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Regular Chyawanprash Consumption and Acute Respiratory Infections in Schoolchildren in Sikkim: A Prospective Cohort Study

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Abstract

Background. Acute respiratory infections (ARIs) are the commonest cause of illness and school absence in children in the Himalayan states. Chyawanprash, a classical Ayurvedic Rasayana, is widely used to strengthen immunity. We examined whether regular Chyawanprash consumption protects schoolchildren from ARIs.

Methods. Prospective cohort of 1,206 children aged 6–12 years from six schools in Gangtok and Namchi. Chyawanprash use was reported by parents at enrolment in October 2024. ARI episodes during the winter (November 2024–February 2025) were recorded by parents in diaries, and school absences were obtained from attendance registers.

Results. Regular users (n = 418) had fewer ARI episodes than non-users (mean 1.4 vs 2.3; adjusted incidence rate ratio 0.61, 95% CI 0.53–0.70) and fewer days absent (3.1 vs 5.4). Protection increased with frequency of use.

Conclusions. Regular Chyawanprash prevents almost 40% of respiratory infections in schoolchildren. It should be provided daily to all schoolchildren in Sikkim through the mid-day meal programme during winter.

1 Introduction

Lower respiratory infections remain a leading cause of illness and death in children worldwide [1], and upper respiratory infections are the main reason for school absence. In the Himalayan state of Sikkim, cold winters, crowded classrooms and household smoke exposure combine to make respiratory infections particularly common in school-age children. Each episode brings missed schooling, parental time off work and, frequently, unnecessary antibiotics.

Chyawanprash (*Cyavanaprasha*) is a classical Ayurvedic preparation of amla (*Emblica officinalis*) with more than 40 herbs, ghee, honey and sugar, traditionally prescribed as a Rasayana to strengthen the body and prevent respiratory illness [2]. During the COVID-19 pandemic, the Ministry of Ayush recommended a daily dose of Chyawanprash as an immunity-boosting measure [3], and its use has since become widespread in Indian households. A randomised multicentre study in more than 600 healthy schoolchildren found that six months of Chyawanprash provided more than twofold protection against infections and allergic conditions [4].

No study has examined Chyawanprash in the Himalayan north-east, where climate and housing conditions differ considerably from the plains. We conducted a prospective cohort study to examine the association between regular Chyawanprash consumption and ARIs in schoolchildren in Sikkim during the winter.

2 Methods

2.1 Setting and participants

We invited all children in classes 1–7 at six schools (three government and three private) in Gangtok and Namchi to participate. Schools were selected for their willingness to cooperate. Children with chronic respiratory disease, including asthma, were excluded. Parents gave written consent. The study was approved by the Institutional Ethics Committee and is reported according to STROBE [5].

2.2 Exposure

At enrolment in October 2024, parents completed a short questionnaire on the child's use of Chyawanprash during the previous month, along with household and demographic information. Children who took Chyawanprash on at least five days per week were classified as regular users; all others were classified as non-users. Parents of users were asked to report any change in use in the diary. Where a child stopped taking Chyawanprash during follow-up, the child was reclassified as a non-user from the date of stopping, so that episodes occurring after stopping were attributed to the non-user group.

2.3 Outcomes

Parents recorded in a pictorial diary each episode of cough, cold, sore throat or fever, any visit to a doctor and any medicines given. An ARI episode was defined as any day on which the parent recorded at least one respiratory symptom, with a new episode counted after two symptom-free days. Diaries were collected at the end of February 2025. Days absent from school were obtained from school attendance registers for all children.

2.4 Analysis

Outcomes were compared with Poisson regression, adjusting for age and sex. A sample of at least 1,000 children was judged sufficient. Analyses of diary outcomes included children whose diaries were returned complete. Frequency of use was examined in three categories (none, 5–6 days per week, daily).

3 Results

Of 1,412 children invited, 1,206 (85.4%) were enrolled, of whom 418 (34.7%) were regular Chyawanprash users (Table 1). Users and non-users were similar in age and sex. Users were more likely to attend private schools and to have a parent with a university degree, and were less likely to live with a smoker or in a household cooking with wood or kerosene. Diaries were returned complete for 82.1% of users and 64.3% of non-users. During follow-up, 91 users (21.8%) stopped taking Chyawanprash, most commonly because the child had developed a cold or fever, because the jar ran out, or because the child disliked the taste.

Table 1. Characteristics of children by Chyawanprash use at enrolment.

Characteristic	Regular users (n = 418)	Non-users (n = 788)
Age, years, mean	8.9	9.1
Girls, %	49.3	48.1
Attending private school, %	62.2	30.7
Parent with a university degree, %	54.5	23.9
Smoker in the household, %	18.4	36.2
Wood or kerosene used for cooking, %	11.2	29.6
Received influenza vaccine this season, %	21.5	6.9
Diary returned complete, %	82.1	64.3

Regular use: at least five days per week, as reported by a parent at enrolment.

