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# A STUDY ON KOLLIDAM RIVER WATER POLLUTION AND AWARENESS AMONG THE RURAL PEOPLE IN KOLLIDAM VILLAGE, NAGPATTINAM DISTRICT

**Dr. K. MAHARAJAN**
Associate Professor in Sociology
Annamalai University, Annamalai Nagar, Chidambaram

***Abstract***

*Environmental knowledge is a process aimed at improving the quality of life by empowering the people in general in particular to investigate and understand environmental knowledge. Environmental awareness can help the people gain knowledge, skills, motivation and values needed to manage the earth's resources optimally and to take responsibility for maintaining environmental quality, sustainability and stability. In this connection, a study of environmental knowledge arises a need to carry out this investigation. The present study aims to find out the Kollidam River Water Pollution and Awareness among the Rural People in Kollidam Village, Nagpattinam District. A samples of 100 respondents selected randomly were studied. Primary data were collected by using a structured interview scheduled. All the respondents were asked the some questions in the same fashion and they were informed the purpose of study. Correlation and Regression analysis was applied. The findings and observations are the result and outcome of the interpretations made during the study of analysis.*

***Key Words: Environmental Awareness, Water Pollution and Demographic Variables.***

## Introduction

Environmental knowledge is a process aimed at improving the quality of life by empowering the people in general in particular to investigate and understand environmental knowledge. Environmental awareness can help the rural people gain knowledge, skills, motivation and values needed to manage the earth's resources optimally and to take responsibility for maintaining environmental quality, sustainability and stability.

Youth, who comprises nearly 30 percent of the world's population especially in the study areas, with their skills, experiences and perspectives, they can restore, sustain and create livable and productive environment. In this connection, a study of environmental knowledge arises a need to carry out this investigation.

Environmental pollution could be termed as ecological crisis, which has paced threat to the properties of the basic amenities such as air, water and soil. Earlier they were undisturbed un contaminated and supported every life to frame a joyful and peaceful life. But now due to man's activities the environment is no more pleasant. Rapid urbanization and industrialization accompanied

with population explosion has resulted in polluted rivers, water less river beds, contaminated soil, exhausted natural resources and extinction of wildlife, animals and plants thus up setting the food chain, food web and in turn the whole living system. Man's activities have resulted in the following pollution of the basic amenities.

Pollution:- Is defined as the excessive concentration of foreign material which change the composition of Nature by physical or chemical methods and affects the health of man and also causes damage to the property. The word Pollution derived from the Latin word 'Pollutionem' meaning of to defile or make dirty. The term pollution is defined in various ways. For example. Pollution is the unfavorable alteration of our environment, largely because of human activities. Pollution is defined as a deviation from the natural composition of a part of the environment, resulting in adverse effects on life.

Pollution is an undesirable change in the physical, chemical or biological characteristics of our air, land and water causing harmful effect on our life or that of other desirable species and cultural assets. Pollution is the release of harmful substances or energy into the environment by man in quantity that damage health and resources.

**Water Pollution**

Water is one of the abundantly available substances in nature. It is essential constituent of all animals and vegetables. Water is elixir of life and it is an excellent solvent. Water is mostly used for industrial and municipal purposes. Water pollution refers to any adverse change in conditions or composition of water, which may harmfully affect the life activities of man and domesticated species. Water pollution is caused due to harmful solids, liquids or gases, which are non- permissible, undesirable, unpleasant and objectionable. The water pollution disturbs the normal uses of water for irrigation, agriculture, industries, public water supply and aquatic life.

The various factors, which are to be considered for the supply of water for any purpose, are 1. The quality and quantity of water available. 2. Analyses of water taking into consideration its chemical, physical, microscopical and Bacteriological characteristics and 3. Cost involved in getting continues supply of required quality and quantity of water.

**Types of water pollution**

**Physical pollution of water:** It brings about changes in water with regard to its colour, odour, density, taste and turbidity and thermal properties.

**Chemical pollution of water:** This is due to the presence of inorganic and organic chemicals such as acids, alkalies. The industrial wastes of certain industries such as DDT factory, high explosive factory, battery factory etc. contain acids.

