J. Hum. Ecol., 8(1): 69-71 (1997)
DOI: 10.31901/24566608.1997/08.01.09

# An Assessment of Quality of Water and Its Impact on Health in Hilly Region of District Kangra, Himachal Pradesh

J. Kishtwaria[1] and V. Gandotra[2]

*1. Directorate of Extension, H.P. Krishi Vishvavidyalaya, Palampur 176 062, Himachal Pradesh, India*
*2. Department of Home Management, Faculty of Home Science, M.S.U., Baroda 390 002, Gujrat, India*

KEY WORDS Bauri, Natural Spring Water. Diseases. A Definite Morbid Process with Symptoms.

ABSTRACT Laboratory analysis of quality of water revealed that there was no pollution in major sources of drinking water during the year except rainy season which is the main cause of water borne diseases in the area in this season. Assessment of the impact of water on health indicated that 100 per cent infants and 62.5 per cent children from 2 to 6 years suffered from diarrhoea followed by other infectious diseases (40 per cent). About 90 per cent of children between age group 6 to 12 years and 88.4 per cent adolescents suffered from diarrhoea.

## INTRODUCTION

Much of the ill health in the under developed countries is largely due to lack of safe drinking water. In India only 12 per cent of people get good clean drinking water (Kudesia, 1980). The pollution of water is mainly due to release of wastes such as sewage, industrial wastes and ignorance of people of its proper use. Therefore, the quality of drinking water may be poor due to either inherent insanitary water supply source or insanitary water storage methods.

Different kinds of diseases are transmitted through contaminated water and poor sanitation. These diseases are caused by an infective agent such as bacteria, protozoa, viruses or worms. The implication due to lack of safe drinking water for child health is clear. An estimated 8.7 per cent of the deaths in the old age group and 19.1 per cent of the deaths between 5 to 15 years group are due to one water borne disease alone, *i.e.* diarrhoea. An estimated 5 million infants die in different parts of the world every year. It is important to focus emphasis on various aspects of water such as quality of water, reasons of pollution and its impact on health as it is one of the esential life giving resources.

## MATERIALS AND METHODS

Survey method was used with a structured type questionnaire as the data collecting instrument. Random sampling technique was adopted for data collection from a sample of 60 respondents to assess the impact of water on health of respondents and their family members.

Experimental work was conducted for the bacterial count analysis of water to determine its potability. For analysis of sanitary quality of water 10 samples each were collected from sources as well as stored water from kitchens of respondents. Sterile tubes were used for collection of water sample for bacterial count. Pour plate test method was used for bacterial count of sample. Blood agar petridishes were inoculated by water samples and examined in front of flame inside the inocculation hood at 37°C after 24 hours of incubation.

## RESULTS AND DISCUSSION

The results revealed that there was no bacterial growth in all the samples. However, it was reported that the quality of water deteriorates considerably in rainy season, therefore, the same test was conducted again. Quality of water sample showed an entirely different picture in rainy season in both the sources of water as well as stored water.

The commonly used main sources of drinking water were hand pumps (53.3 per cent),

'Bauri' (45.0 per cent) and tap water (11.6 per cent). The analysis revealed that during rainly season 'Bauri' water was contaminated the most (20,000 bacteria per 1 ml of water) followed by hand pump (11,000 bacteria per 1 ml of water). The average bacterial count of stored water was 10,500 per 1 ml of water. Hence, it can be concluded that quality of water varied in this hilly region depending upon season in the year.

### *Opinions of Respondents Regarding Quality of Water and Level of Pollution*

Reasons quoted for pollution of water by the respondents were rainly season (100.0 per cent), uncovered source of water (10.0 per cent) and improper drainage (6.6 per cent) (Table 1). Majority of people prefer to drink and use 'Bauri' water considering it as God's gift and good for health. During rainy season 'Bauri' get contaminated due to various sources through running water, thus, water gets polluted and is mostly not potable. This is the season and reason of causing water borne diseases to those who drink water from these sources. The findings get supported from the results of Singh's study (1981) that water gets polluted from sewerage, industrial and other wastes. Further, 70 per cent of sample considered the quality of stored water good while 30 per cent sample did not do so.

