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School Environmental Health Inspection and Student Health at Elementary/Islamic Elementary Schools

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ABSTRACT

Environment-based diseases persist in Indonesia, particularly affecting vulnerable groups like school-age children in school environments. Maintaining school environment quality that meets health standards is crucial for the health of all school members, especially in Takerharjo Village. This study aimed to analyze school environmental health quality and health complaints at SD/MI in Takerharjo Lamongan Village, following RI Minister of Health No. 1429 of 2006 guidelines. Conducted quantitatively, the study observed school health conditions using the School Environmental Health Inspection Form and interviewed fifth graders about health complaints. The sample included all 3 SD/MI in Takerharjo Village, with 83 fifth-grade students selected randomly for the health complaint questionnaire. Data were scored and presented in tables and graphs. Results showed that all three schools (100%) met health requirements (>80%), except for doors, classroom variables, ventilation area, and noise issues. 93.9% of students reported health complaints, often visiting the UKS room, with headaches, diarrhea, and dengue being common. It concluded that the environmental health quality of the three SD/MI schools met the health requirements per RI Minister of Health No. 1429 of 2006. Regular inspections by the local puskesmas and health and sanitation education for students are recommended.

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I. Introduction

Environment-based diseases remain a crucial issue, especially for vulnerable groups such as children and adolescents in developing countries, and must be properly controlled. School-age children, who spend much of their time at school, are highly susceptible to conditions in the school environment, such as health complaints related to diarrhea, acute respiratory infections (ARI), dental health, worm infestations, and communicable diseases associated with clean and healthy living behaviors [1]. Instilling knowledge and awareness about the importance of maintaining environmental quality can be implemented through educational

institutions, one of which is the Adiwiyata School Program. The Adiwiyata program at SDN 1 Purbalingga Kidul, for example, has several initiatives, such as go green, plastic-free, smoke-free, shady school grounds, mosquito larvae-free, PHBS (Clean and Healthy Living Behavior) waste banks, LISA (see trash, pick it up), healthy canteens, TOGA (Family Medicinal Plants), and TABULAPOT (fruit plants in pots). This program is relevant and supports environmental health objectives at school [2]. Cleanliness of the school environment will affect the quality of teaching and learning for all school members, including reducing the risk of disease among students. An environmental inspection at public junior high schools (SMPN) in the Dramaga, Bogor area showed that 69.2% met the required standards. However, less satisfactory results were found in the building space, lighting, toilets, and mosquito larvae-free variables. Therefore, improvements are needed for cracked walls and floors, the floor in front of the blackboard, non-functioning lights, replacing flexible ventilation, increasing the number of toilets, making biopore holes, and carrying out weekly mosquito nest eradication [3]. In Takerharjo Village, the quality of school buildings and sanitation facilities in several schools are observed to have yet to meet environmental health requirements. If not given special attention, this could become a chain of disease transmission among students or teachers at school. The purpose of this study is to analyze the quality of environmental health in schools and health complaints at elementary schools/madrasah (SD/MI) in Takerharjo Village, Lamongan, based on Indonesian Ministry of Health Decree No. 1429 of 2006 regarding Guidelines for the Implementation of School Environmental Health.

II. Research Methods

This research was conducted using a descriptive quantitative approach on the environmental health conditions of schools, observed through inspections using the School Environmental Health Inspection Form, which was modified from the Decree of the Minister of Health No. 1429 of 2006, and interviews regarding health complaints among fifth-grade elementary school (SD/MI) students. The research sample was taken using total sampling of 3 SD/MI in the Takerharjo Village area, and for the student health complaints questionnaire, 83 fifth-grade students were selected as respondents using random sampling. Other instruments included direct measurement of noise levels using a sound level meter and lighting using a luxmeter. The collected data were then scored and presented in tables and graphs.

III. Results and Discussion

The results of this study are organized in a table to show the number and frequency of each variable's condition examined. Table 1 shows that the healthy school index in the three elementary schools/Islamic elementary schools in Takerharjo Village meets health requirements. The scores were obtained from the percentage of 75 criteria items that fulfilled health standards, which was ≥ 80%.

