



Original Research Article

A comparative study of the sanitation practices between urban and sub-urban school children in Jessore District, Bangladesh

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This study was conducted in 19 urban and sub-urban primary and secondary schools of Jessore district of Bangladesh where 226 respondents between the age of (6 to 15) years from those schools were selected randomly and interviewed with the use of a questionnaire to find out comparative sanitation practices during school time. In the surveyed schools, toilet using (No of Students per Toilet) ratio was 71:1 that varies in urban 58:1 and in sub-urban area 103:1. Although 95% of sub-urban students use tube-well water for drinking purpose, only 10% of them get the facilities of water purification system (filter). On the other hands 51% students of urban schools use tube-well water for drinking purpose but 70% of them get the facilities of water purification system. During school time 42% students of urban schools wash their hand before taking snacks, while only 29% students of sub-urban schools do that. The scenario is quite different in case of hand washing practices, where only 22% of urban students and 50% of sub-urban students use soap as hand washing material after defecation, as reason they said that, soap is absent in most of the urban schools toilets.

Key words: Sanitation practice, purification system, drinking water, waste dumping, hand washing.

INTRODUCTION

Every year, about two million people die due to diarrheal diseases. Amongst them most of the deaths occur in children under the age of five years old (WHO, 2013). In developing countries like Bangladesh poor school sanitation practices and hygiene behavior is a major problem and remains a high risk behavior among school going children, causing many students to fall ill and even to die. Many gastrointestinal infections have been linked with primary schools (UNICEF, 1998). This research paper is designed to assess the factors which are influencing sanitation practice and hygiene behavior among school children. This study also focuses on comparing the hygiene practices among the school children of urban and sub-urban areas. It is estimated that, 1.9 billion school days could be gained if the Millennium Development Goals (MDGs) related to safe water supply and sanitation are achieved and the incidence of diarrheal disease is reduced (Hutton and Haller, 2004).

The major causes of mortality for children under five are improper sanitation, water scarcity, and low water quality. Inappropriate hygiene behaviors are disastrous for infants and young children. These types of conditions are also injurious to the health of school-going children. The physical environment and cleanliness of a school facility significantly affects the health of children. Disease tracts quickly in closed spaces with less ventilation, where hand-washing facilities or soap are not available, and the toilets are in ruination. Now it can be said, schools are the potential places of child illness. (WASH in school, 2011)

In Bangladesh about 83.5% of the schools have water supply sources in the school areas, access to functional water supply in the schools are 76.1% in primary schools area and 90.6% in high school areas. On average, the number of functional water points in schools is 1.1. It is reported that, about 79.1% of schools

depend mostly on shallow tube-well for their water. In context of water supply virtually there is no difference among schools and madrassas at the secondary level (WASH in school, 2011; WHO, 1994).

Rationale of the study

Schools are the most important places of learning for children after family. The students have a central place in the community. Schools are exciting learning environments for children and initiate change to society. If sanitation facilities in schools become available, students can play an important role. They can act as models, and teachers can function as role models. Schools may also influence communities of the respective area through extraordinary activities, through their students. Schools are in a link with a large proportion of the households in a community in a country (UNICEF, 1993).

A study among school children represent that about half of the diseases found are related to unhygienic conditions and lack of personal awareness. Again, it is generally avowed that childhood is the best time for children to learn about hygiene behaviors at home or school. Children are the posterior parents and their knowledge about hygiene behavior is likely to be applied for the rest of their lives. Children are eagerly agreed to learn, teach and help to others and they can take care of their own health and the health of surroundings people. Children are also likely to confirm the sustainability of a program's impact in future which must be helpful for the community as well as the nation (IRC, 1993).

In rural areas, school-based hygiene, sanitation and water treatment programs increase student knowledge about hygiene, and decrease absenteeism in school. Primary and secondary school programs need to be arranged for the prevention of diarrhea by developing drinking water and hand washing stations in schools, teaching students about sanitation, hygiene and water treatment and encouraging them to share the messages with their families (Patel et al., 2012).

