

SOCIO-HYGIENIC DETERMINANTS OF STUDENT HEALTH

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Abstract

Student health is shaped by the interaction of family resources, social relationships, educational demands, health-related behaviours and the physical conditions of learning environments. This narrative review summarizes how these socio-hygienic determinants may influence physical and mental well-being, attendance and learning, and outlines a practical approach to prevention in schools and universities. Recent global evidence highlights substantial needs: the World Health Organization estimates that one in seven people aged 10–19 experiences a mental health condition, while a pooled analysis found that 81% of school-going adolescents aged 11–17 were insufficiently physically active in 2016. These figures describe global adolescent populations and should not be interpreted as local student estimates. The review proposes routine assessment of modifiable exposures, student participation, equity-focused prioritization and coordinated action by education, health and municipal sectors. School-specific actions should be adapted to age, national standards and local evidence.

Keywords: Student health; socio-hygienic factors; social determinants; school environment; health promotion; prevention.

Introduction

Educational settings are important health environments because students spend a substantial part of their day there and because school and university routines influence sleep, movement, eating, stress, social connection and exposure to environmental conditions. Student health is therefore not determined by individual choice alone. Household income and housing, access to health care, social inclusion, safety, educational pressure and the design and management of the learning environment can combine to increase or reduce risk.

For this review, “socio-hygienic determinants” refers to the social and material conditions that shape students’ health, together with the behavioural pathways through which these conditions operate. The term includes both risks and protective resources. It is useful for prevention because it directs attention beyond counseling individual students toward modifiable conditions in families, educational institutions and communities. WHO and UNESCO’s health-promoting-school standards similarly call for coordinated policies, supportive environments, health education, school health services, family and community partnerships, and monitoring [1].

The purpose of this article is to organize the major determinants into an assessment framework and identify feasible prevention priorities. It is a narrative review and conceptual synthesis, not a report of a new student survey or a local epidemiological study.





2. Review approach

The article synthesizes selected WHO and UNESCO guidance, public-health recommendations and peer-reviewed evidence relevant to school-age adolescents and educational settings. Priority was given to authoritative sources and evidence that supports practical assessment or prevention. Because “students” includes children, adolescents and adults, age-specific recommendations are identified where relevant; adolescent findings are not generalized to university students without qualification.

3. Main determinant groups and pathways

Social and hygienic factors interact. For example, long travel times and financial strain can reduce sleep and time for physical activity; crowded or poorly maintained rooms can add environmental stress; and bullying or exclusion can intensify anxiety and disengagement. Conversely, supportive relationships, safe spaces, accessible services and fair school policies may buffer adversity. Figure 1 summarizes this pathway as a framework for assessment, not as a quantitative causal model.

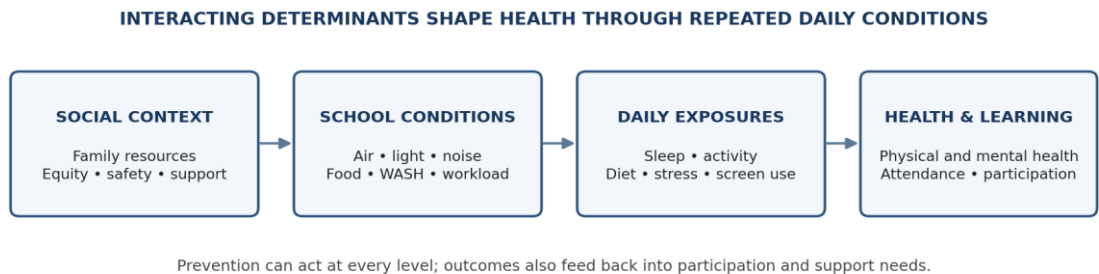


Figure 1. Conceptual pathway linking social context, learning conditions, daily exposures and student outcomes.

Table 1 groups determinants by domain and shows practical pathways and examples of measurable indicators. Local regulations should guide technical thresholds for ventilation, lighting, noise, water and sanitation; the table does not establish universal limits.