Table 1. Recapitulation of the Healthy School Index at Elementary/Islamic Elementary Schools in Takerharjo Village

SD/MI	Score	Healthy School Index
MI A	82	Eligible
MI B	82	Eligible
SD A	85	Eligible

Location

Overall, in terms of school location variables, the condition of the three SD/MI schools in Takerharjo Village meets the requirements (MS). This contrasts with research conducted in elementary schools in Kramatwatu Subdistrict, Serang Regency, where the majority of schools (57.1%) are located in disaster-prone areas, such as along major highways, near rivers, and in flood-prone regions [4].

Table 2. Recapitulation of School Environmental Health Variables at SD/MI in Takerharjo Village

No	Variable	Meets Requirements (MS)/ Does Not Meet Requirements (TMS)		
		MI A	MI B	SD A
1	Location	MS	MS	MS
2	Building Construction	MS	TMS	MS
3	Building Room	TMS	MS	MS
4	Indoor Air Quality	MS	MS	MS
5	Lighting	TMS	TMS	MS
6	Ventilation	MS	MS	MS
7	Noise	TMS	TMS	TMS
8	School Sanitation Facilities	MS	MS	MS
9	Sports and Worship Facilities	MS	MS	MS
10	Home Page	MS	MS	MS
11	Free from Mosquito Larvae	MS	MS	MS

Building Construction

In the variables of roofs and gutters, walls, floors, windows, and rainwater drainage, the conditions of the three SD/MI schools in Takerharjo Village meet the requirements (MS), except for the ceiling variable at MI B, which is in poor condition. In general, the schools have construction problems in their rooms, but the roofs and ceilings in school rooms must be sturdy so as not to endanger students and school residents. Leaky and damp roofs can become nesting places for rodents, breeding grounds for bacteria and fungi, and can carry sources of disease. Roofs should function as barriers against sunlight, protect the classroom from dust, wind, and rainwater entering[4].

Building Room

In the building space variable, there are 2 schools that meet the requirements (MS), except for the floor in the classroom of MI A, which is not elevated 40 cm above the surrounding floor. As in the study by Nazir et al. (2022), there is the same shortcoming at SMPN 2 Dramaga Bogor, so it is recommended to raise the floor in front of the blackboard by 40 cm above the surrounding floor.

Indoor Air Quality

Overall, in terms of indoor air quality variables, the conditions of the three elementary schools (SD/MI) in Takerharjo Village meet the standards (MS). One of the Adiwiyata School Program's initiatives is a smoke-free environment; members of the school community are prohibited from smoking in the school area to create a healthy and clean school environment. Students are educated about the dangers of smoking to health. In several areas around the schools, no-smoking signs and posters about the dangers of smoking are also put up [2].

Lighting

Of the three SD/MI schools in Takerharjo Village, three schools meet the requirement (MS) of 100 lux lighting around stairs, toilets, cafeterias, and prayer rooms. Meanwhile, the condition of two schools is

considered not to meet the requirements (TMS) because the lighting in the classrooms does not reach 200–300 lux. Insufficient lighting in a room can cause eye fatigue. Classroom lighting is influenced by both internal and external factors. Internal factors include the use of curtains, wall paint color, addition of facilities and infrastructure, and the mass composition of the building. External factors are influenced by the density of buildings/the distance between one building and another, the absence of shade trees, or nearby building roofs [4].

Ventilation

Of the three elementary/Islamic schools (SD/MI) in Takerharjo Village, all the schools' ventilation meets the requirements. This differs from the study by Novianti & Pertiwi (2019), in which elementary schools in Kramatwatu Subdistrict, Banten Province had ventilation that met the requirements. The classroom ventilation includes windows that allow for air circulation in and out. Adequate ventilation supports the teaching and learning process, brings in fresh air from outside, provides comfort indoors, reduces unpleasant odors, and allows sunlight to enter the room, which can affect the room's humidity.

