COMMUNITY SERVICE PROJECT

ON

ACCESS TO SAFE DRINKING WATER

Submitted in the partial fulfilment of the requirement for the completion of first year degree

BACHELOR OF SCIENCE

Submitted by

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1st B.Sc., MPC (EM),

2021-22

Under the guidance of

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DECLARATION

I hereby declare that this project report on **"COMMUNITY SERVICE PROJECT ON ACCESS TO SAFE DRINKING WATER"** comprises my own project work, except where specifically mentioned and that it is not substantially the same as any other project reports which has been submitted by any other person.

(SAPPARAPU KOTA VEEEA NAGA SIVAMANI)

Narsapuram.
Date:

CERTIFICATE

This is to certify that the project work on **"COMMUNITY SERVICE PROJECT ON ACCESS TO SAFE DRINKING WATER"** submitted by **SAPPARAPU KOTA VEEEA NAGA SIVAMANI** of 1st B.Sc., M.P.C (EM) Sri Y.N. College (A), as the part of curriculum, is based on the bona fide work carried out under my supervision.

Dr. S. B. Ronald,
Project Guide.

Narsapuram.
Date:

ACKNOWLEDGEMENT

I take this opportunity, with great pleasure, to put on record our ineffable personal indebtedness to our **Secretary and Correspondent Dr. C. Satyanarayana Rao**and our Principal **Dr. A. P. V.Apparao,** for providing us all the necessary departmental facilities.

I specially thank our project guide &honourable HOD, Chemistry**Dr. S. B. Ronald**for his guidance throughout our project and gave us an urge to take up this project and also gave great support and for providing us all the required information regarding the project and valuable guidance, patience throughout the project.

Finally, I thank all the faculty of our department for always encouraging us. I also thank my friends, who have helped us all time for the completion of our project. I am thankful to our college for providing us all the required facilities. I am also wish to express our sincere thanks to the households of my study area for their support and patiently gave answers to my questionnaire.

SAPPARAPU KOTA VEEEA NAGA SIVAMANI

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CHAPTER-1

INTRODUCTION

Water, the elixir of life is essential for the existence of life anywhere in the Universe. As two thirds of our planet earth is covered with abundant water, our earth is popular with the name 'blue planet'. The most ironic part of it is the scarcity of drinking water amidst of plenty. Earlier wars were made for land, money and precious metals. Now wars are made for water. In the last 2000 years human population has grown fifty times whereas the quantity of water on our planet remained same. As per the recent UN estimates two thirds of population is going to water stressed by 2025.

According to National Institute of Transforming India (NITI Aayog, 2018), 70% of India's water supply is contaminated. Further, this study warns that India is facing its worst water crisis at present and that the demand for the potable water will outstrip supply by 2030 if steps are not taken. About 600 million people face high to extreme water stress. Nearly 2,00,000 people die every year due to inadequate access to safe water. 21 cities including Hyderabad, Chennai, Bengaluru, and Delhi will run out of groundwater affecting 100 million people. 6% loss in the country's Gross Domestic Product (GDP) by 2050.

The quality of water has been degraded day by day in the name of modern development in which, the need based sustainable development has turned into greed based exploitative development showing scant regard to ecology and environment. Intensive and extensive human activities in the sectors like agriculture, aquaculture, industry and urbanization are responsible for making the water unfit for its designated uses.

Though the picture of water with respect to the whole country was running out of safe drinking water, our Godavari region is flourished with plenty of water. River Godavari is passing on either side the East and West Godavari Districts. As the river Godavari merges with the Bay of Bengal at our region, the river becomes estuary, hence the water become brackish and it is not suitable for our designated use. Fortunately, Godavari water is supplied though the canals derived from the Sir Aurther Cotton Barrage at Dowleswaram. These canals bring sufficient water for agriculture, aquaculture and domestic uses. All Panchayats and Municipalities draw water from these canals and filter and purify the water and made it suitable for drinking purpose. Then the purified

water is supplied to the entire village and town though pipelines. The water supplied to the households at a specified timings and either once or twice a day. During summer due to scarcity of water, drinking water is supplied once a day or once in two days. Apart from the supplied drinking water, practicing of using groundwater is also seen in many households and for commercial use.

Drinking of water from any source is not safe, it is to be purified properly, and also adequatequantity of potable water should be available for everyone for their designated use. In this regard I studied by survey on “access to safe drinking” as a part of my curriculum. I have selected a small unit area having 20 households, surveyed and studied with certain objectives.Made a questionnaire, it was analysed. Based on the analysis, I have given awareness among the household regarding the significance of safe drinking water, consequences of drinking unsafe or contaminated water. Explained them about the water borne diseases and also personal hygiene.

CHAPTER-2

REVIEW OF LITERATURE

Water is one of the precious natural resources. “Follow the water” is the basic strategy of man for the existence of life in the Universe (Poholille and Pratt, 2012). The changes in living style of human beings right from the ancient times to modern times are infinite. The initial driving force for the change in life style of ancient human was ‘pain’ and in order to overcome the pain, man has invented and used the tools and equipment. Thus, the pain-centric development turned into comfort centric development at the expense of quantity as well as quality of the natural resources.

Water is connected to every form of life on earth and is the basic human need, equally importantas air. Water is connected to every aspect of human day-to-day activities directly or indirectly.At a basic level, everyone needs access to safe water in adequate quantities for drinking,cooking, personal hygiene and sanitation facilities that do not compromise health or dignity.Close to 0.3 million children under the age of five (U5) die every year in India just due to infectious diarrhea. These children are mostly from socio-economically vulnerable communities. Drinking water that is contaminated with fecal pathogens and living in poor sanitation and hygiene (WASH) conditions are the main causes of diarrhea. Primordial preventive measures including sustained access to microbially safe drinking water, proper use of toilets and handwashing with soap can prevent these meaningless deaths (Padma *et al*., 2021).

Clean water is fundamental to human health and well-being. UN’s Sustainable Development Goal # 6.1 is to provide all households with safe quality and adequate quantity of water by 2030. Equal and equitable access to safe and affordable drinking water is part of that goal. The governments of countries have the responsibility of providing access to safe drinking water to its populations through improved supplies. The Joint Monitoring Program (JMP) for Water Supply and Sanitation of WHO and UNICEF tracks and monitors global access to safe drinking water (Kostyla et al., 2015). For practical purposes of monitoring, the JMP classifies drinking water supplies as improved water and unimproved water(World Health Organization & UNICEF, 2017).

Inadequate quantities and poor quality of drinking water make people exposed to a variety of preventable illnesses and they remain trapped in morbidity and increased DALY (disability adjusted life years) (World Health Organization, 2019). In 2017, 1.6

million people worldwide died of diarrhea, of which >0.5 million were U5 children (Dadonaite et al., 2019). Incessant diarrhea also impacts the nutrition and growth of children, especially those living in socio-economically compromised environments (Mokomane et al., 2018). Microbial contamination of drinking water is closely related to poor water, sanitation, and hygiene (WASH), and influenced by the knowledge, attitude, and practices (KAP) of individuals and communities (Kuberan et al., 2015).

Safely managed drinking water is defined as "drinking water from an improved water source that is located on-premises, available when needed and free from faecal and priority chemical contamination" (World Health Organization & UNICEF, 2017).

India.(MDGs, 2012) Pathogens such as bacteria, viruses, protozoa, cyanobacteria and helminths are examples of biological contaminants (Sharma & Bhattacharya, 2017). Diseases caused by microbial contamination include diarrhea, cholera, typhoid, dysentery, hepatitis A and E, poliomyelitis etc. (Sharma & Bhattacharya, 2017). Worldwide, infectious diarrhea caused by bacteria and viruses is a leading cause of mortality of children under the age of five (Francis et al., 2015) Diarrheagenic pathogens such as *Escherichia coli, Salmonella typhi, Shigella flexneri, Vibrio cholerae* and *Rotavirus* spread through water and food contaminated with human or animal feces.

Drinking water is the water intended for human consumption for drinking and cooking purposes from any source. It includes water (treated or untreated) supplied by any means that is for human consumption (BIS, 2012).

Water of satisfactory quality is the fundamental indicator of health and well-being of asociety and hence, crucial for the development of a country. Contaminated water not only has thepotential to pose immediate threat to human, but also can affect an individual productive rate (Mpenyana&Momba, 2012).

Water dissolves many kinds of materials and transports them from one place to another within and outside the living system. This unique property of water is now cursed the life for the water getting polluted. The seeds of the pollution started at the earlier times of civilization, but being nomadic they used to move constantly. Hence, the wastes are getting diffused, scattered and diluted. Later, people adopted agrarian way of life and established permanent settlements; consequently, the pollution became a point sources. At that time people don't know the significance of safe drinking water until they prone

to water borne diseases. With the advent of microbes and onset of water borne disease people started giving much importance to the quality of water (Vuorinen et al., 2007).

In 19th century the global population has grown four times where as the urban population has grown 13 times, the well-developed villages, towns and cities started producing point source of pollution to the nearby water resources such as ponds, lakes, rivers etc., (Vourinen et al., 2007)

The quality of water is now an emergency concern for everyone all over the world, the decision of World Health Organization 29the session (WHO, 1976) signifies that the water for the consumers should be free from pathogenic organisms and toxic substances. Moreover, it is the worldwide current environmental issue in research (Ouyang, 2005, Shrestha and Kazama, 2007).

Safe drinking water is simply defined by WHO as "water that does not represent any significant risk to health over a lifetime of consumption, including different sensitivities that may occur between life stages" (WHO, 2006). Water becomes unsafe for consumption when it gets polluted with physical, chemical, biological, or radiological contaminants. Of these, microbial contamination is by far the major concern, especially in low-and-middle income countries like

Fresh water is the finite resource essential for agriculture, industry and even human existence, without which of adequate quantity and quality, sustainable development will not be possible (Kumar, 1997).

CHAPTER-3

METHODOLOGY

Dagguluru villagewas selected and about 20 households were selected for the survey on 'access to safe drinking water', a questionnaire was prepared comprising the basic details as well as questions regarding 'access to safe drinking water' for the people in detail by asking 55 questions, the data obtained from the survey was analysed. Based on the analysed data wherever there is a significance to create awareness to inculcate drinking safe drinking water among the people of study area, they were given awareness programme.

The questionnaire used for the survey is as follows.