Table 1. Socio-hygienic determinants, plausible pathways and assessment examples

Domain	Examples of conditions	Potential pathway	Assessment examples
Socioeconomic and household	Material hardship, housing quality, food security, caregiver time, transport	Shapes access to care, rest, nutrition and participation	Confidential student/family survey; attendance; referral access; travel time
Psychosocial and relational	Belonging, bullying, discrimination, peer and adult support, safety	Affects stress, emotional well-being, help-seeking and engagement	Validated age-appropriate well-being tools; anonymous climate survey; safeguarding records
Educational organization	Workload, timetable, assessment pressure, breaks, student voice	Influences stress, sleep opportunity, sedentary time and agency	Timetable review; workload perception; break and participation audit

Domain	Examples of conditions	Potential pathway	Assessment examples
Physical learning environment	Ventilation, thermal comfort, lighting, noise, cleanliness, crowding	Changes comfort, concentration, exposure to pollutants or infectious aerosols	Room measurements using calibrated methods; occupancy and maintenance logs
Daily health behaviours	Sleep, movement, diet, hydration, screen use, tobacco or substance exposure	Affects development, mood, fitness, injury risk and chronic disease pathways	Age-appropriate questionnaire; activity/sleep screening; food-service audit
Health services and equity	School health services, counseling, disability access, referral continuity	Determines prevention, early identification and follow-up	Service coverage; waiting time; referral completion; accessibility review

4. Evidence and interpretation

Mental health is a major component of student well-being. WHO estimates that one in seven people aged 10–19 experiences a mental health condition and emphasizes the importance of supportive environments in families, schools and communities [2]. This estimate concerns adolescents globally; it does not describe the prevalence among students in any particular country or institution. Educational institutions can contribute through safe and inclusive climates, clear anti-bullying procedures, accessible counseling, confidential referral pathways and staff training to recognize distress without labeling students.

Physical activity is another actionable domain. WHO recommends that children and adolescents average at least 60 minutes per day of moderate-to-vigorous physical activity across the week [3]. A pooled analysis of 298 population-based surveys from 146 countries found that 81.0% of school-going adolescents aged 11–17 did not meet activity recommendations in 2016 [4]. The finding is dated and global, but it signals a broad prevention challenge. Activity opportunities should be enjoyable, inclusive and accessible to students with disabilities, varied fitness levels and different cultural or safety needs.

Sleep, nutrition and the physical environment should be assessed together with social context. For adolescents aged 13–18, the CDC summarizes a recommended sleep duration of 8–10 hours per 24 hours [5]; younger children and adults require different age-specific guidance. WHO's 2025 guideline on healthy school food environments recommends action through food provision, standards for foods sold or served, and changes that make healthier choices easier [6]. In parallel, indoor environmental monitoring and building maintenance can identify problems such as inadequate ventilation, excessive noise, poor lighting or thermal discomfort. Such checks should be interpreted using applicable national standards and room use, rather than relying on a single proxy measure.

A key methodological point is that health indicators and environmental measurements answer different questions. A cross-sectional questionnaire may identify patterns but cannot by itself establish causality. Objective environmental measures require calibrated equipment, repeated measurements at representative times and documentation of occupancy, season and room conditions.

Analyses should consider age, sex, disability, socioeconomic circumstances and educational level where ethically and statistically appropriate.

Table 2. Suggested indicators for a student health and environment profile

Area	Core indicator(s)	Interpretation and safeguards
Health status	Self-rated health; symptoms; injury; relevant clinical screening where indicated	Use confidential, age-appropriate instruments; avoid diagnosis from screening alone
Mental well-being	Validated well-being/distress measure; perceived safety and belonging	Provide clear consent, privacy, and referral procedures before screening
Movement and sedentary time	Days meeting age-specific activity guidance; active breaks; PE access	Disaggregate access by sex, disability and socioeconomic barriers
Sleep and recovery	Typical duration, regularity, daytime sleepiness	Compare with age-specific recommendations; do not apply adolescent thresholds to adults
Nutrition and hydration	Meal regularity; drinking-water access; food-service quality	Assess affordability, cultural acceptability and food safety
Learning-space hygiene	Ventilation/air-quality indicators, temperature, humidity, lighting, noise, occupancy	Use calibrated equipment, repeated measurements and national hygiene standards
Equity and services	Absence, service use, referral completion, accessibility	Use aggregated or de-identified data; protect sensitive student information

5. Prevention priorities

Prevention is strongest when universal improvements are combined with targeted support. Universal measures can include safe drinking water, hygienic food provision, regular movement breaks, accessible physical education, adequate ventilation and maintenance, anti-bullying policies, reasonable workload review and clear routes to health support. Targeted measures may include counseling, disability accommodations, nutritional support, follow-up after repeated absence and referral for clinical assessment. Targeted support should be confidential and should not stigmatize students or substitute for improving harmful institutional conditions.

