

**POTENTIAL HEALTH AND ECONOMIC GAINS FROM JAL JEEVAN MISSION  
A COMPREHENSIVE ANALYSIS**

**Dr. Shrinivas R. Patil**

Professor @ Jain University Bangalore

**Dr. Satyajit Nanda**

Asso. Professor @ Jain University Bangalore

**Dr. Rashmi Akshay Yadav**

Asst. Professor @ Jain University Bangalore

**Dr. Premalatha KP**

Asst. Professor @ Jain University Bangalore

**Abstract**

**Purpose** – India is observing positive changes in the socioeconomic structure with improvement in the living standard and the spending capacity of the people. The Government of India initiated to solve the problem of water crises with the Jal Jeevan Mission, hence researchers aim to evaluate the health and economic gains of the beneficiaries of this scheme.

**Design/methodology/approach** - A study is conducted in rural Karnataka to understand the potential benefits of the scheme. A sample of 250 individuals in rural Karnataka is subjected to a questionnaire with respect to changes in the routine life of beneficiaries of the Jal Jeevan Mission. The data were analyzed using the SPSS software package. Descriptive statistics have been assessed and differences in the variables were analyzed with statistical tools, Further, we used correlation and regression analysis to understand the relationship between health and new water connections.

**Findings** –

The study finds a positive and significant correlation between health and JJM - the new water connections being greater in north Karnataka areas. The JJM connection especially in the Kalyan Karnataka region has a significant impact.

**Originality**

An attempt is made to understand how the flagship scheme Jal Jeevan Mission of the government of India has impacted rural India on their health and economic aspects.

**Research Limitations/Implications:**

The study focused only in Karnataka which may not be generalized

### **Practical Implications:**

The study suggests that the scheme should be extended with more hygienic and pay significant attention to sustainability.

### **Social Implications:**

Access to safe and clean drinking water is essential for maintaining public health. The study helps society and policymakers to understand the impact of JJM on the health and economic aspects of the beneficiaries.

**Keywords:** Jal Jeevan Mission, Har Ghar Jal, Nal Se Jal, Water Scarcity, Purified Water, Potable Water.

### **Paper Type: Research paper**

## **1. Introduction**

The central government's most popular scheme is the Jal Jeevan Mission, which aims to provide safe and sustainable drinking water to all households in rural India. This study investigates the potential health benefits and economic gains resulting from improved access to clean water through the implementation of the mission. The provision of basic facilities to the people is the prime duty of any government. The problem with the quantity and quality of drinking water persisted in most of the villages [7]. The government collect tax directly and indirectly from all the people of the country; hence it is necessary to ensure human essentials like quality road, electricity, water, and other protections. [1] Poor people especially rural people in India are not getting sufficient and quality social security from the government. Many Western countries like America, England, and France provide individual and industrial insurance, free health services, and family allowance as part of their social security to their citizens [2]. Rural India is facing an illiteracy problem hence they lack awareness about the social security schemes and hence they are not getting many of the government schemes. In spite of a number of schemes introduced by the government, rural India was facing basic needs like quality water supply [3], in this regard, the government of India has announced Jal Jeevan Mission to rural India. The scheme is introduced in line with schemes launched for ordinary people. The government is focusing on women's entrepreneurship by skilling them in various aspects [5].