QUESTIONAIRE

Section I. Demographic Questions:

1. What is your name?
2. Gender of respondent 1- Male
   2- Female
3. What is your age? ----- Years
4. Location/ Address:

_____

5. Type of family 1-Nuclear
   2-Joint

6. a. Number of adult males in the household _____
   b. Number of adult females in the household_____
   c. Number of male children _____
   d. Number of female children_____
7. How many members in the household are employed? _____
8. What is the monthly household income? 1- <5,000 Rs
   2- 5,001-10,000 Rs
   3- 10,001-15,000 Rs
   4- 15,001-20,000 Rs
   5- > 25,000 Rs

Section II. Drinking Water (General)

9. Which of the following sources of drinking water is available in your neighborhood
   1- Bore well/ hand pump
   2- Public tap
   3- Community well
   4- Household water supply (piped)
   5- Other

10. Which of the following sources of drinking water does pumpyour household use?
   1- Bore well/ hand
   2- Public tap
   3- Open well
   4- Household water supply (piped)
   5- Other

11. What is your main source of water? (Single response)
   1- Bore well/ hand pump (skip to Q. 12)
   2- Public tap (skip to Q.18)
   3- Open well (skip to Q.28)
   4- Household water supply/ piped (skip to Q. 32)
   5- Other specify _____ (skip to Q.36)

<u>Bore well/ hand pump</u>:

12. How far (in meters) is the bore well/ hand pump that you use?

_____

13. How long (in minutes) does it take to fetch water and return home?

_____

14. Who fetches water most often?
   1- Adult male
   2- Adult female
   3- Male child
   4- Female child

15. Has the bore well / hand pump broken down in the past one year?
   1- Yes
   2- No (skip to Q. 36)

16. How frequently has the bore well/ hand pump broken down during the past one year?

1. Once a week
2. Once a fortnight
3. Once a quarter
4. Once in six months
5. Once a year

17. Is the bore well/ hand pump fixed promptly when it breaks down? 1- Yes
2- No

GO TO Q. 36

<u>Public tap</u>:

18. How far (in meters) is the public tap that you use? _____
19. How long (in minutes) does it take to fetch water and return home?

_____

20. Who fetches water most often? 1- Adult male
2- Adult female
3- Male child
4- Female child
21. What is the frequency of water supply? 1- More than once a day
2- Once a day
3- Once in two days
4- Once in three days
5- Once a week
6- Other
22. Is this frequency sufficient for your needs? 1- Yes (skip to q. 24)
2- No
23. How often would you like to get water? 1- More than once a day
2- Once a day
3- Other
24. On the days that you get water, how many hours do you usually get water for?

25. Has the public tap broken down in the past one year? 1- Yes
2- No (skip to Q. 36)
26. How frequently has it broken down? 1- Once a week
2- Once a fortnight

3- Once a quarter

4- Once in six months

5- Once a year

27. Is the public tap fixed promptly when it breaks down? 1- Yes

2- No

GO TO Q. 36

Open well:

28. How far (in meters) is the open well from which you get water? _____

29. How long (in minutes) does it take to fetch water and return home? _____

30. Who fetches water most often? 1- Adult male

2- Adult female

3- Male child

4- Female child

31. What is the frequency of cleaning the well? 1- Once in a quarter

2- Once in six months

3- Once a year

4- Not cleaned in the last year

GO TO Q. 36

Household water supply (piped):

32. What is the frequency of water supply? 1- 24 hour supply (skip to q. 36)

2- More than once a day

3- Once a day

4- Once in two days

5- Once in three days

6- Other

33. Is this frequency sufficient for your needs? 1- Yes (skip to Q. 36)

2- No

34. How often would you like to get water? 1- More than once a day

2- Once a day

3- Other

35. On the days that you get water, how many hours do you usually get water for?

_____

CONTINUE TO Q. 36

Common Questions

36. Is the quantity of water that you receive (from your main source of water) adequate? 1- Yes
2- No

37. Is water available (from your main source) throughout the year?
1- Yes (skip to Q. 39)
2- No

38. Which months do you face scarcity? Specify the month: _____

39. Generally, how does the water smell?
1- No smell
2- Foul smell

40. Generally, does the water have a taste? 1- Yes
2- No (tasteless)

41. Generally, what does the water look like? 1- Clear
2- Cloudy/ dirty

42. Do you pay for water? 1- Yes
2- No (skip to Q. 45)

43. How much do you pay a month? _____

44. Are the bills that you receive accurate? 1- Yes
2- No

45. Have you made a complaint related to your drinking water service in the past one year? 1- Yes
2- No (skip to Q. 48)

46. To whom did you complain? _____

47. What was the result of the complaint? 1- Prompt action taken
2- Delayed action taken
3- No action taken

48. Overall, are you satisfied with your drinking water service? 1- Satisfied
2- Dissatisfied (skip to Q. 50)

49. What is the extent of your satisfaction? 1- Complete (skip to Q. 51)
2- Partial (skip to Q. 51)

50. What are the reasons for your dissatisfaction?

_____

51. Have you paid a bribe for any service related to drinking water in the last one-year?

1- Yes

2- No (interview completed)

52. For what purpose have you most recently paid a bribe?

1- To get a connection for water supply

2- To finish repair work

3- Other

53. How much did you pay? _____

54. Was the bribe demanded (or did you pay on your own) 1- Demanded

2- Paid on my own

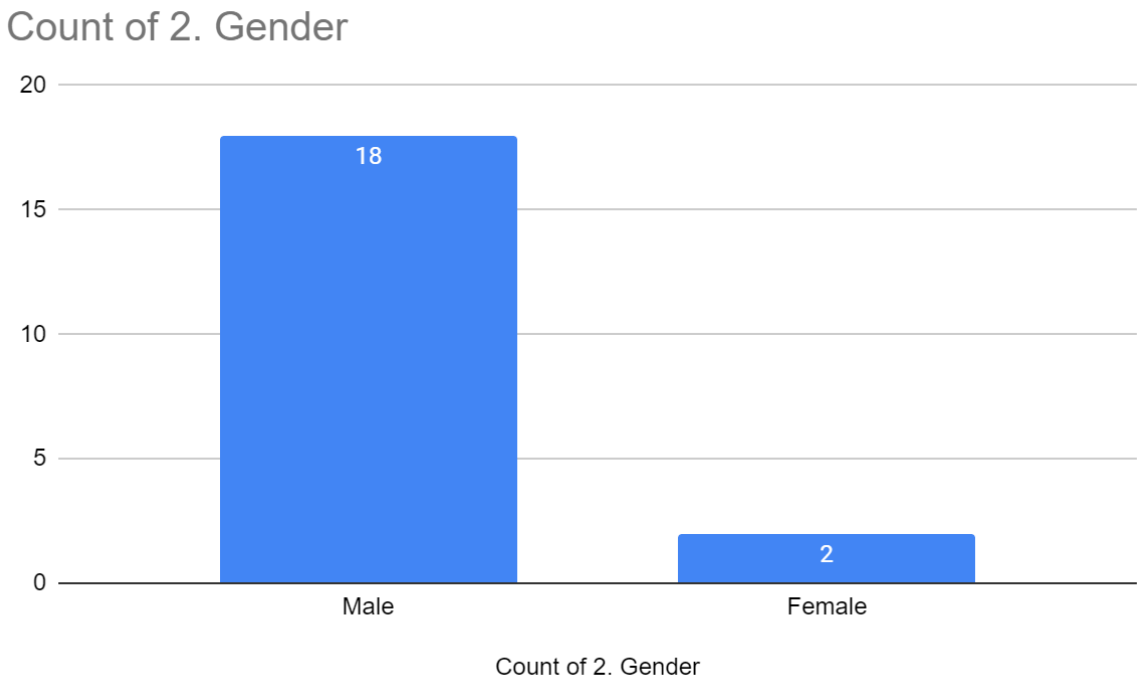
55. Did the work get done after paying the bribe? 1- Yes

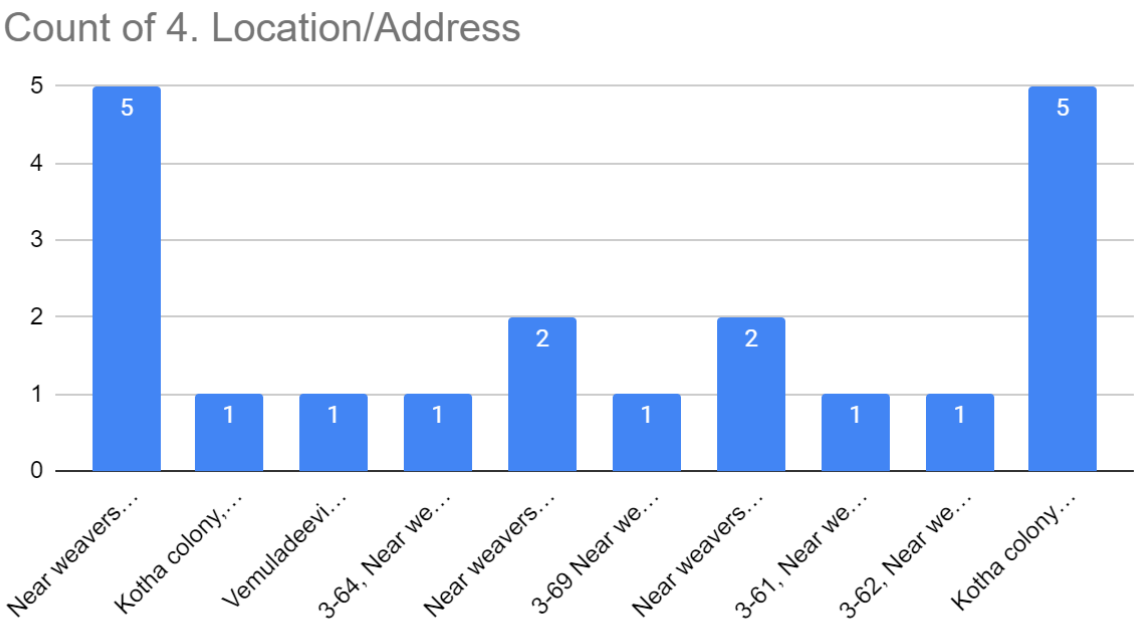
2- No

CHAPTER-4

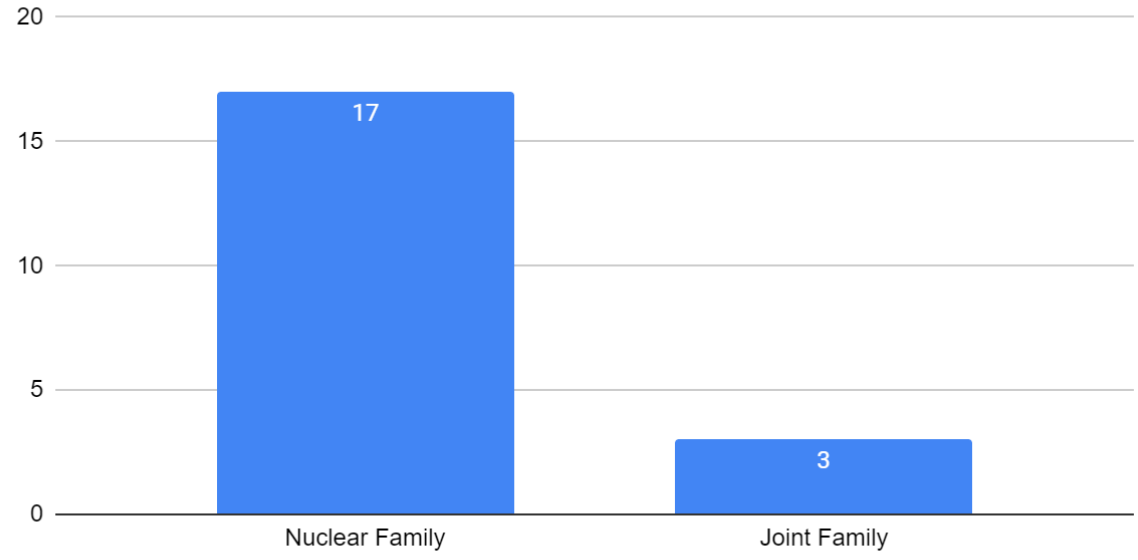
ANALYSIS OF SURVEY DATA

After doing the survey in the selected area of Dagguluru village, the data obtained through questionnaire from 20 families was made into spread sheets. It was analyzed and the data is shown into bar charts for better understanding and comparison. Hence, the data from my survey is presented below.

