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by Asma Qoyyum

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Role of Chemical Composition of Drinking Water in Human Health of the Community

Farwa Naseem[1], Hafiza Zobia Zia[2], Moaz Ishtiaq[3] Tariq, Muhammad Amjad Bashir[4], Syeda Amber Hameed[5], Asma Qayyoom[5] ,Hasnain Farooq[6,7], Reem A. Alajmi[8] Mohamed Hashem[9,10], Saad Alamri[9], Saeed A. El-Ashari[9] , Khizer Samiullah[5], Abdulrahman Alasmari[11,12], Mohammed Ali Alshehri[11,12]

[1]Women Medical Officer RHD Badduke Lahore Punjab, Pakistan

[2] Women Medical Officer RHC 148/ EB Burewala , Vehari, Punjab, Pakistan

[3]Medical Officer THQ Mian Channu District Khanewal Punjab, Pakistan

[4]Department of Plant Protection faculty of Agricultural Sciences, Ghazi University Dera Ghazi Khan Punjab, Pakistan

[5]Department of Zoology faculty of Sciences, Ghazi University Dera Ghazi Khan Punjab, Pakistan

[6] Department of Environmental Sciences, University of California, Riverside, CA 92521, USA

[7] Department of Forestry, Faculty of Agricultural Sciences, Ghazi University, Dera Ghazi Khan 32200 Pakistan

[8] Zoology Department, College of Science, King Saud University, P.O. Box 2455, Riyadh 11451, Saudi Arabi

[9]King Khalid University, College of Science, Department of Biology, Abha 61413, Saudi Arabia

[10]Assiut University, Faculty of Science, Botany and Microbiology Department, Assiut, 71516, Egypt

[11]Genome and Biotechnology Unit, Faculty of Sciences, University of Tabuk, Tabuk, Saudi Arabia.

[12]Department of Biology, Faculty of Sciences, University of Tabuk, Tabuk, Kingdom of Saudi Arabia.

Cross ponding: abashir@gudgk.edu.pk

ABSTRACT

consuming safe drinking water is a simple human want that should be met by way of anyone. Prevention and control of water-borne diseases starts with making sure the protection of drinking water. The present day have a look at turned into designed to assess the physical and chemical stage of groundwater in twenty distinctive areas of Tehsil Taunsa DG Khan, Punjab Pakistan. For this cause, groundwater samples are accrued from Mangrotha, Sokar, BastiBuzdar, KotQaisrani, JhokeBodo, Litra, Vehova, Bohar, Makwal Kalan, Bindi, Dona, NariJanubi, Tibbi Qaisrani, Morejhangi, Babbi, Nutkani, JaluWali, Lakhani and Lakhani (Turbidity, perfume, coloration, TDS, HCO3, Alkalinity, Ca, CO3, Cl, EC, Fl, Solidity, Mg, SO4 , pH, Na and k) mentioned. The consequences discovered a dramatic boom in bodily and chemical data. among Chemical parameters, Alkalinity saturation become among 205mg / L to 235 mg / L, Calcium saturation turned into between 60 mg / L to 112 mg / L, saturated carbonates in one vicinity only (BastiBuzdar) turned into barely higher at 64 mg / L, electrical Conductivity ranged between 1230 μS / cm to 1260 μS / cm, concentration depth numerous between 145 mg / L to 550 mg / L. standards for all other parameters have been within the WHO acceptable requirements. A survey become also conducted to evaluate the impact of ingesting water on the fitness of town dwellers. worldwide, 780 million people, in addition to one hundred million humans in Pakistan are uncovered to hazardous water sources. To quantify the fitness danger of contaminated water, a complete of 160 citizens were interviewed. facts from this discipline work will display the prevalence of water-borne illnesses inclusive of diarrhea, nausea and vomiting, stomach troubles, pores and skin rashes, pores and skin inflammation, diabetes, neurological illnesses, kidney failure, cholera, malaria, persistent fever, cancer, hepatitis and and jaundice. To deal with water and environmental troubles, systems were evolved to display and frequently reveal the agency of water and sanitation in a secure way. As a end result, in all research regions, a scientific and controlled waste disposal gadget is needed. To make certain that water is suitable for human consumption, popular drinking water first-rate trying out system, big provided tanks, distribution structures and pipelines need to be used.

keywords: Chemical residences, Groundwater, fitness, character,

INTRODUCTION

Water is important to life so that you can inform a tale. All creatures need get right of entry to to the full length of the ingesting water. that is a selection of functions that are used in nearly each subject of life. In a few cases, water may be the residual sink of a contaminant. Coastal regions, streams, glaciers, swimming swimming pools, mountain streams, and personal water tanks can all be discovered everywhere inside the global. many pools of water do no longer run out seemingly; otherwise, their capacity to keep is restrained, and they revive drug strategies. due to the proliferation of instances, all of the water resources cited above are declining at an alarming price. loss of water in residing matters can have a adverse impact on their surroundings.

In Pakistan, water pollutants is one of the best risks to public fitness. high water consumption is not well maintained or tested. In phrases of growing consuming water stages, Pakistan ranks eightieth out of 122 countries. toxic metals and pesticides had been discovered within the use of water assets throughout the us of a, each floor and groundwater. The distribution of who is 2927099c7129e5e67b031f9eb65b6349 ingesting water machine is being undermined on a every day foundation. the main causes of terrible water best are human actions that include doing away with municipal pollutants and manufacturing and biased agricultural agricultural software program. Bacterial and chemical pollutants are the principle reasons of diverse public fitness troubles, both isolated or mixed.