The aim of the study is to find out the existing sanitation and hygiene practices of students in the schools of urban and sub-urban areas in Jessore and to make comparisons between them.

MATERIALS AND METHODS

Jessore district is located in the south-western borderline of Bangladesh and the first district of joint Bengal and now the 13th largest district in Bangladesh. The area of Jessore is 2606.94 sq km. It is under Khulna Division. There are 8 Upazilla (sub districts) in Jessore district named- Jessore Sadar, Ovoinagor, Bagharpar, Sharsha, Monirampur, Keshobpur, Jhikorgacha and Chowgacha containing 92 Unions, 1254 Mauzas and 1419 Villages

(Figure 1). The Geo position of the district is between 22°47' to 23°47' North latitudes and between 88°40' to 89°50' east longitude. (Source: Jessore District Information, 2015). According to the latest report the total population of Jessore district is 27,64,547 (Male- 13,86,293 and Female-13,78,254), with a male:female ratio is 101:100, population density of 1060/Sq Km and annual growth rate is 1.11%. The literacy rate of Jessore district is 56.50% (Male- 59.40% and Female- 53.70%), School attendance rate is 58.30% for the 5 to 24 years age group. The total number of educational institutes are 1663 including Government Primary school: 662, Registered Primary School: 481, Community Primary School: 85, Junior High School: 100, High School: 335. (Source: Jessore District [Accessed 25th July, 2015] <http://www.kabirhat.com/bangladesh-district/jessore.html>)

The research was carried out among the students of urban and sub-urban primary and secondary schools and their teachers to ensure authentic information about the sanitation status of the respective school. This study was conducted in 9 schools in urban area and 10 schools in sub-urban areas of Jessore district among which 226 students were chosen by using simple random sampling technique. The visited students were around the age of 6-15 years. The class variation was one to ten respectively. A school based descriptive cross-sectional study was conducted in Jessore District of Bangladesh to collect information concerning sanitation practices in schools. A structured questionnaire and observational checklist were used to collect data that was pre-tested on 10 students in a similar school in the study area which was not included in the study. The questionnaire consisted of: demographic information (gender, age), parent's educational status (illiterate, literate or educated) and knowledge questions on the three key hygiene behaviors according to World Health Organization that is water handling, latrine utilization, and hand washing practices.