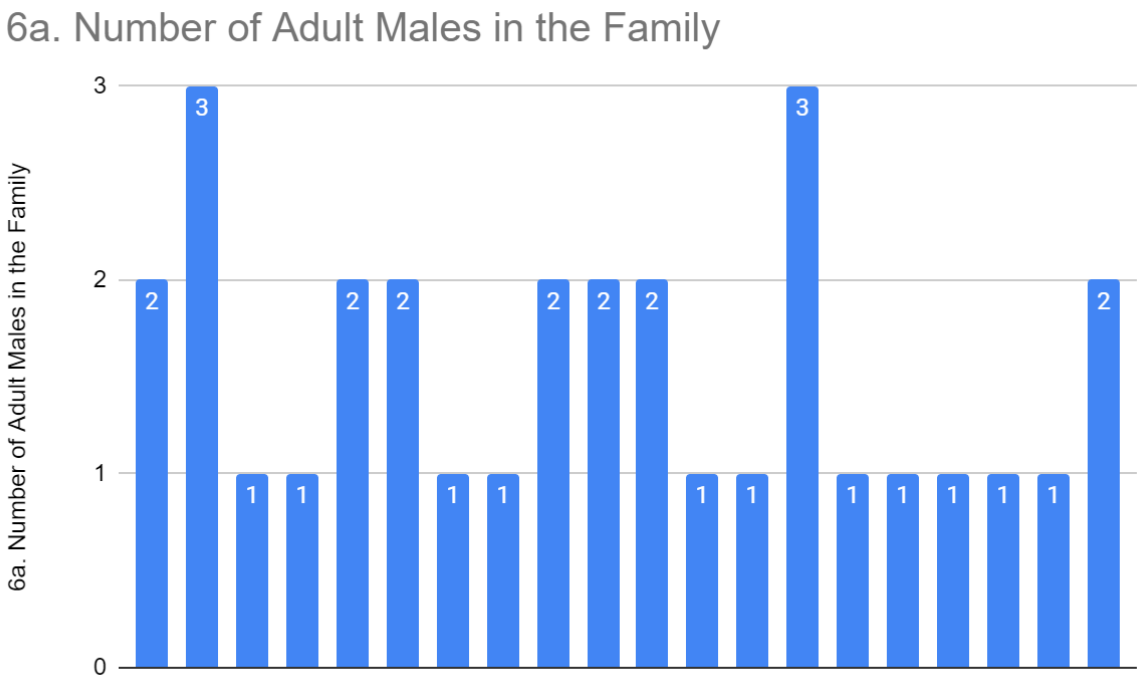


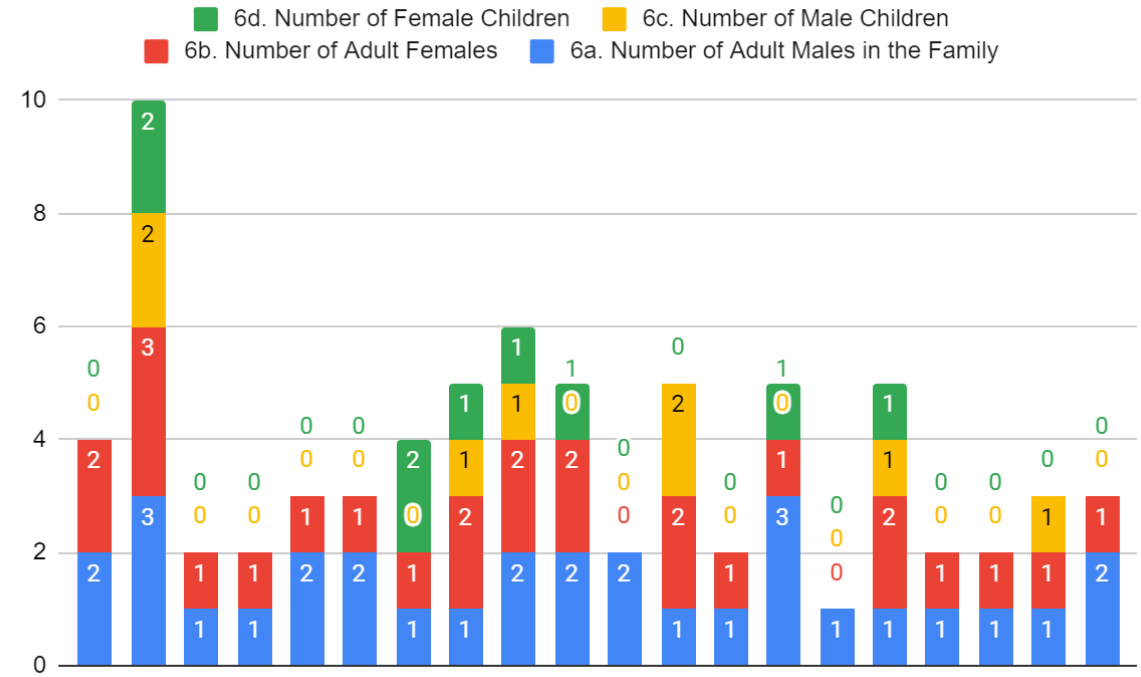


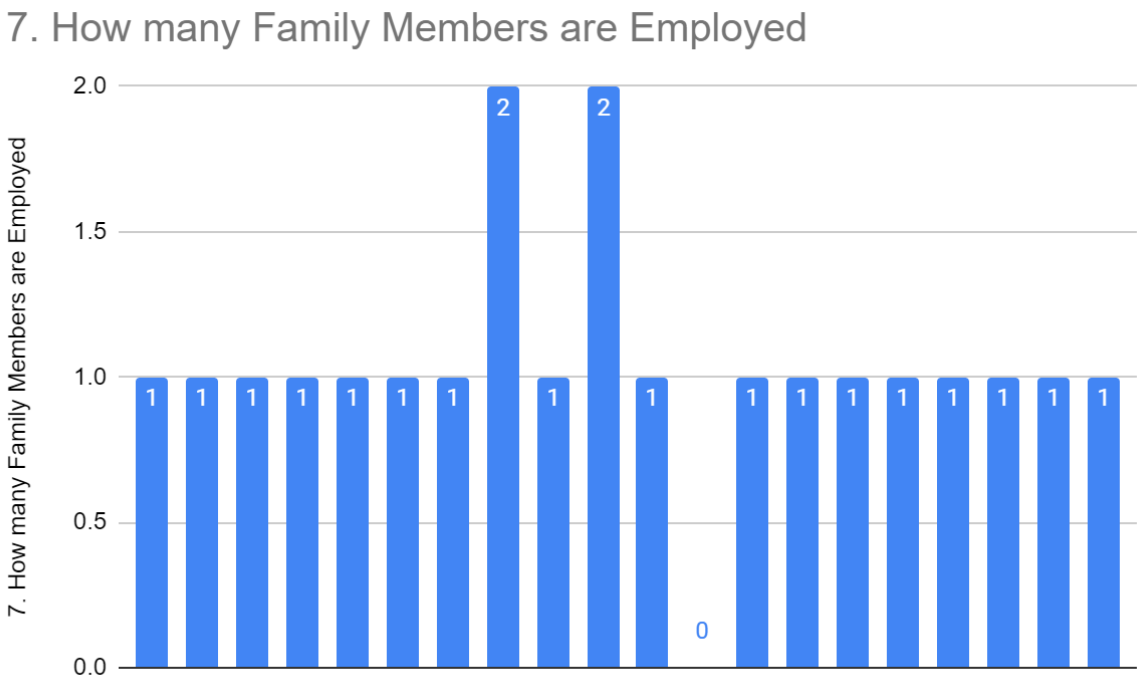
Count of 4. Location/Address

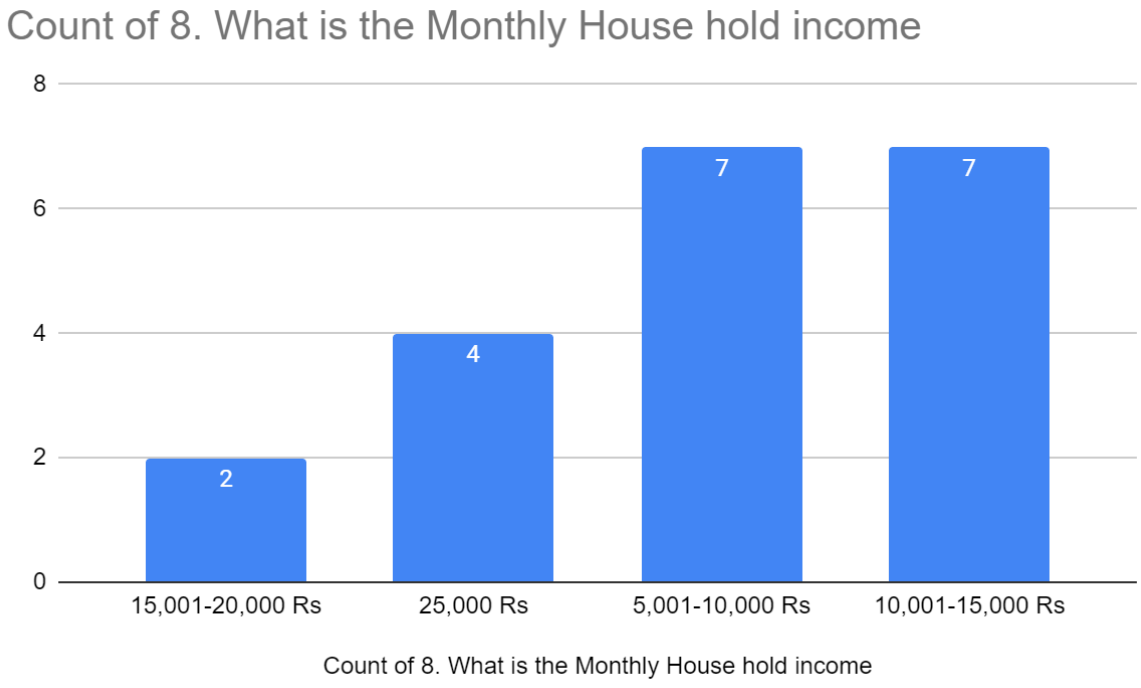


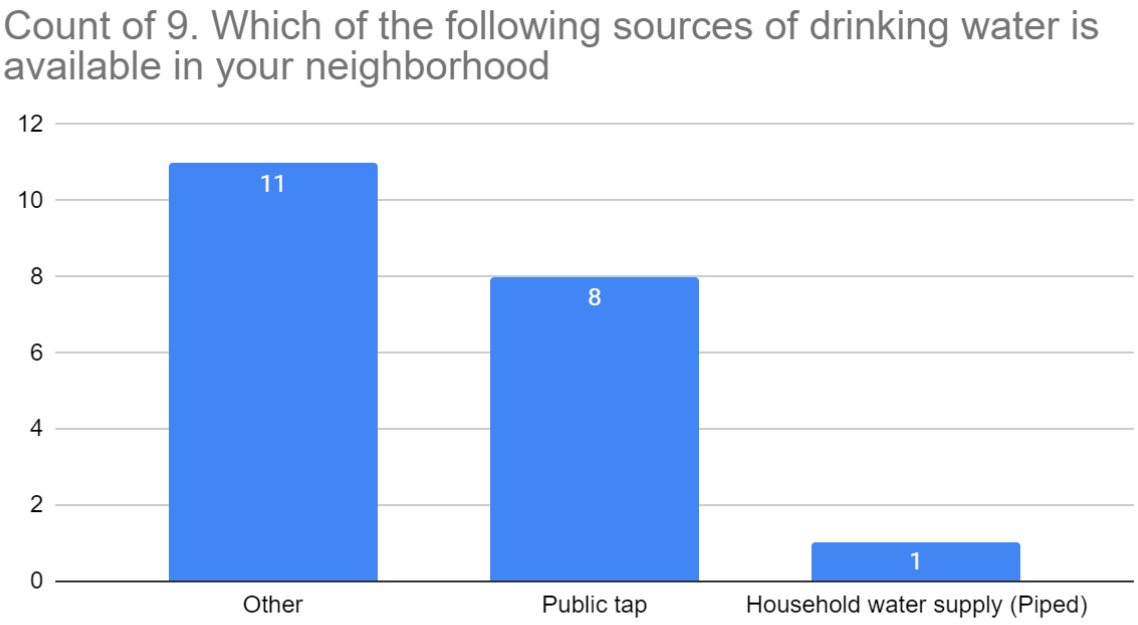
Count of 5. Type of the Family


6a. Number of Adult Males in the Family
6a. Number of Adult Males in the Family
3
2
1
0

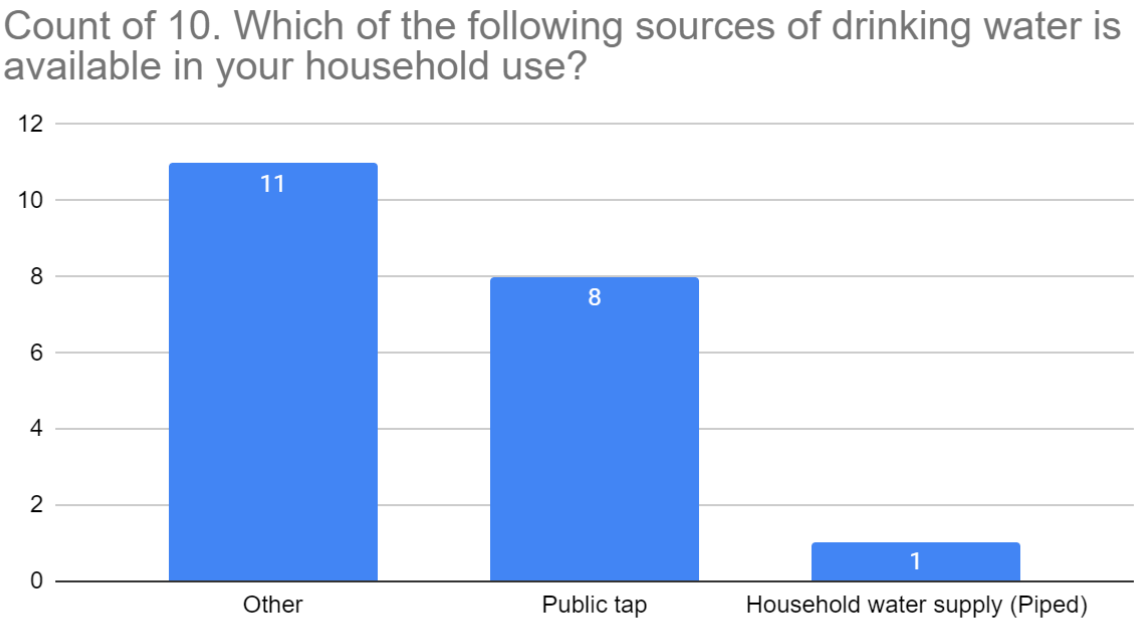

6d. Number of Female Children
6c. Number of Male Children
6b. Number of Adult Females
6a. Number of Adult Males in the Family
10
8
6
4
2
0


7. How many Family Members are Employed
