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R. Vijaya Bavani
Madras Christian College

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16.A PROSPECT EVOLVEMENT OF HOUSEHOLD EXPENDITURE ON WATER SUPPLY FOR HEALTH BENIFITS IN CHENNAI

Mrs. R. VIJAYA BAVANI., M.A., M. Phil, Research Scholar, Department Of Economics, Madras Christian College, Tambaram, Chennai.

ABSTRACT

Due to rapid urbanization, especially in developing countries such as India, has affected the availability and quality of groundwater is contaminated, its quality cannot be restored by stopping the pollutants from the source. The common pollutants of groundwater are discharge of agricultural, domestic, and industrial waste, pesticides, etc., which leads to water-borne diseases. Water-diseases may be of microbial origin such as diarrhoea, dysentery, cholera and typhoid and chemical origin such as fluorosis and methemoglobinemia, therefore, in order to consume the quality water people need to spend more on water supply as other household expenditure, such as: food, clothing, housing (rent), energy, transport, etc., A significant number of people purchase water from private and public water suppliers and that they incur a sizeable expenditure on water purchases; some of these households are also willing to pay additional amounts for improved water supply from public and private sources for their health benefits. The results suggest that improvements in water supply would significantly increase the welfare of the people. This is clearly a public health risk that must be addressed along with the issue of water service affordability.

KEYWORDS: Household expenditure on Water supply, water problems and health

INTRODUCTION

Water is essential for life. We need water for every activity in life. Millions of people worldwide suffer from serious diseases because they do not have access to clean drinking water. It is impossible to imagine our lives without an adequate water supply. According to National Water Policy "adequate drinking water facility should be provided to the entire population both in rural and in urban areas and drinking water needs of the human beings should be the first change on any available water'. Adequate water supply is not merely dependent on the existence of a water source. Therefore, when assessing people's level of access both to water supply and sanitation, it is important not to restrict this only to issues of distance to a source and density of users, but it further involves many aspects such as regularity, sufficiency, affordability, quality and safety.

Water supply and sanitation in India continue to be inadequate, despite longstanding efforts by the various levels of government and communities at improving coverage. The level of investment in water and sanitation, albeit low by international standards, has increased in size during the 2000s. For example, in 1980 rural sanitation coverage was estimated at 1% and reached 21% in 2008. Also, the share of Indians with access to improved sources of water has increased significantly from 72% in 1990 to 88% in 2008.

At the same time, local government institutions in charge of operating and maintaining the infrastructure are seen as weak and lack the financial resources to carry out their functions. In addition, only two Indian cities have continuous water supply and according to an estimate from 2008 about 69% of Indians still lack access to improved sanitation facilities. A study by Water Aid estimated as many as 157 million Indian or 41 percent of Indians living in urban areas, live without adequate sanitation. India comes top for having the greatest number of urbanites living without sanitation. India tops urban sanitation crisis, has the largest number of urban dwellers without sanitation and the most open defecators over 41 million people.

A number of innovative approaches to improve water supply and sanitation have been tested in India, in particular in the early 2000s. These include demand-driven approaches in rural water supply since 1999, community-led total sanitation, a public-private partnerships to improve the continuity of urban water supply in Karnataka, and the use of micro credits for water supply and sanitation in order to improve access to water and sanitation.

METHODOLOGY

The study is based on only secondary data which were collected from books, journals, government reports, websites and other data.

Objectives:

The general objective of the study is to identify the household expenditure for water and sanitation, hygiene and health problems in the city of Chennai.

However, the specific objectives of the study are:

1.To examine the patterns of water sources, supply, access to consumer, connections in Chennai city;

2.To analyse the household expenditure for water supply in Chennai;

3.To examine and analyse sanitation, hygiene, diseases and to identify indoor and outdoor risk factors in Chennai so as to suggest strategies for overcoming them.

WATER SOURCES

Chennai Metropolitan Water Supply and Sewerage Board (CMWSSB) is depending mainly on surface water, partly on groundwater and water from two desalination plants for its water supply to Chennai city. The main water sources for Chennai city are as follows:

1. Poondi, Cholavaram, Redhills and Chembarambakkam Reservoirs.
2. Krishna River water received in the Poondi reservoir through Kandaleru-Poondi Canal.
3. Veeranam Lake in Cuddalore District.
4. Desalination Plants at Kattupalli near Minjur (100 MLD) and Nemmeli near Mahabalipuram (100 MLD)
5. Ground water sources from Wellfields in the Araniyar-Kortalaiyar River Basin and from Neyveli aquifer.

WATER SUPPLY SERVICES

The abstraction from a water source, conveyance, treatment, storage and distribution of potable water, water intended to be converted to potable water and water for industrial and/or other uses, where such water is provided by or on behalf of a water services authority, to consumers or other water services providers is termed as water supply services. This includes all the organizational arrangements necessary to ensure the provision there is including amongst others, appropriate health, hygiene and water resource use education, the measurement of consumption and the associated billing, collection of revenue and consumer care.