"Hepatitis B and C are more extreme viral infections than corona-inflamed infections, which reason three hundred to 325 deaths every day in Pakistan, yet Covid-19 kills fewer people than viral hepatitis. quacks, in line with the PMA, are a main component inside the growing number of cases of hepatitis C in Pakistan. ” pesticides, industrial contaminants and heavy metals (particularly arsenic, which occur certainly close to the Indus Basin) have inflamed 89 percentage of the groundwater across the U.S. s. not noted working hours due to water-related infection, as well as premature loss of lifestyles are extra than the combined costs of water shortages, salts and flood damage.P Pakistan cannot best improve the lives of its human beings, however additionally its monetary health, through improving its water supply.

Pakistan is the 1/three-US average water shortage within the area, in line with the arena monetary Fund (IMF). Overuse of water, lack of water garage techniques, evaporation ponds, depletion of water resources, overcrowding, and seasonal changes are all contributing factors to

water shortage. As a result, there may be no country wide water approach, and the primary motive for the water shortage is the tensions among Pakistan and India, as well as the pastimes of a united and neighboring authorities. Deforestation and the potential for snow damage. Pakistan's woodland cowl cover decreases by using a mean of 2% yearly.If the trend continues, Pakistani forests may additionally disappear inside the next 50 years (Randhawa, 2017).

Water is a essential detail that makes up three% of the earth's surface. a small part of this overall factor, more or less than 1.1 percentage, exists for the use of living beings (Hinrichsen and Tacio, 2002). ok sanitation, and 5 million people die every yr as a result of water-borne infections, ten times the quantity killed in conflicts. despite the fact that there's sufficient or too much water, pollutants and rising wires poses a extreme danger.

approximately 60 million humans in Pakistan are exposed to arsenic of their consuming water. the most important toxic incident on file. Arsenic poisoning can cause tumors, serious lung issues, skin problems, coronary heart failure, hyperglycemia, necrosis, cerebral perfusion, endocrine, immunological, hepatic, renal, and other troubles, as properly and socio-monetary problems (Rahman et al., 2018). lamentably, there are not any epidemiological information about arsenic toxicity in businesses which are routinely replaced, drinking water change, or the dosage measures they should have in the interim.

The impact of contaminated water on groundwater is discriminated towards because of the variety of objects, as well as the density of the water desk, soil conditions and freshwater contaminants. In damp areas with low bright water tables, irrigation water has a full-size impact at the excessive pleasant of groundwater (Hussain et al., 2001). Faisalabad freshwater studies using a variety of techniques (graphical enhancing, logarithmic nomography, trilinear marriage) has been proven. that groundwater become now not appropriate for direct settlement, agriculture, or industrial use. Groundwater pollution is commonly due to an increase in commercial and domestic waste (Hassan et al., L997).

Faisalabad, Pakistan's most populous metropolis, expenses about 64.7 million gallons of water used in step with day to satisfy its desires. but, residential pumps pumping groundwater and tubing resources have been liable for 3 million liters of this water (Bashir et al., 1999). following the famous annual financial victims of Rs 25 – 58 billion. Water pollutants within u. s. a. all in all it's far due to the unwelcome disposal of by means of-merchandise and waste of the

metropolitan region, which is followed by the useful resource of a shifting infection due to old pipes and leaking pipes and short deliver of filter out water and disinfection. oppressive movements are essential to save you the destruction of water fines and get entry to to exceptional water to be had if you want to defend human beings from water-borne illnesses.

Water pollutants is also the end result of lack of certified employees, special carelessness, and terrible transport of water and germs. remedy assets and the unfold of human activities can pollute groundwater. the fine groundwater can be promoted by means of residential, municipal, commercial, industrial, and agricultural activities. pollutants can input the groundwater by shifting to a low-lying location, which includes the removal or disposal of saved manufacturing waste; underground sources outdoor the water desk, as well as flammable structures or leaky petroleum shipping structures; and structures beneath the water table, including wells.Patio's cutting-edge water deliver is 79 percentage (Chilton, 2000).

Groundwater is an crucial requirement for natural water for irrigation and use, so coping with its availability and performance is vital. Groundwater is surely infected chemically, bodily, or microbiologically. The combination of microbiological and physicochemical contamination currently threatens groundwater, which is a first-rate supply of water absorption (Pedley and Howard, 1997).

Diarrhea is due to excessive groundwater. every day, an anticipated 2,000 younger people underneath the age of 5 die out of diarrhea because of diarrhea. approximately 90% of child deaths from diarrhea are because of infected water, poor sanitation, or sanitation. dozens of others, consisting of older children and adults, be afflicted by excessive levels of dissatisfaction and forget of activity and education opportunities for every dying toddler. The best source of transport in many Pakistani cities is groundwater, which incorporates a wide range of pathogens, which include viruses, greater protozoan viruses, ensuing in 2.five million deaths a yr as a result of set up diarrhea infections (Kosek et al., 2003). drinking fluids are free from pathogens and pathogens and probably harmful compounds.

There are a few corporations in Pakistan which have their personal wastewater treatment flora. according with the NEQS beneath the 1997 Act, government need to take strict measures to cast off sewage in their industries. If a commercial agency is found to be in breach of its guidelines, it should be fined and fined.

With the intention to address the significance of safe water absorption, public interest packages at university, university, university and network stages have to be put in area. NGOs also can have a role in thisiarea. Rural districts have to implement measures to manipulate safe water storage and simple water purification technologies.

Severe research imply that the usage of boiled water reduces the danger of growing water-borne illnesses. Toba-Tek Singh, Multan and Rawalpindi are the 3 districts of the metropolis of Punjab and the rural districts in which the idea is made. A multi-section sampling system changed into used to collect all the samples. The findings found out that forty five.1 percent of human beings in those 3 areas did not follow national requirements to enhance water price lists, and that those human beings were laid low with diarrhea. The closing residents of those three regions adhere to the best country wide standards and aren't but considered to be disadvantaged. The social and financial conditions of the families moreover play an essential role in decreasing the occurrence of diarrhea. it became additionally located that the mother's college, domestic income and life-style are all related to the excessive water absorption, and as a result, the strength of the family.

