



ISSN Print: 2394-7500
ISSN Online: 2394-5869
Impact Factor: 5.2
IJAR 2018; 4(4): 313-314
www.allresearchjournal.com
Received: 11-02-2018
Accepted: 12-03-2018

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Characteristics of portable water in dakkilivaripalem, Nellore, Andhra Pradesh

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Abstract

Background: Water that is easily accessible, adequate in quantity, free from contamination, safe and readily available. There can be no safe of positive health and well being without safe water. It is not only a vital environment factor to all forms of life, but it has also a great role to play in socioeconomic development of human population.

Aim: The study aim was to assess the characteristics of portable water in Dakkilivaripalem. Survey research design was adopted for the study. Bore water and Tap water samples were collected and compared with the WHO standard tool of portable water.

Results: The study concluded that the physical characteristics of both ground water (Sample1) & tap water (sample 2) are normal & the PH concentrations of both samples are neutral. The concentration of trace elements such as zinc is normal copper& selenium levels are elevated in both samples.

Keywords: characteristics of portable water

Introduction

Water that is easily accessible, adequate in quantity, free from contamination, safe and readily available. There can be no safe of positive health and well being without safe water. It is not only a vital environment factor to all forms of life, but it has also a great role to play in socioeconomic development of human population. Water is an integrated with other PHC components because it is essential and part of health education, food and also MCH.¹

Various national agencies have drinking water quality standards that specify the acceptable microbial, chemical and radiological characteristics of drinking water. Characteristics of portable water is determined by color, taste, odour etc and minerals calcium, magnesium, sodium and potassium will be present in the water and second inorganic ion to bicarbonate in most surface water major anions include chloride, carbonate, fluoride and nitrate.²

Portable water is fit for consumption by humans and other animals it is also called drinking water in a reference use is the case with pristine springs or it may need to be treated in order to be safe in either instance, the safety of water is assessed with tests which look for potentiality harmful contaminants. The Issues of access to portable water is very important.³

Need for the study

Globally 663 million people live without safe water. Every minute a newborn baby dies from infection caused by a lack of safe water and an unclean environment (WHO, 2015). 42 % of health care facilities in Africa do not access to safe water.⁴

2011 India census report published by government of India, The rank is based on the percentage of households which have access to safe drinking water. Punjab ranked highest with 97.6% while Kerala has the worst rank with only 33.5% households having access to safe drinking water. National average stands at 85.5%.⁵

Due to the industrialization and urbanization, the quality of drinking water is worsening day by day. Since the portable water is very essential for daily living, it must have the proper quality to safe guard the health of the people. And especially in rural areas, most the people cannot access to the safe drinking water. The water borne diseases are more prevalent in rural areas, and affecting the health of the people. So, the investigator has chosen this topic to study.

Problem Statement

A Study to Assess the Characteristics of Portable Water In Dakkilivaripalem, Nellore.

Objectives

To assess the characteristics of portable water in Dakkilivaripalem, Nellore.

Delimitations

The study is delimited to;
Water samples from Dakkilivaripalem, Nellore.

Materials and Methods

Research Approach: Quantitative Research Approach

Research Design: Survey Research Design

Setting of the Study

The Study Was Conducted In Dakkilivaripalem, Nellore.

Development of the Tool

WHO standards for portable water quality was adopted in the present study.

Data Collection Procedure

Water samples from bore well & municipal tap were collected. WHO Standard methods were adapted for the analysis of water qualities. 100 ml polythene bottles were used for water quality parameter analysis and all bottles were washed with dilute acid followed by distilled water and were dried. At each sampling location, water samples were collected in two polyethylene bottles. Before taking final water samples, the bottles were rinsed three times with the water to be collected. 100ml of each sample was collected for analysis of physicochemical parameters. Separately 100ml of each water sample is collected and acidified with Con.HNO₃ heavy metal and toxic metal analysis. Special precautions were taken during sampling and analysis of trace elements. Before collecting the samples, the sample containers are soaked overnight in 2% nitric acid and washed with double distilled water. All the samples were collected polythene containers and stored at 4°C by using ice packs. Supra pure grade nitric acid was used to acidify the samples. Finding the sample sent to Laboratory.

Results

Table 1: Distribution of physical characteristics of water sample I & II

S. No	Physical characteristics	Sample I (Bore water)	Sample II(Tapwater)	WHO Guidelines for drinking water quality
1.	Colour	Colorless	Colorless	Colorless
2.	Odor	Odorless	Odorless	Odorless
3.	Turbidity	Clear	Clear	Clear

Table 2: Distribution of PH of water sample I & sample II

S No	Samples	PH	WHO Guidelines for drinking water	Reference range
1.	Sample I (Bore water)	7.97	6.5 – 8.5	Normal
2.	Sample II(Tap water)	7.93	6.5 – 8.5	Normal

Table 3: Distribution of trace elements sample I and sample II

S. No	Trace Elements	Sample I(Bore water)	Sample II (Tap water)	WHO Guidelines for drinking water
1.	Zinc(mg/l)	12mg/l	6mg/l	0.05mg/l
2.	Copper(mg/l)	1.5mg/l	1.5mg/l	2mg/l
3.	Selenium(mg/l)	5.5mg/l	8mg/l	0.4mg/l

Results and Discussion

- Regarding physical characteristics of portable water sample I & sample II found to be colorless, odorless, clear according to WHO Guidelines for drinking water. The PH of both bore water (sample I) and tap water (sample II) are with permitted limits as per WHO guidelines for drinking water.
- The concentration of Zink in both sample bore water (sample I) and tap water (sample II) of the study area range between 12 mg to 6 mg and the concentration of Zink in the both sample is elevated the described limits as per WHO guidelines for drinking water.
- The concentration of copper both bore water (sample I) and tap water (sample II) 1.5 mg/l, are within the describe limit as per WHO guidelines for drinking water.

Conclusion

The study concluded that the physical characteristics of both ground water (sample1) & tap water (sample 2) are normal & the PH concentrations of both samples are neutral. The concentration of trace elements such as zinc is normal copper& selenium levels are elevated in both samples.

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