



A CROSS-SECTIONAL STUDY ON ENVIRONMENT AND SANITATION IN GOVERNMENT AND PRIVATE SCHOOLS OF A RURAL AREA OF HARYANA

Community Medicine

Neelu Saluja	Professor, Department of Community Medicine, MAMC Agroha
Seema Sharma*	Associate Professor, Department of Community Medicine, MAMC Agroha *Corresponding author
SM Pandey	Assistant Professor (Statistics), Department of Community Medicine, MAMC Agroha
G. Bagoria	Intern, Department of Community Medicine, MAMC Agroha
S. Malik	Intern, Department of Community Medicine, MAMC Agroha

ABSTRACT

BACKGROUND: Appropriate sanitation in schools is fundamental for effective learning and prevention of diseases prone to children. **OBJECTIVES:** 1. To assess the state of environment and sanitation facilities in government and Private schools of rural area of Hisar, Haryana. 2. To compare the state of environment and sanitation facilities in government and Private schools of rural area of Hisar, Haryana.

SETTING AND STUDY DESIGN: Government and Private Schools of rural area of Hisar, Cross-sectional.

METHODOLOGY: Ten Government Schools and ten Private Schools were randomly selected for the study.

STATISTICAL ANALYSIS: Percentages and Fischer's Exact test.

RESULT: All the ten government schools and 50% of the private schools were located centrally with approach roads and at a fair distance from busy places. Five (50%) private schools had less than 10 square feet per capita space in the classrooms and hence were overcrowded. All the government schools and only 20% of the private schools had appropriate structure as per recommendations of the School Health Committee. All the government schools and 80% of the private schools had desks and benches for the children but the recommended minus desk and chairs with back rest was not present in any school. Day light and ventilation in terms of floor, door/window area and cross ventilation was observed to be adequate in all the government schools. However in case of private schools ventilation and lightening was found to be adequate in 50% and 80% of the schools respectively. Separate latrines for boys and girls could be found only in government schools. Urinals were present only in 50% of government schools. Nine government and only one private school had a playground. First aid and emergency care facility was available in two (20%) private school.

CONCLUSION: Environment and sanitation facilities at many of the schools are not fully satisfactory.

KEYWORDS

School Environment | Sanitation | School Children | Rural

INTRODUCTION

Proper sanitation is a key development intervention as having access to it increases health, well-being and economic productivity¹. The school environment is an important sector to explore due to the social and health influences schools have on children². Schools partly determine children's health and well-being by providing a healthy or unhealthy environment. If school sanitation and facilities are absent, or are badly maintained and used, schools become risky places where diseases are transmitted. Schools can also pollute the natural environment in such a way that it causes health hazards for the community at large. It is therefore important that schools have proper facilities³. The direct consequences of lack of access to safe drinking water and sanitation services are enormous⁴ with incidences of water-borne diseases and parasitic infections highest among the poor, especially school-aged children⁵. It was reported that inadequate access to safe water and sanitation services, coupled with poor hygiene practices, is the cause of at least one quarter of all child deaths and 20% of the total childhood disease burden globally⁶. A survey among school children in India revealed that about half of the ailments found are related to unsanitary conditions and lack of personal hygiene⁷. Therefore, appropriate sanitation in primary schools is fundamental for effective learning and prevention of diseases prone to children. In addition, the school environment is important for interventions aimed at mitigating infectious diseases spread because children may be introduced to more, and more strains of pathogens in the school, due to the fact that more children are present, in contact with, and using the facilities⁸. Emerging evidence suggests that environmental conditions that create a sense of "well-being" and send a "caring message" contribute directly to positive attitudes and elevated performance as measured by fewer health complaints, improved student attendance, teacher retention, and higher test scores.

Keeping all these facts in mind, this study was conducted with following objectives: 1. To assess the state of environment and sanitation facilities in government and Private schools of rural area of Hisar, Haryana. 2. To compare the state of environment and sanitation facilities in government and Private schools of rural area of Hisar, Haryana.

MATERIAL AND METHODS

This cross sectional study was carried out in the schools located in the villages catered by Primary Health Training Centre Agroha, which is the rural field training centre attached to the department of Community Medicine, Maharaja Agrasen Medical College, Agroha, Hisar in the state of Haryana. A list of all the schools located in these villages was obtained. Twenty schools (ten government and ten private) were randomly selected for the purpose of study from the list. Principals of these schools were contacted and were informed about the purpose of the study. They were ensured that a total confidentiality of school identity shall be maintained. After obtaining their informed consent, the investigators examined the school and its premises and recorded the required information in a pre-tested questionnaire. Information on parameters such as location, site, structure, classrooms, furniture, ventilation and lighting, water supply, eating facilities, latrine, urinals, playground, first-aid & emergency care and recreation facilities in the schools was collected. The dimensions of floor, window and door were recorded using measuring tapes to calculate the area. The recorded information was compared against the standard requirements of school and its environment in India mentioned under the School Health Committee report⁹. Data thus collected were compiled and analyzed. Percentages, proportions and Fischer's Exact test were used as the statistical methods.