MATERIAL AND METHODS

The reason of this study became to analyze the physiological and chemical composition of groundwater in Tehsil Taunsa, DG Khan, Punjab, Pakistan. For that reason 20 water samples had been amassed from 20 Tehsil Taunsa union councils and the have a look at become finished in session with the one hundred 66 Taunsa residents to research the understanding of human beings's ideals about the water situation in human beings's lives in Tehsil Taunsa, DG. Khan, Punjab, Pakistan.

Region

The modified look turned into made in some components of Tehsil Taunsa, DG Khan, Punjab, Pakistan.

Sample collection

20 groundwater websites were targeted at Tehsil Taunsa, DG Khan, Punjab, Pakistan for water sampling. Following the aseptic situations, the samples have been accumulated in sterile plastic bottles of polypropylene. All samples had been saved securely and brought directly to the laboratory for investigation. The time between samples and

testing became not more than 6 hours. All of the templates were chemically analyzed take a look at structure

The experimental work is in particular divided into two classes.

• In segment 1 groundwater samples have been analyzed bodily, chemically and bacteriologically. by means of physico-chemical studies, HCO3, Ca, CO3, Cl, EC, Fl, Hardness, Mg, Na, adequate, TS, Alkalinity (mEq / l), NO2, NO3, PO4, SO4, PH, Turbidity, TDS, shade and the smell of water changed into analyzed. Physico-chemical studies is carried out in accordance with the same old methods (APHA, 2005). information of those fashion approaches (APHA, 2005) are furnished inside the table.

• In segment II, a survey is being conducted to supply an infectious sickness profile for approximately 160 Tehsil Taunsa residents. To do research see a listing of questions that are being asked.

desk -1. methods of physical and chemical trying out

Parameters	**Methods**	**Reference Methods**
Ph	Electrometer	AmericaniPublic Health AssociationiColor Scale-4500iH^+ B
Alkalinity	Titration	AmericaniPublic HealthiAssociation Color Scale -2130 B
Nitrogen Dioxide	Spectrophotometric	American Public Health Association Color Scale -4500 Cl B & C
Nitrate	Spectrophotometric	American Public Health Association Color Scale -4500 F-/C
Phosphate	Spectrophotometric	American Public Health Association Color Scale 4500 NH_3 C,
Sulphate	Spectrophotometric	American Public Health Association Color Scale -5530 C

RESULTS

This chapter presents the results of 20 different water samples collected from 20 Union Councils in Tehsil Taunsa, as well graphical representations of each sample value.

Chemical analysis

Bicarbonates

Bicarbonate is an ordinary component of all limestone water. Mineral water from limestone-rich sites usually contains high levels of bicarbonate. Bicabonates plays an important role in storing carbonate acid and keeping the taste of mineral water clean and fresh. Bicarbonate, also called hydrogen carbonate, is liable for maintaining the acid-base balance in your body, i.e. the pH value. It is a base or alkaline, and therefore an important "antagonist" of acid. Bicarbonate acts as an acid buffer.The permissible limits of Bicarbonates in drinking water ranges from 23 to 30 mEq/L in adults. The values of Bicarbonate in the twenty water samples varies between 23-28 mEq/L but its value was 33 mEq/L in the BastiBuzdar . 33 mEq/Lmeans it exceed the permissible limit of WHO. The value of bicarbonates in Mangrotha was 24 mEq/L , in Sokar the value was 24 mEq/L, in BastiBuzdar , it was 33mEq/L, in KotQaisrani, it was 25mEq/L, in JhokeBodo its value was 27mEq/L, in Litra the value of bicarbonate was 21mEq/L, in Vehova its value was 26 mEq/L, in Bohar the value of bicarbonate was 28 mEq/L, in MakwalKalan its value was 23mEq/L ,in Bindi the value was 26 mEq/L, the value of bicarbonates in Dona was 27 mEq/L, in NariJanubi, this value was 26 mEq/L, the value of bicarbonates in TibbiQaisrani was 24 mEq/L, in MoreJhangi its value was 24 mEq/L, in Babbi the value was 26 mEq/L, in Nutkani the value was same as in Babbi 26mEq/L , this value in JaluWali was 24 mEq/L, the value of bicarbonates in Lakhani was 27mEq/L, in Kotani the value was 28 mEq/L and in Chulani the value was 27 mEq/L.

Alkalinity

Alkalinity refers back to the capability to neutralize water acids. The alkalinity of water may be because of the presence of 1 or more ions. those substances ought to contain hydroxide, carbonate and bicarbonate, drinking water and all water must have a pH of 7 this means that it's miles impartial. It is good to have extra alkalinity in our drinking water because it keeps the water secure for ingesting. the quantity of Alkalinity that need to be 20-2 hundred mg/L for standard consuming water. The values of alkalinity in the twenty water samples varies between 205-235 mg/L. The price of alkalinity in all of the sample locations exceeds the permissible restrict of WHO. the very best cost which is 235 mg/L was seen in BastiBuzdar. The price of Alkalinity in Mangrothawas 210 mg/L, in Sokar the fee turned into 230 mg/L, BastiBuzdar , it became 235 mg/L, in KotQaisrani, it changed into 215 mg/L, in JhokeBodo its cost become 210 mg/L, in Litra the fee of Alkalinity was 216 mg/L, in Vehova its fee was 218 mg/L, in Bohar the fee of Alkalinity become 220 mg/L, in MakwalKalan its value changed into 226mg/L, in Bindi the fee was 222 mg/L, the cost of Alkalinity in Dona become 218 mg/L, in NariJanubi, this fee changed into 214 mg/L, the cost of Alkalinity in TibbiQaisrani was 210 mg/L, in Morejhangi its cost become 220 mg/L, in Babbi the price was 210 mg/L, in Nutkani the fee became 205 mg/L, this price in

JaluWali become 223 mg/L, the price of Alkalinity in Lakhani was 210 mg/L, in Kotani the fee was 210 mg/L and in Chulani the cost changed into 215 mg/L.