2.0
1.5
1.0
0.5
0.0
7. How many Family Members are Employed
1 1 1 1 1 1 1 2 1 2 1 0 1 1 1 1 1 1 1 1

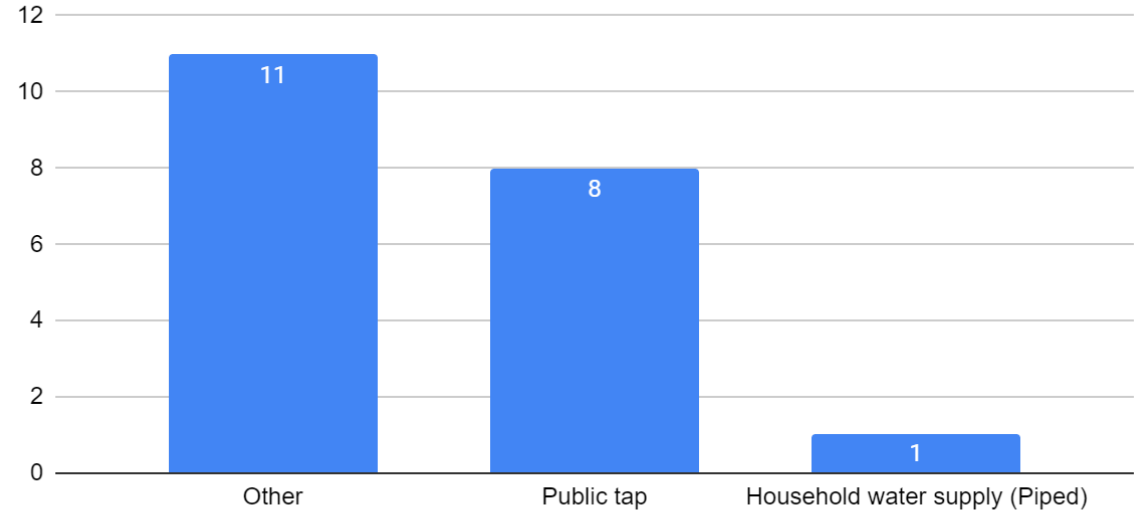

Count of 8. What is the Monthly House hold income
8
6
4
2
0
2
4
7
7
15,001-20,000 Rs
25,000 Rs
5,001-10,000 Rs
10,001-15,000 Rs
Count of 8. What is the Monthly House hold income



Count of 9. Which of the following sources of drinking water is available in your neighborhood

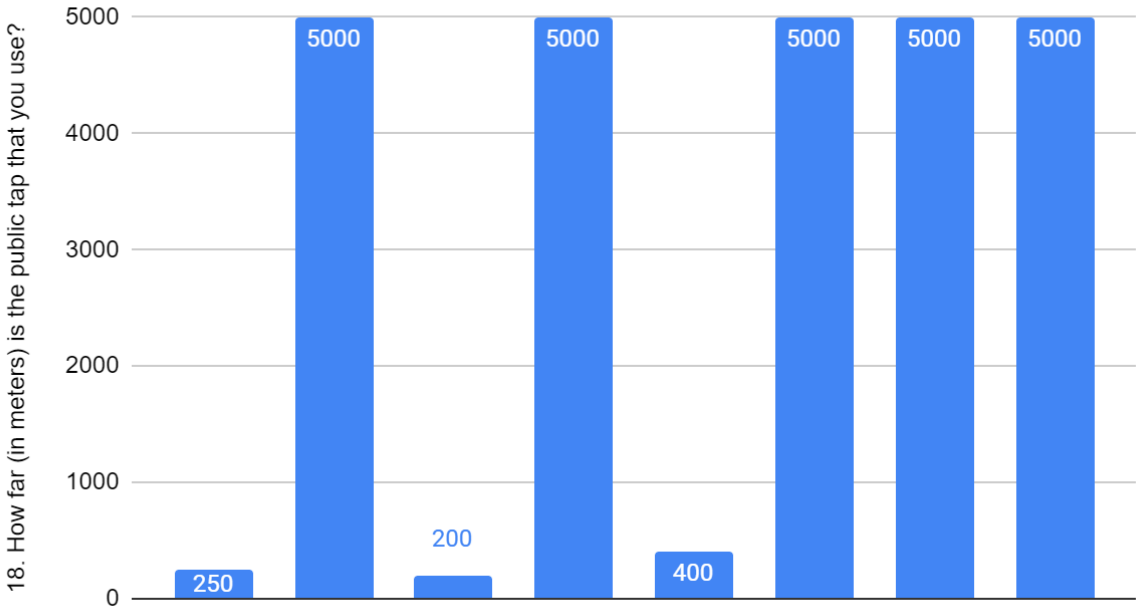


Count of 10. Which of the following sources of drinking water is available in your household use?