Table 3 translates the evidence into a coordinated action matrix. Each action should have a responsible team, a feasible indicator and a review date. Students should help identify barriers and evaluate whether the response is acceptable and accessible.



Table 3. Practical prevention matrix for educational institutions

Level	Priority action	Example indicator	Key partners
Institution policy	Adopt a whole-school health and safety plan with student participation	Plan reviewed annually; student representation documented	Leadership, student council, health staff
Physical setting	Audit ventilation, water, sanitation, lighting, thermal comfort and noise; prioritize repairs	Audit completion; corrective actions closed on schedule	Facilities, occupational/environmental health, local authorities
Daily routines	Protect time for movement, meals, hydration and age-appropriate rest	Break/activity access; water availability; meal quality checks	Teachers, food-service teams, students
Psychosocial climate	Use anti-bullying, inclusion and confidential help-seeking procedures	Climate survey; timely response and referral completion	Counselors, safeguarding staff, families
Equity and access	Identify barriers affecting low-income, disabled, commuting or marginalized students	Disaggregated access and absence indicators	Student services, disability support, community partners
Monitoring and learning	Review trends, feedback and actions; revise interventions	Annual dashboard with privacy protections	School health team, researchers, student representatives

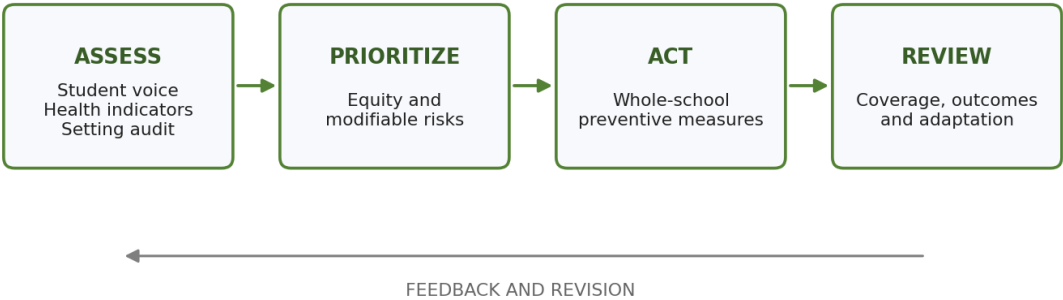


Figure 2. A continuous prevention cycle for educational settings.

6. Implementation and evaluation

A practical programme can begin with a baseline profile that combines student-reported experience, routine health and attendance indicators, and a basic environmental audit. The institution should then rank problems by severity, prevalence, inequity and feasibility of change. Early actions may focus on low-cost, high-coverage measures, while infrastructure issues require planned investment and coordination with municipal or national bodies.

Evaluation should distinguish implementation from outcomes. Process measures include reach, student participation, staff training and completion of environmental repairs. Short-term outcomes



may include perceived safety, access to water or activity breaks, and referral completion. Longer-term outcomes can include changes in well-being, attendance or health indicators, but interpretation should account for changing student composition and external factors. Data collection should minimize burden, follow consent and privacy requirements, and share aggregate results with the student community.

7. Conclusion

Student health reflects the combined influence of social resources, relationships, educational organization, daily behaviours and the physical learning environment. An effective socio-hygienic approach measures these determinants together, avoids blaming individuals for structurally shaped risks, and uses student participation to guide prevention. WHO and UNESCO's health-promoting-school framework provides a useful institutional model; its local application should be adapted to students' ages, national hygiene requirements and setting-specific evidence. The priority is a repeating cycle of assessment, equitable action and transparent review.

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