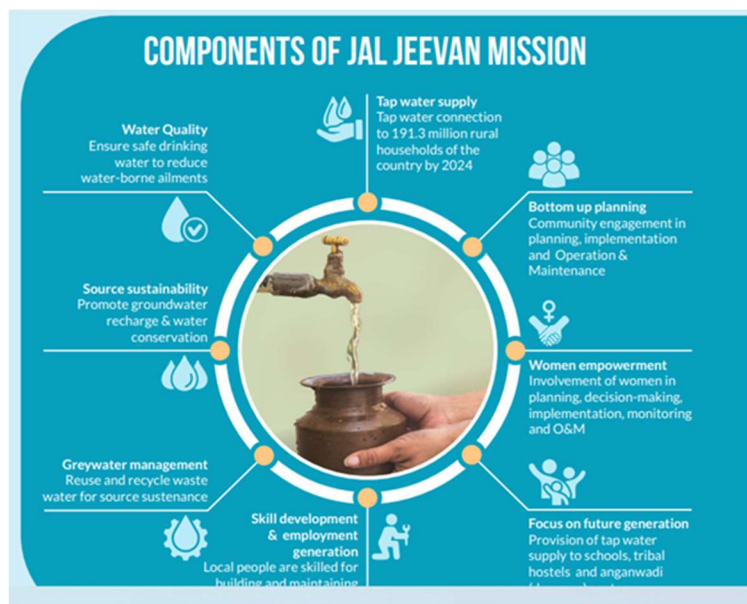
The majority of the people in India use groundwater which contains geogenic contaminants like arsenic, fluoride, iron, heavy metals, etc., which pose serious health issues. Bacteriological contaminants in drinking water may lead to diseases like cholera, dysentery, diarrhea, and typhoid, etc., in this connection, the government of India has focused on rural health and hygiene, so the Jal Jeevan Mission is considered a very strong focus on speedy resolution of any issue around water quality. As per the survey done by the government of India, there were only 3.23 Crore i.e., 17% of households had tap water connections in 2019. The government is able to connect to around 12.98 crore households out of 19.23 crore rural households in the country. i.e., 68% of the total

number of rural households and 186460 villages connected with 100% as of 31st August 2023 (PIB Delhi 2022). The government has taken a lot of initiatives to speed up the work. To name a few of the initiations, annual action plan of states and UTs, regular review of implementation, conducting workshops seminars, and field visits. The government has issued a complete guidelines book called Margadarshi for Gram Panchayats to provide safe and potable drinking water facilities. Jal Jeevan Mission, Integrated Management Information System has been put in place for online monitoring.

We developed a questionnaire to evaluate 250 beneficiaries covered under the Karnataka state. The respondents were chosen from different parts of the state using the tap water connections. The problems with the quantity and quality of drinking water persist in most of the villages.

## 2. About Jal Jeevan Mission

India is a rural-dominated country where the health and well-being of the rural population is the major concern of the government. The government of India is focusing more on the good health of the people hence the schemes they announced are completely circled around the health of the nation. The Government of India is working to improve the quality of life of people, especially in rural India. The main aim of the Jal Jeevan Mission is to ensure social security with tap water connection in every rural house launched in the year 2019 to benefit 19 crore rural households to ensure more than 90 crore rural people benefit directly from this mission [10]. Piped water connection helps in improving the health of the people. Survey says that poor-quality water causes plenty of problems due to frequent dysentery, typhoid, and cholera. Tap water provision to every household in rural India resulted in significant time saved on water collection [4]. The report of WHO says if the JJM provided safely managed drinking water to all households, would result in averting around 4 lakh diarrheal diseases deaths.



Source: JJM Brochure

## 3. Methodology

People using unsafe drinking water will face multiple health effects and broader societal impacts. Hence government of India initiated the Jal Jeevan Mission to provide safe drinking water to all rural households. In this regard to understand more about the impact of the program on rural health, we have developed methods and tools to estimate health gains based on new tap water connection. The researchers conducted a survey in the state of Karnataka India during the months of June and July 2023 in the state of Karnataka in India. The research involved the beneficiaries of central government schemes Jal Jeevan Mission who filled out Google form questionnaires and physical forms. The method of convenience sampling was used. 250 rural households responded to our call in the research during the study period. The collected data was used to analyze through SPSS software. Statistical tools techniques were used to know the impact of the Jal Jeevan Mission on socioeconomic and health aspects. The Karnataka state is towards the southern part of India with a population of 6,10,95,297 (Census 2011). It has 31 districts and 28657 villages, and 22363 villages have Piped Water Supply schemes. The researchers have identified 250 households from 40 villages across the state for the study as a sample. It is hypothesized that 50% of households had access to clean water before implementation.

#### 4. Result

The study was conducted to know the impact of the Jal Jeevan Mission scheme on rural health and the economy of the households.

