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CONSUMER'S AWARENESS AND ATTITUDE TOWARDS PACKAGED DRINKING WATER IN THOOTHUKUDI DISTRICT

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Abstract

Today, one million people are drinking unhealthy water in the world. Each year 5 million people worldwide die due to the diseases caused by unhealthy drinking water. Unhealthy water creates a great risk, especially for children because of their undeveloped immune system (G8 Action Plan Decisions, 2003)[1]. Indeed, the World Health Organization estimates that 4.1 million children die from diarrhea, which can be inhibited by healthy water (WHO, 2010)[2].

In developed countries, it is observed that water is not only a basic consumption food, but also a lifestyle product. As mentioned in the Maslow's hierarchy of needs, packaged water consumption reflects the choices related to the lifestyle as well as being a basic need at the bottom of the pyramid (Sipos, et al., 2007)[3]. Water is increasingly becoming an important economic resource, and its public distribution is being privatized in many countries (e.g., France, England, Brazil, Australia, Bolivia and, recently proposed in Italy), opening new market opportunities for private investors. The consumption of bottled mineral water is significantly increasing worldwide and has become an important factor both for economic and health issues (King, 2008)[4]. Natural mineral water means microbiologically wholesome water, originating in an underground water table or deposit and emerging from a spring tapped at one or more natural or bore exits. This type of water cannot be sterilized, pasteurized or otherwise treated to remove or destroy microorganisms (European Commission, 2009)[5]. Hence, the researcher has made an attempt to find out the existing awareness and attitudes of consumers towards using packaged drinking water in Thoothukudi District.

Keywords: Drinking Water; Natural Mineral; Unhealthy; WHO & Diseases.

1. Introduction

Today, one million people are drinking unhealthy water in the world. Each year 5 million people worldwide die due to the diseases caused by unhealthy drinking water. Unhealthy water creates a great risk, especially for children because of their undeveloped immune system (G8 Action Plan Decisions, 2003)[1]. Indeed, the World Health Organization estimates that 4.1 million children die from diarrhea, which can be inhibited by healthy water (WHO, 2010)[2].

In developed countries, it is observed that water is not only a basic consumption food, but also a lifestyle product. As mentioned in the Maslow's hierarchy of needs, packaged water consumption reflects the choices related to the lifestyle as well as being a basic need at the bottom of the pyramid (Sipos, et al., 2007)[3]. Water is increasingly becoming an important economic resource, and its public distribution is being privatized in many countries (e.g., France, England, Brazil, Australia, Bolivia and, recently proposed in Italy), opening new market opportunities for private investors. The consumption of bottled mineral water is significantly increasing worldwide and has become an important factor both for economic and health issues (King, 2008)[4]. Natural mineral water means microbiologically wholesome water, originating in an underground water table or deposit and emerging from a spring tapped at one or more natural or bore exits. This type of water cannot be sterilized, pasteurized or otherwise treated to remove or destroy microorganisms (European Commission, 2009)[5]. Mineral water has been marketed as ideal for infant formula preparation and nursery drinking water, and for reconstitution of foods and as drinking water, particularly for the immune-suppressed people (Warburton, 1993)[6]. Although some variations on the number of CFU may occur, the bottling process does not change the natural composition of the mineral water.Therefore large bacterial populations usually develop from small initial populations present in the source (Leclerc and Moreau, 2002; Loy et al., 2005)[7]. There are insufficient clinical and epidemiological evidence to conclude that the high heterotrophic counts in drinking water pose a risk to a consumer's health (Edberg and Allen, 2004; Otterholt and Charnock, 2011; Varga, 2011)[8]. However, members of some species that may be part of the mineral water microbiota can cause diseases, mainly in vulnerable individuals, i.e., the very young, the elderly, the immune suppressed population, and pregnant women (Szewzyk et al., 2000; Otterholt and Charnock, 2011)[9].