**Biological pollution of water:** Bacteriological pollution of water is due to the presence of pathogenic bacteria, certain fungi, pathogenic protozoa, parasitic worms etc.

**Physiological pollution of water:** Several chemical agents such as chlorine, sulphur dioxide, hydrogen sulphide, phenols, amines and hydroxyl benzene cause it. Chlorination of water usually connects phenol to ortho or parachloro phenol, which tastes like medicine and produces offensive odour.

**Sources of Water Pollution**

1. Sewage and domestic wastes: Sewage is commonly a cloudy dilute aqueous solution containing mineral and organic matter. About 75% of water sewage, domestic wastes and food processing plants cause pollution. It also includes human excreta, soap detergent, metals, glass, rubbish garden waste and sewage sludge from sess pools etc.
2. Industrial Effluents: Industrial effluents discharged into water bodies contain toxic chemicals, hazardous compounds, phenols, Aldehydes, chinned metallic wastes, plasticizers, toxic acids oils, greases, dyes, bioxides, suspended wastes and thermal pollutant from numerous industries.
3. Agricultural Discharges: Plant nutrients, pesticides, insecticides herbicides, fertilizers, farm wastes, manure slurry, sediments, drainage from silage plants and animal's debris, soil erosion containing mostly the inorganic materials are reported to cause heavy pollution to water sources.
4. Fertilizers: Modern agriculture really heavily on artificial fertilizers, including several biocides. Although these chemicals enhance vegetation but they disrupt the entire nature aquatic ecosystem. Excessive uses of nitrogen to anemulation of nitrates in

water which when consumed by cattle and man get reduces to toxic nitrates by the intestinal bacteria.

5. Detergents: Detergents are of recent origin, used as cleaning agents and derived from surfactant, builder and other ingredients. They contain surface-active agents and contribute to phosphates of sodium, sodium silicates, sodium sulphate, amides and several other builders in water.
6. Toxic Metals: Among the industries with the highest emissions of heavy metals are the mining industry, metallurgical industry, chemicalindustry, leather industry, sugar industry, distilleries, battery industry and thermal power plants.
7. Siltation: Silt consists of dirt and dust particles, which are carried from land to water. These soil particles create high turbidities in water and may hinder the free movement of aquatic organisms, growth of fishes and their productivity.
8. Thermal Pollution: These pollutants include the waste heat chiefly from atomic, nuclear and thermal power plants. The discharge of unutilized heat is highest in the thermal power plants, which adversely affect the aquatic environment. As the temperature of water rises, the amount of dissolved oxygen in water decreases, and it may be fatal for aquatic life.
9. Radioactive Pollution: Radioactive pollutants enter into water streams from various sources such as nuclear power plants, nuclear reactors, nuclear test and nuclear installations. The extremely toxic radioactive elements such Pu, Ne, Cs, Ru, U etc were found to pollute water.
10. Oil Pollution: Oil is a major source of pollution in ocean. The major sources of oil pollution in seawater are cargo tanker washings at sea, import oil losses, bilge pumping at sea and maritime accidents.

**Treatment of Polluted Water**

The purification process to be folded is based on the nature of impurities in the water. The commonly available methods are as follows screening, sedimentation, coagulation filtration water softening, reverse osmosis, Electrolysis, Nitrification, Denitrification, Activated carbon treatment, Ion exchange etc. Though many acts exist in India, the general awareness is the powerful tool to control the water pollution to a significant extent.

**Review of Literature**

**Sukhia (2011)** states that, for any worth study in any period of water pollution knowledge, the research worker needs an adequate familiarity with the library and its many resources. Only then will an effective search for specialized knowledge be possible.

**Aggarwal (2011)** pointed out, the study of related literature implies locating, reading and evaluating reports as well as reports of research of causal observation and opinion that are related to the individuals planned research project.

**Stockholm Conference (2012),** It is the first International Conference sponsored by United National Environment Agencies held at Stockholm, the capital of Sweden from 5 to 14 June 2012. The birth of 'United National Environmental Programme' with the goal of establishing a new and equitable global partnership through the creation of new levels of cooperation among states.

