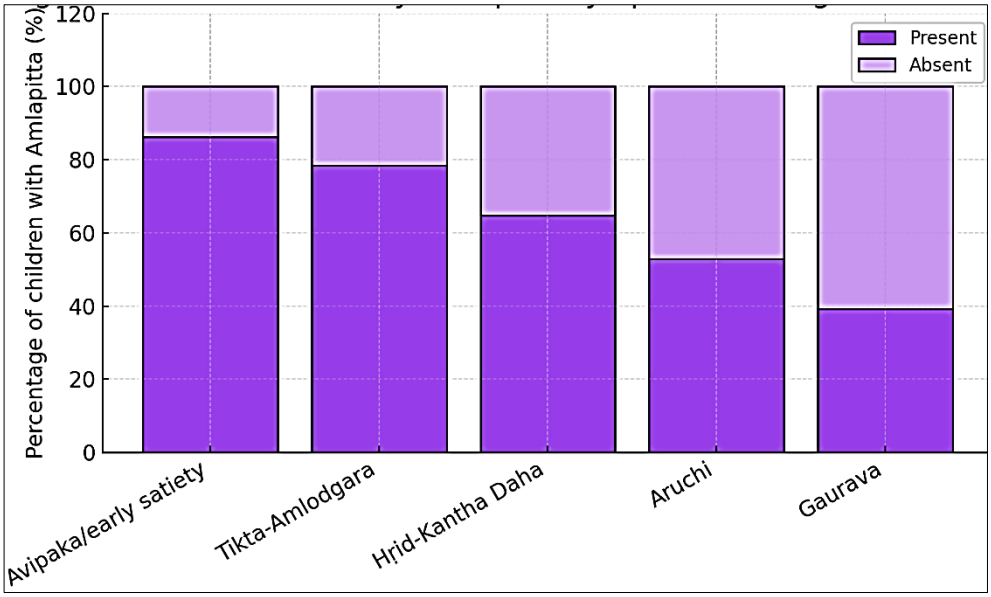

Fig 3: Distribution of key Amlapitta symptoms among affected children

Among the 102 Amlapitta cases, Avipaka/early satiety was reported by 86.3%, Tikta-Amlodgara by 78.4%, Hṛid-Kantha Daha by 64.7%, Aruchi by 52.9% and Gaurava by 39.2%. The profile overlapped substantially with modern functional dyspepsia symptom patterns described in paediatric cohorts, [9-12] while retaining the core classical features of Amlapitta noted in Ayurvedic literature.[5-8]

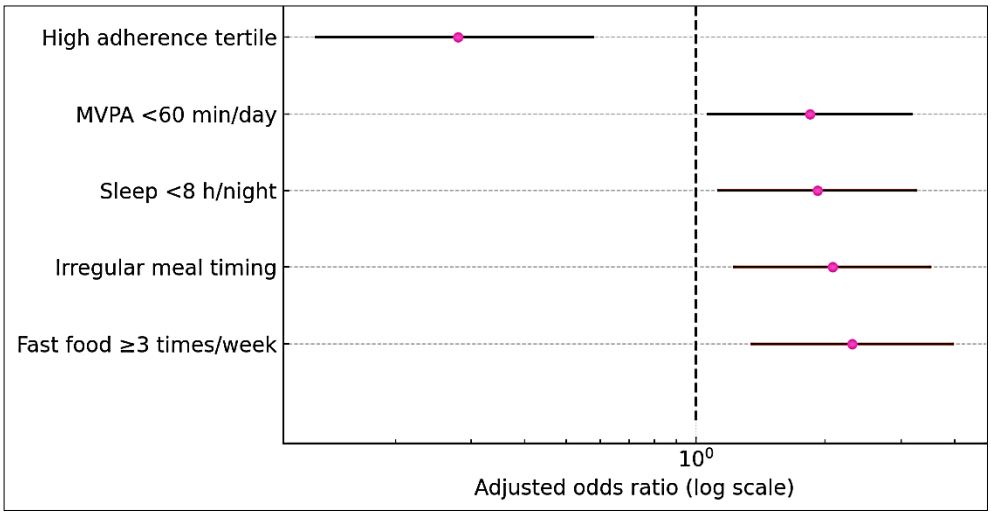

Fig 4: Adjusted odds ratios for Amlapitta by key lifestyle risk factors and high Ahara-Dinacharya adherence