RESULTS AND DISCUSSION

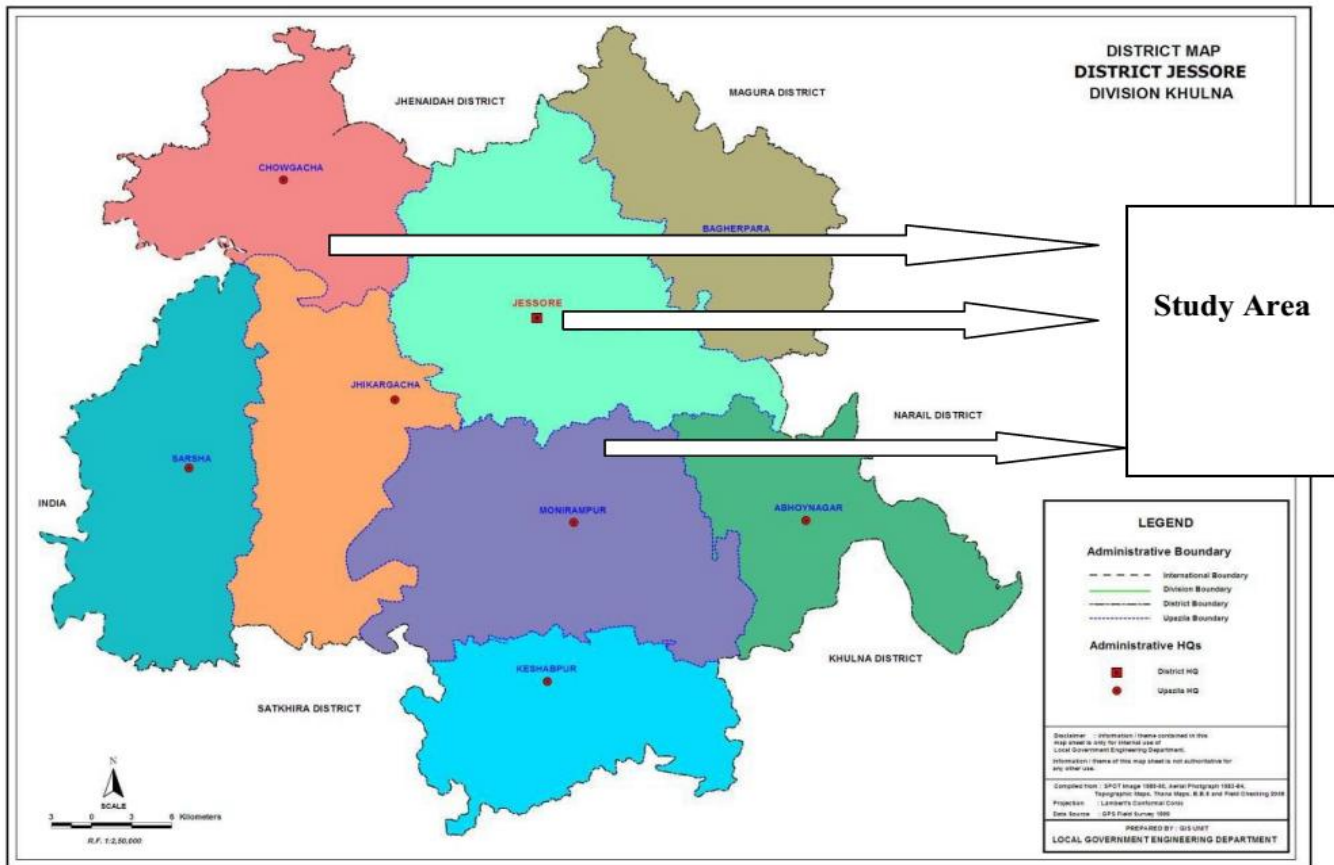
Family status and age of the students

In the study area among 226 students about 44% students were from middle class families most of which are in urban school. Were as 24% student's families were under poverty line and 5% student's families were under severe poverty line most of them were in rural school.

In the study population about 49% students' age were in the group of 11-14 years, 28% students were in the age of 7-10 years and 19% students were in the age of above 14 years.

Educational status of the student's family

From the survey result it has been found that about 18% respondent's family were illiterate, 39% respondents were educated and the major percentage (43%) student's



Source: LGED

Figure 1: Map of the Study Area

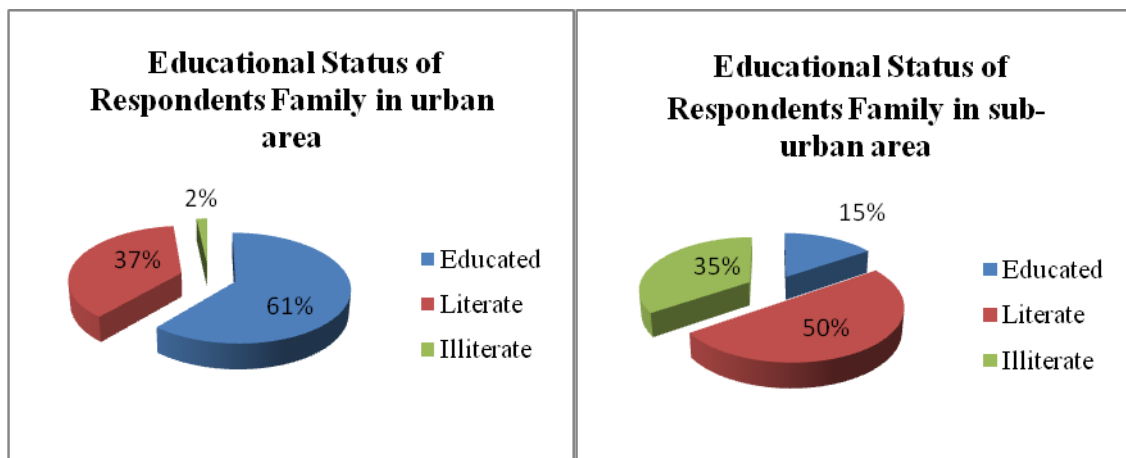


Figure 2: Educational status of the respondent student’s family in urban and sub-urban area

families were literate. The percentage of educated family is more in urban area (61%) comparing with sub-urban area (15%). In urban area the literacy rates of the families were 37% and in sub-urban area the literate families were 50%. On the other hand most illiterate families were found in sub-urban area (35%) and in urban area the illiterates are only 2% which is shown in the Figure 2.