**George R. Flectwood (2014)** has developed environmental attitude inventory and water pollution knowledge test. Many of the test items in the above series evaluate the water pollution awareness of rural pupils.

**Tibilisi Conference (2015),** the first inter-Governmental conference on Environmental Education organised by UNESCO and UNEP was held in Tibilisi, USSR. The conference declared, "Education utilizing the findings of Science and Technology should play a leading role in creating an awareness and better understanding of water pollution. Environmental Education should be provided for all ages.

**Sudhakar,G. (2015)** has developed a curriculum on environmental studies, facilitating life-long education for rural pupils. In his curriculum model, he has developed a number of items for assessing water pollution awareness of the pupils.

**Bhopal Gas Tragedy (2016),** which took place on 3-12-2016 and caused by air pollution by Methyl isocyanate is perhaps one of the biggest air tragedy in the world. This tragedy took nearly 3200 human lives and affected nearly 50 thousand persons, who are still suffering from respiratory, lung, eye and throat diseases.

**Sastry, C.A. (2016)** 'National Seminar on Pollution Control'- Pondicherry (Central) University, 16-17 October 2016. According to

his research 'the coir producing industry in Kerala is destroying water quality. Coir units soak coconut huska in pits to remove the fleshy matrix from the fiber. In the process, hydrogen sulfide and organic acids contaminate ground water.

**Zmud and Mia (2017)** submitted a paper on "Acid Rain: The silent environmental Threat". They have concluded that a silent environmental threat is posed by acid rain. It has also threatened the public health and life.

**Swatantra Devi, T.K. (2017)** pointed out the various activities at the village level to provide the water pollution awareness and knowledge to the peoples and stated the need for the knowledge of water pollution awareness for village level.

**Sundararajan.S. and Rajasekar.S. (2018)** studied the water pollution awareness among the rural people and found that the water pollution awareness of rural peoples in Tamil Nadu has not influenced by the locality to which they belong or sex.

**Power, K.B. (2018)** revealed that the Global concern regarding the steadily deteriorating state of environment was first seriously manifested in the form of the United Nations Conference on Human Environment held in Stockholm. The Stockholm conference opened the eyes of north to the water pollution problems of south. It also saw the adoption of rules and regulations to cover the environmental ills at least in the developed counties.

**Objectives of the Study**

1. To identify the Kollidam river water pollution and awareness among the rural people in Kollidam Village, Nagpattinam District.
2. Water pollution and awareness among the rural people differ significantly in respect of their demographic variables.

**Methodology**

A research design is highly essential and it is inevitable as a blue print. In the present investigation survey method is employed. The present investigation was conducted in the rural people in Kollidam Village, Nagpattinam District. Total estimated sample size is 100. The sample is to be selected very carefully and it should enable the researcher to draw meaningful conclusions and generalizations. In such case, the sample should be adequate and must be a true representative of the water pollution awareness. The researcher has adopted random sampling technique in the selection of the sample. Research design is purely and simply the framework or plan for a study that guides the collection and analysis of the data. The research design indicates the methods of research i.e. the method of gathering information and the method of sampling. Primary data were collected by conducting direct structured interview using questionnaire. All the respondents were asked the same questions in the same fashion and they were informed the purpose of study. The data were collected by using questionnaire as an instrument.

**Limitations of the Study**

Though the research has been properly planned and well executed, there are certain limitations, which are inherent in nature and are out of the researcher's control. The effectiveness of the project is felt only when the results are read along with the limitations and constraints faced during the course of this study. The following are the limitations.

1. The responses from the respondents could be casual in nature. This may be due to lack of interest or time on their part.
2. The correctness of information provided by the respondents in the personal data could not be established.
3. Some of the information provided by the respondents might not be correct.
4. Getting timely responses from the respondents was a difficult task.