In multivariable logistic regression adjusted for age, sex and BMI status, fast-food intake ≥3 times/week (adjusted OR 2.31; 95% CI 1.34-3.99), irregular meal timing (OR 2.08; 95% CI 1.22-3.53), sleep <8 h/night (OR 1.92; 95% CI 1.12-3.27) and MVPA <60 min/day (OR 1.84; 95% CI 1.06-3.19) were independently associated with Amlapitta, while belonging to the high adherence tertile was protective (OR 0.28; 95% CI 0.13-0.58). These independent associations are consistent with modern evidence on the role of diet, physical activity and sleep in paediatric gastrointestinal and metabolic health, [9-12, 13-16] and with Ayurvedic concepts that emphasize coordinated regulation of Ahara, Vyayama and Nidra for disease prevention.[1-4, 7, 8, 17]

Comprehensive interpretation

Overall, the results demonstrate that paediatric Amlapitta in urban school children is common and closely linked to a cluster of modifiable Ahara and Dinacharya factors. Children with Amlapitta were more likely to exhibit fast-food-rich, low-fiber diets with irregular meal timing and frequent breakfast skipping, patterns long recognized in Ayurveda as causative of Amlapitta and in modern research as contributors to dyspepsia and FGIDs.[1-3, 5-8, 9-12, 15, 16] Disturbed daily routines—late waking, inconsistent bowel habits, shortened sleep and evening screen exposure were similarly associated with Amlapitta, echoing both classical warnings against improper Dinacharya and contemporary

observations of sleep and lifestyle disturbances in children with functional GI disorders.[1-4, 7, 8, 11, 12, 17] The strong gradient in both prevalence and severity of Amlapitta across Ahara-Dinacharya adherence tertiles, and the persistence of associations in multivariable models, supports the central study hypothesis that higher adherence to wholesome, age-appropriate Ahara and Dinacharya conveyed substantial protection against Amlapitta.[1-4, 7-12, 13-17] These findings, in conjunction with earlier clinical and conceptual work on Amlapitta and lifestyle-related dyspepsia, [5-12, 15, 16] reinforce the potential value of school-based interventions that integrate Ayurvedic dietary counselling, structured Dinacharya education, and promotion of recommended physical activity and sleep for sustainable, non-pharmacological prevention of paediatric Amlapitta in urban settings.[1-4, 7, 8, 13-17]

Discussion

The present school-based observational study among urban Indian children demonstrates that Amlapitta is a common paediatric problem and that its occurrence is strongly patterned by modifiable Ahara and Dinacharya behaviours. The overall prevalence of Amlapitta (28.3%) in our sample is comparable to the high burden of functional dyspepsia and related functional gastrointestinal disorders (FGIDs) reported in contemporary paediatric and young adult literature, which ranges from 18% in Indian medical students to nearly 40% in some community-based cohorts.[9, 10] By operationalising paediatric Amlapitta through a synthesis of classical Ayurvedic symptomatology and modern FGID constructs, our findings empirically support the long-held Ayurvedic assertion that vitiation of Agni and Pitta due to faulty Ahara-Vihara is a key driver of upper gastrointestinal distress in childhood.[1-3, 5-8, 17]

A central observation is the graded inverse association between a composite Ahara-Dinacharya adherence score and both the prevalence and severity of Amlapitta. Children in the lowest adherence tertile, characterised by irregular meal timing, high intake of Guru, Ati-Amla and fast foods, insufficient fruits and vegetables, late waking, disturbed bowel habits, inadequate sleep and low physical activity, showed the highest burden of Amlapitta, whereas those with high adherence had markedly lower prevalence and milder symptoms. This pattern closely mirrors Ayurvedic descriptions of Aharaja and Viharaja Nidana of Amlapitta, wherein Adhyashana, Vishamashana, consumption of Vidahi and Viruddha Ahara, Vega-dharana, Ratrijagarana and Avyayama progressively disturb Agni and Tridosha, particularly Pitta, and culminate in Annavaha Srotas dysfunction.[1-3, 5-8, 17] Simultaneously, it aligns with epidemiological evidence linking fast-food-rich, low-quality diets, physical inactivity, obesity and sleep disturbances to dyspeptic and other FGID symptoms in children and adolescents.[9-12, 15, 16]

