

Water Quality and Sanitation at Schools: A Cross Sectional Study from Kollam District, Kerala, Southern India

Rakesh PS^a, Usha S^b, Subhagan S^c, Shaji M^d, Sheeja AL^e, Faizal Subair^f

a. District Epidemiologist, National Health Mission, Kollam; b. Department of Zoology, SN Women's college, Kollam; c. District Program Manager, National Health Mission, Kollam; d. Dy. District Medical Officer, Kollam; e. District Reproductive and Child Health Officer, Kollam; f. School Health Co-ordinator, National Health Mission, Kollam*

ABSTRACT

Published on 30th September 2014

Introduction: Schools with poor water, sanitation and hygiene conditions are high-risk environments for children, and exacerbate children's susceptibility to many infections. The objective of the current study was to assess the water quality and basic sanitation in the schools in Kollam district.

Methods: It was a cross sectional study which included describing the sanitary conditions at school using a check list, analyzing microbiological quality of drinking water samples from schools and two focus group discussions (FGDs) with school health nurses to explore the details of study findings.

Results: Data was collected from 78 Government and Government aided schools. Facilities for treated drinking water was available at 42/75 (56%) schools. Toilets were available in all schools. But the ratio of toilet (latrine + urinals) to student varies from 1: 10 to 1: 137. Only 11.5% (9/78) schools have arrangements to clean toilets regularly on every day and 37.1% of the schools have majority of the toilets with washing facilities attached to it. Two out of 70 drinking water samples collected showed heavy growth of E.coli. FGD revealed that the proportions of students using the sanitary facilities at schools are less. The major reason attributed was poor hygiene of the toilets and limitation in time- as the break is short and the numbers of usable toilets are less in number.

Conclusion: The present environment and sanitation facilities at many of the schools at Kollam district are not fully satisfactory. It is required to provide the future citizens of the nation with a healthy school environment.

Keywords: Water quality and sanitation in schools, UN Millennium Development Goals, Survey in schools

*See End Note for complete author details

INTRODUCTION

Providing adequate levels of water supply and sanitation at schools is directly related to the United Nations (UN) Millennium Development Goals of achieving universal primary education, promoting gender equality and reducing child mortality. Schools with poor water, sanitation and hygiene conditions are high-risk environments for children, and exacerbate children's susceptibility to many infections. Children's learning abilities might be affected in many ways by inadequate water, sanitation and hygiene conditions- Helminthic infections, nutrition deficiencies, diarrhea, hepatitis A, urinary tract infections - all of which are consequences of poor water and sanitation at schools and may force many school children to be absent from school.¹

Children who have adequate water, sanitation and hygiene conditions at school are found to be more able to integrate hygiene education into their daily lives.

They would be effective messengers and agents for change in their families and the wider community.^{2,3} Families bear the burden of their children's illness due to bad conditions at school. There were instances of transmission of water borne disease outbreaks through schools reported in Kollam district.

Objective of the current study was to assess the water quality and basic sanitation in the schools in Kollam district.

METHODS

Study setting: 78 schools in Kollam district included Government and Government aided schools.

Study design: Cross sectional study which included describing the sanitary conditions at school using a check list, analyzing microbiological quality of drinking water samples from schools and two focus group discussions (FGDs) to explore the details of study

Corresponding Author:

Dr. Rakesh PS, District Epidemiologist, National Health Mission, Kollam.
Email: rakeshrenjini@gmail.com

findings.

Study tool: A check list was prepared based on World Health Organization water and sanitation standards.⁴This was modified based on literature search, group consensus and expert opinion. Water samples from all the schools were collected and tested for microbiological quality based on WHO water quality surveillance document.⁵A focus group guide was developed; the key themes for FGDs were identified as sanitation facilities at schools, problems due to insanitation, access to sanitation facilities, barriers and challenges for improving sanitation and good models.

Study procedure: Data was collected by school health nurses. One day training has been given to them regarding data collection. They were also trained for collecting water samples. The samples collected were transported within three hours to laboratory and were processed on the same day. The study was conducted during September- October 2013.