Number of toilets and frequency of toilets cleaning for the school children

The Table 1 below shows the total number of students in urban and sub-urban areas schools and the number of toilets for the students in schools. From the table it has been found that, in urban area’s school the ratio of student

Table 1. Ratio of students and toilet in urban and sub-urban area

School in area	Number of students	Number of toilets	Ratio(Student: Toilet)
Urban	8498	147	58:1
Sub-urban	5910	57	103:1
Total	14408	204	71:1

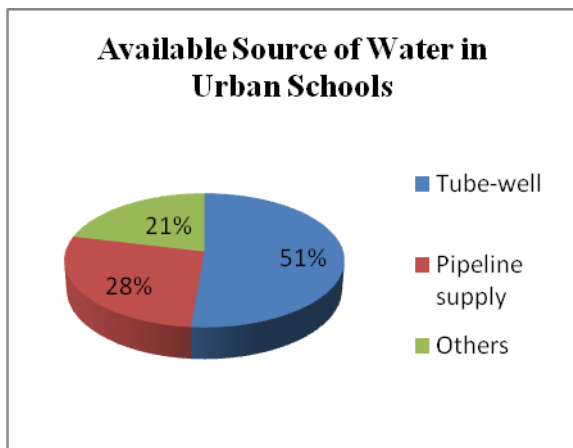


Figure 3: Available source of water in school

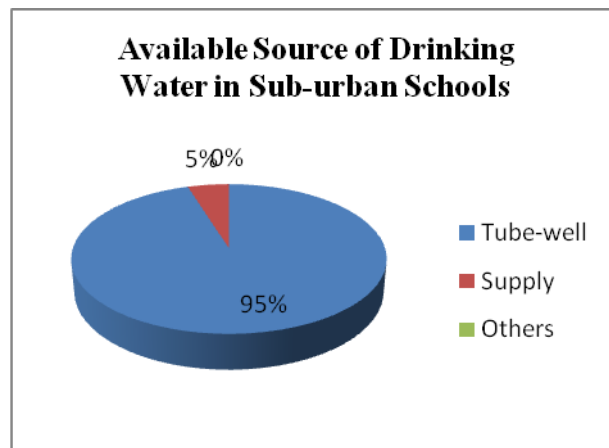


Figure 4: Available source of drinking water in School

and toilet is 58:1, the condition in sub-urban areas school is more crucial. Here the no of student: toilet ratio is 103:1. The average ratio is 71:1 that is for every 71 students have only 1 toilet to use which is not enough to maintain proper hygiene.

From the survey data it has been also found that in most of the schools the toilet is clean up between 3-5 days interval which is also not enough to maintain proper hygiene.

Available source of water in the school

Sources of water are very important for maintaining proper sanitation. From the study area it has been found that the available source of water in the school is mainly the deep tube-well (51%) and the other important sources are the pipeline supply (28%) and various sources (21%). In context of drinking water the major source is deep tube-well water (95%) and only 5% students take supply water for drinking purposes which is shown in the following Figures 3 and 4. The findings from this section are similar to (WASH, 2011) where tube-well is the most common source as reported in 79.1% of schools and also have some non-functional water point for schools use.

Availability of water purification system in school

In the study area, only 38% students can get the facility of water purification system. So we can ensure that most of the students have no facility of purified water from water purification system. About 62% students have no way to

get pure water from water purification system. So they depend on tube-well water to drink directly. According to (WASH, 2011), 80 percent primary and secondary school's water are acceptable for drinking in terms of photoreceptive requirements.

