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A STUDY ON CISTERN DRINKING WATER TANKS PROGRAMME IN ANANTAPURAMU DISTRICT-ISSUES AND SUGGESTIONS

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ABSTRACT

The Rayalaseema region is majorly affected by drought. There is scarcity of pure drinking water. The groundwater is very low in the district of Anantapuramu in Andhra Pradesh state. Majority of the People living in this region face severe drinking water related issues mainly related to health. People often face the issues related to fluoride and algae content in the drinking water. Several minor rivers flowing in this region are mainly rain fed and during summer these river waterways appear dried out. The Sathya Sai Trust has undertaken many developmental projects in the region and one among such projects is the provision of pure drinking water to the people. Through this drinking water project the water is supplied through pipelines to the cistern drinking water tanks in the villages from where the local population fetch the water for various daily needs both by the State Government and the Sathya Sai Trust drinking water supply programme. The people are highly benefitted by this project that fulfils their drinking water purposes regularly. It is also noticed that the maintenance of these cistern tanks is not upto the mark because in these tanks due to the long duration of water storage the formation of algae has been observed and it is also mixed with water in small particles that is further affecting the health of the people drinking it because these rural masses do not have the filters to further purify it and use for the drinking needs. The maintenance of these tanks especially in removing the algae is not adequately undertaken by the concerned staff that is slowly affecting the population dependent on it and who are not able to afford the filtration units in their homes due to poverty and lack of awareness.

Keywords: Drought, Rayalaseema Region, Cistern Drinking Water Tanks, Flouride content in Drinking water, Inadequate Rainfall, Sathya Sai Central Trust, Anantapuramu.

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Introduction

Pure drinking water availability is like a boon for the survival of the people on this planet earth. The rainfall is not equally distributed all round the globe. Some regions get very high rainfall others regions get medium to moderate rainfall and several regions get very low rainfall. On the other hand the ground water is also unevenly distributed and the ground water is often found to be mixed with various kinds of elements that has to be purified before use especially for the drinking purposes. People living in low rainfall regions and drought prone areas suffer a lot due to non-availability of the pure drinking water on the one hand and due to poverty based on various reasons they are unable to afford to bear the expenses of purified water sold by the water purifier industry units. These people with no choice depend on borewells and cistern drinking water facilities supplied by the non-governmental organisations and the governmental water supply departments that supply drinking water through the cistern tanks and tap connections.

Directive Principles of the State Policy and Public Health

Part IV of the Indian Constitution under Articles 36-51 directs the states to adopt several principles that are fundamental in the effective governance of the country. The provision of clean drinking water has been given priority in the Indian Constitution with Article 47 conferring the duty of providing clean drinking water and improving public health standards to the State Governments in India.

Objectives of the study

The objectives of the study are stated below:

1. To study the drought situation in the study area.
2. To study the availability of pure drinking water issues in the study area.
3. To study the cistern drinking water programme in the study area.
4. To study the management of the cistern drinking water tanks in the study area.
5. To identify the issues in the maintenance of the cistern drinking water tanks in the study area.
6. To highlight the impact of ill-managed cistern drinking water on the health of the people in the study area.
7. To suggest measures for the effective maintenance of the cistern drinking water tanks in the study area.

Research Problem

In the drought prone region of Rayalaseema with special reference to Anantapuramu district the availability of the pure drinking water has become a major issue. The main reason for this is that the drinking water supplied through the cistern drinking water tanks are not properly maintained. The tanks are not cleaned regularly and many contaminants like dust, algae, mud, micro living organisms etc., are found to be mixed with the drinking water supplied for the drinking purposes in the study area. The impact of this on the health of the people who are not able to further purify it through the purifying units available at the market often suffer from various minor to major diseases. They further fell into the debt trap to afford for the treatment of the diseases especially through contaminated drinking water. The ground water that is available contains fluoride that is very highly toxic. So, to overcome this issue the present study offers several fruitful suggestions for the maintenance of the Cistern drinking water tanks and also to provide pure drinking water to the people in the study area.

Scope of the study area

The scope of the study is limited to Anantapuramu district due to financial constraints. Further for the convenience of the study four mandal headquarters are chosen for the study viz., Dharmavaram Mandal, Kalyandurgam Mandal, Raptadu Mandal and Bathalapalle Mandal respectively. From each Mandal 25 respondents were chosen randomly for the study.