**Table 1: Rural House Holds - RHH Tap Water Connections**

State	RHH	Tap Water Connections	Rural HHs given tap water connections (in crores)				
			2019-20	2020-21	2021-22	2022-23	Total
Karnataka	101.18	24.51	0.21	3.43	18.70	12.41	34.76
% of comparison from Previous Year				1533.33	445.19	-33.64	180.10
India	1935.71	323.63	82.62	322.62	204.51	132.45	742.20
% of comparison from Previous Year				290.49	-36.61	-35.24	460.36

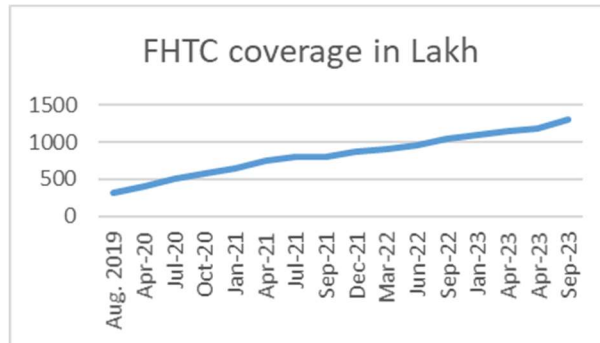
State	RHHs with tap water supply	
	No.	In%
Karnataka	59.28	58.59
<b>India</b>	<b>1065.83</b>	<b>55.06</b>

Note: RHH = Rural Households,  
column 3 indicates rural households with tap water connection as of 15.08.2019.

We found from the study that, Rural Households in Karnataka have been getting improvement in their health, and savings in their time as the tap water connections is increased tremendously in the year 2020-21 and 2022-23. This has reached to around 60% households in the study area. The change in the health and savings resulted in a very significant economic value to the extent of 1% of the total GDP of India (WHO Report). Figure 1 shows, progressive coverage in the

household tap water connections reached to the expectation as reported by ministry of Jal Shakti. The Indian Map shows, the coverage of tap water connections before 2019 and for the year 2023

Figure1: progressive coverage – functional household tap connection as on 31.08.2023



Source: JJ Samvad, Ministry of Jal Shakti, GOI

Figure2: Indie connects Tap Water

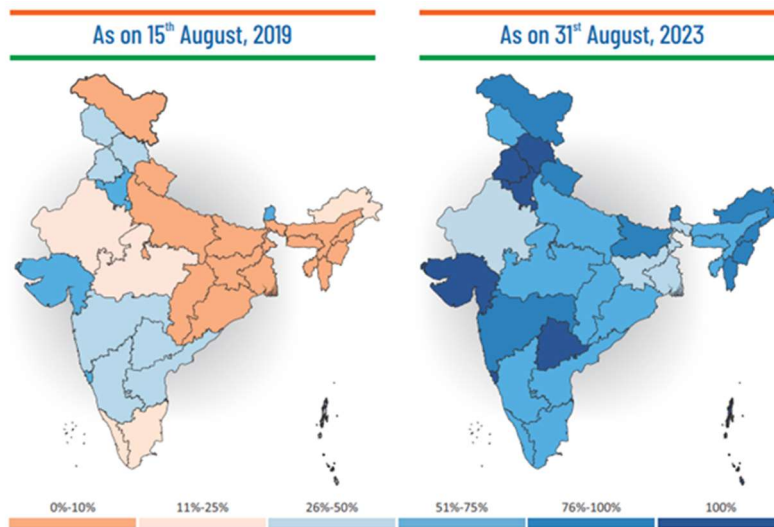


Table 2 highlights on ranks assigned to the different districts in Karnataka based on the performance during the month of December 2022 as per data available in ministry of jal shakti.

**Hypothetical Data:**

Let's consider a hypothetical region with 250 rural households. Before the implementation of the Jal Jeevan Mission, only 30% of households had access to clean water. After the mission's implementation, this increased to 95%.

Creating a hypothetical study on the potential health and economic gains from the Jal Jeevan Mission involves generating data and using analytical tools to analyze the impact of improved access to clean water on both health outcomes and economic indicators.

