

# Assessment of non-household toilet facilities in the Kathmandu Valley, Nepal

*In this study non-household toilet facilities in the Kathmandu Valley have been assessed.*

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## Abstract

This study attempted to understand and describe the state of the non-household toilet facilities located in the Kathmandu valley of Nepal. The premises of 100 toilet areas were visited, of which 98 were assessed for pre-defined basic toilet parameters using pre-designed forms. Nearly two thirds of the toilets had no soap or detergent for hand washing. Nearly 82% of the toilet facilities (n=80) had hand wash basins. 81% of the toilet areas had tapped running water for the purposes of for hand washing, hand rinsing and flushing. 87 toilet areas (89%) had no facilities for drying hands. Cleaning duty rosters were absent in all toilet facilities. Only 37 toilet sites had waste bins. Most of the toilet facilities in the Kathmandu Valley are poor in sanitation and hygiene. There is an urgent need for maintaining and improving toilet conditions and associated hygiene.

## Introduction

Health and hygiene are closely related; hygiene and sanitation are the determinants of socio-economic development (Mara et al., 2010). The United Nations General Assembly in 2010 recognized sanitation as a human right (UN, 2010). In the face of rapid and unplanned urban growth worldwide, ensuring sanitation in urban areas is a major challenge to the concept of healthy cities floated by the World Health Organization. Urban areas in developing countries have to cope with large population increases while lacking in essential physical and social infrastructure, therefore putting public sanitation facilities including non-household toilets under strain. More than two and half billion people worldwide are reported to face lack of adequate sanitation which contributes to nearly 10% of the global disease burden, particularly of diarrheal diseases (Mara et al., 2010). The UN's millennium development goal 7, target 7.C is to halve the proportion of the population without sustainable access to safe drinking water and basic sanitation by 2015 (UNDP, 2012a). The coverage of water supply and sanitation in the South-East Asia region (including Nepal) was reported to be 81% (urban 85% and rural 80%) and 27% (urban 75% and rural 20%) respectively (Thompson and Khan, 2003). But when the functionality of water comes into account, the coverage falls to as low as 53% (Water Aid Project, 2012).

Safe and sufficient water and improved sanitation is one of the most effective ways to improve public health (Poverty-Environment Partnership, 2005). Furthermore, the state of public toilets can serve as an indicator of the hygiene and sanitation practice of any population. Toilet practices among people seem to depend on and are influenced by the access to water. Therefore, water availability becomes one of the important assessment parameters to consider. Adequate sanitation not only can prevent endemic diarrhoea, but also can help prevent intestinal helminthiasis, giardiasis, schistosomiasis, trachoma, and numerous other globally important infections (Bartram and Cairncross, 2010). Human-associated bacteria can dominate most public toilet facility surfaces (Flores et al., 2011). Hand washing practice with soap after the toilet use reduces the risk of endemic diarrhoea up to 47 % (Curtis and Cairncross, 2003). Therefore, the consequences of hand washing practices to prevent faecal material contracting the susceptible children are utterly important (Curtis et al., 2000). A well-planned toilet provision would include free access to hand washing, efficient hand drying and nappy changing to minimize the likelihood of spread of infection. It is known that the transmission of microorganisms is more effective in wet environments than in dry environments (Patrick et al., 1997). Moreover, damp hands due to ineffective hand

## Key messages:

- Most of non-household toilet facilities in the Kathmandu Valley are poor in sanitation and hygiene making themselves high-potential zones for the origin and propagation of toilet-associated diseases.
- The Nepalese government therefore should urgently bring policies and programs to improve non-household toilet facilities and sanitation practices of people.

drying can lead to higher numbers of bacterial colonization in the skin and helps in spreading harmful microorganisms (Larson et al., 1998). Therefore, hand-washing and hand-drying procedures are thought to be essential for good sanitation and hygiene practices.