In the comparison between percentages of urban and sub-urban area the picture is not good in sub-urban area. In sub-urban area only 11% students get the facility of water purification system. And in urban area 66% students get the facility which is shown in the Figure 5. In sub-urban area the main problem is unawareness and lack of budget. They think tube-well water has no problem and some students from urban area also think the tube-well water is good.

Status of hand washing practices before taking food in school

Hand washing is one of the major criteria in sanitation. Sanitation cannot be fulfilled without issues of hand washing. In school time almost 100% students wash their hands properly with water when they eat rice as they have said during survey time. But in school when they take snacks, 64% students do not wash their hand and only 36% students wash their hands with water. The findings concur with (NETWAS, 2003) who found that only 47 % of pupils washed hands before meals while 53% did not.

The school children of sub-urban area are lagging behind more in washing hand before taking snacks in school than the urban students. When 42% students of urban area wash their hand before taking snacks, only 29% students of sub-

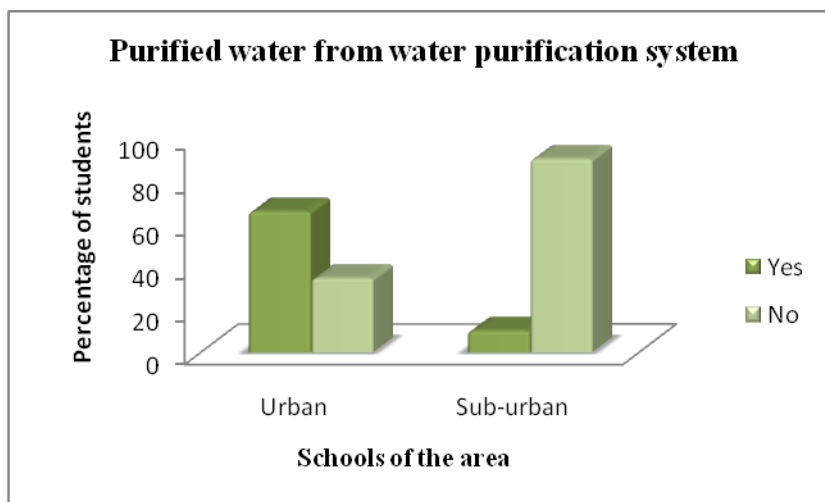


Figure 5: Comparison of getting pure water from water purification system between urban and sub-urban school

