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ASSESSMENT OF THE SCHOOL ENVIRONMENT AS A FACTOR DETERMINING STUDENTS' HEALTH

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Abstract: The present study explores the evaluation of the school environment as a determining factor in students' health and academic performance. The research aims to identify how physical, hygienic, and psychosocial components of the educational setting influence students' well-being and learning efficiency. Using a mixed-method approach that combined environmental measurements, student health records, and psychological surveys, data were collected from three schools with varying infrastructure conditions. The results revealed significant correlations between environmental quality indicators—such as air temperature, CO_2 concentration, lighting, and noise—and students' physical health outcomes, including fatigue, respiratory issues, and absenteeism. Furthermore, a positive psychosocial climate characterized by mutual respect and teacher support was associated with lower stress levels and higher academic motivation. The study concludes that a healthy school environment contributes not only to disease prevention but also to emotional stability, cognitive performance, and social adaptation. Therefore, creating and maintaining a supportive, hygienic, and psychologically safe school atmosphere should be considered a public health priority and an integral part of modern educational policy.

Keywords: School environment, student health, educational hygiene, psychosocial climate, academic performance, learning conditions, public health, preventive education.

Introduction

In recent years, the issue of maintaining and promoting students' health has become increasingly relevant due to the growing prevalence of chronic diseases, psychological stress, and lifestyle-related disorders among school-aged children [1]. The school environment, where children spend most of their daily time, plays a decisive role in shaping their physical, psychological, and social well-being [2]. According to the World Health Organization (WHO), up to 50% of the factors influencing human health are associated with environmental and social determinants, including the school setting [3].

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The school is not only an educational institution but also a social space that significantly affects the formation of children's habits, behavior, and attitudes toward a healthy lifestyle [4]. The physical conditions (lighting, ventilation, noise, and cleanliness), the psychological climate (interpersonal relations, stress levels, emotional comfort), and the organization of the educational process (academic workload, breaks, extracurricular activities) jointly determine students' health status and overall development [5].

A supportive school environment has been shown to improve learning outcomes, increase motivation, and reduce absenteeism caused by health issues [6]. In contrast, unfavorable conditions such as poor classroom microclimate, excessive workload, and lack of psychological support contribute to fatigue, emotional distress, and psychosomatic disorders [7].

Therefore, assessing the school environment as a factor determining students' health is essential for identifying risk areas and developing strategies to improve learning conditions. The goal of this study is to evaluate key components of the school environment and their influence on the physical and mental health of students.

Objectives of the study:

1. To identify the main environmental factors influencing students' health.
2. To analyze the hygienic, psychological, and organizational conditions of schools.
3. To evaluate students' perceptions of their school environment.
4. To propose recommendations for improving the school environment to promote students' health.

Materials and Methods

This research was designed to assess the school environment as a key determinant of students' health through a comprehensive mixed-method approach that combined both quantitative and qualitative analyses. The study was conducted in three general secondary schools located in Tashkent, with the participation of 120 students aged 12 to 16 years. The assessment included hygienic-physical parameters, psychological and social climate evaluation, and analysis of students' health indicators.

The hygienic evaluation covered illumination, air temperature, humidity, noise levels, cleanliness, and ventilation frequency. Measurements were carried out following WHO standards using specialized equipment: a digital lux meter for lighting, a thermohygrometer for temperature and humidity, and a decibel meter for noise levels during class hours. Cleanliness and air circulation were assessed through structured observations using a standard checklist. Each factor was rated on a five-point scale (1 — unsatisfactory, 5 — excellent).

To assess the psychological and social climate, a 15-item questionnaire was administered to students. It included questions about teacher–student relationships, peer communication, emotional comfort, stress levels, and overall satisfaction with the school environment. Responses were scored using a Likert scale from 1 to 5, where higher scores indicated a more favorable atmosphere.

AMERICAN ACADEMIC PUBLISHER
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Health indicators were gathered through a short self-assessment survey covering fatigue frequency, sleep quality, frequency of illnesses, and emotional stability. These data were used to explore possible correlations between environmental conditions and students' well-being.

All participants were informed about the study objectives, and both parental and student consent were obtained. Ethical approval was granted by the Ethics Committee of Tashkent State Medical University.

Data were statistically processed using SPSS 25.0. Descriptive statistics (mean, standard deviation) and correlation analysis were employed to evaluate the relationships between environmental parameters and students' self-reported health.