Institutional arrangements in Chennai:

Depending on where one lives within Chennai metropolitan area, four distinct systems of water supply can be found in Chennai:

- i) Supply of water by the Metro Water Board – mainly for Chennai City;
- ii) Municipal supply – in 9 towns adjoining Chennai;
- ii) Self-provision by many households and industries – by drilling of shallow wells or deep tube wells;
- iv) Private market – (a) bulk supply by means of tanker trucks of 12, 000 litres capacity and (b) retail distribution of ‘bottled water’ in jerry cans of 10 or 12 litres capacity and water cans 25 litres capacity

Providing good quality water in adequate quantity to urban households in developing countries will reduce poverty and increase social welfare considerably. But the reality is

that a large number of poor households do not have access to good quality water. When the government fails, the households will have to depend on alternative service providers to meet out their water needs. The increased demand accompanied by huge scarcity of water in urban areas leads to emergence of institutions such as private water markets. In recent years, the private operators are playing an important role in fulfilling the household water requirements in major cities like Chennai.

water in Chennai city has become a scarce economic commodity and even the poor end up shelling out a substantial amount of their income on it. Poor makes informal payment for the public supply; around 50 percent of them pay an additional amount for private water. Informal payment to the rent seekers suggests that poor households are willing to pay for ensuring existing public service, even though the quality is bad. Their preference towards private water suggests that they are interested to pay more for better quality service. However, when the improved public supply scheme is proposed, the level of keenness to participate and pay for it is found to be low as the private sector is already responding adequately to the changing preferences of the consumers. This implies that when a good service is already available from the private sources, preference towards improvements in the existing public supply may get suppressed. Apart from improving their existing service delivery system to serve the people better, the Government needs to regulate the informal water markets properly and monitor their functions adequately so that the informal markets could play an effective ‘supplementary’ role in fulfilling water supply needs of the people, including that of the poor (L. Venkatachalam).

ACCESS TO CONSUMER

In 2015, 88% of the total population had access to at least basic water, or 96% in urban areas and 85% in rural areas. The term “at least basic water” is a new term since 2016, and is related to the previously used “improved water source”. In India in 2015, 44% had access to “at least basic sanitation”, or 65% in urban areas and 34% in rural areas. In 2015, there were still 150 million people without access to “at least basic” water and 708 million without access to “at least basic” sanitation.

In earlier years, in 2010, the UN estimated based on Indian statistics that 525 million people practice open defecation. In June 2012 Minister of Rural Development Jairam Ramesh stated India is the world’s largest “open air toilet”. He also remarked that Pakistan, Bangladesh and Afghanistan have better sanitation records.

In 2008, 88% of the population in India had access to an improved water source, but only 31% had access to improved sanitation. In rural areas, where 72% of India’s population lives, the respective shares are 84% for water and only 21% for sanitation. In urban areas, 96% had access to an improved water source and 54% to improved sanitation. Access has improved substantially since 1990 when it was estimated to stand at 72% for water and 18% for sanitation.

According to Indian norms, access to improved water supply exists if at least 40 liters/capita/day of safe drinking water are provided within a distance of 1.6 km or 100 meter of elevation difference, to be relaxed as per field conditions. There should be at least one pump per 250 persons.

In urban areas, those that do not receive water from the piped network often have to purchase expensive water of dubious quality from private water vendors. For example, in Delhi water trucks get water from illegal wells on the banks of the Yamuna River for 0.75 rupees per gallon (about USD 2.70/m3).

Category	Quantity	Price (each)	Volume of sales (INR*)
2 5 0 m l sachets	5,000,000	INR 1/	5,000,000
1 litre water bottles	75,000	INR 10 -12	7 5 0 , 0 0 0 -900,000
12 litre cans	1,00,000	INR 18-30	1,800,000-3,000,000
20–25 litre cans	25,000	INR 20 and up	500,000 minimum
T a n k e r l o r r i e s (1 2 , 0 0 0 litres)	10,000	INR 700-900	7,000,000-9,000,000

Table 1. Water supplied by the private sector in Chennai (daily basis).

Source: Information gathered by the author from different sources including the South India Packaged Drinking Water Manufacturers’ Association. *USD 1 ¼ approx. INR 45 (in 2010).

THE HOUSEHOLD EXPENDITURE FOR WATER SUPPLY IN CHENNAI

Inadequate access of basic services to the poor is one of the major problems of urban India. The Government has undertaken a number of initiatives to provide basic services to the poor. However, it is observed that the public-sector agencies have not been able to provide the services. With the introduction of economic reforms in our country, there is a demand for improving cost recovery, increase in service charges and privatization in urban basic services.

It is felt that these might price the poor out of the delivery system.

