Chapter VI

Conclusions and Recommendations
CONCLUSIONS

The study showed that the good class and the reasonably good quality hotels and restaurants maintain their hygienic condition properly as compare to road site hotels and restaurants. The road site did not maintain the hygienic condition properly which made the potable water become non-potable.

The study indicated that the hotels and restaurants owners of various religions showed degree of coliform contamination in drinking water. Out of hotels, the hotels of Muslim owners showed highest coliform contamination as compare to other hotels. This indicated that Muslim people living unhygienically and have least knowledge of health education.

The study indicated that in the storage of drinking water in rajan / drum was highly contaminated. It might be due to direct contact of hands and fingers of hotels and restaurants owners or workers which made water contaminated, but in the OHT, water cooler with filter cases there was least contamination because of no direct contact of fingers or hands, which prevent the secondary contamination. This proved the hypothesis that water get contaminated due to improper procedure of water serving/ handling in the hotels and restaurants.
The jug/mug with short handle or without handle contaminated the water by the dirty fingers and hands of hotels and restaurants owners and workers. The least coliform contamination was found in the collection of water by tap. This clearly indicated that where, there is no direct contact with stored water, water got less contamination and remain potable. This indicated that water became nonpotable due to improper handling or incorrect procedures of storage.

The method of serving of drinking water in the hotels and restaurants was found to be directly in glass (glass dipped in water) which showed highest degree of contamination (100%), and least contamination was recorded in keeping the empty glass on the table and jug of water with handle (68.6%). This clearly indicated that in the previous case the hand and the finger of hotels and restaurants owners or worker make the direct contact with the water and water got contaminated, but in the second case where least contamination was observed because there was no direct contact of fingers or hands of hotels and restaurants owners or worker, which prevent the secondary contamination. This proved that water get contaminated due to improper procedure of water handling and storage in hotels and restaurants.

The study indicated that daily washing of storage tank or container showed least coliform as compare to highest contamination in washing the storage tank or
container once in month. This showed that daily washing of storage tank is necessary to improve or maintain the good quality of drinking water.

The study indicated that some knowledge of health education to hotels owner and worker showed least coliform contamination as compare to maximum contamination in no knowledge of health education. Therefore hotels and restaurants owners should have basic knowledge of water hygienic and health education to run the hotels hygienically. This showed that knowledge of health education is necessary to improve the storage condition and handling of drinking water.

The study indicated that the hotels and restaurants opened for whole day showed highest degree of contamination as compare to the hotels opened either morning or evening least degree of coliform contamination. The hotels opened for whole day did not find sufficient time to clean the storage tank, utensils and generally less hygienic which made drinking water more non potable. Therefore, authority should see that hotels should not be kept open for whole day.

The study indicated that the workers with clean uniform showed least contamination as compare to highest contamination with dirty uniform. This showed that the dirty uniform is also responsible for the contamination of drinking water.
Conclusions

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The study indicated that higher the number of customers per day in the hotels higher the coliform contamination in the water and lower the number of customers per day lower the contamination, that is degree of contamination is directly proportional to the number of customers in the hotels and the restaurants.

The study indicated that adequate hygienic condition showed the least coliform contamination to highest coliform contamination in the hotels having no adequate hygienic condition. This showed that the adequate hygienic condition improve the better quality of drinking water.

The study indicated that the highest coliform contamination was found as *Salmonella typhimurium* typhimurium and *Escherichia. coli* 38.7% and 29.7% was in pre monsoon period, but in post monsoon period it was 28.3% and 31.6% respectively.
Over all study indicated that poor hygienic condition, improper method of storage, handling of drinking water, more customers per day, opening of hotels throughout day, owner’s health education, uniform of hotel workers, handling of water without tap or utensils without handle contribute in making drinking water contaminated.
RECOMMENDATIONS

Health workers are aware of the link between safe water supplies and the prevention of water borne. Importance is teaching people how to use safe drinking water. When is hand washing most important? How do you maintain safe water supplies? This insert provides practical information on hygiene behavior at family and community level for proper storage and handling of drinking water in hotels and restaurants.

