Asian Journal of Water, Environment and Pollution, Vol. 5, No. 1, pp. 13-15.

Water Supply and Sanitation Condition of Slum Areas in Dhaka City

Md. Shahjahan Kaisar Alam Sarkar* and Md. Mafizur Rahman[1]

Dept. of Civil & Environmental Engineering, Shah Jalal University of Science and Technology, Sylhet, Bangladesh
[1]Dept. of Civil Engineering, Bangladesh University of Engineering and Technology, Dhaka, Bangladesh
✉ kajal_cee@yahoo.com

Received October 24, 2005; revised and accepted July 18, 2007

Abstract: About 19.4% of the total population of Dhaka city live in the slum and squatter areas. Therefore, the environmental condition of these areas significantly affects the environment of entire Dhaka city. The water supply, sanitation, wastewater and solid waste disposal practices of these areas are very unhygienic. In the context of environmental pollution, newly established slums are of more concern than well established slums.

Key words: Environmental condition, sanitation, solid waste, water supply, wastewater.

Introduction

The total number of slums and squatters within the Dhaka City Corporation (DCC) is 3007 (CUS, 1996). Urbanization, rural pushes (landlessness, unemployment, natural disasters etc.) and urban pull (employment opportunities) are the major reasons for migrating rural poor to the cities (Mamtaz and Akter, 2004). About 19.4% of the total population of Dhaka city live in the slum and squatter areas (CUS, 1996). The environmental condition of these areas significantly affects the environment of entire Dhaka city. The people of these areas are extremely poor and deprived of basic urban utility services viz. safe water supply and sanitation, wastewater and solid waste disposal facilities, health services (ADB, 1996).

Methodology

A study was undertaken to assess the environmental conditions of the slums of DCC area, and to identify the deficiencies for the improvement of existing situation (Sarkar, 2000). In order to achieve the objectives a comprehensive literature review, several surveys and field visits, and a questionnaire survey were conducted. The duration of the study was thirteen months.

Selection of Study Area

Almost 46% inhabitants of Mohammadpur area live in slums and squatters, which is higher than any other part of Dhaka city (CUS, 1996). So Mohammadpur area was selected for this study. Some well-established slums (Mohammadpur Ring Road Bastee, MSA Samaj Bastee and Town Hall Bastee) designated as 'Area 1' and some newly established slums (Mohammadpur West Beribadh Bastee, Mohammadpur Katasuri Beribadh Bastee, Beribadh 3 no. unit Bastee and Beribadh 4 no. unit Bastee) designated as 'Area 2' from Mohammadpur area are selected for analyses.

Parameters Analyzed

Various parameters such as water supply, sanitation, waste water and solid waste disposal, diseases and hygienic condition, satisfaction with present services were selected for analyzing the existing environmental condition of the selected study area.

Field Visit and Survey

Several surveys and field observations were performed to depict the existing situation. A questionnaire survey

*Corresponding Author

was also conducted upon 50 respondents (selected randomly) of each area. Relevant information was gathered from different organisations.

Results and Discussion

By extensive field observations, a comparative feature of environmental condition of both areas is drawn.

Water Supply

The main source of water supply in 'Area 1' is the Dhaka Water and Sewerage Authority (78%), which is followed by neighbouring residence/pond/river (12%), community water point (8%) and NGO water point (2%). Every family has to pay Taka 30 per month to get approximately 50 to 70 litre water per day, which is not sufficient for a family of 4 to 8 members. Moreover the system is irregular also. On the other hand, the main source of water supply in 'Area 2' is the water point provided by an NGO named SEP-Bangladesh (53%), which is followed by DWASA water supply (20%), neighbouring residence/ pond/river (15%), and community water point (12%). Water point is basically a storage facility where water is stored from DWASA main lines. Every family has to pay TK 20 per month to get this facility. In contrast, the average water supply coverage of slum areas of entire Dhaka city is 76.1% (CUP, 1998). The water supply coverage in 'Area 2' is very low as it is not yet permanent and the income level of the dwellers is low (average monthly income TK 1500- 2500). The services are not yet sufficient in 'Area 1' also. The queues and the long time (15 minutes or higher) taken to collect water show the level of inadequacy of services.

Sanitation

The highest sanitation option in 'Area 1' is sanitary latrine (43%), which is followed by unsanitary latrine (41%) and open defecation (16%) as shown in Figure 1. In 'Area 1' some sanitary latrines are found but not sufficient and clean. In peak time (6.30 to 8.00 AM), queue is observed for using the latrines and some are bound to defecate in open area or nearby drain due to the non-availability of latrine. On the other hand, the highest sanitation option in 'Area 2' is unsanitary latrine (57%), which is followed by open defecation (22%) and sanitary latrine (21%) as shown in Figure 2. In contrast, the average sanitary latrine usage of slum areas of entire Dhaka city is 30% (CUP, 1998). Most of the latrines in 'Area 2' are hanging latrines with bamboo, wood, tin or sags superstructure and the human excreta are disposed to nearby water body, canal, drain and even to the open ground surface as shown in Figure 3. The open disposal of human excreta pollutes the nearby water bodies causing severe water pollution. The sanitation practice indicates that in question of pollution, 'Area 2' is of more concern than 'Area 1'.