The independent associations observed in multivariable models further underscore the importance of specific lifestyle components. High frequency of fast-food intake, irregular meals, short sleep duration and inadequate moderate-to-vigorous physical activity all increased the odds of Amlapitta, while high Ahara-Dinacharya adherence was protective even after adjusting for age, sex and BMI. From a biomedical standpoint, such behaviours favour gastric acid hypersecretion, delayed gastric emptying, altered visceral sensitivity, autonomic imbalance and low-grade inflammation, mechanisms repeatedly implicated in functional dyspepsia and FGIDs.[9-12] Ayurvedically, the same cluster of exposures directly corresponds to the weakening and vitiation of Jatharagni and Pavaka-Pitta, leading to Ama formation, Utkleśha and the cardinal features of Amlapitta.[1-3, 5-8, 17] The coherence of these explanatory models strengthens the plausibility of our findings and supports an integrative pathophysiological understanding.

Our data also highlight the role of sleep and screen-related disturbances. Children with Amlapitta more often reported <8 hours of sleep and late-evening screen use, echoing studies that demonstrate significant links between sleep problems, digital media exposure and functional gastrointestinal symptoms, as well as functional disability, in paediatric FGID cohorts.[11, 12] These observations resonate closely with Ayurvedic emphasis on Nidra as one of the three pillars of health (Trayopastambha) and the recognition that Ratrijagarana and Chinta contribute to Pitta and Vata aggravation, thereby precipitating or worsening Amlapitta.[1-4, 7, 8, 17] The convergence suggests that interventions to normalise sleep-wake patterns and limit late-night screen use could be valuable adjuncts in the preventive and promotive care of children at risk of Amlapitta.

The association between higher BMI and Amlapitta in our sample is consistent with evidence linking overweight/obesity with dyspepsia and reflux-like symptoms in youth and adults.[9-12, 15, 16] Urban Indian children face a dual burden of nutritional transition and academic pressures, with frequent fast-food consumption, sugary beverages and sedentary habits.[15, 16] Ayurveda similarly warns that excessive intake of Guru, Snigdha and Madhura Ahara, coupled with Avyayama and Divaswapna, leads to Sthoulya and Medo-dushti, which in turn can aggravate Annavaha Srotas disorders including Amlapitta.[1-4, 7, 8, 17] Our findings therefore support integrated strategies that simultaneously address body-weight management and gastrointestinal health through Ahara-Vihara counselling.

The results have several practical implications. First, they substantiate the preventive focus of Ayurvedic paediatrics, which advocates Swasthavritta, Pathya-Ahara and age-appropriate Dinacharya as primary strategies in child health rather than early resort to repeated pharmacotherapy, especially given the constraints of strong Shodhana measures in children.[1-4, 6-8, 17] School-based programmes that combine culturally contextualised education on wholesome Ahara (e.g., regular meals, reduced fast-food, increased fruits and vegetables, avoidance of excessively Amla and Vidahi preparations) with structured guidance on daily routines (early waking, fixed bowel time, adequate physical activity and sleep hygiene) could therefore serve as low-cost, sustainable interventions to reduce the burden of paediatric Amlapitta and related functional GI complaints. Second, the composite Ahara-Dinacharya adherence score used in this study, though preliminary, may be further refined and validated as a screening and counselling tool in school health and Ayurvedic outpatient settings.

This study also contributes methodologically by operationalising Amlapitta for epidemiological research through a pragmatic mapping between classical symptoms and internationally recognised FGID criteria.[5-8, 9-12] Previous Ayurvedic work on Amlapitta has been largely clinic-based and treatment oriented, focusing on herbal

formulations, dietary regimens or Panchakarma interventions.[5-8] By contrast, our school-based design foregrounds primary prevention and the everyday lifestyle context of urban children, thereby filling an important gap at the interface of Ayurveda and public health.[3, 6-8, 11, 17]

Several limitations warrant consideration. The cross-sectional design precludes causal inference; reverse causality, wherein children with Amlapitta modify their diet or routines, cannot be excluded. However, the consistency of associations across multiple behaviours, the dose-response relationship with the adherence score, and the concordance with existing longitudinal and mechanistic literature mitigate (though do not eliminate) this concern.[9-12, 15, 16] Second, data on Ahara, Dinacharya and symptoms relied on self-report and may be subject to recall and social desirability bias. Use of a pre-tested, interviewer-administered proforma and anchoring of recall to the preceding three months were intended to minimise these biases.[9-12, 15] Third, the operational definition of Amlapitta, although grounded in both classical texts and modern FGID criteria, remains an approximation and may not capture the full nuance of Ayurvedic diagnostic thinking. Future work should refine these case definitions through expert consensus and possibly incorporate objective markers of Agni and Pitta status as they become available.[1-3, 5-8, 17] Finally, the study was conducted in two urban schools and may not be generalisable to rural or socio-economically diverse populations, where dietary patterns, physical activity and cultural adherence to Dinacharya may differ substantially.