Safe water

To be sure that the water used for drinking is safe and contamination must be prevented.

1. At the water source and in the water delivery system (wells, pipes, taps etc).

2. Between collection, storage and use

Safe water from public taps

Tap water can be from a spring water, groundwater or surface water source. To ensure that this water is safe to drink, make sure that:

- The intake (water source) area piping system and storage tank are protected from the contamination by human, animals and agricultural and industrial waste.
- The water is adequately treated before use.
- Keep the taps clean.
• Clean the area around the tap daily.
• Clean (and unblock if necessary) the drains regularly so that waste water can drain away.
• Prevent the area around the tap from getting muddy.
• Repair cracks in the concrete.
• Bathe and wash clothes, at some distance away from the drinking water tap.
• Keep cattle and other animals away from taps.

Prevention of contamination between collection and use

Water may become unsafe at any point between collection, storage, serving in hotels. Clean water can easily become contaminated when:

• It is touched by dirty fingers.
• It is poured into a dirty container.
• Dirt or dust gets into the water from the air if the container is uncovered.
• Dirty cups, glass and jug are used.

Following point should be remember by Hotels worker and owners.

• Wash hands before collecting and carrying water.
• Make sure the container for collecting water is clean.
• Carry water in a covered container if it has a large opening (e.g. if it is a bucket or basin). This will also help
to prevent the water from spilling during the trip hotels (although a loose lid will not prevent spilling and make sure the cover is clean.

- If possible, empty and clean the hotel water storage containers covered, and do not allow directly to drink from them.

- Allow no one, especially a child, to put their hands into the storage container.

- Pour water out of the water storage container without touching it, or use a clean long-handled dipper to take the water out.

- Use clean cups or mugs for drawing and drinking the water in hotels and restaurants.

**Personal hygiene**

Good personal hygiene can prevent or reduce the incidence of water borne infection, skin and eye diseases and body lice. One way to improve personal hygiene is to have plenty of water near people’s homes.

This can be used for

- Washing hands before preparing and eating food.

- Faces and hands of worker.

- Bathing or body washing of worker.

- Regular washing of hotels.

- Washing of clothes of workers in hotels.
Washing, especially hand washing, should be done whenever possible with soap. Where soap is not available for bathing, substitutes such as ash, clean sand, a flat stone, or a clean cloth to rub the body, could be used.

**The importance of hand washing**

Hand washing of workers and washing of storage tank will greatly help to reduce the risk of water borne transmission.

**Domestic hygiene**

**To prevent water borne transmission:**

- Make sure that water containers, dippers, jugs and cups are clean to prevent the contamination of drinking water.

- Wash cooking pots, dishes, eating utensils, carefully after each use. A rack drainer (to keep items above the ground) in the sun above a soak away may be the best place to drain and dry washed articles. The water from washing can be emptied into the soak away (waste water soakage pit).

On the basis of study the following recommendations can be made for the improve the quality drinking water in hotels and restaurants:

1. Maintain the proper hygienic condition in hotels and restaurants.

2. Proper storage of drinking water such as OHT, water cooler, tank with tap which prevent the coliform contamination.
3. There should be frequent washing of storage tank or containers.

4. Water should be collected from the storage tank or container through the tap or container having long handle.

5. Water should be served to customers without dipping the hands and fingers in the storage tank or glass.

6. The owners of hotels and restaurants should have sound knowledge of water hygienic and health education.

7. Every hotel and restaurant workers should have clean uniform.

8. Hotels, utensils, tables, floor, water containers should be frequently washed with disinfectants and soap solution.

9. The hotels and restaurants should not be kept opened throughout the day.

    Over all proper hygienic condition maintain in the hotels and restaurants prevent the water borne infection in the customer and in the society.