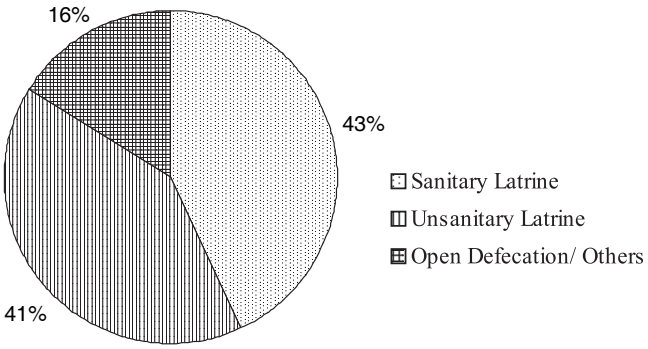

Figure 1: Sanitation scenario in *'Area 1'*.

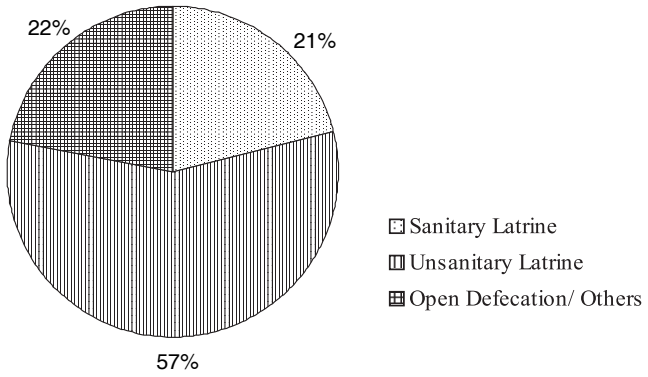

Figure 2: Sanitation scenario in *'Area 2'*.

Figure 3: Photograph showing the common sanitation practices of *'Area 2'*.

Wastewater Disposal

In 'Area 1' some concrete and kachha drains are available which carry the wastewater to the conventional sewerage system. Disposal in such drain (54%) is more frequent in 'Area 1' which is followed by disposal in nearby water bodies (32%) and open area (14%). But no conventional wastewater disposal system is available in 'Area 2'. Disposal in nearby water bodies (48%) is more frequent in 'Area 2' which is followed by disposal in open areas (42%) and kachha drain (10%). Disposal in nearby water bodies, open areas and kachha drains cause severe environmental pollution.

Solid Waste Disposal

Food waste, paper, rubbish, ashes and residues, special wastes such as street sweeping, roadside litter and abandoned vehicles are the main solid wastes in the study areas. Some municipal dustbins are found in 'Area 1' for solid waste disposal, but not sufficient and the inhabitants have to dispose solid wastes in open spaces and road sides. In contrast, in 'Area 2' solid wastes are disposed on the open field and in the nearby water bodies that is very vulnerable for the deterioration of environment.

Diseases and Hygiene Condition

Health and hygienic facilities of both areas are in the worst condition, no disinfection practice (e.g. boiling of water) is available to treat water. Therefore, waterborne diseases such as diarrhea, typhoid and paratyphoid fever, jaundice, amoebic dysentery, bacillary dysentery etc. frequently occur in both areas. Besides safe distance between water point and latrine is not maintained in most cases that are very harmful for human health.

Physical Environmental Condition

Environmental stratification survey has been conducted to assess the physical environment of the area. According to the environmental hazard exposure, the physical environmental condition of 'Area 1' is better than 'Area 2' as shown in Table 1.

Table 1: Rating allocated to different facilities in the selected slum areas

Parameters	*'Area 1'*	*'Area 2'*
Water supply	1	2
Sanitation	1	4
Wastewater disposal	2	3
Solid waste disposal	2	3

Rating: 0—Very good, 1—Good, 2—Reasonable, 3—Bad, 4—Very Bad

Willingness to Pay

The people of both the areas are quite responsive to pay for getting improved services. A survey (conducted out of 100 persons in each area) shows that the willingness to pay (Tk 50 per month per family) is 100% for the inhabitants of both areas, which reveals that interventions may be taken by different government agencies and the NGOs.

Conclusion

The sanitation options of both areas are in the worst condition. Only 43% and 21% latrines are sanitary in 'Area 1' and in 'Area 2' respectively. A significant amount of open defecation (16% in 'Area 1' and 22% in 'Area 2') is also found. The open disposal of human excreta pollutes the nearby water bodies, canals and drains causing severe water pollution. Disposal of solid wastes and wastewater in open space and open drains also causes a severe hazardous condition. It is evident that in the context of environmental pollution, 'Area 2' (newly established slums) is of more concern than 'Area 1' (well established slums). The deteriorated scenario causes severe environmental degradation affecting the environment of entire Dhaka city.

Acknowledgement

The financial support by Bangladesh University of Engineering and Technology, Dhaka is highly acknowledged.

References

ADB (1996). Draft final report of Urban Poverty Reduction Project (UPRP). *In:* Bangladesh under ADB TA 2410-BAN, Asian development Bank, Dhaka, Bangladesh.

CUP (1998). Baseline survey of environmental sanitation, hygiene and water supply in urban slums of Dhaka city. Coalition for the Urban Poor, Dhaka.

CUS (1996). A comprehensive summary report on slums and squatters of Dhaka city. Centre for Urban Studies, Dhaka.

Mamtaz, R. and A. Akter (2004). Water supply, sanitation and solid waste management situations of slums in Dhaka city. Proceedings of International Conference on ISEM, Bangladesh University of Engineering & Technology, Dhaka, 7-8 January.

Sarkar, M.S.K.A. (2000). An assessment of water supply and sanitation condition of slum areas in Dhaka city. B. Sc. Engg. Thesis, Dept. of Civil Engineering, Bangladesh University of Engineering & Technology, Dhaka.

Asian Journal of Water, Environment and Pollution

Volume 2 Number 2 **July – December, 2005**

Contents