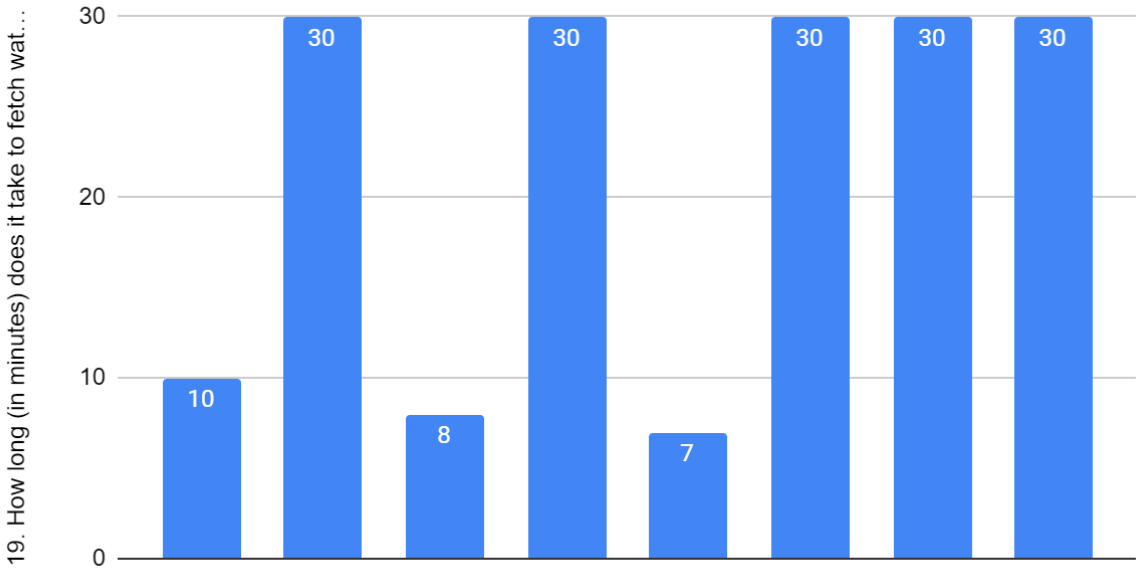


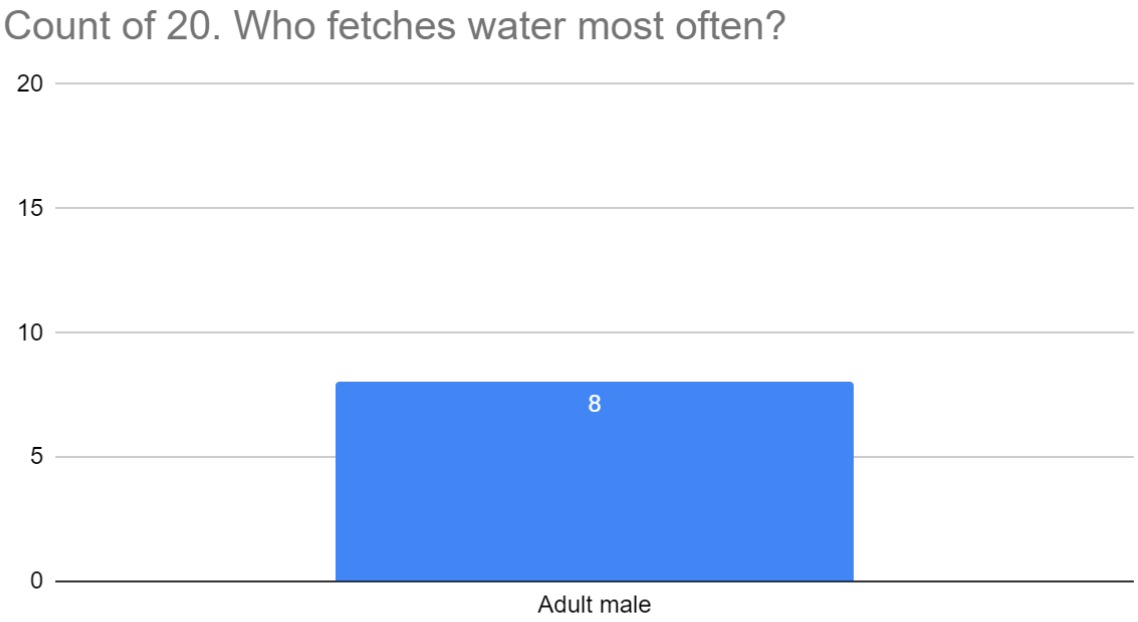
Count of 11. What is your main source of water? (Single Response)

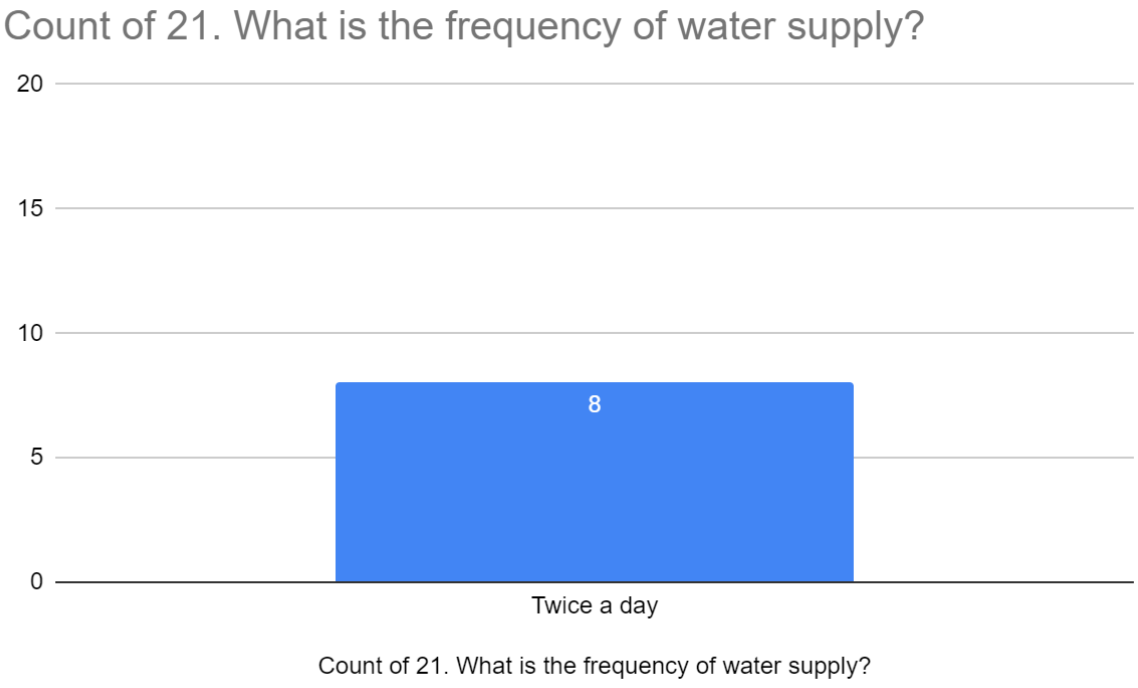
18. How far (in meters) is the public tap that you use?



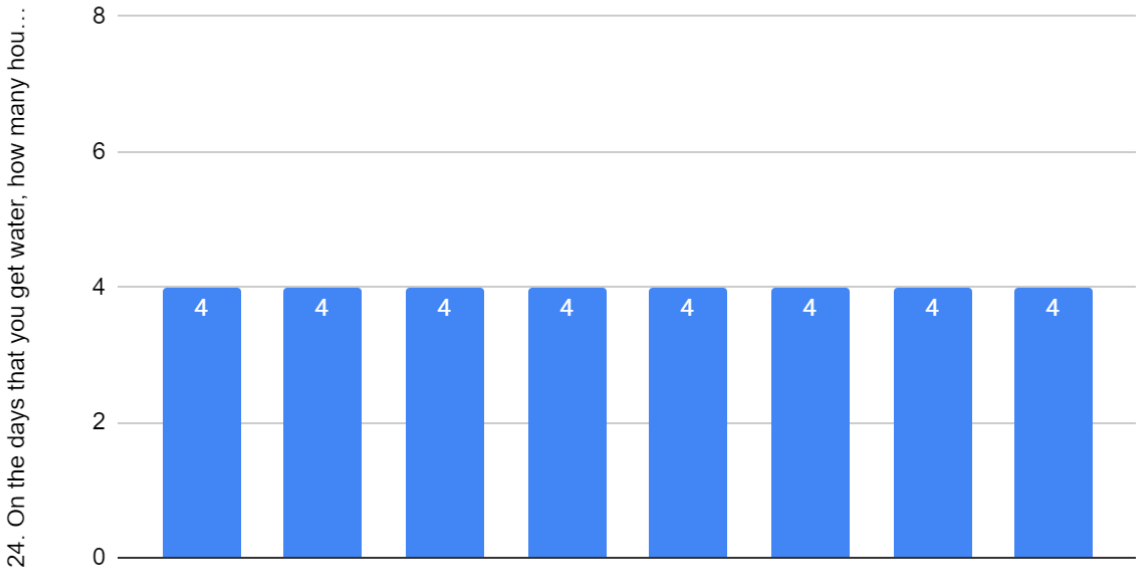
19. How long (in minutes) does it take to fetch water and return home?



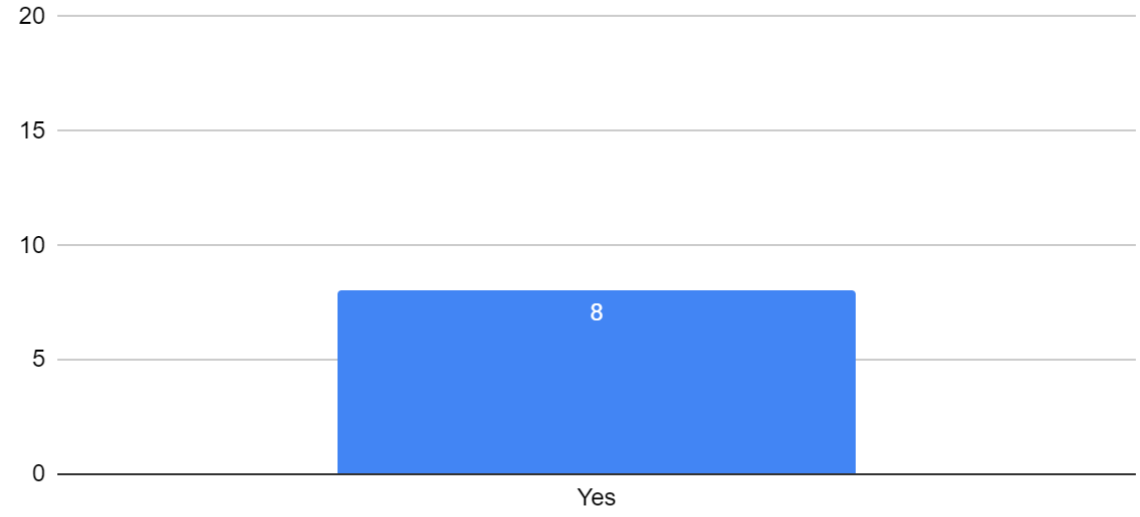

Count of 20. Who fetches water most often?
20
15
10
5
0
8
Adult male
Count of 20. Who fetches water most often?


Count of 21. What is the frequency of water supply?
20
15
10
5
0
8
Twice a day
Count of 21. What is the frequency of water supply?