Calcium

Calcium is the 5th maximum normal detail inside the crust of the earth but is also required for mobile and bone physiology in people. Bones and enamel shop round 95 percent of the calcium inside the human body. extra calcium deficiency in human beings can motive rickets, blood clots, bone fractures, and calcium-triggered coronary heart disease, amongst other things. according to the requirements of the world health enterprise (2011), the permissible restriction in ingesting water is 75 mg / liter. The outcomes in the examine regions show that the calcium awareness stages from 60 mg / L to 112 mg / L.The value of Calcium in Mangrotha was one hundred and five mg/L, in Sokar the price was 60 mg/L, in BastiBuzdar, it was 111mg/L, inKotQaisrani, it become a hundred mg/L, in JhokeBodoits price was 107 mg/L, in Litra the value of Calcium turned into sixty one mg/L, in Vehova its value become 67 mg/L, in Bohar the fee of Calcium turned into 109 mg/L, in MakwalKalan its price turned into sixty six mg/L, in Bindi the price became sixty five mg/L, the cost of Calcium in Dona changed into 108 mg/L, in NariJanubi, this value become 111 mg/L, the price of Calcium in TibbiQaisrani become sixty two mg/L, in Morejhangi its cost turned into a hundred and fifteen mg/L, in Babbi the cost changed into 112 mg/L, in Nutkani the value was a hundred and five mg/L, this price in JaluWali changed into 64 mg/L, the price of Calcium in Lakhani turned into sixty seven mg/L, in Kotani the price become 64 mg/L and in Chulani the value was 101mg/L. The price of Calcium in eleven sample places consisting of Mangrotha, BastiBuzdar, KotQaisrani, JhokeBodo, Bohar , Dona, NariJanubi, Morejhangi, Babbi, Nutkani and in Chulani exceed the permissible limits of WHO.

Carbonate

Carbonate values of a lot much less than 60 mg per litre are termed clean water. 60-120mg/L, quite tough strong, a hundred and twenty-one hundred and 80 mg/L. And more than one hundred eighty mg / L is quite tough. The charge of carbonate in the have a take a look at regions have become below 60 mg/L except in Gulshan Mehmood. Its fee in BastiBuzdar have become sixty 4 mg/L. The values of carbonate varies among 38-64 mg/L. The price of Carbonate in Mangrotha come to be 42mg/L, in Sokar the charge modified into forty three mg/L, BastiBuzdar , it became 64 mg/L, in KotQaisrani, it changed into 38mg/L, in JhokeBodo its fee was 56mg/L, in Litra the rate of Carbonate changed into 45mg/L, in Vehova its charge became 46 mg/L, in Bohar the rate of Carbonate was 59mg/L, in MakwalKalan its value become 40mg/L, in Bindi the fee modified into forty seven mg/L, the charge of Carbonate in Dona grow to be fifty eight mg/L, in NariJanubi, this price turned into 46 mg/L, the price of Carbonate in TibbiQaisrani was 41mg/L, in Morejhangi its value was 42mg/L, in Babbi the price become 42mg/L, in Nutkani the price emerge as forty two mg/L, this price in Jaluwali become forty one mg/L, the charge of

Carbonate in Lakhani modified into 40 mg/L, in Kotani the value come to be 40 mg/L and in Chulani the charge became 43mg/L.

Chloride

Chloride is generally received through blending hydrochloric acid salts along with NaCl and NaCO2, and is introduced from a selection of sources, such as dangerous effluents, manure, and seawater. Chlorides are typically found in decrease concentrations in surface water reservoirs than in groundwater. it's miles vital for the human body's metabolic activities in addition to different critical bodily features. metal tubes and structures, as well as developing plant life, are harmed by excessive chloride concentrations. Chloride concentrations have to now not exceed 250 mg/L, in line with global health business enterprise hints. in the examine regions, the value of chloride degrees from 31-45 mg / L.The fee of Chloride in Mangrotha became 36mg/L, in Sokar the cost changed into 33 mg/L, BastiBuzdar , it changed into forty five mg/L, in KotQaisrani, it become 42 mg/L, in JhokeBodo its fee become 41 mg/L, in Litra the price of Chloride changed into 39 mg/L, in Vehova its cost changed into 37 mg/L, in Bohar the price of Chloride become forty four mg/L, in MakwalKalan its price was 34 mg/L, in Bindi the price was 38 mg/L, the cost of Chloride in Dona turned into 35mg/L, in NariJanubi, this value become 32mg/L, the price of Chloride in TibbiQaisrani turned into 31 mg/L, in Morejhangi its fee changed into 34mg/L, in Babbi the cost become 36mg/L, in Nutkani the fee was 36 mg/L, this price in JaluWali become 35 mg/L, the value of Chloride in Lakhani turned into 36 mg/L, in Kotani the cost turned into 36 mg/L and in Chulani the fee became 35mg/L.