Significance of the research study

The study focuses on the pure drinking water provided by the cistern drinking water tanks. The drinking water tanks are constructed with the budget allocated to it and after the supply starts the water tanks are very rarely visited by the maintenance officials. Gradually in these water tanks due to improper maintenance the algae grows and in several instances due to leakage and other issues many other contaminants gets mixed with it. The supply of this kind of drinking water further effects the health and life of the people unknowingly. The rural masses often visit to the hospitals due to contamination in the drinking water and pay huge money to get cured. This study highlights the issues related to the maintenance of the cistern drinking water tanks and offers valuable suggestions to provide the pure drinking water to the people in the study area. This study is helpful for the Central, State and Local Governments in India to address the issues

related to safe and pure drinking water supply to the people of India especially in drought affected areas and to the BPL families throughout the country.

Anantapuramu District-A Brief Profile

It is a district in Rayalaseema region of Andhra Pradesh, India. Anantapuramu district is the largest district in terms of area in Andhra Pradesh. It is also the seventh largest district in India. It was carved from Ballari district in 1882. The rivers that flow within the district boundaries are viz., Chithravathi, Penna, Papagni, Vedavathi, Swarnamukhi and Thadakaleru. The three major rivers viz., the Hagari, Chitravathi and Pennar rivers are non-perennial. They almost dry during the summer season. It receives average rainfall of 381 millimetres annually. The district comprises five revenue divisions viz., Anantapuramu, Dharmavaram, Kadiri, Kalyandurgam and Penukonda respectively. These revenue divisions are further divided into sixty three mandals. [1]

Sathya Sai Central Trust and Drinking Water Supply in the study area

Sri Sathya Sai Central Trust was established by Sri Sathya Sai Baba on 2nd September, 1972. Under Bhagawan's guidance, the Sathaya Sai Central Trust has been undertaking numerous welfare activities such as providing free education at the school and university levels. It also delivers medical facilities completely free of cost and supplies pure drinking water in the state of Andhra Pradesh. It was in November 1995 that Bhagawan Sathya Sai Baba of Puttaparthy expressed his concern for the people in Rayalaseema region and desired to provide drinking water supply to these people who were suffering severely due to lack of proper and scarce drinking water availability in the district. Later the project to supply pure drinking water to the rural areas of the drought affected district was gradually commenced and started extending its services to all parts of the district effectively. It involved four types of schemes and the main approach was to tap the river water that was available from canals, dams and river beds further delivering the water from a well established network of storage of water reservoirs, booster pumping system and pipes connections process viz., Direct Pumping, Infiltration Well Schemes, Summer Storage Tank Schemes and Borewell Schemes. In the present drinking water scenario we witness that the drinking water supply is adequate through the effective supply of water by the Sathya Sai Central Trust and the District Water Supply Department.[2]

Availability of drinking water scenario in the study area

The rivers that flow through the study area are non-perennial. The district is considered as one of the most arid and backward districts in Andhra Pradesh. The groundwater that is available is also scarce and is barkish with high fluoride content. The excessive fluorosis is leading to dental and skeletal deformations. Since centuries the generations in Anantapuramu district have severely faced drinking water deficiency. The water at several places is also being contaminated by the industrial effluents further aggravating the situation of drinking water problem in the study area. The majority of the rural masses used to travel very long distances to fetch water for their daily use even during the high temperatures until the State Government and Sathya Sai Central Trust commenced the project of supplying drinking water to the people of Rayalaseema region through various sources viz., Direct Pumping of water, Infiltration Well Schemes, Summer Storage Tank Schemes, Borewell Schemes, Cistern drinking water supply programme etc.[3]

Scenario of the Cistern drinking water programme in Anantapuramu district

Cistern tanks (Storage Tanks) where the pure drinking water is stored for the supply to the people has been well established in the drought prone district of Anantapuramu. The supply of drinking water is achieved but people who fetch the water from these drinking water cistern tanks often complain that the water tanks are not cleaned and well maintained. The water that they utilise from these tanks often fell sick due the germs and small algae mixed in the water. The small debris particles and several other pollutants are being witnessed by the people utilising the water from these cistern drinking water tanks.