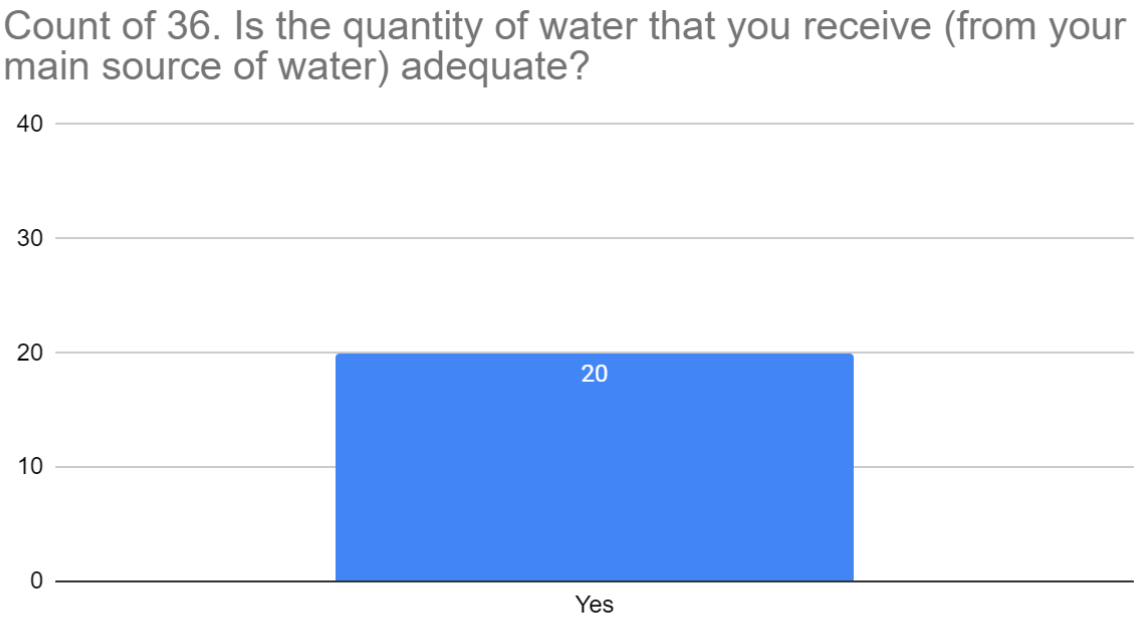
24. On the days that you get water, how many hours do you usually get water for?



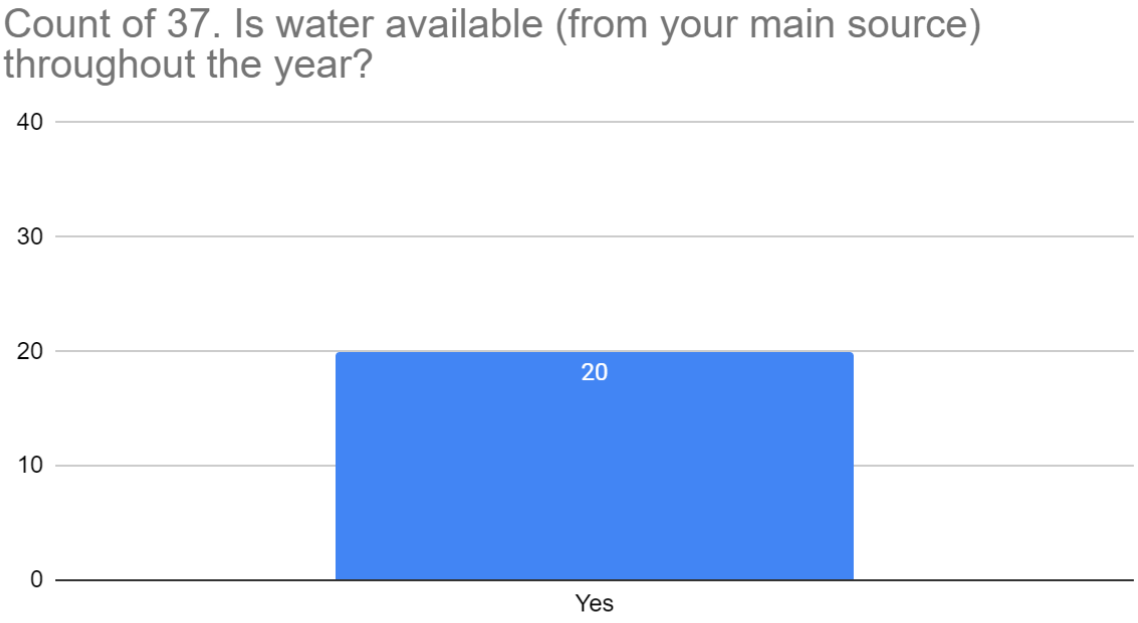
Count of 25. Has the public tap broken down in the past one year?



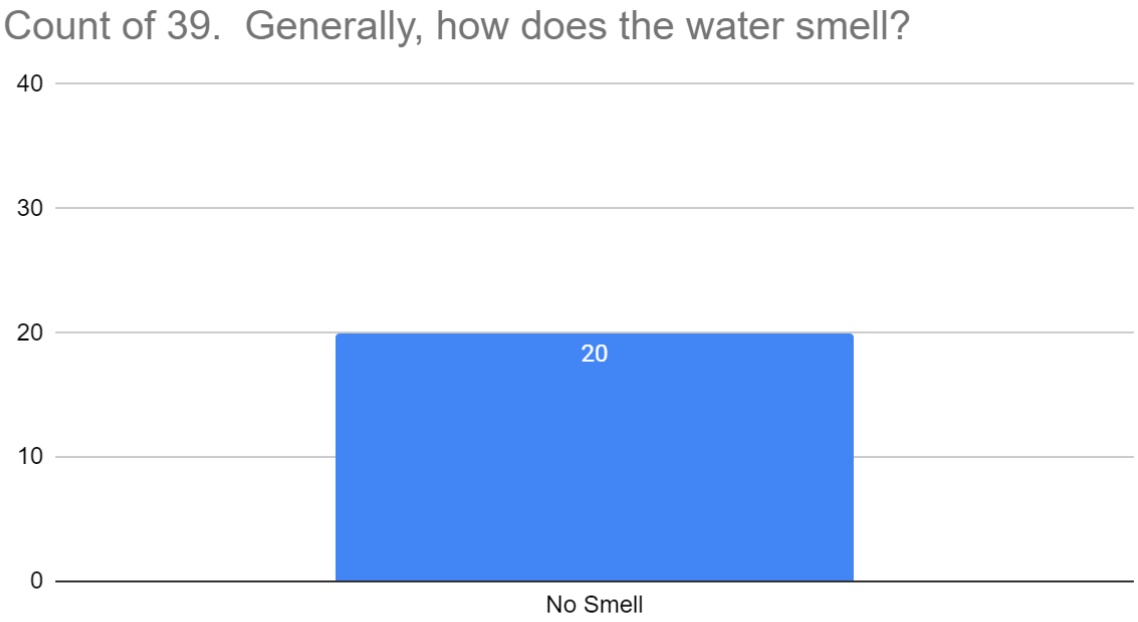
Count of 25. Has the public tap broken down in the past one year?



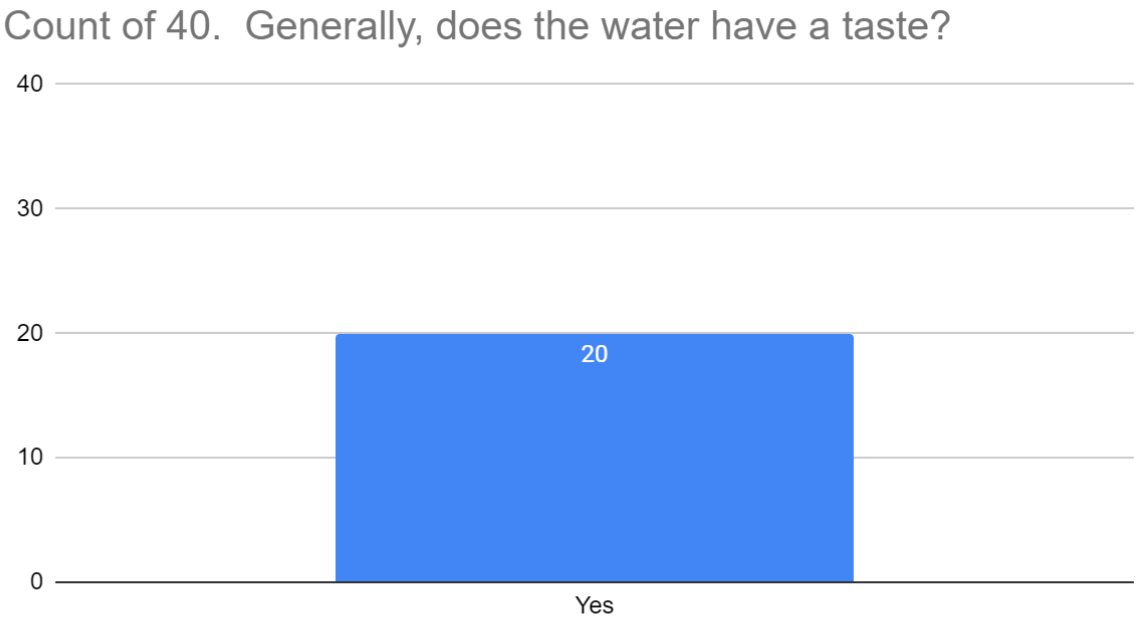
Count of 36. Is the quantity of water that you receive (from your main source of water) adequate?



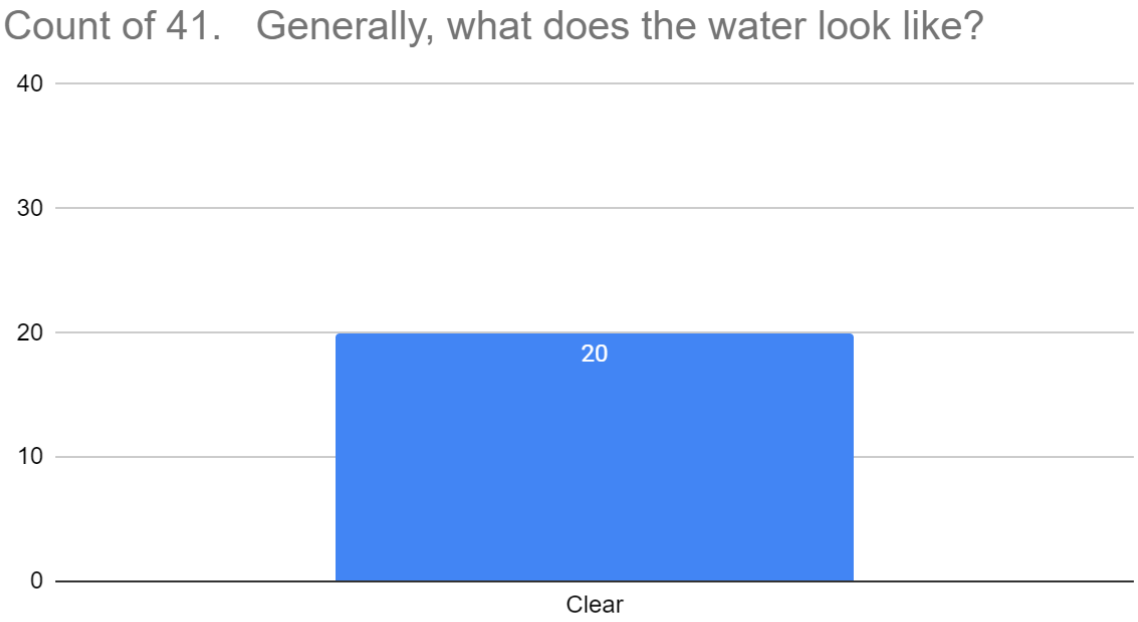
Count of 37. Is water available (from your main source) throughout the year?