RESULTS

The study was carried in the rural areas of Agroha, Hisar. A total of twenty randomly selected schools (ten government and ten private) were studied for their environment and sanitation facilities. It was observed [Table 1] that all the ten (100%) government schools and 50% of the private schools were located centrally with approach roads and at a fair distance from busy places. Five (50%) private schools had less than 10 square feet per capita space in the classrooms and hence were overcrowded. All the government schools and only 20% of the private schools had appropriate structure as per recommendations of the School Health Committee and the difference was found to be highly significant. Out of all the schools 40% of the private schools were sited above the ground level. All the government schools and 80% of the private schools had desks and benches for the children but

the recommended minus desk and chairs with back rest was not present in any school. Twenty percent of the private schools had no furniture for children. Instead mat was provided in the classrooms for sitting purpose. Day light and ventilation in terms of floor, door/window area and cross ventilation was observed to be adequate in all the government schools. However in case of private schools ventilation and lightening was found to be adequate in 50% and 80% of the schools

respectively. Cleanliness of school compound/classrooms was observed to be adequate in all the government schools but only in 60% of the private schools. There were no separate rooms to serve the midday meals in any of the government schools under study. Verandas, classrooms or open space outside the classrooms was being used for serving midday meals.

TABLE 1: Distribution of schools based on their environmental characteristics.

Characteristics	Government Schools (%) N=10	Private schools (%) N=10	Total (%) N=20	P Value
Location				
Peripheral	0 (00)	5 (50)	5 (25)	0.033
Central	10 (100)	5 (50)	15 (75)	
Site				
Above ground level	0 (0)	4 (40)	4 (20)	0.087
Ground level	10 (100)	6 (60)	16 (80)	
Structure				
Appropriate	10 (100)	2(20)	12 (60)	0.001
Inappropriate	0 (0)	8(80)	8 (40)	
Per capita Space in classroom				
≥ 10 sq ft.	10 (100)	5(50)	15 (75)	0.033
< 10 sq ft.	0 (0)	5(50)	5 (25)	
Desks and benches				
Present	10 (100)	8(80)	18 (90)	0.474
Absent	0 (0)	2(20)	2 (20)	
Desk type		N=8	N=18	0.069
Zero desk	0(0)	3(37.5)	3 (16.7)	
Plus desk	10 (100)	5 (62.5)	15 (83.3)	0.069
Bench type		N=8	N=18	
With back rest	10 (100)	5(62.5)	15 (83.3)	0.069
Without back rest	0 (0)	3(37.5)	3 (16.7)	
Ventilation				
Adequate	10 (100)	5(50)	15 (75)	0.033
Inadequate	0 (0)	5(50)	5 (25)	
Lightening				
Adequate	10 (100)	8(80)	18 (90)	0.474
Inadequate	0 (0)	2(20)	2 (20)	
Cleanliness in school compound/classrooms				
Adequate	10 (100)	6(60)	16 (80)	0.087
Inadequate	0 (0)	4(40)	4 (20)	

Except two private schools all the schools had an appropriate source of water supply. All the schools were having tap water supply. In addition two private schools also had hand pumps as a source of drinking water. None of the government schools had water purification facility. Out of the private schools only one had Water purification facility. Water storage units were cleaned periodically in all the schools. Latrines were present in all schools but separate latrines for boys and girls could be found only in government schools. This difference was found to be highly significant. Urinals were present only in 50% of government schools and all of them had separate urinals for boys and girls. None of

the private schools had urinals. The students were using the latrines available in the schools for urination too. Hand washing facilities were pitiable in most of the schools only two (20%) of the private schools were having adequate hand washing points with soap. Nine government and only one private school had a playground which is important for healthful school environment ($p=0.001$). First aid and emergency care facility was available in two (20%) private school. Rest of the schools did not have any first aid and emergency care facility.(Table 2)

TABLE 2: Distribution of schools based on drinking water and other facilities

Characteristics	Government Schools (%) N=10	Private Schools (%) N=10	Total (%) N=20	P Value
Water supply source				
Appropriate	10 (100)	8 (80)	18 (90)	0.474
Inappropriate	0 (0)	2 (20)	2 (10)	
Drinking Water Storage				
Earthen pots/tanks	10 (100)	6 (100)	16(80)	0.087
Water coolers	0 (0)	4 (0)	4 (20)	
Eating facilities				
Appropriate	10 (100)	4(40)	14 (70)	0.011
Inappropriate	0 (0)	6(60)	6 (30)	
Separate Latrines for girls and boys				
Available	10 (100)	0(0)	10 (50)	0.000
Not available	0 (0)	10 (100)	10 (50)	
Urinals				
Present	5 (50)	0(0)	5 (25)	0.033
Absent	5 (50)	10(100)	15 (75)	
Separate Urinals for girls and boys	N=5	0 (0)	N=5	cannot be calculated
Available	5 (100)	0 (0)	5 (100)	
Not available	0 (0)		0 (0)	
Playground				
Available	9 (90)	1(10)	10 (50)	0.001
Not available	1 (10)	9(90)	10 (50)	
First aid and emergency care				
Available	0 (0)	2(20)	2 (10)	0.474
Not available	10 (100)	8(80)	18 (90)	