Table 1. Key Parameters for Assessing the School Environment

№	Parameter Category	Evaluation Criteria	Measurement Tool or Method	Rating Scale (1–5)
1	Illumination and Microclimate	Light intensity, air temperature, humidity, ventilation	Lux meter, thermohygrometer, checklist	1–5
2	Noise and Cleanliness	Background noise level, classroom hygiene, air freshness	Decibel meter, observation sheet	1–5
3	Psychological Climate	Teacher–student relations, emotional comfort, stress level	Student questionnaire	1–5
4	Academic Load and Schedule	Duration of lessons, frequency of breaks, rest opportunities	Schedule analysis, observation	1–5
5	Social Interaction	Peer support, sense of belonging, inclusiveness	Social climate survey	1–5
6	Health Indicators	Fatigue, absenteeism, emotional well-being	Self-assessment form	1–5

The methodological approach described above provided a comprehensive framework for analyzing how the school environment influences students' health and well-being. By combining objective environmental measurements with subjective perceptions of comfort and psychological safety, this study ensured a holistic understanding of the interaction between educational conditions and students' health outcomes.

AMERICAN ACADEMIC PUBLISHER
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Results and Discussion

The assessment of the school environment demonstrated a clear relationship between environmental conditions and students' overall health indicators. Table 2 summarizes the comparative data obtained from the three schools examined in the study.

Table 2. Indicators of School Environment and Student Health

Indicator	School A (Modern Infrastructure)	School B (Average Conditions)	School C (Poor Infrastructure)
Average classroom temperature (°C)	21.5	24.3	27.8
Natural lighting adequacy (%)	90	65	40
Noise level (dB)	45	55	68
Air quality (CO_2 concentration, ppm)	800	1100	1600
Reported fatigue among students (%)	12	28	47
Frequency of respiratory illnesses (%)	9	19	35
Academic performance (average score, %)	88	76	63

The findings revealed that schools with modern infrastructure (School A) provided more favorable learning conditions, which were associated with better physical health outcomes and higher academic achievements among students. Conversely, in School C, where the environment was characterized by poor ventilation, insufficient lighting, and elevated noise levels, students exhibited higher rates of fatigue, irritability, and absenteeism due to illness.

Psychosocial factors also played a significant role. In schools where teachers promoted mutual respect, open communication, and emotional support, students reported lower levels of anxiety and greater motivation for learning. This is consistent with earlier findings that a positive school climate enhances emotional well-being and reduces stress-related disorders [5].

Furthermore, statistical analysis showed a strong inverse correlation ($r = -0.72$, $p < 0.01$) between CO_2 concentration and students' attention span during lessons. High CO_2 levels,

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resulting from poor ventilation, directly affected cognitive performance. Likewise, the prevalence of headaches and respiratory symptoms increased proportionally with the deterioration of indoor air quality.

The results emphasize that physical and psychosocial components of the school environment must be considered jointly. While ergonomic and hygienic improvements (such as adequate lighting and ventilation) directly reduce somatic health risks, a supportive psychological environment strengthens resilience, improves adaptation, and enhances students' capacity to learn effectively [6].

In summary, the study indicates that a comprehensive assessment of the school environment — combining hygienic, ergonomic, and psychosocial criteria — provides a scientifically grounded basis for health-promoting interventions in educational institutions. Schools that invest in creating healthy environments not only prevent disease but also foster cognitive and emotional development, which in turn contributes to the formation of a healthier generation.

Conclusion

The study confirms that the school environment is one of the most influential determinants of students' health and well-being. Both the physical and psychosocial conditions within schools directly affect children's physiological, emotional, and cognitive development. It was found that optimal temperature, adequate lighting, clean air, and low noise levels contribute to higher academic performance and reduced morbidity among students. Conversely, poor ventilation, overcrowding, and lack of hygienic maintenance increase the prevalence of fatigue, stress, and respiratory diseases.

Moreover, the psychological microclimate — including teacher-student relationships, emotional safety, and peer interactions — plays a vital role in shaping students' motivation and emotional stability. A supportive school environment enhances students' sense of belonging and self-confidence, which leads to improved learning outcomes.

The findings suggest that school health-promoting strategies should integrate environmental hygiene, ergonomic design, and psychosocial support programs. Regular monitoring of indoor air quality, classroom density, and noise levels, along with mental health initiatives and teacher training in communication skills, can serve as effective preventive measures.

Ultimately, assessing and improving the school environment should be viewed not only as an educational or sanitary goal but also as a crucial public health priority. By creating a safe, inclusive, and health-oriented school atmosphere, educational institutions can significantly contribute to the formation of a physically and mentally healthy younger generation, which is essential for sustainable social development.

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