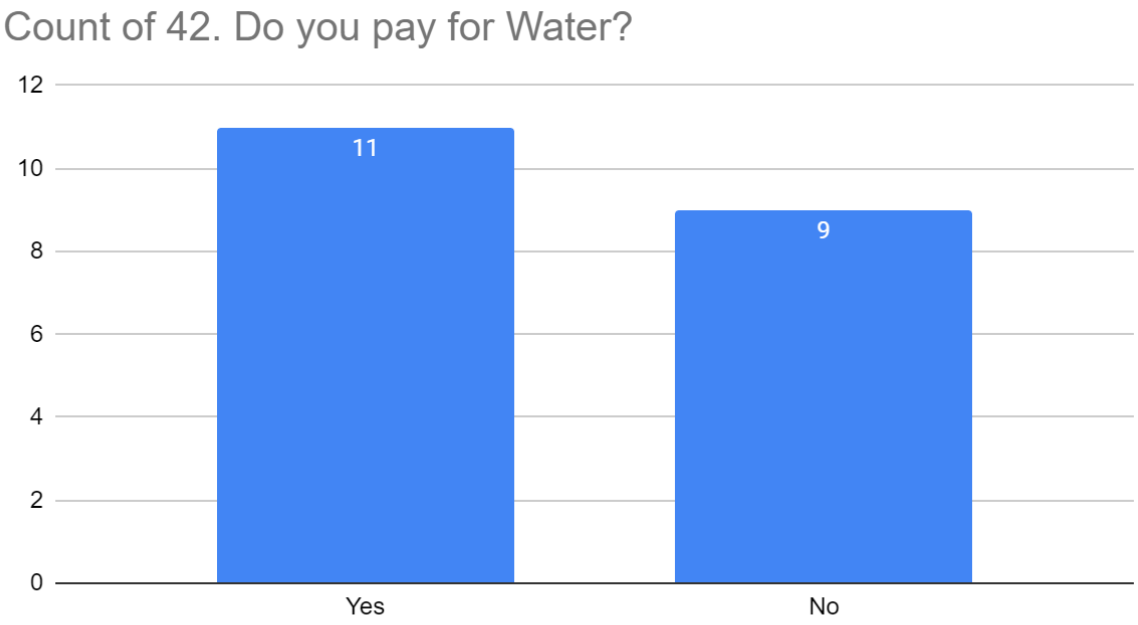
Count of 39. Generally, how does the water smell?



Count of 40. Generally, does the water have a taste?

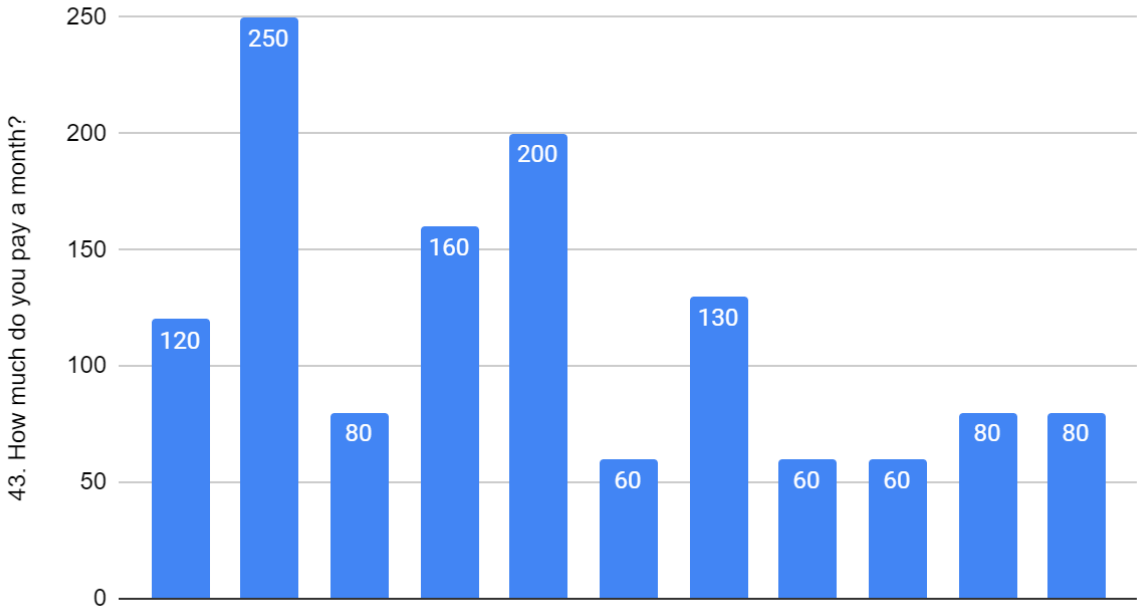


Count of 41. Generally, what does the water look like?

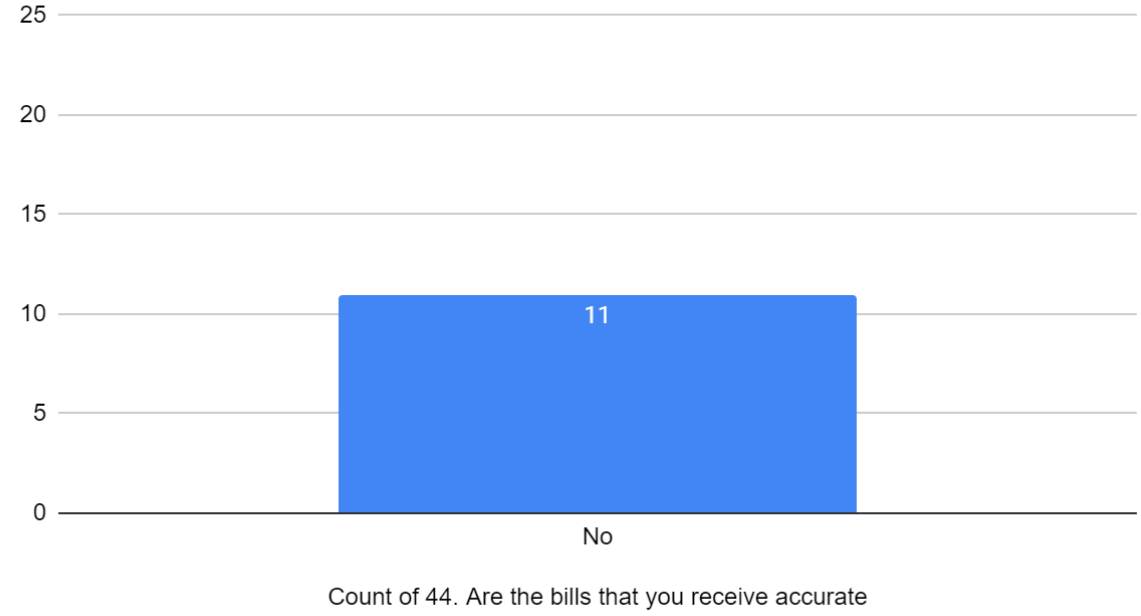


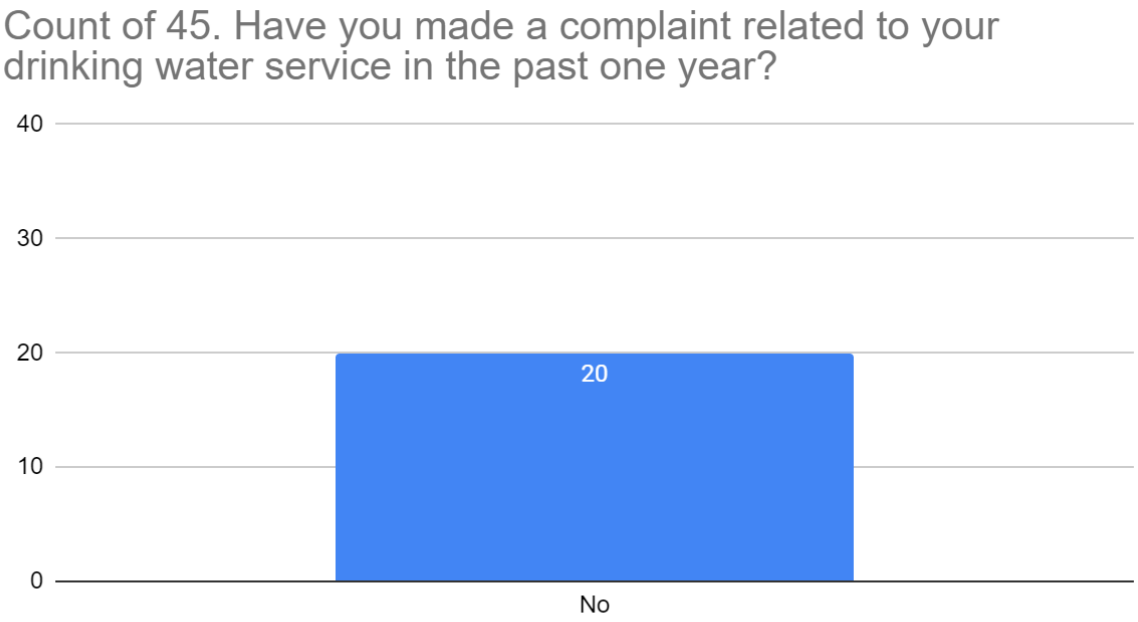
Count of 42. Do you pay for Water?