**Table 2: Rank of district based on performance marks as on December 2022**

S. No.	District Name	Dec-22				Quarterly		
		Category	Marks	National Rank	State Rank	Avg. mark	National Rank	State Rank
1	Bagalkote	Achiever	45.59	60	6	45.41	52	5
2	Ballari	Achiever	45.75	59	5	45.95	49	4
3	Belagavi	Achiever	69.97	18	2	69.25	15	1
4	BENGALURU RURAL	Aspirant	20.24	79	2	20.18	76	2
5	Bengaluru Urban	Aspirant	18.82	83	4	14.82	90	3
6	Bidar	Performer	37.36	80	3	30.43	92	3
7	CHAMARAJANAGARA	High Achiever	48.25	42	5	52.92	18	1
8	CHIKKABALLAPUR	Aspirant	29.00	60	1	30.21	44	1
9	CHIKKAMAGALURU	Achiever	21.88	149	13	19.57	153	13
10	Chitradurga	Achiever	32.76	106	11	33.01	91	11
11	Dakshina Kannada	High Achiever	28.22	65	6	24.24	71	6
12	Davangere	Achiever	53.28	47	4	44.50	56	6
13	Dharwad	High Achiever	49.15	41	4	48.77	30	4
14	Gadag	High Achiever	17.16	83	8	13.75	87	8
15	Hassan	Performer	24.78	123	5	25.84	115	5
16	Haveri	High Achiever	50.46	36	3	47.28	33	5
17	Kalaburagi	Achiever	41.72	74	9	40.18	64	9
18	Kodagu	High Achiever	50.57	35	2	52.74	21	2
19	Kolar	Aspirant	19.59	80	3	13.69	96	4
20	Koppal	High Achiever	52.29	32	1	51.67	23	3
21	Mandya	High Achiever	18.27	80	7	17.96	80	7
22	Mysuru	Achiever	40.59	79	10	37.57	71	10
23	Raichur	Achiever	20.07	155	14	17.14	157	14
24	RAMANAGARA	Achiever	55.55	44	3	42.79	59	7
25	Shivamogga	Achiever	43.05	68	8	42.68	60	8
26	TUMAKURU	Performer	39.80	64	2	36.84	67	2
27	Udupi	Achiever	26.38	129	12	24.72	127	12
28	Uttara Kannada	Performer	33.24	90	4	27.18	106	4
29	VIJAYANAGARA	Performer	47.88	43	1	40.65	54	1
30	VIJAYAPURA	Achiever	43.84	66	7	47.97	46	3
31	Yadgir	Achiever	70.80	13	1	52.32	35	2

Source: JJM Bulletin, Ministry of Finance, GOI

**Table3: Jal Jeevan Mission fact sheet in India and Karnataka**

Institutional arrangement	India	Karnataka
Village reported having presence of Pani Samiti (%)	38	35
Villages in which Pani Samiti is responsible for Operation & Maintenance of PWS schemes (%)	14	16
Villages in which persons are trained to use Field Test Kits (%)	31	53
Villages levying water service delivery to households (%)	34	60
Villages having skilled manpower for Operation & Maintenance of PWS schemes (%)	31	44
Community monitoring of water wastage in villages (%)	19	31
Villages in which signages about JJM were observed (%)	15	11

1 Quantity (in liters) of water received by households per person per day should meet the service level of 55 lpcd

2 Regularity is receiving water for 12 months or daily basis as per schedule

3 Potable waters have been considered basis testing of water samples through laboratory tests for physical, chemical, and bacteriological parameters (within acceptable/ permissible range) and onsite testing of pH.

4 Overall functionalities have been computed as the intersection of Adequate Quantity, Fully Regular Supply and Potable (Quality) for households wherein water supply was available at the time of survey

**Table 4: Time spent collecting water from off-premises**

Respondents	Average Time spent collecting water by RHH per day (in minutes) before 2019		
	Water Collectors in %	Av. Time in Minutes	
		Before 2019	After 2019
Off-premises water collection	73	42	24
Women collect water	32	52	26
Men collect water	23	42	32
Girls collect water	08	53	30
Boys collect water	14	40	28
Need based	23	49	--

Source: data collections.

