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Introduction

Tongi Ershadnagar is a slum area. 85% of women in slum areas only wash their hands with water and they claim that they cannot afford a bar of soap (Hoque, 2003). Poor hygiene and lack of water-handling processes result in contamination of water in the home. Factors responsible for water contamination in the home include transfer of water from collection to storage container (Lindskog, & Lindskog, 1988), contact between hand and water (Hammad, & Dirar, 1982) and regrowth of bacteria in the storage container (Momba, & Kaleni, 2002). Study results show that poor hygiene practices increase coliform levels in water which can be correlated with cases of diarrheal diseases.

Objectives of the Study

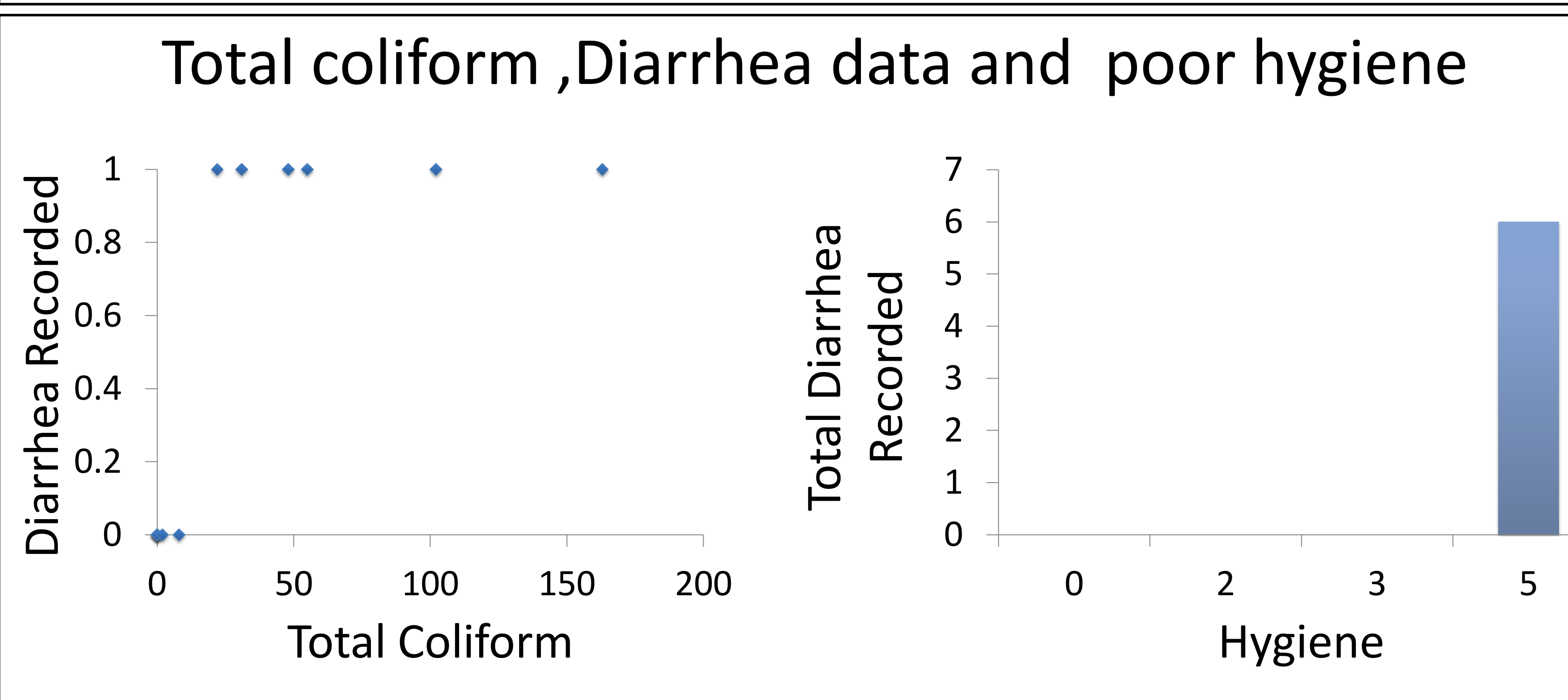
To determine :-

- 1) The effect of automated chlorination system in drinking water on amount of *E.coli* and total coliform in drinking water,
- 2) The association between water quality indicator parameters such as amount of free available chlorine, *E.coli* and total coliform amount and diarrheal disease severity among children who are less than 5 years old living in slum areas of Bangladesh.

Methods

- Household selection criteria :
 1. Household must have at least one child [age under 5 years],
 2. Household cannot use secondary source of water supply,
 3. Household must use submersible pump in Tongi Ershadnagar area which is connected to automated chlorination system.

Poor toilet conditions, drinking water tap, water storage pot/ bottles



- Household stored and tap water were collected.
- Free chlorine and total chlorine residual levels in stored water and tap water were determined using the LaMotte Colorimeter.
- Quantitative bacterial counts were obtained by membrane filtration and incubation on MI agar. Coliform colonies that were fluorescent under UV light were counted.
- Poor hygiene practices ie. (1) poor toilet conditions, (2) use of the same tap for drinking and toilet water, (3) no availability of soap for hand washing, (4) unwashed and unclean hands, and (5) use of unclean mugs were recorded on a scale of 1 to 5.

Results

- Quantitative analysis showed that household stored water had significant numbers of *E.coli* and total coliform bacteria.
- Total coliform counts and incidence of diarrheal had a correlation coefficient value of 0.70
- Incidence of diarrhea and hygiene had a correlation coefficient value of 0.90
- Total coliform counts and hygiene had a correlation coefficient value of 0.65.

Conclusions

Water contamination is widespread in low-income slum areas in Bangladesh. We have demonstrated that poor hygiene practices and secondary contamination increased diarrheal diseases in children under five years of age. One of the limitations of our study was the small number of samples analysed. Further experiments with more cases will shed more light on the measures required for improving the health condition of the children in these areas.

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