**Kollidam River Water Pollution and Awareness among the Rural People and their Demographic Profile**

| Demographic Variables | Water Pollution and Awareness |
|---|---|
| Age | 0.398** |
| Gender | 0.541* |
| Marital Status | 0.398** |
| Educational qualification | 0.374* |
| Monthly income | 0.451* |
| Family Type | 0.347** |

Table 1 displays that Kollidam River Water Pollution and Awareness among the Rural People is positively related to their demographic characteristics of age, gender, marital status, educational qualification, monthly income and family type. So there is a positive significant relationship between Kollidam River Water Pollution and Awareness

among the Rural People and their demographic variables. So concluded that there is average level of Kollidam River Water Pollution and Awareness among the Rural People in the study area.

**Kollidam River Water Pollution and Awareness among the Rural People and their Demographic Profile**

| Step/Source | Cumulative $R^2$ | $\Delta R^2$ | Step t | P |
|---|---|---|---|---|
| Age | 0.040 | 0.037* | 3.075 | 0.01 |
| Gender | 0.057 | 0.051* | 2.623 | 0.01 |
| Marital Status | 0.073 | 0.064* | 2.013 | 0.01 |
| Educational qualification | 0.085 | 0.073* | 2.401 | 0.01 |
| Monthly income | 0.100 | 0.086* | 2.332 | 0.01 |

Five variables namely, age, gender, marital status, educational qualification and monthly income have significantly contributed for predicting the Kollidam River Water Pollution and Awareness among the Rural People. The variable age predictive value of Kollidam River Water Pollution and Awareness among the Rural People seems to be 0.040, when paired with the variable gender it is 0.057, with marital status 0.073, with educational qualification 0.085 and with monthly income 0.100. The predictive value of these variables separately is 0.01.

**Relationship between Knowledge on Water Pollution among the Rural People and their Demographic Profile**

| Demographic Variables | Knowledge on Water Pollution |
|---|---|
| Age | 0.349** |
| Gender | 0.249* |
| Marital Status | 0.344** |
| Educational qualification | 0.444* |
| Monthly income | 0.432* |
| Family Type | 0.355** |

Table 1 displays that Knowledge on Water Pollution among the Rural People is positively related to their demographic characteristics of age, gender, marital status, educational qualification, monthly income and family type. So there is a positive significant relationship between Knowledge on Water Pollution among the Rural People and their demographic variables. So, concluded that there is average level of Knowledge on Water Pollution among the Rural People in the study area.

**Regression analysis for Knowledge on Water Pollution among the Rural People and their Demographic Profile**

| Step/Source | Cumulative $R^2$ | $\Delta R^2$ | Step t | P |
|---|---|---|---|---|
| Age | 0.045 | 0.042* | 3.921 | 0.01 |
| Gender | 0.054 | 0.034* | 3.942 | 0.01 |
| Marital Status | 0.065 | 0.042* | 2.554 | 0.01 |
| Educational qualification | 0.081 | 0.062* | 2.420 | 0.01 |
| Monthly income | 0.102 | 0.075* | 2.141 | 0.01 |

Five variables namely, age, gender, marital status, educational qualification and monthly income have significantly contributed for predicting the Knowledge on Water Pollution among the Rural People. The variable age predictive value of Knowledge on Water Pollution among the Rural People seems to be 0.045, when paired with the variable gender it is 0.054, with marital status 0.065, with educational qualification 0.081 and with monthly income 0.102. The predictive value of these variables separately is 0.01.

**Conclusion**

The researcher framed some objectives and hypotheses on the basis of that, a well-structured questionnaire was used to collect the responses. The present study aims to find out the Kollidam River Water Pollution and Awareness among the Rural People in Kollidam Village, Nagpattinam District. The research was carried out in 100 samples based randomly. After collecting the data they were analyzed using statistical tools such as correlation and regression analysis. The result concluded that rural people have average awareness about water pollution in rural people in Kollidam Village, Nagpattinam District. So concluded that there is Kollidam River Water Pollution and Awareness among the Rural People is positively related to their demographic characteristics. Five variables namely, age, gender, marital status, educational qualification and monthly income have significantly contributed for predicting the

Kollidam River Water Pollution and Awareness among the Rural People.

Also result shows that Knowledge on Water Pollution among the Rural People is positively related to their demographic characteristics. Five variables namely, age, gender, marital status, educational qualification and monthly income have significantly contributed for predicting the Knowledge on Water Pollution among the Rural People.

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