**RHH – Rural Household**

Table 4 says, 8% of girls used to spend 53 minutes daily on average collecting water which has come down to 30 minutes after getting tap water connected. The average time spent by household has drastically reduced by 50%. Interestingly, school going children started collecting water after the Jal Jeevan Mission implementation as they use the pipes for filling water. WHO reports, 66.6 million hours were spent every day in collecting water from non-tap water connections before 2018. This shows that, after 100% implementation of the Jal Jeevan Mission, people will not only reduce their burden but also achieve considerable health and economic gain.

**Table 5. User satisfaction**

Sl. No.	Parameter	In %
1	Regular supply	97
2	Time punctuality	85
3	Color of water	98
4	Taste of water	96
5	Overall quality	95

Respondents in the rural areas have opined about the connection of Jal Jeevan Mission that, 95% of them are satisfied with overall quality of the water supply as shown in the Table 5. This means the scheme has large positive impact on the beneficiaries.

**Table 6. Simple linear regression model to test the relationship between the JJM water connection and improvement in the health conditions**

<i>Regression Statistics</i>	
Multiple R	0.28707196
R Square	0.08241031
Adjusted R Square	0.069666009
Standard Error	0.345468753
Observations	74

ANOVA	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>
Regression	1	0.771761	0.771761	6.466444	0.013142605
Residual	72	8.593103	0.119349		
Total	73	9.364865			

	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>	<i>Lower 95.0%</i>	<i>Upper 95.0%</i>
Intercept	0.857471264	0.121343	7.06648	8.33E-10	0.615577453	1.099365	0.615577	1.099365
X Variable 1	0.209195402	0.082266	2.54292	0.013143	0.045201508	0.373189	0.045202	0.373189

The regression model was used to check the relationship between the usage of water from JJM connection and improvement in health conditions. As the significance F value is less than 0.05 it is proved that there exists a significant relationship between the usage of JJM water and improvement in the health conditions of the people.

## 5. Impact study

Among the respondents, nobody has given a negative report of water-related diseases during the study period. 32% of the respondents reported that the number of hours available for routine work increased after the tap water connections. 87% of the women respondents say, the Jal Jeevan Mission of the government schemes helped in reducing their time and work in collecting water. They say that saved time is spent productively. 57% of the respondents reported that students' attendance improved after the installation of the tap water and most of them reported, they were on time to the school and colleges.

### 5.1. Economic Implications

The program is implemented across the nation hence major infrastructure developments are taking place even in rural India. A lot of employment opportunities are generated at all levels for skilled, semi-skilled, and unskilled labor forces. This program has created numerous employment opportunities directly and indirectly. The sectors like cement, pipe, sand, steel, plastic, transportation, petroleum, and other related are major beneficiaries of this program. Employment opportunities are extended beyond construction like repair, maintenance, science & technology, and operation of the infrastructure. Even the migration from villages has been reduced



in many villages. [8] This large initiation of government made the village living an ‘ease of living’. Based on the study, it was estimated that the Jal Jeevan Mission scheme helped in saving 35% of their man hours daily and the same man hours are used for other productive purposes. There were around 42% of rural people and 20% of urban people collected water from off-premises supplies in the year 2018, and 66.6 million hours were spent each day collecting water in households [4] [10]. There is a drastic change in the people in many ways. It is found that, there is increase in productivity due to improved health. Reduction in healthcare costs. Increase in agricultural and other yield due to consistent water supply