Nepal is one of the least developed countries with a population of 26.6 million (Government of Nepal, 2012). Human Development Index puts the country at the 157th position revealing a meager situation of development (UNDP, 2012b). The percentage of the population lacking improved sanitation was reported to be 65% in 2004 (UNDP, 2012c). In another report, 19.8 million people of the country were reported to have no access to sanitation (Water Aid Project, 2012). It is noted that water and sanitation expenditure of Nepal was 0.79 % of GDP in 2010 (Water Aid Project, 2012). Infectious diseases, including diarrhoea, are major morbidities (Rai et al., 2002). In the Mid- and Far-Western regions of Nepal, 25 % of households had neither water nor soap available for hand washing (Government of Nepal, 2011). Therefore, it is important to raise awareness about sanitation issues and create a culture of improved sanitation practices in Nepal. Urban population in Nepal characterizes with its mobility and thus is bound to use non-household toilets frequently. Given the burden of diseases partly or wholly attributable to poor sanitation in Nepal, an understanding of the state of non-household toilets can provide insights into potential avenues for improvements. There is limited information available about the toilets' conditions and sanitation practices in the context of Nepal (Water Aid Project, 2012, Government of Nepal, 2011). Kathmandu Valley, the geographical region in Nepal that includes Kathmandu, Lalitpur and Bhaktapur districts, constitutes the biggest urban area in Nepal with five bordering cities viz. Kathmandu Metropolitan City, Lalitpur Sub-Metropolitan City, and Madhyapur Thimi, Bhaktapur and Kirtipur Municipalities. Therefore, Kathmandu Valley is notably characterized by over-population, congestion, ill-managed physical infrastructures, insufficient water supply and insufficient mechanisms for the disposal of human excreta as well as other kinds of wastes. The valley is nevertheless the most developed area and also the seat of the central government of Nepal. In such context, this study aims to gather baseline information about the conditions of toilet facilities and sanitation situation observed in the Kathmandu valley.

## Material and Methods

### 1. Study design and setting

This descriptive cross-sectional study was designed to assess the condition of toilet facilities in the Kathmandu Valley. One toilet facility (area) in a designated premise can accommodate several toilet units, which are accessible to the public. The toilet facilities located in private households were excluded from the study. Therefore, two general categories of toilet facilities were designated; institutional (means located within schools, restaurants, public buildings, hospitals, etc.) and alone- standing public toilet facility.

One hundred randomly selected toilet facilities, including male and female toilet areas were visited. At institutions with more than one toilet area (e.g. in different storeys of an institutional building), at most one male toilet area and one female toilet area were included and counted in order to avoid repetition and increase representativeness of the study. At lone-standing public toilet areas having more than one toilet/urinal rooms, the total number of toilets and urinals were recorded, and assessment was made of one of the toilets. Of the 100 toilet areas visited, attendants/ authorities did not allow assessment of the two toilet areas. From the 98 visited toilets, 15 were alone-standing public toilet facilities and the rest were institutional toilet areas. Of the institutional toilet areas, 47 were in governmental or government-owned institutions and the rest were in non-government institutions with access to the general public, including private and co-operative institutions, among others educational, culinary and business houses. Of all the toilet areas, 42 were male toilet facilities, 22 were female toilet facilities and the rest (n=34) were gender non-specified or common toilet areas. A total of 202 toilet units for defecation and 164 urinals were covered in the assessment.

### 2. Data collection and analysis

Data were collected during October-November 2011 using pre-designed forms by the investigators. All toilet areas were assessed during daytime, between 11:00-17:00 hours local time. The parameters recorded were types of toilet and ventilation, observed inward traffic of toilet users in five minutes, availability of water (for hand/body-washing and rinsing), hand drying facility, waste bins as well as cleaning rosters, wastes within toilet facilities/bins. The descriptive analyses were performed in Excel 2007.

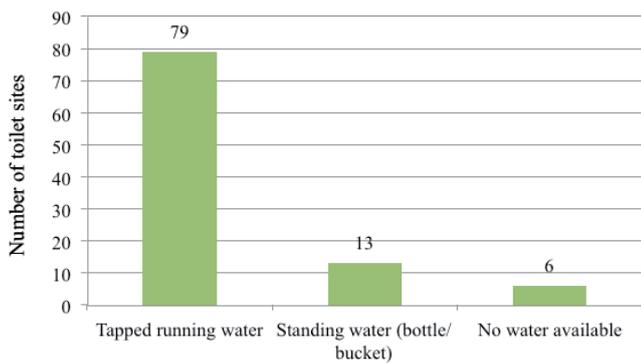
## Results

### 1. Toilet types and ventilations

61 toilet facilities visited had squatting-type flushing toilet units, 33 had sitting-type toilet units and four had units of mixed type. The majority of them (58%) were ventilated through windows, 16% were primarily ventilated by exhaust fans (some of those with exhaust fans also had ventilator windows in addition), 15% were ventilated through gaps in the roof or through gaps between the roof and the walls of the toilet facilities. 5% of the facilities were ventilated through opening on the walls (usually a few bricks missing) while 6% of the facilities had no ventilation at all.

