

# Coliform Presence/Absence Analysis in Ready-to-drink Water of Food Vendors of Kathmandu and Lalitpur Districts

## FACT SHEET *(ENPHO/UNICEF Survey, 2017)*



### Background and Context

Street food are ready-to-eat foods and beverages prepared and/or sold by vendors and hawkers especially in the streets and other similar places (FAO). The street food are one of the cheapest options and are valuable because it has a large significant area supporting the livelihood of millions of urban poor.

With the growing population in Kathmandu Valley, the trend of food vendors has been increasing significantly. The ever-bustling cities of Kathmandu is vigorously developed in terms of street foods in every corners, *chowks* and *gallis*. The pedestrians are more fascinated to the traditional taste with the delights of some local foods. Of the many foods, the fast foods such as *Mo:mos*, *Chowmein*, *Pani Puri*, *Chatpate* and *Sausages* are the popular foods amongst the vendors. Additionally, raw fruits, teas, coffees, curds, ice-creams and some other beverages are also served. It is equally important to serve safe drinking water services on such food stalls to be prevented from various water-borne diseases. One of the important aspects related to the food vendors is the importance and quality of safe drinking water for maintaining the good health status of the population. Many studies have indicated that water is a critical raw material in many street-vended operations. Contaminated water (rich in *E. Coli* pathogens) for drinking and cleaning foods/fruits can create a public health risk.

In this context, ENPHO, an organization working extensively on WASH sector, has undertaken the studies related to drinking water quality and practices of food vendors in Kathmandu and Lalitpur districts, with the support of UNICEF. The studies have been conducted during the monsoon and the post-monsoon seasons. The study findings provides the actual situation of quality and practices of drinking water in those food vendors.

### Study area

The survey respondents are the local food vendors from Kathmandu and Lalitpur District.

### Methodology

The samples were collected from 'ready-to-drink' water i.e. the water provided by the food vendors when consumers asked for drinking. The sample were collected once during the monsoon and, another during the post-monsoon seasons. The results found during the monsoon season was showcased to the respondents and distribution of IEC materials related to PoU (point of use) options were conducted. To see the result after providing the knowledge on appropriate safe use of water treatment methods and safe handling of drinking water, post-monsoon survey was conducted and comparative study was done. The survey was conducted collecting 187 ready-to-drink



water samples during monsoon season and 184 ready-to-drink water samples during post-monsoon season from food vendors using Kobo Toolbox. A drinking water quality testing by using P/A vial (ENPHO Coliform Presence/Absence Vial test Kit) was conducted in order to identify the presence/absence of coliform.

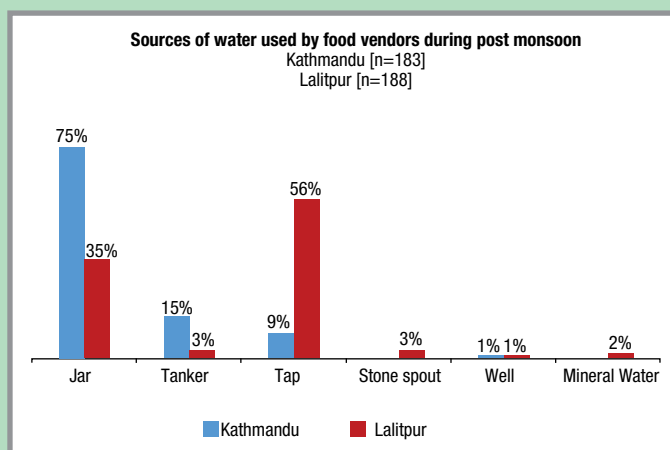
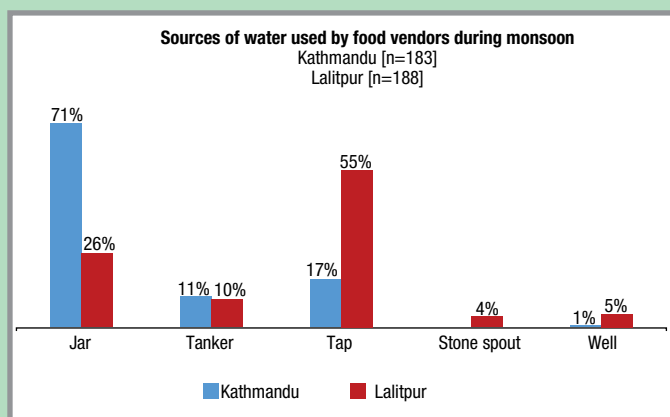
Table 1: Table showing samples collected during monsoon and post-monsoon