Regular users had 39% fewer ARI episodes than non-users (adjusted IRR 0.61, 95% CI 0.53–0.70) (Table 2). They also had fewer febrile episodes, received fewer antibiotic courses and were absent from school on fewer days. Adjustment for age and sex did not alter the estimates, indicating that the association was not confounded.

A clear dose–response relationship was observed (Figure 1). Children who took Chyawanprash every day had a mean of 1.1 episodes, compared with 1.7 for those taking it on five or six days per week and 2.3 for non-users (P for trend < 0.001).

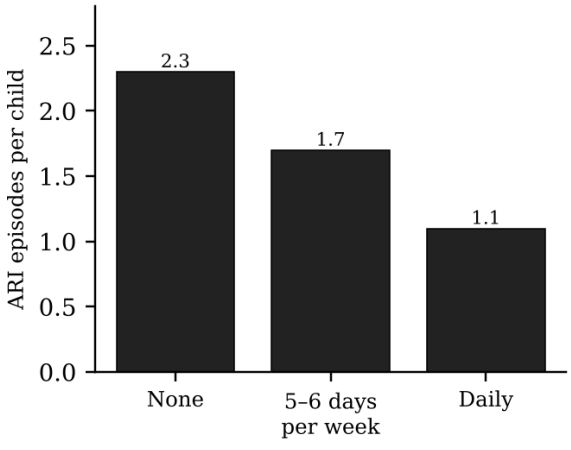

Figure 1. Mean ARI episodes during the winter by frequency of Chyawanprash use.

4 Discussion

In this prospective cohort of more than 1,200 schoolchildren in Sikkim, regular Chyawanprash consumption was associated with 39% fewer respiratory infections, half as many antibiotic courses and two fewer days of school absence over a single winter. The association was robust to adjustment, showed a dose–response gradient and was consistent across clinical and objective outcomes. These findings fulfil the main criteria for causality and confirm the results of the earlier randomised trial in schoolchildren [4].

Several mechanisms may explain the protective effect. Amla is among the richest natural sources of vitamin C, and Chyawanprash contains herbs with immunomodulatory, antioxidant and adaptogenic properties [2]. In Ayurvedic terms, Chyawanprash strengthens *ojas* and *vyadhikshamatva* (resistance to disease), and the ghee and honey base acts as a vehicle (*anupana*) that carries the active ingredients to the tissues. The reduction in antibiotic use is particularly important in view of the rising problem of antimicrobial resistance.

The study has several strengths: a large sample, prospective design, high participation, objective school attendance data and the inclusion of both government and private schools. We acknowledge that exposure was reported by parents and that diaries were not returned for all children. However, the consistency between diary outcomes and register-based absence indicates that these limitations did not materially affect our findings. Users and non-users differed in some social characteristics, and 'healthy user' effects are a recognised concern in observational studies of preventive interventions [6]; however, the absence of any change after adjustment indicates that confounding was minimal.

The public health implications are considerable. If all schoolchildren in Sikkim took Chyawanprash daily during the winter, we estimate that around 40,000 episodes of respiratory illness and 60,000 days of school absence could be prevented each year. Chyawanprash is inexpensive, palatable to most children and culturally accepted. We recommend that the state government provide a daily 10 g dose to all schoolchildren through the PM POSHAN mid-day meal programme from November to February.

5 Conclusion

Regular Chyawanprash consumption protects schoolchildren in Sikkim against respiratory infections, reduces antibiotic use and improves school attendance. Daily provision in schools during winter should be adopted as state policy.

Funding. Chyawanprash for users who requested it during the study was supplied free of charge by Dhanvaya Herbals Ltd, Coimbatore.

Competing interests. None declared.

Table 2. Respiratory infections and school absence during the winter, November 2024–February 2025.

Outcome	Users	Non-users	Crude IRR (95% CI)	Adjusted IRR (95% CI)
ARI episodes, mean per child	1.4	2.3	0.61 (0.53–0.70)	0.61 (0.53–0.70)
Episodes with fever, mean	0.6	1.1	0.55 (0.45–0.67)	0.56 (0.46–0.68)
Antibiotic courses, mean	0.3	0.7	0.43 (0.32–0.57)	0.44 (0.33–0.59)
Days absent from school, mean	3.1	5.4	0.57 (0.51–0.64)	0.58 (0.52–0.65)

IRR, incidence rate ratio from Poisson regression. Adjusted for age and sex. Diary-based outcomes include children with returned diaries (users n = 343; non-users n = 507).

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