### *Assessment of Impact of Water on Health*

Assessment of the impact of water on health

**Table 1 : Distribution or respondents according to reasons for pollution of water as perceived by rural homemakers ( N = 60)**

| *S.No.* | *Reasons for pollution* | *F* | *%age* |
|---|---|---|---|
| 1. | Summer season | 2 | 3.3 |
| 2. | Winter season | – | – |
| 3. | Rainy season | 60 | 1.00 |
| 4. | Improper drainage | 4 | 6.6 |
| 5. | Animal drink from same source | – | – |
| 6. | People or animals deficate near same source | – | – |
| 7. | Uncovered source | 6 | 10 |

(Table 2) reveals that 100 per cent infants and 62.5 per cent children from 2 to 6 years suffered from diarrhoea. From the same age group 33.33 per cent suffered from cholera and 20.8 per cent from malaria.

Ninety per cent children between age group 6 to 12 years suffered from diarrhoea while 87.5 per cent suffered from dysentery. It was also reported that 25 per cent, 20 per cent and 5 per cent respondents suffered from malaria, cholera and typhoid, respectively (Table 2).

Amongst adolescents 88.4 per cent suffered from diarrhoea and 84.6 per cent from malaria. Out of the total, 73 per cent and 29.6 per cent suffered from dysentery and typhoid, respectively. Investigations also revealed that 46.6 per cent respondents in the age group of above 50 years suffered from diarrhoea.

After detailed analysis of frequency and oc-

**Table 2: Distribution of respondent's family members according to age group and occurence of water borne disease**

| *S. Disease No.* | *Children* | | | *Adolesescents* | | *Adults* | | *Old* |
|---|---|---|---|---|---|---|---|---|
| | *Upto 2 yrs* | *2-6 yrs* | *6-12 yrs* | *Male* | *Female* | *Male* | *Female* | *(N=30)* |
| | *(N=20)* | *(N=24)* | *(N=40)* | *(N=26)* | *(N=30)* | *(N=90)* | *(N=72)* | |
| 1. Cholera | 2 (10) | 8 (33.3) | 8 (20) | 15 (57.6) | 16 (53.3) | 20 (22.2) | 15 (20.8) | 5 (16.6) |
| 2. Typhoid | – | – | 2 (5) | 7 (26.9) | 8 (26.6) | 8 (8.8) | 7 (9.7) | – |
| 3. Dysentery | 20 (100) | 24 (100) | 35 (87.5) | 19 (73.0) | 25 (83.3) | 40 (44.4) | 22 (44.4) | 9 (30.0) |
| 4. Diarrhoea | 20 (100 | 20 (83.3) | 36 (90) | 23 (88.4) | 22 (73.3) | 45 (50) | 40 (55.5) | 14 (46.6) |
| 5. Malaria | 2 (10) | 5 (20.8) | 10 (25) | 22 (84.6) | 27 (90) | 30 (33.3) | 19 (26.3) | 5 (16.6) |
| 6. Dengu Fever | – | – | 4 (16.6) | 15 (57.6) | 11 (36.6) | 6 (6.6) | 8 (11.1) | – |

curence of diseases in various age groups, the inferences can be drawn that the majority of sample belonging to different age groups suffered from diarrhoea and dysentery. Malaria, cholera, typhoid and dengu fever were also reported. It can be conferred that sanitation level in rainly season was low and occurence of these diseases was high in this season. It was also reported by Naidu (1988) that 30 per cent of the mortality and 50 per cent of the morbidity is due to infection of water in India.

## REFERENCES

Kudesia, V.P. : *Water Pollution*. Pragati Prakashan, Meerut (1986).

Naidu, R.P. : Environmental health. *Ind. J. Public Health*, **32** : 70-71 (1988).

Singh, M.J. : Polluted water - a potential danger to health. *Swastha Hind*, **25** : 238 (1981).