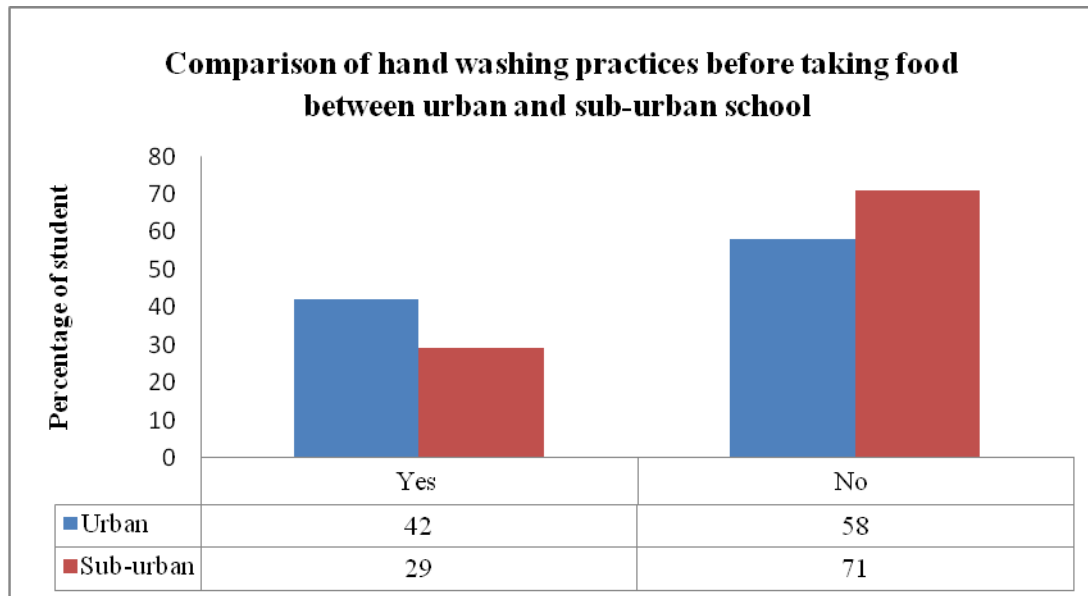


Figure 6: Comparison of hand washing practices before taking food between urban and sub-urban school

urban area do that. But here the students who do not wash their hand properly before taking food in school their percentage are higher in both the urban area (58%) and sub-urban area (71%). The percentages of students who are not aware about washing their hand before taking food are showing in Figure 6 above.

Status of hand washing after defecation and washing substances

All of the interviewed students said that they washed their hand after defecation but when asked about the washing materials most of them said only water. In a simple word, it could not be said as washing the hand. However the

students of the visited school used either only water or solid soap. But the soap using student's numbers were very little (36%) with comparing only the water using pupils (64%) which is shown in the Figure 7. This is similar to the Turkey studies (Yalcin et al, 2004) where an average of 37.7% children and 42.4% of school children, respectively, washed their hands with soap.

The comparison between urban and sub-urban area shows that in urban area most of the school children do not use soap for hand washing after defecation. Only 22% students use soap and 78% students use only water for hand washing after defecation. On the other hand in sub-urban area 50% pupil use only water and 50% pupils use solid soap for hand washing. Here most of the head teacher