2. Problem Statement and Purpose of the Study

In the modern scientific world most of the consumers, both poor and rich, are using packaged drinking water frequently or occasionally. Everyone believes that packaged drinking water is good for health. But they do not know its harmful impact on health.Major efforts have been taken to improve access to drinking water across India have not been matched by proportionate declines in deaths and illnesses from waterborne diseases which remain grossly underestimated. The poor water quality and the lack of adequate disposal of human, animal, and household wastes are contributing to waterborne diseases.Unsafe drinking water, along with poor sanitation and hygiene are the main contributors to an estimated 4 billion cases of diarrheal diseases annually, causing more than 1.5 million deaths, monthly among children under 5 years of age (WHO, 2005)[10]. Water is consumed in large quantities around the world. The health risk associated with the consumption of contaminated water is of greatest concern. The paradoxical question is "Why are waterborne diseases high in India, even though the consumers are buying

packaged drinking water which is stored in traditional, hygienic and scientific methods at home?". Hence, the researcher has made an attempt to find out the existing awareness and attitudes of consumers towards using packaged drinking water in Thoothukudi District.

3. Objectives

1) To study the awareness of consumers towards packaged drinking water.
2) To know the attitude of consumers towards packaged drinking water.

4. Hypotheses

Ho1: Awareness of extraction of minerals from the water depends on demographic profile of consumers.
Ho2: Awareness and using of unsafe drinking water and contaminated water do not differ with the different profiles of consumers.

5. Scope of the Study

The present study covers the districts of Thoothukudi, It deals with the consumers' attitude and awareness towards packaged drinking water.

6. Methodology

Research Design
Since the study has its own predetermined objectives and methodology, it is descriptive in nature. Apart from this, an attempt has been made to explain the consumers' attitude towards packaged drinking water in Thoothukudi district. Hence this study is also analytical in nature.

Sampling Procedure of the Study
Thoothukudi District selected for this study using convenience sampling method. The total sample size came to 607 respondents. A well-structured interview schedule was used to collect the relevant data.

Source of Data
The present study is based on the primary data collected from consumers in the various Towns and Taluks like Kovilpatti, Tiruchendur, Sawyerpuram, Ottapidaram etc., in Thoothukudi district. Secondary data consists of different literatures like books, published articles and websites.

7. Frame Work Analysis

Statistical tool SPSS (17.0) has been applied to classify and analyse the data collected in the surveys undertaken. The collected data were processed with the help of appropriate statistical tools. The applied statistical tools and the conduct of application are summarised below:

1) **Chi-Square Analysis:** The Chi-Square analysis has been used to analyse the association between the profile of the respondents and their level of awareness of extraction of mineral from the water and contaminated water in the use of packaged drinking water.
2) **t Test:** The t-test has been applied to find out the significant difference between awareness and unawareness of respondents regarding the percentage of mineral added and removed and waterborne diseases.

8. Awareness of Packaged Drinking Water – Genderwise

In the natural mineral water, 90% of the sales comprise institutional sales and only 10% account for retail sales. All the leading players expect an annual average sales growth of around 10% in the coming years considering market driving factors such as increase in awareness about natural mineral water and its health benefits, increase in high profile customers who prefer to buy only premium natural mineral water and increase in air travelers. Indian hotel industry is also growing at a fast pace. As per the leading players, increases in awareness about natural mineral will definitely have a positive impact on the growth of the industry.(Taruna Sondarva, 2011)[3].

Young people and females are more likely to purchase bottled water. Young people are generally believed to be more vulnerable to marketing and advertising, which are essential keys held by the bottled water companies (Ferrier and Gleick 2010)[4].

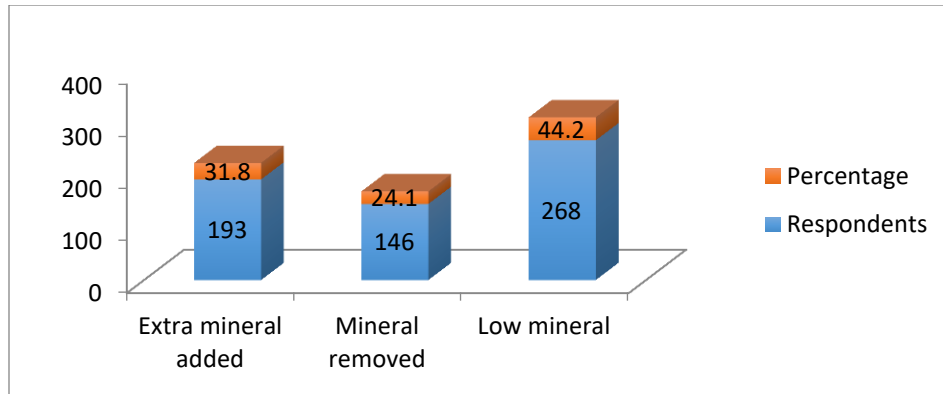Table 1: Awareness of packaged drinking water – Gender wise