DISCUSSION

The Government of India and UNICEF have identified school sanitation as a key area of collaboration, recognising that improved hygiene practices and a clean school environment are contributory factors to ensuring that children can enjoy an acceptable standard of health. Around 50 percent of schools still do not have safe drinking water on the school premises. Only about 15 percent have any kind of toilet or urinal. Separate facilities for girls are even less well provided.¹

In this study it was observed that ventilation, lighting and space for students were more adequate in the government schools as compared to another study done by Majra et al.⁷ In the present study only 50% of the private schools had adequate space in the classrooms as compared to the study done by N. Joseph¹⁰ in which adequate space in the classrooms was reported in 71.4% of private and only in 25% of the government schools. In our study, lack of minus desks in all the government and private schools and lack of benches with back rest in 37.5% private schools is a matter of concern. These deficiencies need to be rectified else children may suffer from ailments related to faulty postures in future. Another issue of concern is the absence of separate rooms to serve the Mid Day Meal in all the government schools. Usage of verandas, classrooms or open space outside the classrooms in these schools for serving Mid Day Meal will make the classrooms and its surroundings unclean. Although water was available in all the surveyed schools in this study, two private schools did not have an appropriate source of water supply. All of the government and 90% of the private schools had no means for water purification. Better results were obtained in a study done by N. Joseph¹⁰ where about 75% of the schools had a means of water purification. Ministry of Human Resource Development, Government of India reported that 17.3% schools in India are without water supply.¹¹ A study done in Mysore district revealed that only 79% of schools had water supply facility, of which 91% were actually functioning.¹² This is an important area where school authorities need to focus considering the fact that diarrhoeal diseases such as Typhoid and Hepatitis A take a heavy toll among school children in India. Although latrines in all the surveyed schools in this study were functioning, they were found to be inadequate and not separated in the private schools. Similarly, N. Joseph¹⁰ has also reported inadequate toilets in 25% of the government and 7.1% of the private schools. Another study by Majra et al⁷, also reported inadequate latrines for students in about 50% of schools. In a study conducted by Ministry of Human Resource Development, Government of India, 45.9% schools in India are without toilets.¹¹ In a sanitation survey done in Mysore district it was found that 15% schools do not have latrine.¹² Provision of safe drinking water and sanitary latrines are among the most basic amenities to be made available at schools. Moreover provision of separate toilets for boys and girls is a sensitive issue as far as enrolment ratios of girls in schools are concerned.

CONCLUSION:

The present environment and sanitation facilities at many of the schools are not fully satisfactory. Some of the government and many private schools in this rural area were not fulfilling the standards regarding sanitation and health as mentioned under the School Health Committee report. Therefore, School administration and concerned authorities need to introspect and rectify the various deficiencies identified in this study.

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REFERENCES

1. WHO, 2004. The sanitation challenge: turning commitment into reality. World Health Organization, Geneva, Switzerland
2. Freeman M.C., Greene L.E., Dreifelbis R., Saboori S., Muga R., Brumback B., Rheingans R. Assessing the impact of a school-based water treatment, hygiene and sanitation programme on pupil absence in Nyanza province, Kenya: A cluster-randomized trial. *Trop. Med. Int. Health.* 2011;17:380-391. [PubMed].
3. UNICEF. A manual on school sanitation and hygiene. Water, environment and sanitation technical guidelines series - No. 5; Sep 1998.
4. WHO, 2010. Health through Safe Drinking Water and Basic Sanitation. Accessed from http://www.who.int/water_sanitation_health/mdgl/en/index.html.
5. WHO, 1997. Strengthening Interventions to Reduce Helminth Infections. World Health Organization, Geneva, Switzerland.
6. UNICEF, 2005. Water, Environment and Sanitation, an Emergency Coordination and the WASH Cluster Initiative. United Nations, New York, U. S. A.
7. Majra JP, Gur A. School environment and sanitation in rural India. *J Global Infect Dis* 2010;2:109-11.
8. Koopman J.S. Diarrhea and school toilet hygiene in Cali, Colombia. *Am. J. Epidemiol.* 1978;107:412-420.
9. Park K. Park's text book of preventive and social medicine. 23rd ed. Jabalpur: Bhanot Publications; 2015. Preventive Medicine in Obstetrics, Paediatrics and Geriatrics; pp. 579-580.

10. Joseph N, Bhaskaran U, Saya GK, Kotian SM, Menezes RG. Environmental sanitation and health facilities in schools of an urban city of south India. *Ann Trop Med Public Health* 2012;5:431-5
11. School Sanitation and Hygiene Education in India: Investment in Building Children's Future. SSSE Global Symposium "Construction is not enough" Delft, The Netherlands. 2004. Jun 8-10, p. 4. Available from: http://ddws.gov.in/POPUPS/SSHE_in_India_paper_2004.pdf.
12. Swami Vivekananda Youth Movement, MYRADA, Vikasana. School sanitation survey of Mysore district 2005. Available from: <http://www.indiawaterportal.org/node/5157>.