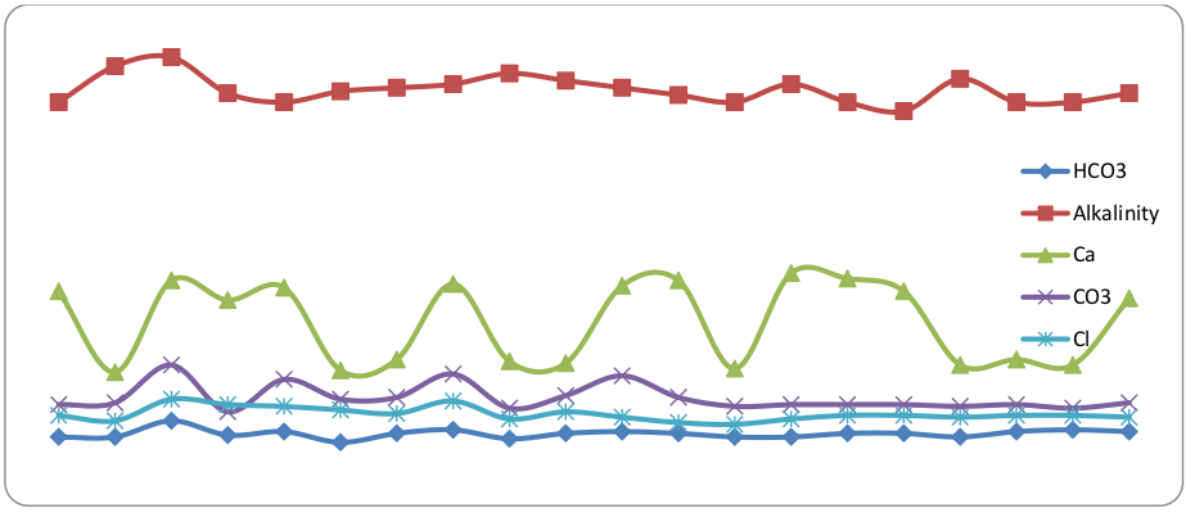

Fig-1: Scattered graph showing the concentration of HCO3, Alkalinity, Ca, CO_3 and Cl(in standard units) in the drinking water of the different locations of study Areas

Figure-1 shows the measured pH, Bicarbonates, Carbonates, Sulphates, Hardness, Conductivity, Chloride, Calcium, Fluoride, Magnesium and Potassium values. We have taken samples from twenty different locations of Taunsa Sharif including Mangrotha, Sokar, BastiBuzdar, KotQaisrani, JhokeBodo, Litra, Vehova, Bohar, MakwalKalan, Bindi, Dona, NariJanubi, TibbiQaisrani, MoreJhangi, Babbi, Nutkani, JaluWali, Lakhani Kotani and Chulani. All these sites are 7-8 km away from one another.

Physical Analysis

Electrical Conductivity

The electrical conductivity of water is measured through conductivity. The presence of inorganic particles such as chloride, nitrate, sulphate, and phosphate ions (negatively charged ions) or sodium, magnesium, calcium, iron, and aluminium affects water conductivity dissolution (positively charged ions). Oils, phenols, alcohols, and sugars are organic substances that do not transmit electrical current well and so have low conductivity in water. Temperature has an impact on conductivity: the greater the temperature of the water, the higher the conductivity. The values of conductivity in the study area varies between 1230-1260 μS/cm. Highest value of electrical conductivity is shown in Babbi and Nutkani. The value of conductivity in Mangrotha was 1238 μS/cm, in Sokar the value was 1245 μS/cm, BastiBuzdar , it was 1231 μS/cm, in KotQaisrani, it was 1230 μS/cm, in JhokeBodo its value was 1235 μS/cm, in Litra the value of conductivity was 1240 μS/cm, in Vehova its value was 1244 μS/cm, in Bohar the value of conductivity was 1233 μS/cm, in MakwalKalan its value was 1244 μS/cm, in Bindi the value was 1247 μS/cm, the value of conductivity in Dona was 1237 μS/cm, in NariJanubi, this value was 1239 μS/cm, the value of conductivity in TibbiQaisrani was 1248 μS/cm, in Morejhangi its value was 1240 μS/cm, in Babbi the value was 1260 μS/cm, in Nutkani the value was 1260 μS/cm, this value in JaluWali was 1242 μS/cm, the value of conductivity in Lakhani was 1245 μS/cm, in Kotani the value was 1247 μS/cm and in Chulani the value was 1245 μS/cm.

Fluoride

Fluorine is a commonplace element that does not occur in nature due to its excessive reactivity. It represents zero.three g / kg of the earth's crust and is gift as fluoride in a number of minerals, the most not unusual being fluorescein, cryolite and fluoropatite. The oxidation country of fluoride ion is -1.The permissible limit of Fluoride in drinking water is 1.five mg/L. The fee of fluoride inside the have a look at area is not exceeding 1.5 mg/L. The fluoride awareness inside the examine vicinity varies between zero.5-1 mg/L. The Fluoride concentration in Mangrotha turned into 0.85mg/L, in Sokar the fee become zero.8 mg/L, Basti Buzdar , it changed into 0.80 mg/L, in KotQaisrani, it turned into zero.70 mg/L, in JhokeBodo its fee changed into 0.seventy eight mg/L, in Litra the price of Fluoride was zero.7 mg/L, in Vehova its price became zero.7 mg/L, in Bohar the awareness of Fluoride was zero.seventy eight mg/L, in Makwal Kalan its

cost changed into 0.7 mg/L, in Bindi the value was zero.7mg/L, the fee of Fluoride in Dona became zero.91mg/L, in Nari Janubi, this price changed into 1mg/L, the value of Fluoride in Tibbi Qaisrani was zero.8mg/L, in extra jhangi its value turned into 0.8mg/L, in Babbi the cost was zero.65mg/L, in Nutkani the cost become 0.sixty five mg/L, this value in JaluWali was zero.five mg/L, the value of Fluoride in Lakhani became zero.8 mg/L, in Kotani the value was zero.nine mg/L and in Chulani the cost was zero.6mg/L.