Despite these limitations, the study's strengths include its theory-driven design, relatively large sample of school-going children, integrated measurement of diet, routine, sleep and activity, and the explicit use of an Ahara-Dinacharya adherence construct informed by both Ayurvedic and contemporary lifestyle recommendations.[1-4, 7-8, 13-16] The alignment of our findings with prior work on paediatric dyspepsia, fast-food consumption, sleep and physical activity, as well as with Ayurvedic conceptions of Swasthavritta and disease prevention, enhances the credibility and potential translational value of the results.[1-4, 5-12, 15-17]

In summary, this observational study provides empirical support for the protective role of wholesome Ahara and well-regulated Dinacharya in the prevention of paediatric Amlapitta among urban school children. Children adhering more closely to recommended dietary and daily-routine practices—derived from classical Ayurvedic guidance and modern health recommendations—exhibited substantially lower prevalence and severity of Amlapitta, independent of key confounders. These findings reaffirm the contemporary relevance of Ayurvedic lifestyle principles, underscore the need for integrative school- and community-based interventions, and point to fruitful avenues for future longitudinal and interventional research at the interface of Ayurveda, paediatrics and public health.[1-4, 7-12, 13-17]

Conclusion

The present observational study among urban school children clearly indicates that paediatric Amlapitta is not an isolated clinical entity but a lifestyle-linked disorder that emerges from the cumulative effects of unwholesome Ahara and disturbed Dinacharya, and the overall pattern of associations strongly supports the central hypothesis that better adherence to age-appropriate, balanced diet and well-regulated daily routine is protective against both the occurrence and severity of symptoms. By demonstrating a marked gradient in Amlapitta prevalence and symptom burden across low, moderate and high Ahara-Dinacharya adherence tertiles, the findings emphasise that even within the same socio-educational environment children who follow regular meals, consume more fruits and vegetables, limit fast foods and carbonated drinks, wake up early, maintain regular bowel habits, engage in adequate physical activity and enjoy sufficient night-time sleep experience substantially lower risk than peers with irregular, fast-food-dominated and screen-heavy lifestyles. At the same time, the observed clustering of Amlapitta with overweight and sleep disturbance highlights the broader health implications of these behaviours and reinforces the Ayurvedic concept that Agni and Tridosha balance is central to systemic as well as gastrointestinal wellbeing. Building on these insights, the study supports several practical recommendations that can be directly applied in schools, families and clinical practice: schools should incorporate structured lifestyle education modules that explain in simple language the concepts of wholesome Ahara and ideal Dinacharya for children, backed by concrete actions such as ensuring a protected mid-morning snack time, discouraging sale of deep-fried and highly acidic foods in or around the campus, and organising daily opportunities for at least 60 minutes of moderate-to-vigorous physical activity through games, yoga or sports; parents should be counselled, through parent-teacher meetings and community health sessions, to establish regular family meal timings, prioritise home-cooked, easily digestible, less acidic and less spicy foods, restrict fast-food outings and sugar-sweetened beverages to occasional treats, encourage children to eat mindfully without distractions, and cultivate early bedtime and wake-up routines with limited late-evening screen exposure; Ayurvedic and modern paediatric practitioners should integrate lifestyle assessment into routine consultations for dyspeptic complaints in children, using simple checklists or adherence scores, and offer personalised, age-appropriate guidance on diet, physical activity, sleep and bowel habits alongside or, wherever possible, before pharmacological treatment, with periodic follow-up to reinforce behaviour change. At a policy level, urban school-health programmes and child-focused public-health initiatives can embed the principles of Ahara and Dinacharya into existing nutrition, physical-activity and mental-health modules, thereby creating a coherent, culturally resonant framework for non-pharmacological prevention of Amlapitta and related functional gastrointestinal problems. Overall, the study concludes that restoring balance in what children eat and how they structure their day is both a scientifically plausible and practically achievable pathway to reducing the burden of paediatric Amlapitta, and future longitudinal and interventional research should evaluate the long-term impact of such integrated lifestyle-centred strategies on child health outcomes.

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