Districts	Samples Collected	
	Monsoon	Post-Monsoon
Kathmandu	90	93
Lalitpur	97	91
<b>Total</b>	<b>187</b>	<b>184</b>

## Findings

### Sources of water

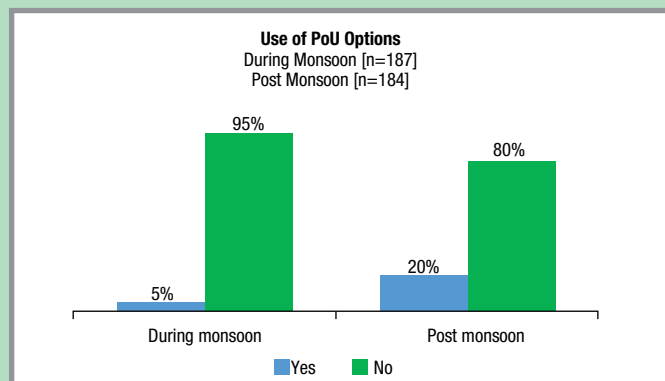
The majority of the sources serving the ready-to-drink water in food vendors was found to be jar water and tap water in both during monsoon and post monsoon season. Majority of the food vendors use jar water as the source of drinking water purpose in Kathmandu district, whereas tap water was the major source of drinking water purpose in Lalitpur district.



### Use of PoU Options

Majority of food vendors were found not using any of the PoU options while serving the 'ready-to-drink' water to the consumers. During the monsoon season only 5% of food vendors use PoU options whereas, after monsoon season, the percentage of using PoU options increased by three folds i.e. 20%.

The survey data revealed majority of used PoU options among the food vendors is boiling i.e. 37%, followed by filtration i.e. 6%. Chlorination and SODIS are the least used PoU options used by the food vendors.

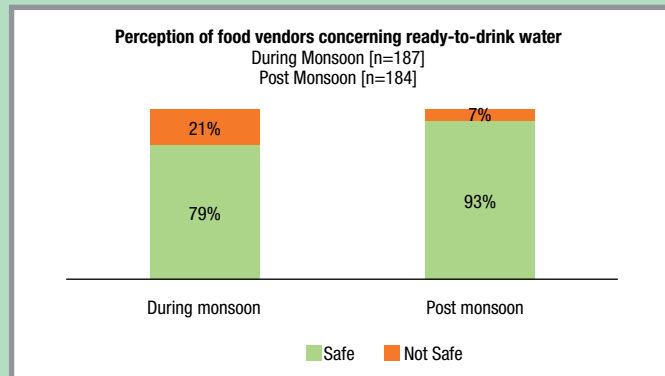


### Perception of food vendors concerning ready-to-drink water

Out of the 187 respondents, during the monsoon season, 79% of food vendors felt that ready-to-drink water available to them was safe to drink, and 21% felt ready-to-drink water available was not safe to drink. As per the above figure of 'Use of PoU Options', 95% of the food vendors were not using any water treatment options and among them 79% vendors felt that the ready-to-drink water available was safe to drink.

Similarly, during the post monsoon season, 93% of food vendors felt ready-to-drink water available to them was safe to drink, while 80% food vendors (as of above figure 'Use of PoU Options') were not using any of the water treatment options.

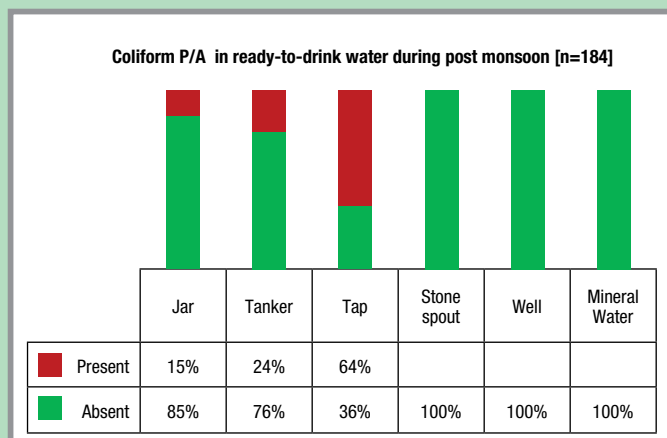
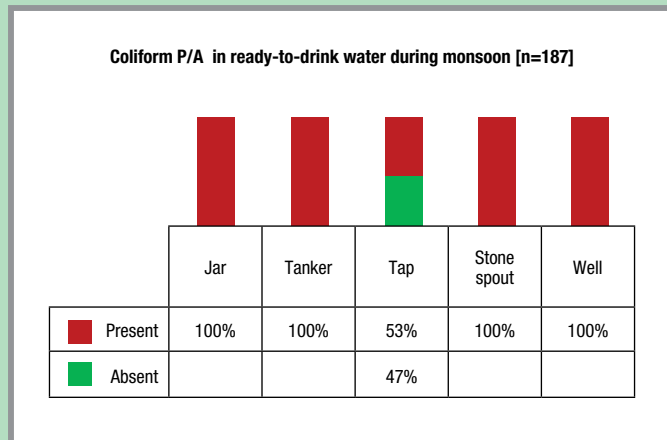
This shows the gap between the knowledge and practice on safe drinking water among those food vendors.