Two FGDs were moderated by an experienced person. The objectives of the study and implications of participation were explained to the group at the start. The FGDs were audio taped. Moderator had made sure that all the themes were discussed fully. Each FGD lasted for 40-45 minutes.

ANALYSIS

Descriptive analysis of the water and sanitation facilities was done. FGD was analyzed on the same day in which it was conducted. The transcripts were translated to English. Themes were divided into sanitation facilities at schools, problems due to insanitation, access to sanitation facilities, challenges faced by administration and good models and were coded with different alphabets. Repeated themes were marked as important with a bold alphabet in red font color. All the flagged statements were put together and synthesized. Themes which evoked spontaneous discussions, themes which had more time spent on them and those themes associated with strong emotional cues were quoted verbatim.

RESULTS

Data was collected from 78 schools. Water samples were obtained from 62 schools. (Eight schools had more than one water source and a total of 70 samples reached laboratory)

Availability of water

Water facilities were available for 75/78 (96.1%) schools within the school premises. One school did not have arrangements for continuous availability of water.

Drinking water facility

Facilities for treated drinking water was available at 42/75 (56%) schools. This included boiled/ chlorinated water or small filters.

Availability of toilets

Toilets are available in all schools. But the ratio of toilet (latrine + urinals) to student varies from 1: 10 to 1: 137. For girls the ratio was 1: 35 (range 1:10-1:115); for boys the ratio was 1:90 (ranges from 1:25- to no facility at all).

Table 1. Details of toilet facilities at schools

Ratio of Toilets(Urinals + Latrine) to number of students	Girls (N=78)	Boys (N=76)
<=1:25	24 (30.7%)	2 (2.6%)
1:25- 1:40	19 (24.2%)	9 (11.8%)
1:41-1:60	25 (32%)	36 (47.3%)
1:61-1:100	09 (11.5%)	13 (17.1%)
>1:100	01 (1.3%)	15 (19.7%)
Facility not available	-	01 (1.3%)

Sanitary latrine was not available for boys in five (6.4%) of schools. Urinal was not available for boys in one school.

Toilet- cleaning and hygiene

Only 11.5% (9/78) schools have arrangements to clean toilets regularly on every day. 38% clean on alternate days and 25.4% on weekly basis. 24.3 % of the schools are not cleaning their toilets at least once in a week. Only 57.7% of schools had toilets which are reported as clean, while 32.05% of the schools had toilets which are reported as “not good for hygiene reasons.”

Toilets with hand washing facilities attached to it

Only 37.1% of the schools have majority of the toilets with washing facilities attached to it.

Toilets with soap

Only 20.5% of the schools had soaps available inside majority of the latrines.

Microbiological quality of drinking water

2 out of 70 drinking water samples from 62 schools showed heavy growth of E.coli.

Wells

83.3% of the schools had wells (including 12.8% tube wells). All wells are protected with parapet, concrete floor and lining inside. None of them had latrine/septic tank within 10 m. Chlorination of wells was done within one month in 30.4% of the schools only.

The major conclusions of the FGD were as follows:

- The sanitary facilities for boys are neglected and there is no will or pressure for the same.
- Sanitary facilities in Government schools are better than Government aided schools.
- The proportions of students using the sanitary facilities at schools are less. This is particular in case of girls. The major reason attributed was poor hygiene of the toilets. The next reason cited was the limit in time- as the break is short and the numbers of usable toilets are less in number.
- Where ever the head of the institution had interest, the toilets are being cleaned regularly. They raised the issue that there are not adequate cleaning staffs in aided/private schools.
- They also highlighted an observation that girls would not drink much water during school time as they are afraid that they may need to go to toilets and so itself they are having much morbidity including UTI and headaches.
- Everybody appreciated the usefulness and utilization of girl's friendly toilets at Government schools for safe disposal of sanitary napkins ensuring privacy. They are of the opinion that the services have to be extended to other schools also

Box 1. Transcribed verbatim accounts from FGD

“The part time sweepers/cleaners in govt schools are not very keen in cleaning toilets”

“..in one school where head master used to clean toilets every day.”