Methodology of the study

The data for the study was collected from the primary and secondary sources. The universe of the study is one hundred rural respondents in Anantapuramu District of Andhra Pradesh State. The research technique used in this study is simple random sampling method. This study is both exploratory and analytical in approach. To collect the primary data the interview schedule method has been used to analyse the perception of respondents in the study area. The secondary sources are collected from various government websites, Wikipedia, Satya Sai drinking water distribution programme, books, journals, local newspapers, district statistical information annual

reports and concerned department websites. The collected data has been tabulated and analysed through simple statistical tools and thereby the inferences have been drawn based on this in the study area.

Gender-wise distribution of the respondents

Table: 1 **N=100**

Sl.No.	Gender-wise distribution	Percentage of the respondents (%)	Total (%)
1.	Male	50	100
2.	Female	50	

Source: Computed from the primary data

Table 1 indicates that the total universe of the study is 100 respondents. The male respondents constitute 50 per cent and the female respondents represent 50 per cent in the study area respectively. The total universe of the study constitutes 100 respondents in Anantapuramu district.

Age wise distribution of respondents

Table: 2 **N=100**

Age group	% of respondents
Children (Below 18 years)	10
Youth (18-31)	39
Middle age (32-50)	31
Aged (50-60)	10
Senior Citizens (60 and above)	10
Total	**100**

Source: Computed from the primary data

Table 2 depicts the distribution of the respondents in the study area according to their age. The table reveals that the total respondents in the study area constitute 100 members, the children below the age of 18 years cover 10 per cent, the youth in the age group of 18-31 constitute 39 per cent, middle age respondents in the age group of 32-50 cover 31 per cent, aged respondents in the age group of 50-60 represent 10 per cent, and the respondents belonging to the age group of 60 and above are recognised as the senior citizens by the Government of

India and 10 per cent of them are covered in the study. The different age groups were selected for the study mainly to provide an overall scenario of the affected people in the study area.

Caste-wise distribution of respondents

Table: 3 **N=100**

Caste	**% of respondents**
Upper castes	40
OBC's	20
Scheduled Caste	20
Scheduled Tribes	20
Total	**100**

Source: Computed from the primary data

In table 3, it is shows that 40 per cent of respondents belong to upper castes, 20 per cent belong to other backward communities, 20 per cent of them belong to Scheduled Castes, 20 per cent of them belong to the Scheduled Tribes respectively.

Literacy wise distribution of the respondents

Table: 4 **N=100**

Sl.No.	**Literate (%)**	**Illiterate (%)**	**Total (%)**
1.	50	50	100

Source: Computed from the primary data

Table 4, indicates that the 50 per cent of the respondents were literate and the rest of the 50 per cent respondents were illiterate in the study area respectively.

Perception of the respondents utilising the cistern drinking water in the study area

Table :5 **N=100**

Sl.No.	**Respondents in the study area**	**Yes**	**No**
1.	Are you a resident of this ---------- Mandal/District ?	100	------
2.	Do you utilise the water from the Cistern drinking water tanks ?	100	------
3.	Do you think that the water provided through the cistern drinking water tanks is safe drinking water ?	59	41
4.	Have you witnessed the small particles of algae in the water	100	-----

	supplied by the cistern drinking water tanks ?		
5.	Have you witnessed the white residue kind of powder formation in the water supplied by the cistern drinking water tanks?	100	------
6.	Do you boil the water that you fetch from the cistern drinking water tanks ?	03	97
7.	Have you witnessed the dust particles in the water supplied by the cistern drinking water tanks?	100	------
8.	Do you further purify the water supplied from the cistern drinking water tanks?	------	100
09.	Are you able to afford the water purifying machines that cost about Rs.5,000-Rs.10,000 available in the market ?	------	100
10.	Are you suffering from Silicosis borne diseases ?	44	56
11.	Do the officials check the cistern drinking water tanks frequently ?	------	100
12.	Do the concerned officials clean and treat the cistern drinking water tanks frequently?	------	100
13.	Do the domestic animals lick the tap of the cistern drinking water tanks ?	100	------
14.	Do you experience bad smell from water supplied through the cistern drinking water tanks ?	100	------
15.	Are you aware of the procedure to clean the cistern drinking water tanks ?	------	100
16.	Did you ever complain to the local officials about the ill maintenance of the cistern drinking water tanks ?	04	96
17.	Do you expect that the water purifier machines for household purposes should be freely distributed to the BPL families by the State Government of Andhra Pradesh ?	100	------
18.	Did the local political leaders ever highlight the ill maintenance of cistern drinking water tanks ?	------	100
19.	Do the water from the cistern drinking water tanks utilised for functions like marriages without further purifying the water ?	100	------