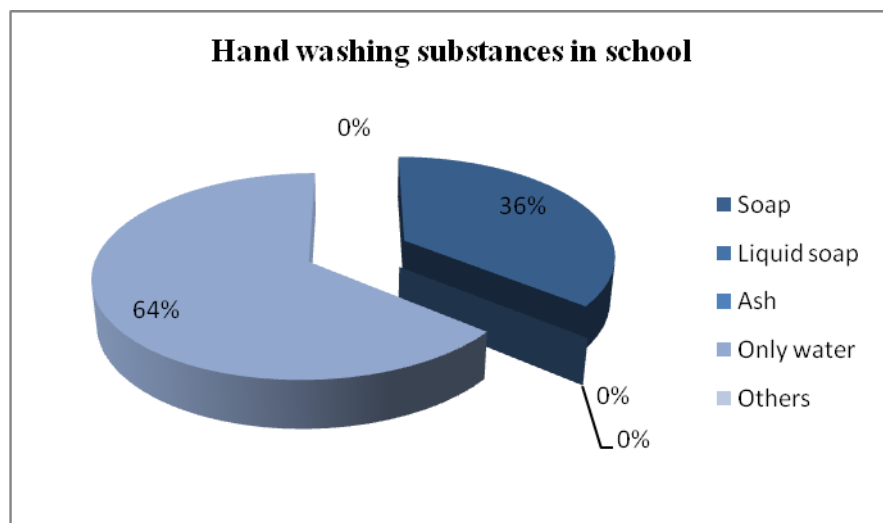


Figure 7: Substances used for hand washing in the school

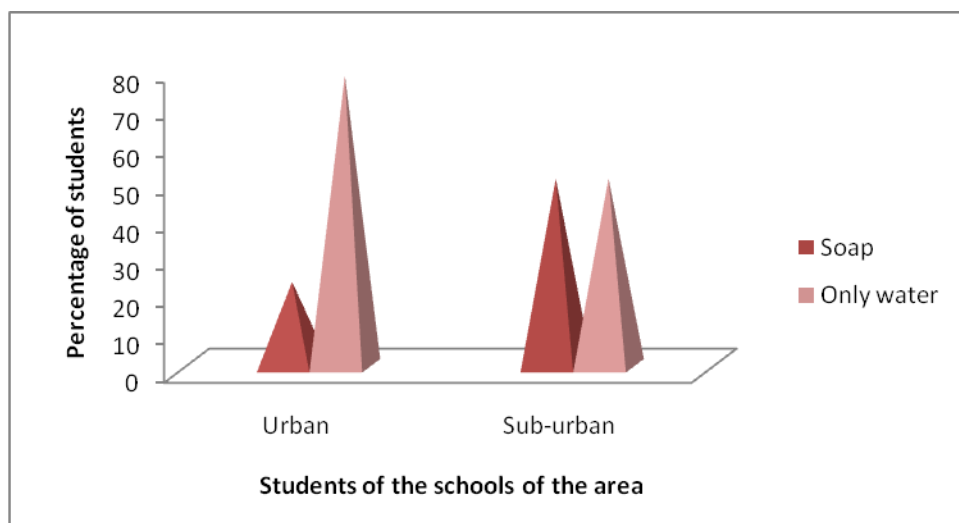


Figure 8: Comparison of hand washing materials between urban and sub-urban area

of urban school opined that most of the students did not use toilet, so soap was not available in toilet. But when the students went toilet suddenly they did not find the soap and so they did not use. But in sub-urban area students used toilet frequently and 50% students got the soap facility which is shown in the Figure 8.

Health status of the school children

From the survey result it has been found that about 23% students’s health status was very good, 46% students were moderately good in health and the rest 24% and 9 % were average and not well accordingly. The similar condition was found by WHO (1985) that the health status of school children were not good in developing countries due to transmission of diarrhea and worm infections.

From the Figure 9 it has been found that, 33% school children in urban area were very good in health and only 13% students in sub-urban area were in very good health condition. But the moderately good health was almost same in urban and sub-urban area. The average health was 33% in sub-urban and only 15% in urban area. From the figure has been also found that, the percentage of unhealthy students is more in sub-urban area comparing to urban areas student, the probable reason is the lack of awareness among sub-urban family.

Medical Facility and Awareness Programs in School

Every school should have some primary medical facilities but in the survey schools only 21% students got the primary health care facility from school and major part of

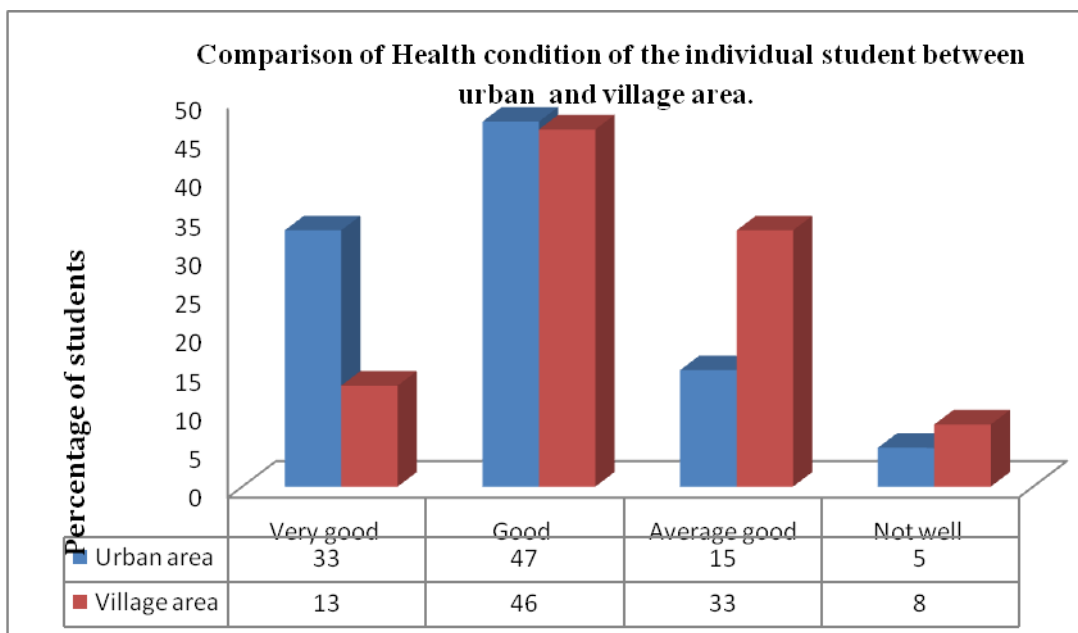


Figure 9: Comparison of health status between urban and sub-urban school children

students (79%) do not get the facility from their school.