### 2. Inward traffic in five minutes

Among the toilets assessed, the maximum number of people entering within five minutes of observation was 30 for alone-standing toilet facility in the Kathmandu city center, where the facilities had seven toilet units. Analysis of the eight toilet facilities with more than 10 visitors in five minutes revealed four of them to be alone-standing public toilet areas, and the rest to be institutional toilet areas. The institutional toilet facilities included those in a shopping



**Figure 1: Availability of water in the toilet facilities**

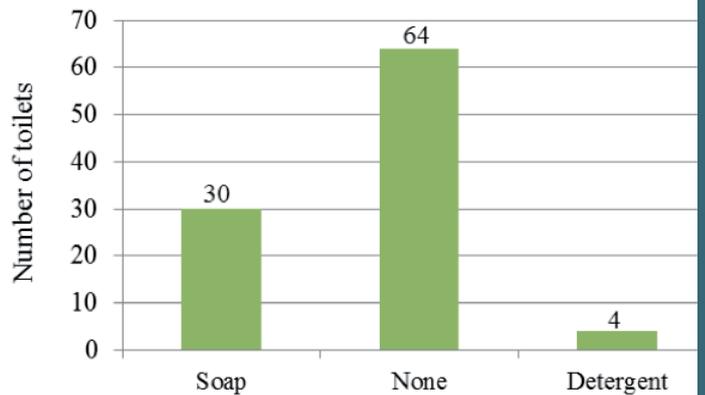
complex, two hospitals and an office of a government-owned commercial bank.

**3. Water sources**

81% of the toilet facilities (n=79) had tapped running water available (inside toilet units) for backside washing and flushing purposes, as well as hand washing purposes. Another 14% (n=13) of the facilities assessed had no running water but rather water standing in buckets/mineral water bottles. No water was present in the toilet premises in six percent (n=6) of the toilet facilities assessed. Figure 1 shows the availability of water in the toilet facilities for the aforementioned purposes. Though the facilities were designed for running water uses (e.g. flushing toilet units, hand-washing basins etc.), the functionality of running water was absent largely due to unmaintained water supply.

Of the toilet facilities with standing water and no water available facilities half were institutional toilets including a district development committee office, a district police headquarters office, an office of a government-owned commercial bank, a private higher secondary school, a government office under the Ministry of Law and a women’s skill-based co-operative office.

The other half of the facilities with standing water were lone-standing public toilet areas at locations including around the Central Ground of Tundikhel, and the bus parks in Gongabu, Bagbazaar, Koteshwor and Lagankhel. In the total 15 lone-standing public toilet facilities located in



**Figure 2: Provision of hand washing (hand disinfection) facility in the toilet areas**

these areas, a total of 53 visitors were found to be availed of them in five minutes.

**4. Hand washing and drying facilities**

The presence of soap or detergent at the toilet facilities for hand washing after toilet use was assessed. Nearly 82% of the toilet areas (n=80) had wash basins for hand-washing purpose with six of them being non-functional in terms of water availability. Nearly two thirds of the toilet areas were found to be devoid of any soap or detergent for hand disinfection (Figure 2). The condition of wash basins observed is shown in Figure 3.

87 toilet facilities (89%) had no facilities for drying hands. Of the 8 toilet areas with > 10 people entering within five minutes 4 had soaps while the rest had no soap or detergent present. An electric dryer was noted in one instance while paper towels were documented in 4 of the cases. In all 9 of the toilets that had clothes towels, the towels looked worn and overused.

**5. Waste bins availability**

Of 98 total toilet areas assessed, 61 lacked waste bins. Four-fifths of the toilet facilities were found to be free of wastes and the rest had wastes within those facilities. Plastics were the most common waste present in 6% of the toilets while cigarette stubs were present in 3% of the toilets. In the remaining toilets with wastes, paper, faecal material on the floor, cotton wools as well as menstrual pads were noted. Of 22 female toilets assessed, 12 lacked bins.