## 5.2. Social implication

World Health Organization based on its study reported that 42% of rural households and 20% of urban households, collected water from off-premises supplies. women bear the main burden of this carriage in 2018. The study states further that, 66.6 million hours were spent each day collecting water in households without on-premises water. the great majority of this happened in rural areas (WHO Report). Providing safe drinking water through Taps, the government constituted the Village Water & Sanitation Committee/ Pani Samiti to monitor water-related issues like water sources, water conservation, water User Charges, and testing water quality. It has also observed positive changes in the socio-economic structure in villages in recent years in terms of standard of living. The central government provided all the basic facilities to the villages like Cooking Fuel, Electricity, Toilets, Quality piped water, 5 Kg Ration, Rs.2000 DBT for farming expenses, and subsidies in agriculture equipment, fertilizers, and seeds. Scholarships to students, interest-free loans for education and agriculture purposes, and pensions for the unemployed, senior citizens, and widows. The government has introduced many schemes for the welfare of the nation, especially in rural India [6]. However, the extension of government schemes should not be a burden to the government. Few of the schemes like pensions and other expenditures are expected to increase as India experiences population aging [9] [10]. Around 75% of the rural households used to be affected due to waterborne disease, but it is drastically reduced after getting tapped water connection.

## 6. Major findings

1. The socio-economic, and health impact of the Indian government-initiated program Jal Jeevan Mission on rural households is explored in this study. As per the study, 80% beneficiaries from slum areas are extremely happy with the tap water connection compared to the main areas in the villages. With improved infrastructure like good water and road connectivity, people are leading their lives peacefully to access their facilities like health services, education, and social circles.
2. The government has initiated several programs to support rural India, it was observed in the study that, women in the house who used to spend around 52 average hours daily have reduced their work for the same to the extent of 50%. Thus, the hypothesis that the tap water connection has a significant impact on the health and economic benefits of the scheme is accepted.

3. The study also found that the quality of the materials used for the tap water is not good hence, around 25% of the taps were found damaged within a year. The causes mentioned in the survey are poor quality of pipes, poor quality of work, improper maintenance by households, damage caused by children as the connections are outside the main door, and alteration in the connections.
4. The study also focused on demographic variables, like age, gender, marital status, occupation, family size, qualification, etc. The study determines the significance of mean differences in beneficiaries' perceptions.
5. Pani Samithi is one of the organizations initiated to look after many things with respect to the smooth functioning of the program. The study found that 25 percent of the villages have having water oversees committee called Pani Samit which is responsible for the overall monitoring of the water supply. 98% of the villages reported that they have trained watermen who are connected to the new scheme of water supply.
6. Once the Jal Jeevan Mission is completed, the Government will be able to provide safe and potable drinking water to all rural households. This would result in the prevention of almost 400000 diarrhoeal disease deaths (WHO).
7. Jal Jeevan Mission is able to prevent in India almost 14 million DALYs (Disability Adjusted Life Years) from diarrhoeal disease (WHO) to save the cost of up to US\$101 million
8. Tap connection to every household would result in significant time saved on water collection (66.6 million hours each day), especially among women.
9. Jal Jeevan Mission has provided not only potable water to rural households, it has also provided good amount of employment opportunities. 59.93 lakh people per year were given direct employment opportunities in the construction phase and 2.22 crore persons-year of indirect employment and 11.8 lakh person-year of additional direct employment annually during the O&M stage (center for Public Policy and IIM B)
10. In the state of Karnataka, 94% of the households are satisfied with the regularity of the supply.
11. The majority of households (84%) use tap water directly without a water purification process. 70% of the respondents say they filter with a cloth while taking water from the tap.

## 7. Suggestions

- Many of the respondents are feeling happy with the scheme but the awareness level with respect to the intention of tap water connection is found still missing.
- It is advised that the local government like the gram panchayat should maintain cordial relations with households and make people convinced about the free tap water connections.
- Jal Jeevan Mission beneficiaries should be encouraged to utilize the water economically as it is poling beyond the limit. Peer families or water ambassadors are to be appointed and incentivize the households for minimum water consumption and maintaining hygiene.

## 8. Limitations

The study is restricted exclusively to the Karnataka state of India because of limited resources and time. The study is limited to the opinion of the Jal Jeevan Mission users in rural areas only and the future could be carried in different states. We took every care while collecting and evaluating data, but the few differences cannot be ruled out.