	Value	df	P value
Pearson Chi-Square	18.148[a]	2	.000*
Likelihood Ratio	18.232	2	.000
Linear-by-Linear Association	17.018	1	.000
N of Valid Cases	607		

 *Significant at 5% level

Table 1 shows the relationship between male and female respondents in using packaged drinking water. As per the rejection of null hypothesis (P<.05), the analysis indicates that the male respondents differ from female in having the awareness of packaged drinking water.

9. Awareness of Minerals in the Packaged Drinking Water

Packaged waters with very low mineral content, such as distilled or demineralized waters, are also consumed. Rainwater, which is similarly low in minerals, is consumed by some populations without apparent adverse health effects. There is insufficient scientific information on the benefits or hazards of regularly consuming these types of bottled waters (WHO, 2003)[5].

Source: Primary Data

Figure 1: Awareness of minerals in the packaged drinking water

Fig 1 shows the awareness of minerals in the packaged drinking water. Majority of the respondents (44.2%) stated that the packaged drinking water has low minerals. About 31.8% of the respondents indicated that in the packaged drinking water added extra minerals and this is followed by the opinion that minerals are removed from the packaged drinking water. This analysis clearly reveals that 24.1% of the respondents have knowledge about the content of minerals in packaged water.
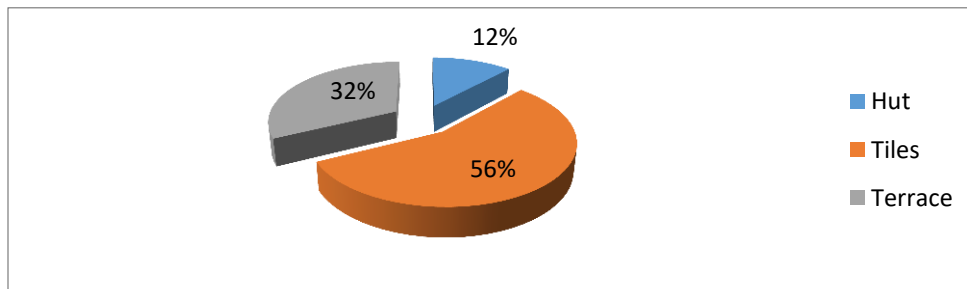

Figure 2: Usage of packaged drinking water by the respondents in different types of houses

Fig 2 shows the purchase frequency of packaged drinking water by the respondents' residences in different types of houses. The purchase frequency is high (55.8%) with the respondents who live in tiled houses. About 32.3 percentage of the purchase frequency is made by the respondents who live in terraced houses. The least purchase frequency (11.9%) is displayed by the respondents who live in huts. The respondents who live in tiled houses more frequently purchase packaged drinking water than the others.

Table 2: Influence of occupation on the awareness of packaged drinking water

	Value	df	P value
Pearson Chi-Square	46.944[a]	8	.000*
Likelihood Ratio	48.486	8	.000
Linear-by-Linear Association	.032	1	.859
N of Valid Cases	607		

*Significant at 5% level

Table 2 shows the relationship between the occupation and the awareness of packaged drinking water. As per the rejection of null hypothesis (P<.05), the alternative hypothesis is accepted. This indicates that the awareness of packaged drinking water is based on the different occupations of the respondents.

10. Influence of Income on the Purchase of Packaged Drinking Water

High awareness of safety and hygiene and the increase in disposable income are driving the sales of bottled water in India. With an increase in the number of waterborne diseases, consumers are concerned about safety and do not mind spending on bottled water. In fact bottled water has become a necessity when travelling. There is an increasing awareness, even in rural areas and small towns, about the need for safe drinking water, which coupled with the acute water shortage in many areas in the country, is also supporting bottled water sales (Bottled Water in India, 2013)[6].