Hardness

Water hardness pertains to the amount of ca and mg dissolved in water. In difficult water, dissolved salts, specially calcium and magnesium, are severa. you may have felt the outcomes of tough water the final time you washed your fingers. After using the soap to wash your fingers, you may word a layer of remnant in your fingers depending at the hardness of the water. At tough water, soap combines with calcium (that is present in a high percent) to provide "soap dirt." when cleansing with hard water, you'll want to use more soap or detergent. cleaning with tough water needs the usage of extra soap or detergent. The permissible limit of hardness in water is 500 mg/L. The price of hardness inside the have a look at area varies between one hundred forty five-550 mg/L. In some areas the values of hardness exceed the permissible limit of WHO. The value of hardness in Mangrotha become 539 mg/L, in Sokar the cost became 150 mg/L, BastiBuzdar , it changed into 537 mg/L, in KotQaisrani, it become 530 mg/L, in JhokeBodo its fee changed into 535 mg/L, in Litra the fee of hardness was154 mg/L, in Vehova its fee changed into 155 mg/L, in Bohar the cost of hardness become 540 mg/L, in MakwalKalan its cost become 152 mg/L, in Bindi the value was 162 mg/L, the value of hardness in Dona changed into 546mg/L, in NariJanubi, this price was 548 mg/L, the cost of hardness in TibbiQaisrani became 162mg/L, in Morejhangi its cost become 542 mg/L, in Babbi the fee turned into 550 mg/L, in Nutkani the value became 545 mg/L, this value in JaluWali became a hundred forty five mg/L, the cost of hardness in Lakhani was one hundred sixty mg/L, in Kotani the price became 156 mg/L and in Chulani the value become 544 mg/L.

Magnesium

Magnesium is found naturally in water and is the eighth most naturally occurring element in the crust of the earth. It's present in minerals like dolomite and magnetite, and it's necessary for organisms to function normally. Magnesium is found in the human body in roughly 25 grammes (60 percent in bones and 40 percent in muscles and tissues). The maximum amount of magnesium allowed in water, according to WHO guidelines, is 150 mg per litre. The magnesium concentration in the study region ranged from 65 to 76 milligrammes per litre. The study's findings revealed that the magnesium concentration in the study area was lower than the WHO requirement.

Sulfate

Sulfate comes mainly from the dissolution of sulfate and is present in almost all aquifers. High concentrations of sulfate can be caused by oxidation of pyrite and mine drainage.In natural water, sulphate concentrations range from a few milligrammes per litre to hundreds of milligrammes per litre, but there are no reports that sulfate has a major adverse effect on human health. The WHO has set a maximum ideal limit of 250 mg / L for sulfate in drinking water.Sulfate concentrations in the study area range from 165 to 85 mg/L. The results show that Taunsa Sharif's sulfate concentration is below standard and can not be harmful to human health.

pH

The pH price is an essential parameter for assessing the acid-base balance of water. it is also an illustration of the acidity of the water. The most allowable pH variety recommended through the who's 6.5 to 8.five. The scope of the current survey is 7.5-8.1, which falls in the scope of WHO standards. the overall pH results display that Taunsa Sharif water supply is right and adequate. essentially, the pH cost is decided by using the quantity of dissolved CO2, which paperwork carbonic acid in water.

Sodium

Sodium is a white metallic element of silver, that is low in water. adequate amounts of sodium inside the human body can prevent many deadly illnesses together with kidney damage, excessive blood stress and headaches. consistent with the arena fitness company, the attention of sodium in drinking water is 50 mg / 1. in the take a look at region, the effects of the observe display that the sodium attention variety is 80-99 mg / 1.

Potassium

Potassium is a silver white alkali, which reacts exceedingly with water. Potassium is important for the functioning of organisms and is therefore found in all human and animal tissues, mainly plant cells. the overall quantity of potassium inside the human body is between a hundred and ten-a hundred and forty grams. it is vital for human functions consisting of heart safety, blood stress regulation, protein breakdown, muscle contraction and nerve stimulation. Potassium deficiency is rare, however it could cause melancholy, muscle weak spot, and arrhythmias. The allowable restriction for potassium is 1omg / 1 in step with world health organization requirements. The outcomes display that the potassium concentration within the take a look at region is 12 to 21 mg / 1. these consequences do now not meet WHO requirements

and can lead to sicknesses associated with immoderate potassium deficiency.

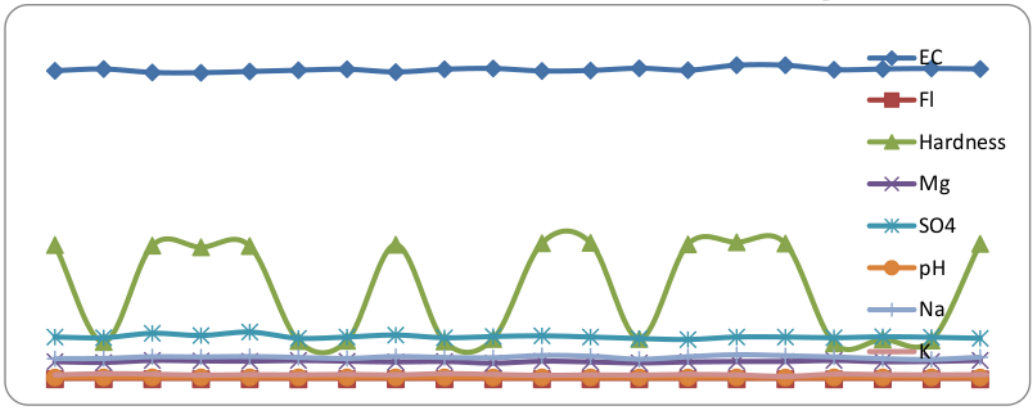

Fig-2: Scattered graph Showing the concentration of Electrical conductivity, Fluoride, Hardness, Magnesium, Sulphates, pH, Na and K (in standard units) in the drinking water of the different locations of the study area.