**Figure 3: Pictures showing the conditions of wash basins at the toilets**



**Figure 4: A typical public toilet scene in Kathmandu (left) and an assessment of the condition (right)**

### 6. Toilet cleaning and rosters

In two toilet facilities, cleaning personnel was present at the time of our assessments. Upon asking they stated they cleaned the toilets every day. In several government offices, we were told that there were separate staffs to clean the toilets. Cleaning rosters were, however, not present in any of the toilets assessed.

### 7. Toilet areas of different types

#### a. Hospitals

The hospital toilet areas assessed (11 in total) fell within six hospitals - three public and the other three private. All but one of the toilet areas were deemed to be satisfactorily ventilated. All but another one of the toilet areas had running water. However, there was no soap or detergent present in seven out of the 11 toilet areas.

#### b. Governmental institutions

Of the total 46 visited toilets that were within governmental or government-owned institutions, 39 had running water while 4 had standing water and 3 had no source of water at the time of assessment. Thirty five toilets of them had no soap or detergent available for hand washing. Only 10 of them had soap while one had kitchen detergent.

#### c. Lone-standing public toilets

Of the 15 lone-standing public toilets assessed, eight had soap while seven offered no option for hand disinfection. Similarly, all had water source; seven had standing water while eight had running water. The percentage of lone-standing public toilets with soap or detergent for disinfection was found to be greater than that of governmental or government-owned institutional toilets.

#### d. Restaurants

Six of the toilets assessed were within restaurants. All of them had running water. Five of the six toilets had soap present in the hand washing area.

### 8. General observation

While conducting the study, the caretakers of the public toilets mentioned that if soaps were placed in the toilets, they would be stolen away by the toilet users and that is why soaps were not placed! At a government office with frequent public dealings upon seeing there is no soap, we asked an employee whether that meant the personnel carried on with their work without washing hands with soap after defecation. The reply of the employee using the toilet facility while the assessment was - "What else can we do?" The situation in government offices and the attitude of helplessness in government employees gives reasons to question the government's commitment on sanitation. In most offices, obviously in government offices, senior most government officials had their own toilets attached to their offices. Such toilets were not included in the study. In some instances, in institutions frequented by public it was found that toilets were locked. Upon enquiry this was found to be for use by the staff only.

### Discussion

This work generates baseline data as to the current state of toilet facilities in the most populous urban area in Nepal. The results of our study are expected to aid in realizing the problem facing the Kathmandu Valley and in designing interventions even though our study sample was of limited size. Our study revealed that even governmental institutions' toilet facilities are lacking in essentials like water supply and soap. This finding allows doubt to be cast on the commitment on the part of the government, and should help policy makers and programmers of the government realize the problem on the ground. Our study showed that nearly 2/3rd of toilet facilities were without any soap or means of hand disinfecting agent. The public toilets that we surveyed were paid type where it costs three rupees (equivalent to 0.04 US\$) to get entrance into. Unavailability of soap even in such paid toilets clearly showed the excessive negligence shown by public and

concerned authorities towards the sanitation practices. The evaluation of School Sanitation and Hygiene Education pilot programs in the six developing countries including Nepal has shown that the availability of soap was a major problem in most of the schools (UNICEF and IRC, 2006). In our study, the absence of hand drying facilities in most of the cases (85% of toilet facilities) further exposes another area of ill sanitation practice.

Our findings suggest that the government should work towards defining minimum requirements for alone-standing public toilets as well as toilets in institutions with public access. That should start with provision of running water and soap/detergent/hand disinfectant in all government institutions. Similarly, we visited some very busy restaurants but could not assess toilets because there were none. Whereas Nepal has an act regulating restaurants that requires separate male and female toilets to be within restaurant premises, this is clearly not the case presently.

## Conclusions

A large majority of public toilet facilities in the Kathmandu Valley are aesthetically as well as sanitation-wise poor. The toilet areas have many attributes that make them high-potential zones for the origin and propagation of toilet-associated health morbidities. Therefore, there is need for better efforts from all stakeholders, especially the Nepalese government, to improve the toilet facilities to achieve better sustainable sanitation practice.

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