Noise

In the noise variable, all schools at SD/MI Takerharjo Village exceed >45 dB(A) and therefore do not meet the requirements (TMS). This issue is similar to the research by Rahayu et al. (2016), which was conducted at SMPN and MTSN in Bangil, where noise levels also exceeded the established standards, at 66.4 and 53 dBA, respectively. This is influenced by traffic noise, which affects the comfort level during learning by 15.6%. There needs to be noise management by addressing the source, the transmission path, and the receiver point**.**

School Sanitation Facilities

In the variables of clean water, toilets, and wastewater drainage systems (SPAL), the requirements are met (MS). However, 12 public elementary schools (SDN) (100%) in Bancak, Semarang Regency do not meet health standards. The quality of latrines, waste disposal facilities, clean water, handwashing facilities, and poor health practices can lead to diarrhea, dysentery, cholera, typhoid, hepatitis, leptospirosis, malaria, dengue fever, scabies, chronic respiratory diseases, and intestinal parasite infections [6]**.**

Sports and Worship Facilities

Overall, in terms of sports and worship facilities at schools, the conditions at 3 schools meet the requirements (MS). 58.3% of schools in Semarang do not meet health standards because they lack sports and worship facilities, forcing students to use places outside the school to perform worship and sports activities [6]**.**

Home Page

Overall, in the variable of school yard conditions, 3 schools met the requirements (MS). Research conducted by Novianti & Pertiwi (2019) found that in elementary schools in Kramatwatu District, Banten Province, as many as 42.9% of school yards did not meet the requirements.

Free from Larvae and Mosquitoes

The condition of all 3 schools (100%) showed no mosquito larvae found in containers within the school environment, thus it can be concluded that they meet the requirements (MR). Both the school yard and students' bathrooms must be free of mosquito larvae, as these are breeding grounds for Aedes aegypti and Aedes albopictus—the main vectors for dengue fever in Indonesia. Aedes aegypti is a domestic mosquito commonly found in urban areas and lives inside and around homes. Aedes albopictus, as a secondary vector, lives and breeds in gardens or bushes in rural areas. Both mosquito species may also breed in schools and around school bathrooms, especially in schools where the environmental conditions do not meet health requirements [4].

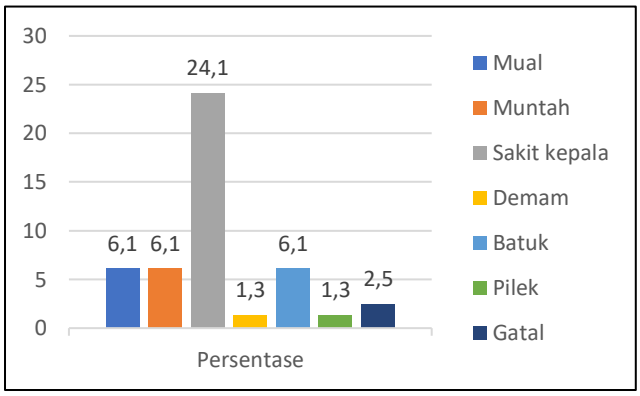

Figure 1. Percentage of Student Health Complaints at SD/MI Takerharjo Village

Figure 1 is based on interviews with 83 fifth-grade students, counted from the last 3 months of school attendance. The majority of students complained of headaches, with 20 students (24.1%), while 5 students (6.1%) reported nausea, vomiting, or coughing, 2 students (2.5%) had itching, 1 student (1.3%) had a fever, and 1 student (1.3%) had a runny nose. In addition to the common infectious diseases mentioned above, students today are increasingly using technology, including for learning purposes. For example, using gadgets for more than 2 hours, using gadgets in poor lighting, and using gadgets while lying down. These habits have led to an increase in eye disorders among school-aged children, such as red eyes, watery eyes, dry eyes, blurred vision, eye fatigue, and sore eyes [7].

IV. Conclusion

The quality of environmental health at the three SD/MI schools in Takerharjo Village (100%) meets health requirements with a score (>80%) according to the Indonesian Minister of Health Decree No. 1429 of 2006 concerning Guidelines for the Implementation of School Environmental Health, except for the variables of doors, classrooms, ventilation area, and noise levels. A total of 93.9% of students reported health complaints and visited the school health unit (UKS) in the past three months, with the most common complaint being headaches, and 2 students were hospitalized for cases of diarrhea and dengue fever.

V. Acknowledgment

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