Turbidity

Turbidity is a measurement of a liquid's relative clarity. It is a measure of the quantity of light scattered from the substances in the water as light passes through the water sample, and it is an optical property of water. The dirtier it is, the higher the intensity of the scattered light. Substances that contaminate water include soil, odors, very small inorganic and organic matter, algae, dissolved organic compounds, and plankton and other microorganisms. The WHO has set 1 NTU as the highest ideal limit for drinking water contamination. In the study area, the results of the study show that the dirt values range from 0.12 to 0.9 NTU. Overall contamination results show that Taunsa Sharif water source is ideal and within reasonable limits.

Total Dissolved Solids (TDS)

The total concentration of soluble solids and soluble compounds in water is referred to as TDS. TDS is made up of inorganic salts and traces of biological materials. Calcium, magnesium, potassium, and sodium are some of the most common inorganic salts found in water. Subunits are what they are. Anions include carbonate, nitrate, bicarbonate, chloride, and sulphate. Ions are negatively charged cations, while cations are positively charged. The permissible TDS level for drinking water is 1000 mg/liter, according to the World Health Organization. TDS levels in the study area range from 522 to 685 mg/L. The research area's TDS value did not surpass the WHO limit.

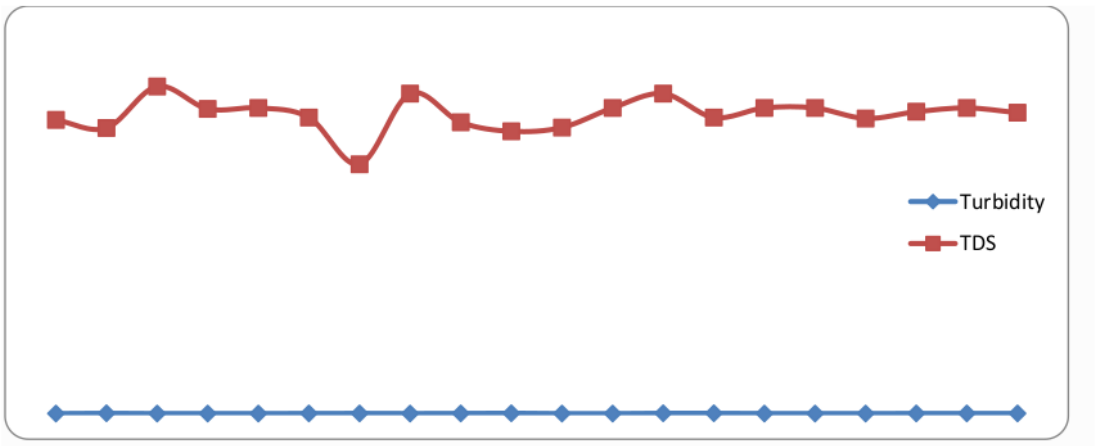

Fig-3: Scattered graph showing the values of Turbidity and TDS (in standard unit) in the drinking water of the different locations of study Area.

Odor

The taste and smell in consuming water can suggest any contamination or malfunction at some point of water remedy or distribution. consequently, it is able to suggest the presence of potentially harmful substances. The cause need to be investigated and suitable fitness officials should be consulted, specially in case of surprising or considerable adjustments. in step with the arena health business enterprise, the smell and flavor of drinking water need to be fine. The water within the examine location is absolutely tasteless. normal, the odor results display that Taunsa Sharif water source is ideal and ok.

Color

even though water does not replicate blue-green light and can be located in deep locations, it ought to appearance colorless when used at home. preferably, tap water isn't always blue or blue-green. consistent with the arena fitness organisation, drinking water ought to be colorless. The water inside the examine location is completely colorless. typical, the odor consequences show that Taunsa Sharif water supply is right and ok.

DISCUSSION

Physiochemical characteristics of water samples accrued from resources (20 union councils of Tehsil Taunsa District Dera Ghazi Khan Punjab, Pakistan), disinfection, outcomes showed HCO3, alkanity, Ca and The water-pH is inside the decreased range of length 23-28mEq / L, 205-235mg / L, 60-112mg / L & 7.5. – eight.1 respectively and did not differ significantly among sample factors. It remains inside their endorsed variety of 6.5 (WHO 1997: 9aaf3f374c58e8c9dcdd1ebf10256fa5 Ethiopian agency 2013). Water pH values acquired from this view are lower than the effects of preceding studies, i.e., basic pH statistics of water our bodies of various towns, pH 7.6 in AkakiKality, small town Addis Ababa (Birhanu., 2007), pH 8 . three in Ziway (Bedane, 2008) and pH 7th. eighth in Adam (Eliku and Sulaiman, 2015). the variability can be because of the geological situations of the water assets.

Doses of Fluorides, Mg, SO4, Na, preferred hardness and mixing of water samples ranged between 0.five-1 mg / L, sixty five-seventy six mg / L, eighty five-100 and sixty-5 mg / L, 80-ninety-9 mg / L, one hundred and forty-5-550 mg / L and

zero.12 – zero.nine NTU respectively. TDS records for water samples within a present that has been taken into consideration to be connected to much less than the recommended recommended restrict (WHO 1997: Ethiopian business enterprise requirements 2013) and TDS fees variety from 522-685mg / L.

The residual content of chlorine content material of water samples inside the sample samples ranged from 31-forty-five mg / L. those values are substantially higher than the consequences mentioned in the town's Ziway treatment (0.79 mg / l) (Bedane, 2008) and are recorded in AkakiKality, subcity of Addis Ababa (zero.67 mg / l) (Birhanu, 2007). but, FRC values have been higher than 0.03 mg / l recorded in the big transport tank of the city of Bahir Dar (Kassahun, 2008).