Table 3: Influence of income on the purchase of packaged drinking water

	Value	df	P value
Pearson Chi-Square	14.563[a]	6	.024*
Likelihood Ratio	15.218	6	.019
Linear-by-Linear Association	3.303	1	.069
N of Valid Cases	607		

*Significant at 5% level

Table 3 shows the relationship between the monthly income and the awareness about and purchase of packaged drinking water. As per the rejection of null hypothesis (P<.05), awareness about and purchase of packaged drinking water significantly varies with the income of the respondents. The income of the respondents influences the awareness about and purchase of packaged drinking water. When the income changes, the awareness of packaged drinking water also differs among the respondents.

Table 4: Lodging complaints and awareness of packaged drinking water

	Value	df	P value
Pearson Chi-Square	16.410[a]	2	.000*
Likelihood Ratio	16.845	2	.000
Linear-by-Linear Association	15.587	1	.000
N of Valid Cases	607		

*Significant at 5% level

Table 4 shows the awareness of packaged drinking water and lodging complaints. As per this analysis, the null hypothesis is rejected (P<.05). This indicates that the awareness of packaged drinking water significantly influences the lodging of complaints. The lodging of complaints is based on the awareness of packaged drinking water. The increase or decrease in the awareness of packaged drinking water influences the respondents' attitude to lodge complaints against defective water.

11. Extraction of Minerals from the Water and Different Age Groups

Contaminated drinking water, along with inadequate supplies of water for personal hygiene and poor sanitation, are the main contributors to an estimated 4 billion cases of diarrhoea each year causing 2.2 million deaths, mostly among children under the age of five in developing countries (Kosek et al., 2003)[7].

Table 5: Awareness of extraction of minerals from the water and different age groups

	Value	df	P value
Pearson Chi-Square	63.209[a]	8	.000*
Likelihood Ratio	63.841	8	.000
Linear-by-Linear Association	2.838	1	.092
N of Valid Cases	607		

*Significant at 5% level

Table 5 reveals that the Chi square value of 63.209 (df = 8, N = 607), P< 0.05 is significant at 8 degrees of freedom, showing a significant difference in expected and observed frequencies. As such, the null hypothesis is rejected and the alternate hypothesis is accepted. Hence, the age influences the awareness of extraction of minerals from the water. The awareness of extraction of minerals from the water is based on the different age group of the respondents.

12. Education and the Awareness of Extraction Of Mineral From The Water

Bottled (''packaged'') water is considered as drinking water under some regulatory schemes and as a food in others. Some authorities distinguish natural mineral water from other bottled waters. WHO Guidelines for Drinking Water Quality are referred to directly in international norms (Codex Alimentarius Commission, 2001)[8] and are considered applicable to bottled waters.

Table 6: Association of education and the awareness of extraction of minerals from the water

	Value	df	P value
Pearson Chi-Square	9.577[a]	4	.048*
Likelihood Ratio	9.892	4	.042
Linear-by-Linear Association	.366	1	.545
N of Valid Cases	607		

*Significant at 5% level

Table 6 shows the association between education and the awareness of extraction of minerals from the water. As per the rejection of null hypothesis, (P<0.05) the education of the respondents is associated with the awareness of extraction of minerals from the water. Hence, it is concluded that the awareness of extraction of mineral is influenced by the education of the respondents.

Table 7: Occupation and awareness of extraction of minerals from the water

	Value	df	P value
Pearson Chi-Square	81.039[a]	8	.000*
Likelihood Ratio	82.546	8	.000
Linear-by-Linear Association	.003	1	.955
N of Valid Cases	607		

*Significant at 5% level

Table 7 shows that the Chi square value of 81.039 (df =8, N = 607), P< 0.05 is significant at 8 degrees of freedom, showing that there is a significant difference in expected and observed frequencies. As such, the null hypothesis is rejected and the alternate hypothesis is accepted. Hence, there is significant influence of occupation on the awareness of extraction of minerals from the water. The awareness of extraction of mineral from the water is based on the occupation of the respondents.

13. Income and the Awareness of Extraction of Minerals from the Water

The introduction of packaged water for human consumption at recent times is a boon to mankind and more convenience is realized. Whenever someone purchases packaged water, he thinks that the quality is assured and it is safe water. The use of bottled water may have begun as a fad but this industry has evolved into one of the fastest growing industries in India. Increased public awareness about waterborne disease outbreaks and lack of safe drinking water supply during travel has also caused an increased demand for bottled drinking water. In India, a large population of road and rail commuters depend on bottled mineral water for their drinking water needs during travel (Jeenaa et al.,2006)[9].