Again in the survey schools only the NGOs play some roles in maintaining proper sanitation and hygiene practice by arranging meeting on sanitation for building the awareness of the school children. But it is matter of great concern that no government organizations have such roles. From the study result it has been found that only 52% students get the opportunities to attend in the seminar on sanitation arranged by NGOs and the rest cannot attend because of lack of facilities and awareness. The picture is same both in the urban and sub-urban area. Here it is important to say that school authority do not arrange any meeting on sanitation without the help of NGOs.

Conclusion

School plays an important role to share knowledge and life skill training relevant to water and sanitation related practice. Water supply and sanitation practice is directly related to human lives. Bangladesh as a developing country faces the severe problem in this regards. In the study area, it is found that, about half of the students are from middle class family, the percentage is 44% and most of the respondent students are in the age of 11-14 years. Both in urban and sub-urban area there is a great difference in both literacy and social status. So generally it is common to search the differences in sanitation practice of the schools of the different area. The study shows that the ratio of student and toilet is 71:1 in the study area where 58:1 in urban area and 103:1 in sub-urban area. As the school children are between the ages of 06-15 so in more cases they have no proper knowledge to use toilet

and how to manage it so the toilet becomes useless in the near future.

In case of drinking water about 95% students depend on deep tube-well in the study area but only 11% students get the facility of water purification system sub-urban area but in urban area 66% students get the facility. In our country nobody can ensure deep tube-well water is safe for drinking. The hand washing scenario of the study area represents that only 36% students wash their hand before taking food in school time. Whereas, after defecation 64% students use only water for washing their hand and only 36% students use soap for washing their hand. In the study school most of the sanitation systems are cleaned up 0-4 day's interval. The overall health status is not bad as 47% in urban and 46% in sub-urban area's students have a good health. About 50% schools do not arrange the sanitation meeting but most of the students get training from their family. The hospital facility in the school is not good in Jessore district only 21% school have their primary treatment facility.

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REFERENCES

- Hutton G, Haller L (2004). Evaluation of the Costs and Benefits of Water and Sanitation Improvements at the Global Level. World Health Organization, Geneva.
- IRC (1993). Saneamiento escolar y educación higiénica en América Latina : documento de trabajo. The Hague, The Netherlands, IRC International Water and Sanitation Centre.
- Network for water & sanitation (2003). Study on sustaining changes in hygiene behaviours, Kenya. Available at. <http://www.netwasgroup.com/newsletter/article/2002/09/09?printVersion=true>.
- Patel MK, Julie P, Harris JR, Patricia Juliao, Nygren B, Were V, Kola S, Sadumah I, Faith SH, Otieno R, Obure A, Hoekstra RM, Quick R (2012). Impact of a Hygiene Curriculum and the Installation of Simple Hand washing and Drinking Water Stations in Rural Kenyan Primary Schools on Student Health and Hygiene Practices. *The American J. Tropical Medicine and Hygiene.* 87(4): 594-601.
- UNICEF (1993). School sanitation package for primary school. Kathmandu, Nepal, UNICEF, Water and Environmental Sanitation Section.
- UNICEF (1998). A manual on school sanitation and hygiene. In *Towards Better Programming Water, Environment and Sanitation Technical Guidelines.*
- UNICEF (2011). Assessment of Water, Sanitation and Hygiene (WASH) Condition in School.
- WHO (1994). Hygiene education and environmental sanitation in schools in Vietnam: the report of a project identification and formulation workshop, Hanoi.
- WHO (2013). Water Sanitation Health. Water supply, sanitation and hygiene development
- Yalcin SS, Yalcin S, Altin S (2004). Hand washing and adolescents. A study from seven schools in Konya, Turkey. *Int. J Adolescent Medicine and Health.* 16:371-376.