In natural water structures, electric fluctuations are a fixed degree of the water restrict retaining the electric limit. Soluble salts consisting of NaCl and potassium chloride have a main effect on this. The high-quality EC (1260 μs / cm) switched to recordings from Babbi and Nutkani water vessels, despite the fact that the decrease EC became out to be recorded in water samples obtained from KotQaisrani (1230 μs / cm) .TheECreportsofwatersource from special cities of the u. s. a. they're far more precious than gift studies (Yasin et al., 2015: Y.Merideand Ayenew, 2016).

adequate water is wanted for good fitness. Addition of diverse assets, further to a beneficial quantity of water. specialists (Van der Hoek et al., 2001) consider that water has a profound effect on fitness improvement. Water-related eligibility activities can be prevented via taking steps to enhance water fine first. according to several research, households who boiled their consuming water had a decrease prevalence of diarrhea (Blake et al., 1991). in step with the findings, 11.9 percentage of respondents enhance the beauty of their water through boiling it, although heat is a relatively cheaper way to get rid of waste at domestic and can be performed with the aid of almost all people, with some techniques along with filtering and others extra costly and tough to implement. moreover, 28.eight% of the agencies that link to each cleaning over boiling to enhance their ingesting water, display that they have been very involved approximately the satisfactory

of the water they used. in keeping with experts, the fine used water have become so terrible that it could not be furnished with out safety measures. In his view, (Aini et al., 2007) targeted at the movement taken by means of households to increase the first-class water. according to studies, a few households boil water before consuming it, at the same time as others promote water filters to enhance the fines of their water they use. swallowing safe water is essential to human fitness. in keeping with several research, providing safe consuming water can reduce diarrhea by means of 15-20%. (Fritschel, 2002) .in all likelihood most of the people of those interviewed have been sixty-seven percentage. the general club (86.1 percentage) said Pakistan now faces severe water shortages, in keeping with its findings. human beings had been properly aware about water troubles.

then again, simplest 19.four percentage of respondents recognise that awful water influences a person's fitness in some way. none in their family participants have suffered as a result of the small water bill, in keeping with 24.four percentage of respondents. in reality, they have been using first rate water property that protected tubing resources and the life of water filtration flora, and some of them were making ordinary efforts to improve water great.

Sixty-seven percentage. , and jaundice occupies 240 in keeping with cent of sanatorium beds in Pakistan (unnamed, 2006). even as further suppressed by way of the results they have been experiencing, 23.1 percent of families say they frequently be afflicted by belly / belly issues. a few homes, at that time, seldom faced this difficulty. 12.5 percent of families had free / wet actions on a regular basis, at the same time as fifty-one in 246 (20.7) had this condition a great deal higher. sixteen households.9% advised that they have troubles with cleaning. humans have suffered from bloody stools and constipation.

severa studies have determined that the connection among particular water and diarrhea varies in keeping with the level of water availability, indicating that the amount of water has a more impact on body fat improvement than big amounts of water, and that water availability relies upon on health or loss. of first-level assist

system (Jensen et al., 2004; Van der Hoek et al., 2001). in keeping with the outcomes, extra than half of respondents, or 44.four percent, stated they had been extra cautious in their water use as they frequently faced water shortages in families. however, some of them found that losing water changed into against Islamic requirements, and as a end result, they had been extraordinarily careful about water use and averted dropping it. in addition, forty.6 percentage of respondents have been well aware about their water use, and zero.6 percent changed to being absolutely blind to their water use.

in step with respondents, one of the maximum critical motives in the meanwhile for no longer demanding about water use changed into the need to maintain true hygiene, which could not be used for restricted water use. moreover, as cited within the FGDs, bathing turned into converted into one of the motivations given by using the respondents to use greater water due to the fact people frequently wasted water during this leisure time so that you can maintain our our bodies effortlessly (pak). the want to preserve water in Islam has been referred to with the help of 38.eight% of respondents. and the second one most commonplace reason has modified to keeping cash in extra debt (29.4%). Water is said to be the most crucial supply of water for all living things. some passages in the Holy Quran discuss the relationship between existence and water. this is genuine in each the Holy Quran and the Sunnah (De Chatel., 2002). in addition, the zero.33 principal goal typically cited turned into the need to preserve water assets, as Pakistan already has severe water shortages. loss of sanitation donations is a excellent reason for area illness (UNICEF, 2007). in step with the global business of fitness, the growth of toilets reduces diarrhea instances through 37%. (2004). having a rest room, in step with experts (Van der Hoek et al., 2001), is one of the maximum not unusual varieties of acute gastroenteritis. As a result, the toilet is an important feature in enhancing the sturdiness of the man or woman.

it is a 9aaf3f374c58e8c9dcdd1ebf10256fa5 reality that hand washing is crucial to actual lifestyles. Washing fingers for the duration of crucial instances can help lessen the severity of diarrhea (WHO, 2004: Maccan-Markar, 2006: Curtis, 2003). An skilled mother, who is aware of many water-borne issues, inclusive of hygiene

and sanitation, which have an impact on human fitness, performs a vital role in instructing her relatives. In high cultural settings, mothers are basically responsible for water management, in addition to home management, hygiene, hygiene, and fitness, in addition to the kid's development on hygiene issues to apprehend the impact of terrible hygiene. in fitness, consistent with IANGWE (2004).

regarding the dying of a young baby, Esrey talked about that parental training and the beauty of lavatories over strolling water depended on each different. properly-educated women dressed their children, mainly in filthy places with very little lavatories, and whilst bottled water arrived, their green use became a addiction to offer advanced hygiene situations for her newborn infants. further, in less-advanced nations, maternal gaining knowledge of time have become increasingly commonly determined to be associated with a more efficient infant lifestyles (Glewwe, 1999: boadi and kwitunen, 2005).

diverse studies genuinely show that families with better earning had been at a lower hazard of passing than human beings incomes decrease families. depending at the social and economic elements, educated moms are extra involved with the health in their families, extra privy to the high best of their ingesting water, and are making efforts to enhance it.

eventually, miles concluded that the most critical factors that contributed to defining the final health outcomes were domestic profits, Defendant education, family type, ingesting water source and Gart Water box.

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