Table 8: Relationship between income and the awareness of extraction of minerals from the water

	Value	df	P value
Pearson Chi-Square	18.636[a]	6	.005*
Likelihood Ratio	20.491	6	.002
Linear-by-Linear Association	7.347	1	.007
N of Valid Cases	607		

*Significant at 5% level

Table 8 analyses the association between income and the awareness of extraction of minerals from the water. As per the rejection of null hypothesis, (P<0.05) the income of the respondents is associated with the awareness of extraction of mineral from the water. Hence, it is inferred that the awareness of extraction of minerals from the water is dependent on the income of the respondents. The higher income groups have more awareness of extraction of minerals from the water.

14. Findings

1) The frequency of purchase of packaged drinking water is based on the monthly income, occupation, family size, possession of a particular type of house and education of the respondents. These factors have positive relationships with one another and with the frequency of purchasing packaged drinking water. In this study, more than half of the respondents use packaged drinking water during travel. They use packaged drinking water daily out of necessity and not for their life style.

2) The consumers have no awareness about the adding and removing of minerals in the packaged drinking water. Income and occupation play a key role in acquiring this awareness about packaged drinking water. However, the possession of a particular type of house determines the quantity and purchase frequency of packaged drinking water.

3) Consumers need to check the information on the label before purchasing packaged drinking water, because of usage time limit of the packaged drinking water. The respondents' occupation, income, age, education, possession of a particular type of house and availability of information plays a key role in checking the information on the label. However, the family sizes do not influence the checking of the labels.

4) Most of the respondents give first preference to retailers to buy packaged drinking water. Only a small number of respondents directly purchase from the manufacturer during the time of special occasions like marriage and other family functions.

5) In determining the purchase frequency and quantity of the packaged drinking water, the size of the family, occupation, education and their need play important roles. Most of the respondents' purchase frequency is below 5 times a month. In determining the purchase frequency of packaged drinking water, the respondents' income plays an important part.

6) Majority of the respondents stated that the extraction of certain minerals from the water is good for health. One third of the respondents' health has been affected due to the frequent use of packaged drinking water. Most of the respondents have the awareness about contaminated water and waterborne diseases.

7) The different sources of purchase of packaged drinking water are influenced by the respondents' education and the possession of different types of houses. However, the occupations do not influence getting packaged drinking water from different sources. The respondents prefer different brands according to their health.

15. Suggestions

1) As per this study, most of the respondents do not have awareness about the contents and extraction of minerals from the packaged drinking water. They have psychological confidence in packaged drinking water. Television, radio and press should give proper information about packaged drinking water and its pro and cons.

2) Retailers, manufactures, commission agents, press and televisions do not create the necessary awareness about packaged drinking waters and its defects. Necessary Acts should be enacted to inform the pro and cons of the packaged drinking water. People should be informed about safe and unsafe packaged drinking water.

3) The respondents in the different categories of occupation, income, age, education, and possession of different types of houses take care to check the information on the labels. Because of the perishable nature of packaged drinking water, the respondents need to

check the information on the labels. The manufacturer should be insisted to avoid invisible information of manufacturing date, expiry date and the contents of the packaged drinking water in its label.

4) The frequency of purchasing packaged drinking water is based on respondents' levels of income, education and size of the family. Now-a-days, all are keen on buying safe drinking water, irrespective of their income, education, age and size of the family. The government should ensure safe water to all citizens of India.

16. Conclusion

In modern days, packaged drinking water plays an important role in society due to scarcity of clean drinking water. In this study, majority of the respondents do not have adequate awareness about the adding and removing of minerals from the packaged drinking water. They trust the content and the safety of packaged drinking water. They do not know that packaged drinking water too has contamination and causes water borne diseases of diarrhoea, vomiting and fever. The respondents do not lodge any written complaints against the inferior quality of packaged drinking water. The retailers supply a major share of packaged drinking water to the consumers directly. The manufacturing date, expiry date, and contents should be printed in a visible way. The Food Safety and Consumer Protection Department should make frequent visit to the water producing industry to ensure the quality of water.

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