Source: Computed from the Primary Data

Issues identified in the Cistern Drinking Water Programme in the study area

The issues that have been identified during the research are stated below:

- Cistern tanks are not cleaned regularly.
- Algae has been formed in the cistern tanks.
- Chlorine residues are identified from the cistern drinking water tanks.
- Microbial growth has been identified in the cistern drinking water tanks.
- People utilising the drinking water do not have the chlorine test kits and are unaware of the ill effects of contaminated water and are easily falling ill when the water is consumed.
- Several cistern tanks have developed cracks and algae formation has been witnessed around it and nearby the tanks.
- Bad smell from the cistern drinking water tanks is a common complaint of the people utilising the water from the cistern drinking water tanks.
- Infectious water borne diseases viz., dysenteries, enteric fevers and diarrheal issues are common in the study area.
- Majority of the cistern drinking water tanks are more than a decade old and are heavily contaminated with algae inside it.
- The small and big cement pipes are identified with cracks and are not replaced form time to time. The steel pipes supplying water in majority of the cases are rusting and further the rust is mixed with the water supplied for the drinking purposes.
- Rain water collected in the dams and canals is contaminated with the toxic fertilisers used to control the pests in crops and this water is further utilised for the supply of drinking water through cistern drinking water tanks.

Findings of the Study

The findings of the study based on the primary data mentioned in table 5 are stated below:

- 100 per cent of the respondents replied that they are the residents of the Anantapuramu district in Andhra Pradesh.
- 100 per cent of the respondents replied that they utilise the water from the Cistern drinking water tanks.
- 59 per cent of the respondents think that the water provided through the cistern drinking water tanks is safe drinking water and 41 per cent do not accept it outrightly.

- 100 per cent of the respondents have witnessed the small particles of algae in the water supplied by the cistern drinking water tanks.
- 100 per cent of the respondents have witnessed the white residue kind of powder formation in the water supplied by the cistern drinking water tanks.
- 03 percent of the respondents boil the water that they fetch from the cistern drinking water tanks and the rest of the 97 per cent respondents drink the water directly without further treatment or purifying it.
- 100 per cent of the respondents have witnessed the dust particles in the water supplied by the cistern drinking water tanks.
- 100 per cent of the respondents replied that they don't purify the water supplied from the cistern drinking water tanks.
- 100 per cent of the respondents replied that they are not able to afford the water purifying machines that cost about Rs.5,000-Rs.10,000 and above available in the market.
- 44 percent of the respondents replied that they are suffering from Silicosis borne diseases.
- 100 per cent of the respondents replied that the officials do not check the cistern drinking water tanks frequently.
- 100 per cent of the respondents replied that the concerned officials do not clean and treat the cistern drinking water tanks frequently.
- 100 per cent of the respondents replied that the domestic animals lick the tap of the cistern drinking water tanks.
- 100 per cent of the respondents replied that they experience bad smell from water supplied through the cistern drinking water tanks.
- 100 per cent of the respondents replied that they are not aware of the procedure to clean and treat the cistern drinking water tanks.
- Only 04 per cent of the respondents replied that they complain to the local officials about the ill maintenance of the cistern drinking water tanks and the rest 96 per cent respondents replied that they don't complain about it.
- 100 per cent of the respondents replied that they expect that the water purifier machines for household purposes should be freely distributed to the BPL families by the State Government of Andhra Pradesh.

- 100 per cent of the respondents replied that the local political leaders never highlight the ill maintenance of cistern drinking water tanks.
- 100 per cent of the respondents replied that the water from the cistern drinking water tanks is effectively utilised for functions like marriages without further purifying the water in the study area.