## 9. Acknowledgments

The authors are pleased to acknowledge the Department of Drinking Water and Sanitation, Ministry of Jal Shakti, Government of India, WHO for the survey, IIM for the report and all the respondents from various villages in Karnataka.

## 10. References:

1. Pradeep MD, M. Kalicharan. Social Security Measures for Indian Workforce - A Legal Intervention. International Journal of Computational Research and Development (IJCRD) 2016, 1 pp. 47-57, [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=2958089](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2958089)
2. Rohan Sachdev, Kriti Garg, Samiksha Shwetam, Aaryan R, Srivastava and Akash Srivastava. Awareness of Indian government initiated social security schemes utilization among villagers of Kanpur rural region: An evaluative cross-sectional study, J Family Med PrimCare2022,11(6):2456–2460.<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC948062>
3. Ashok Kumar Srivastava, S D Kandpal, Awareness and utilization of social security scheme and other government benefits by the elderly – A study in a rural area of district Dehradun. IJCH, 2014-12-31. <https://www.iapsmupuk.org/journal/index.php/IJCH/article>
4. WHO Report, 2023, World Health Organization, WHO-health-impact-study-workshop.pdf
5. Bhaskar Vijayroa Patil & Deepali Gala, Effectiveness of Government Schemes: A Critical Review of most widely used schemes, Journal of Xi'an Shiyou University, Natural Science Edition 2022, 1673-064X, pp.430-439, V18I01-43.pdf
6. Dr. P. Srinivas Rao, Rural Development Schemes in India – A Study, 2018 IJRAR January 2019, Volume 06, Issue 1, [www.ijrar.org](http://www.ijrar.org) (E-ISSN 2348-1269, P- ISSN 2349-5138)
7. Chandra Bhakuni. Pani panchayat: examples of water governance and community participation in India. Community, Environment and Disaster Risk Management, Volume 2, 139–167. ISSN: 2040-7262/doi:10.1108/S2040-7262(2010)0000002011
8. Jaskirat Singh. Does financial inclusion impact socio-economic stability? A study of social safety net in Indian slums. : <https://www.emerald.com/insight/0306-8293.htm>. 2022. International Journal of Social Economics © Emerald Publishing Limited 0306-8293 DOI 10.1108/IJSE-04-2022-0261.
9. Narayana Muttur Ranganathan 2017. Universal social pension for elderly individuals in India. Indian Growth and Development Review Vol. 10 No. 2, 2017 pp. 89-116 © Emerald Publishing Limited 1753-8254 DOI 10.1108/IGDR-07-2017-0047
10. Government of India (2019), Report on beneficiary. available at: Jal Jeevan Eng ..... data graphs can be used.pdf

11. Government of India. (2018). NSS report no.584: Drinking Water, Sanitation, Hygiene and Housing Condition in India, NSS 76th Round (July - December 2018). In M. o. S. P. I. Government of India (Ed.). India. (<http://microdata.gov.in/nada43/index.php/catalog/153>, accessed 3 March 2023)
12. Government of India Jal Jeevan Mission (<https://jaljeevanmission.gov.in/>, accessed 3 March 2023)
13. United Nation Population Division. Revision of World Population Prospects 26th Round. Dept of Economic and Social Affairs 2019. <https://population.un.org/wpp/>
14. Global Health Estimates: Life Expectancy and Leading Causes of Death and Disability. Global Health Observatory 2020. Geneva: World Health Organization [www.who.int/data/gho/data/themes/mortality-and-global-health-estimates/ghe-leading-causes-of-death](http://www.who.int/data/gho/data/themes/mortality-and-global-health-estimates/ghe-leading-causes-of-death), accessed 3 March 2023)
15. Muthuri RNDK & Kirigia JM. The Monetary Value of Disability-Adjusted Life Years in Kenya in 2017. SAGE Open, 2020, 10(4). <https://doi.org/10.1177/2158244020970556>
16. Kirigia JM & Mwabu GM. The Monetary Value of Disability-Adjusted-Life-Years Lost in the East African Community in 2015. Modern Economy, 2018; 9, 1360-1377.

Jal Jeevan Clicks.