43. How much do you pay a month?

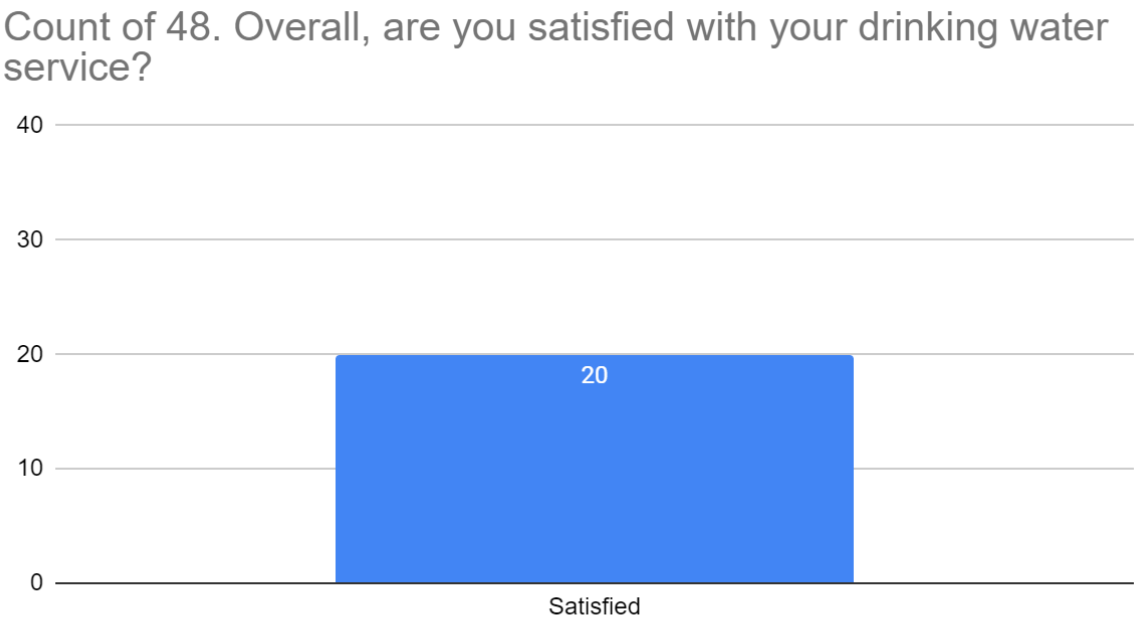


Count of 44. Are the bills that you receive accurate

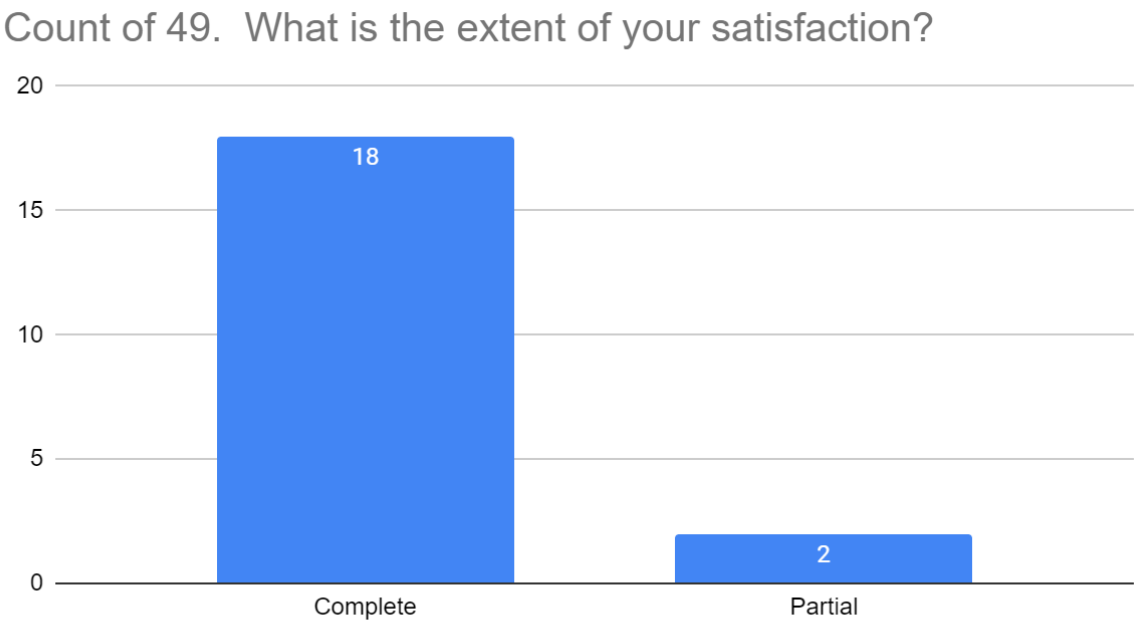


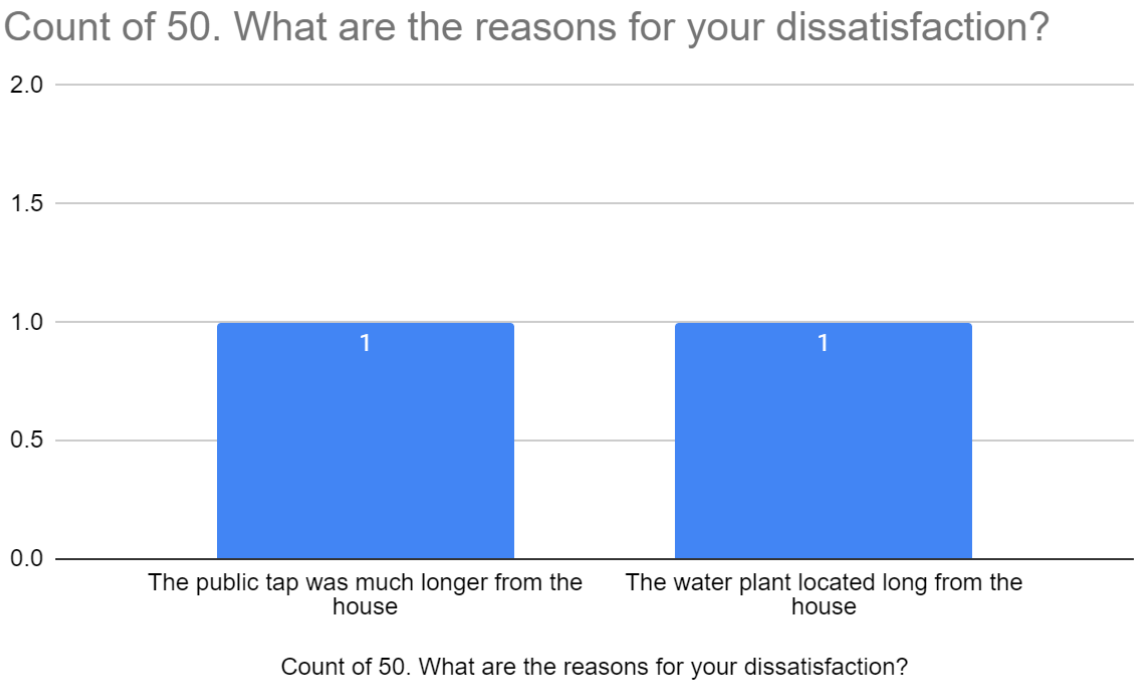


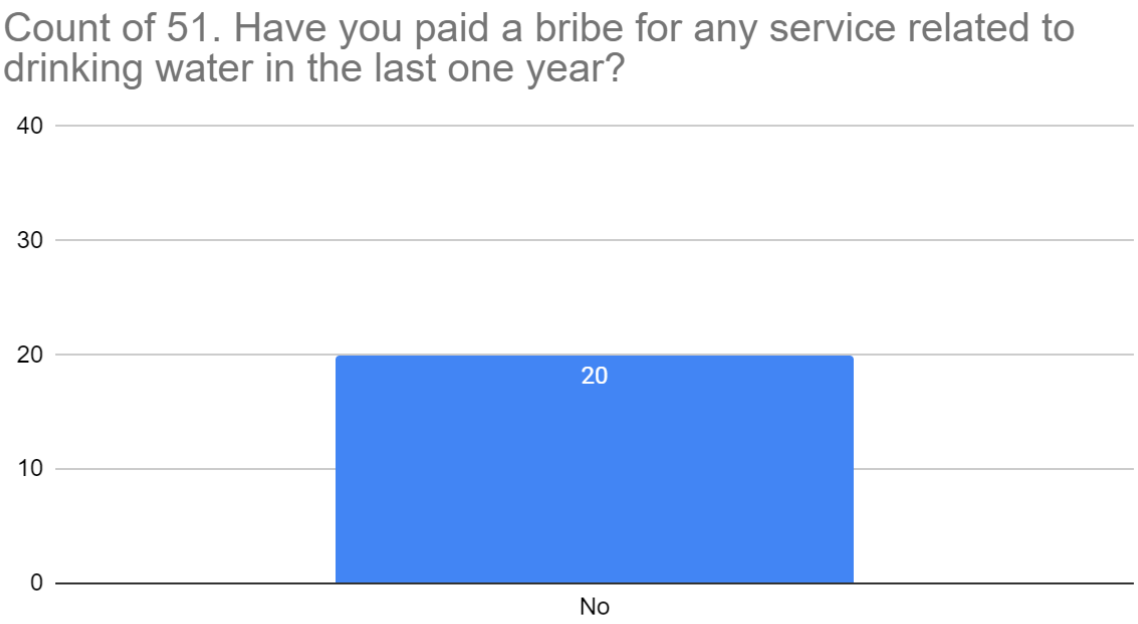
Count of 45. Have you made a complaint related to your drinking water service in the past one year?



Count of 48. Overall, are you satisfied with your drinking water service?


Count of 49. What is the extent of your satisfaction?
20
15
10
5
0
18
2
Complete
Partial
Count of 49. What is the extent of your satisfaction?


Count of 50. What are the reasons for your dissatisfaction?
2.0
1.5
1.0
0.5
0.0
1
1
The public tap was much longer from the house
The water plant located long from the house
Count of 50. What are the reasons for your dissatisfaction?



Count of 51. Have you paid a bribe for any service related to drinking water in the last one year?

CHAPTER-5

CONCLUSION

About 20 households were surveyed in the selected study area of Dagguluru village, everyone was most aware of accessing safe drinking water. Especially after Covid-19 pandemic people were taking at most care to drink safe drinking water. No doubt that the pandemic Covid-19 had changed the habits of the humans, especially with respect to personal hygiene. This pandemic situation also helped people to understand the consequences of unhygienic maintenance inside and outside the living system and surroundings.This area is provided with panchayat drinking water supply system. Out of 20 households only one was having household water supply, eight were using public tap and the remaining 11 were depended on other sources. These 11 were fetching water from near by town at a distance of five kilo meters, adult male used to fetch water and it takes 30 minutes to get water to their home. The public tap was about 250 meters far from their residence. Water was supplied twice a day for about four hours a day. All 20 households were getting adequate quantity of the water throughout the year and also the water is available all the year from their respective sources. As the water was odour less, tasteless and very clear, all 20 households, 18 were completely satisfied and only 2 were partially satisfied and they complain that the water plant and public tap was far away from their residence.

Though, I have done this project as a part of the curriculum; I have acquired knowledge and awareness by interacting the households, came to know their accessibility to safe drinking water. Moreover, this is a great opportunity to motivate them for the significance of accessing safe drinking water and the consequences of using unsafe and impure water for drinking purpose. I too motivated myself while doing this project. Finally, I got confidence with this project and gained experience which will help me to do any projects in future.

SURVEY PHOTOS


Dagguluru, Andhra Pradesh, India
GMJ8+5XV, Andhra Pradesh 534245, India
Lat 16.530561°
Long 81.666276°
18/08/22 07:38 AM


Dagguluru, Andhra Pradesh, India
GMJ8+5XV, Andhra Pradesh 534245, India
Lat 16.530561°
Long 81.666276°
18/08/22 07:40 AM

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