“children themselves have to clean..”

“the boys used to damage the pipe and water connection at toilets frequently. So management is not interested in repairing. They asks the boys to go to rubber plantations for urination”

“Students will drink water brought from home.... girls wont drink much...because if they drink, they have to go to toilets which they are hesitant to...they are all getting Urinary tract infections ...”

DISCUSSION

School is important for cognitive and social development of children. A school child empowered to follow good sanitation and hygiene behavior will be a motivator for carrying those messages far beyond the school walls, bringing improvement not only to his or her well being, but also to that of the family and the society. Government initiatives like Sarva Shiksha Abhiyan (SSA), School Sanitation and Hygiene Education (SSHE) component of Total Sanitation Campaign (TSC) and Nirmal Gram Puraskar has brought in many changes in the sanitation facilities at schools. Political and administrative commitment is evident at National level by Central Government's National Bal Swachatha Mission and Swacha Bharat campaign.

The present environment and sanitation facilities at many of the schools are not fully satisfactory. It is required to provide the future citizens of the nation with a healthy school environment. Drinking-water should ensure microbiological safety. Microbiological quality is of overriding importance. The water supplied must be free of pathogens and protected from contamination inside the school itself. Drinking-water supplied to schools should meet national standards and follow WHO drinking-water quality guidelines. Drinking-water should be available throughout the school day, and children should be encouraged to drink it, because even minor dehydration reduces children's ability to concentrate, and may damage their health in the long term.

Attitudes towards sanitation at schools need to be addressed by training teachers and school administrators. Good models like “Girls friendly toilets” need to be extended to all schools. Regular chlorination of wells at schools has to be ensured. The school health program of National Health Mission should give thrust to water, hygiene and sanitation practices at the schools also. Intersectoral coordination with departments of education, health, water and local self-governments are essential. Many schools don't meet the standards because they lack resources, skills or adequate institutional support. These issues need to be addressed. Also maintaining acceptable conditions requires ongoing efforts at all levels. The role of the school health committee or equivalent body in ensuring regular monitoring of water, sanitation and hygiene conditions is critical. Local Self Governments may own the promotion of water, sanitation and hygiene at intermediate level, since they are critical to support community managed service provisions.

END NOTE

Author Information

1. Dr. Rakesh PS, District Epidemiologist, National Health Mission, Kollam, Email:rakeshrenjini@gmail.com
2. Dr. Usha S, PhD. Department of Zoology, SN Women's college, Kollam,
3. Dr. Subhagan S, District Program Manager, National Health Mission, Kollam,
4. Dr. Shaji M, Dy. District Medical Officer, Kollam,
5. Dr. Sheeja AL, District Reproductive and Child Health Officer, Kollam,
6. Mr. Faizal Subair, School Health Co-ordinator, National Health Mission, Kollam

Conflict of Interest: None declared

Cite this article as: Rakesh PS, Usha S, Subhagan S, Shaji M, Sheeja AL, Faizal Subair. Water Quality and Sanitation at Schools: A Cross Sectional Study from Kollam District, Kerala, Southern India. *Kerala Medical Journal*. 2014 Sep 30;7(3):62-65

REFERENCES

1. United Nations Children's Fund. Levels & Trends in Child Mortality. Report 2014. New York.
2. Snel M. School Sanitation and Hygiene Education. Thematic Overview Paper IRC International Water and Sanitation Centre Delft, The Netherlands. 2003. p. 8.[Source]: <http://www.ircwash.org/sites/default/files/Snel-2004-School.pdf>
3. UNICEF. Water, Sanitation and Hygiene (WASH) in Schools. A companion to the Child Friendly Schools Manual. New York.
4. World Health Organization. Water, sanitation and hygiene standards for schools in low-cost settings. 2009. Geneva.
5. World Health Organization. Guidelines for drinking-water quality. Surveillance and control of community supplies.1997. Geneva.