Suggestions to overcome the issues of Cistern Drinking Water Programme in the study area

1. Educate the rural masses especially women and children thereby creating awareness about the ill effects of impure and unsafe drinking water and educate them about the water purifying methods for safe usage of drinking water.
2. Conduct special seminars, conferences and workshops about boiling and purifying the water before consuming for drinking purposes in the study area.
3. Direct the concerned officials to visit the cistern drinking water and check the water quality and clean it with proper procedure regularly.
4. District Collector should conduct surprise visits to the cistern drinking water tanks and order the quality checks in case of impure water.
5. The State Government of Andhra Pradesh should consider the free distribution of water purifier machines to the BPL households.
6. The videos of affected and cleaning of the cistern drinking water tanks should be shown to the rural masses on weekends.
7. The rural masses especially the weaker sections of the society should be educated about the health effects of the impure and contaminated drinking water.
8. District health officials should organise surprise visits to identify the quality of water supplied on the health of the people utilising it to prevent water borne diseases effectively and thereby save the rural masses from making huge expenditure to nursing homes or hospitals for drinking impure water.
9. Non-Governmental organisations should take the initiative of cleaning the cistern drinking water tanks.

10. The role of media and press in highlighting the scenario of the maintenance of cistern drinking water tanks is the need of the hour and they should be encouraged to act swiftly thereby reporting to the Government and people about the ill effects of polluted water consumption.

11. The educated youth should play an active role in bringing the issue to the notice of the concerned officials thereby playing a key role in providing the safe drinking water through the cistern drinking water tanks.

12. Repairs or replacement with the advanced and updated technology viz., new types of cistern drinking water tanks should be constructed in the study area.

13. World Health Organisation officials should visit the Rayalaseema region to analyse the water quality maintenance through the cistern drinking water tanks in the study are and suggest to the Central, State and Local government about the latest technology available for the effective management and renovation of the existing cistern drinking water tanks in the study area.

14. Case studies similar to this present research work should be conducted by the Central and State Governments to identify the issue and find effective solutions to solve it with updated technology.

15. New technology should be effectively adopted to tap the water vapour from thin air to meet the drinking water demands of the people in the drought affected regions in Andhra Pradesh.

16. Recycling water plants with advanced technology should be adopted by the Central and State governments and the non-governmental organisations should play a key role in this programme.

17. The drinking water supply from the private firms should be strictly monitored with respect to quality and affordability.

18. Case studies should be organised in the countries that have achieved success in water management in meeting the demands of their people and thereby adopting the latest technology to meet the demands of water in our country.

Conclusion

The provision of civic services to meet the needs of the people and its effective maintenance should always go hand in hand. The fulfilling of the drinking water needs through cistern drinking water tanks is highly acknowledged by the people but later after the objective is

fulfilled gradually the maintenance of these tanks by the concerned civic officials is neglected in the study area. Due to this negligence from the side of the officials and non-governmental organisations the poor rural masses have to pay the heavy price mainly issues related to their health and growth of their children due to consumption of contaminated cistern drinking water. A regular mechanism to check on the civic services provided to the people in the country is not up to the mark in the developing countries. The officials should be made accountable for not taking any action and further strict rules should be made to control the situation that affects the health of the people by all means.

References

1. en.m.wikipedia.org/wiki/Anantpur_district.
2. www.srisathyasai.org.in/pages/Service_Projects/Introduction.htm.
3. www.sathyasai.org.in/pages/service_projects/anantapur.htm.
4. Julia M Baird (2013), Cisterns and safe drinking water in Canada, Canada Water Resources Journal, Ontario, Vol.38, (2), pp.121-134.
5. Fattahi S, Alipourfard S, Habibi H (2013), Analysis of determinants of mineral water consumption: The case of Tehran, Rev Contem Bus Res. ;2(1):41–55.
6. P.C.Bansil (2004), Water Management in India, New Delhi, Concept Publishing Company.
7. Madireddi V. Subba Rao (2011), Water Conservation, Management and Analysis, New Delhi, Readworthy Publications.
8. Asit K. Biswas and Cecilia Tortajada (2010), Water Management in 2020 and Beyond (Water Resources Development and Management), New Delhi, Springer.
9. Gupta Akhilesh, R. K. Mall et.al., (2006), Water resources and climate change: An Indian Perspective, Current Science, Vol. 90, No. 12, pp.1610-1626.
10. Mr. Khuba C Rathod (2017), Water Conservation Problems in India, Research Front, Special Issue No. 1, pp.112-115.