Many governments fear that fully recovering costs will hurt the poor, yet increasing prices to enable cost recovery in the delivery of services may actually help the poor (WDR, 1994). They often pay much higher prices per unit of water because they are not connected to public service networks that have lower unit costs, and because they do not benefit from subsidies to users of the public system - usually the better-off. Expansion of access benefits the poor by allowing them to rely on less costly sources of water.

To determine household expenditure for water in urban areas is a very complex process. Households, with house connection, may be willing to pay additional charge for improved pressure, quantity or quantity of water. Households without house connection may pay for improved public standpost or new house connection. In addition, the payments can be made in terms of one-time houseconnection and monthly water charge.

WHY USERS SHOULD PAY FOR WATER AND SANITATION?

- Available capital and public funds are inadequate to meet costs.
- State intervention and control has proven to be inefficient and ineffective
- Socio-economic benefits of improved water and sanitation service justify payment.
- Subsidies disempower users by denying them choice.
- Subsidies discourage cost-effectiveness and the development lose level of solutions
- Evidence of willingness to pay is strong as many poor people are already paying for services.
- Properly regulated user charges would mean the poor would pay less and get better service.
- Payments increase sense of value and commitment among users. Payments maximise the rise of available resources and improve quality/standard of service.

PROBLEM OF WATER HEALTH

Water safety and quality are fundamental to human development and well-being. Providing access to safe water is one of the most effective instruments in promoting health and reducing poverty.

Water health believes that everyone deserves safe, pure and affordable drinking water regardless of their geographical location or economic situation. Yet, for several decades, about a billion people in developing countries have not had a safe and sustainable water supply. It has been estimated that a minimum of

7.5 liters of water per person per day is required in the home for drinking, preparing food, and personal hygiene, the most basic requirements for water; at least 50 liters per person per day is needed to ensure all personal hygiene, food hygiene, domestic cleaning, and laundry needs. A poor water supply impacts health by causing acute infectious diarrhoea, repeat or chronic diarrhoea episodes, and non-diarrheal disease, which can arise from chemical species such as arsenic and fluoride. It can also affect health by limiting productivity and the maintenance of personal hygiene. Finally, improvements in water supply are essential prerequisites for improved personal and home hygiene and to enable sanitation facilities to be kept clean. Consequently, the direct health effect of improved water supply is likely to be extended by its indirect effects on sanitation and hygiene.

FINDINGS AND SUGGESTIONS

Findings suggest that targeting subsidies to increase private connections amongst the low-income urban population would lead to financial savings, in addition to enabling a significant decrease in economic expenditure. While a pro-poor policy in rural area is more complex to achieve because of the prevalence of alternative water sources, it is not impossible. Should a pro-poor policy be developed for these areas, as a priority it would need to address the low functionality rate of formal sources in the dry season (to the benefit of all poverty categories) and provide strategic support—such as point-of-use treatment options—so that households may continue to rely on informal sources. These forms of self-supply are ways used by households to cope with over-crowded, distant or expensive formal water points—these will also need to be retained. Finally, an important issue uncovered by the research is the large proportion of population utilizing water sources whose water quality is not being monitored. This is clearly a public health risk that must be addressed along with the issue of water service affordability.

CONCLUSION

Poor environmental quality leads to individuals facing serious health risks in their everyday lives. Individuals will adopt measures to improve their environmental quality only if they perceive the associated health risks and if they can afford to pay for the prevention measure. It is the role of awareness as separate from the income constraint that we try to evaluate in this paper in the context of drinking water in urban India.

The existing system of drinking water in Chennai is not reliable in both services and quality to meet the requirements of the

households. The study measures household expenditure for improved water services and averting behaviour for quality improvement of drinking water. The results indicate that reliability of both water services and quality is of value to the households. Both services and quality are important such that households are willing to pay for improved water services and also adopts averting behaviour for improved water quality. For the household's household expenditure for improved water services, the study estimates that there is statistically significant effect of location that in urban areas, households have more household expenditure for improved water services. The study also finds that sources of water have a significant effect on household expenditure i.e. the household who have own source are willing to pay in the higher range further tap water has significant effect on household expenditure for the first two quartiles. As expected, education level significantly affects household expenditure for safe drinking water.

In averting behaviour strategies (Filters, Boiling, Chemical) for quality improvement, the study finds that there are statistically significant effects of education on the water purification behaviour of the households. Interestingly, higher income quartile is highly significant in all strategies, while in source of water people getting water from tap or fetch from outside, is highly significant in both boiling and chemical. But tap is significant in filter use at 10 percent level of significance. As expected, the study finds that there is a strong effect of quality (unfavourable taste, smell, appearance) on all water purification behaviour of households i.e. water quality is highly significant in all strategies. Apart from above variables, awareness has an effective role in influencing the general public perception towards the opportunity cost for using unsafe water.

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