### Presence/Absence of coliform on ready-to-drink water

According to the field based analysis through P/A vial test, the figure below depicts that ready-to-drink water in Kathmandu and Lalitpur districts were found to be contaminated with coliform. Except 47% of samples of tap water drinking water sources, all the drinking water samples (jar, tanker, stone spout and well) were found contaminated with coliform during monsoon season. In compared to monsoon season,

the coliform contamination in ready-to-drink water was found to be lower in post monsoon season. The quality of drinking water using jar water, tanker, stone spout and well sources after monsoon season were found to be improved.



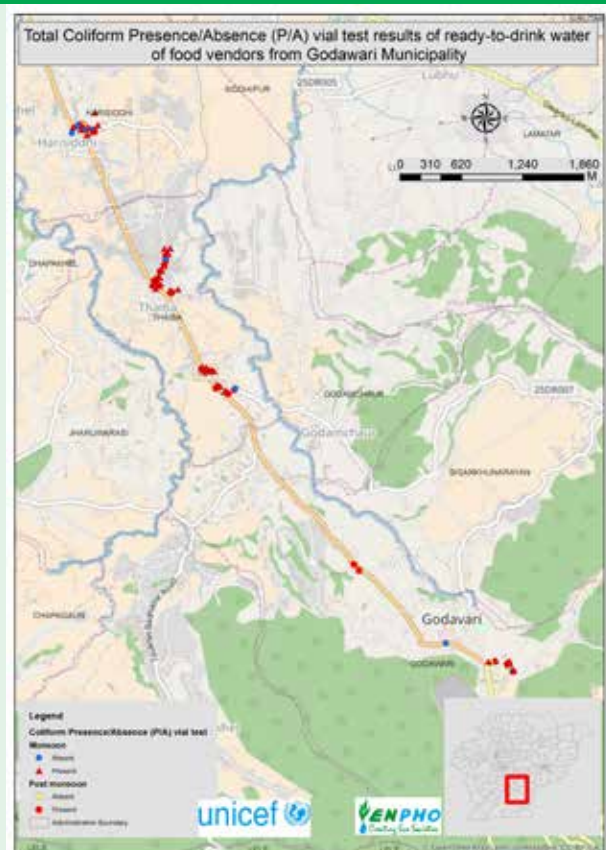
## Discussion

The preliminary findings of the study revealed that coliform contamination to be the key problem with drinking water of food vendors. During monsoon season, this study found that majority of ready-to-drink water of food vendors in the Kathmandu and Lalitpur districts were contaminated based on tests using P/A vial test. Similarly, only minority of food vendors follow water treatment methods during the monsoon season. With the dissemination of the coliform presence/absence results to the food vendors and continuous efforts on sensitizing people on appropriate use of PoU options, the drinking water sample collected during post-monsoon was found to be lower. Additionally, the results disclosed that the coliform presence in ready-to-drink water samples reduced to lower compared to monsoon season. The result also identified that the number of food vendors using PoU option has also increased.

## Conclusion

Safe water and optimum sanitation facilities including hygienic practices can minimize the occurrence of various water borne diseases and help in reducing associated mortality and morbidity. With the significant growth on the trend of food vendors in urban areas, there is high possibilities of increment of prevalence of water borne disease. It is utmost necessary to adopt the water treatment methods to reduce the occurrence of any water-borne epidemic. So, an up-to-date knowledge and practices on the safe water, sanitation and hygiene sensitizing activities is imperative to reduce the further occurrence of water borne disease incidence.

### Map showing Total Coliform Presence/Absence test results of ready-to-drink water served by various food vendors of Godawari Municipality



**Map showing Total Coliform Presence/Absence test results of ready-to-drink water served by various food vendors of Kathmandu and Lalitpur districts**

