Impact of Inadequate Sanitation on Socioeconomic and Health Conditions among Rural Households - An Empirical Study

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Abstract: ***In most developing countries, the three most significant environmental health problems affecting a large majority of the population are contaminated water supplies, inadequate sanitation, and untreated solid waste. This paper examines the impact of inadequate sanitation facilities on the socioeconomic and health conditions of rural women in Karimnagar, Telangana. This paper finds that 47% of the sample belongs to the young age group, 90% are married, 93% have adopted the nuclear family system, 61% have 5 to 6 family members, 47% are illiterate, and 57% live in semi-pucca houses. 93% of respondents are agricultural practitioners and labourers in their occupation. 41% work for less than 20 days per month, 64% have no land, 76% earn between 2000 and 2500 rupees monthly, and 91% have debts. 75% respondents visit government hospitals. 40% women have clothed shed bathrooms; 98% women go to open defecation. 83% of them reported facing problems while going to open defecation. According to cross-tabulation analysis, 45 respondents from the illiterate group and 35 from the primary level educated group are using clothed bathrooms. 115 out of 150 respondents, who are in the income range of Rs. 2000-2500, state that a sanitation facility improves the dignity of women.***

Keywords: Sanitation, health conditions, women's dignity, Telangana

1. Introduction

As public health officials, policymakers, researchers, and NGOs play a crucial role in addressing this fundamental public health concern, which has a direct impact on both individual and community well-being. Maintaining hygiene, limiting the spread of disease, and upholding dignity all depend on having access to safe and clean sanitation. Despite international efforts to upgrade sanitary infrastructure, millions of people, particularly in low- and middle-income countries, continue to lack access to adequate facilities. Water supply and sanitation are crucial components of urban and rural infrastructure services, essential for enhancing the quality of life and health of the human habitat. While there has been a perceptible improvement in access to drinking water, the provision of sanitation facilities has not received the attention it urgently requires. The status of sanitation in rural areas is even worse than the water supply scenario. More than 85% of rural villages lack proper drainage facilities. More than 82% of the houses lack toilet facilities. Toilets are unavailable for nearly 50% of the semi-urban population. In many areas, open defecation is still prevalent, and it is one of the leading causes of many diseases (Kavitha, 2013).

Objectives

1) To study the socioeconomic background of women
2) To study the status of sanitation in rural areas and
3) To examine the impact of sanitation on women's health conditions and the economy.

Hypotheses (qualitative)

1) Rural areas predominantly suffer from unsafe drinking water and poor sanitation.
2) Rural women suffer from different waterborne and airborne diseases due to poor sanitation facilities and a lack of awareness.

Design of the Sample and Tools of Analysis

A multi-stage sample design is adopted for the study. In the first stage, the Karimnagar district was chosen, with 150 women respondents. In the second stage, one mandal has been selected from the district. In the third stage, three villages have been chosen, and from each village, 50 respondent women are randomly selected for the collection of primary data. The data are analysed for the study's objectives. For analysing the data using statistical tools such as frequency counts, percentages, averages and cross-tabulation analysis is employed.

2. Review of Literature

Despite recent progress, access to improved sanitation remains significantly lower in India compared to many other countries with similar or even lower per capita gross domestic product. For example, Bangladesh, Mauritania, Mongolia, Nigeria, Pakistan, and Vietnam—all with a lower gross domestic product per capita than India—are just a few countries that have achieved higher access to improved sanitation (Kavitha, 2013).

Currently, 600 million Indians face high to extreme water stress, and about two lakh people die every year due to inadequate access to safe water (Lal, 2019). Nearly 90% of respondents wash their hands after using the toilet and after coming from outside the home. Ten per cent of respondents reported a lack of awareness about sanitation (Lal, 2020).

Sixty-two per cent of respondents do not have access to toilet facilities and practice open defecation. 92% of respondents stated that a toilet makes dignity, saves time and energy, saves their children's school days, gives adolescent girls privacy, saves wage loss, and makes a quality life (Lal, 2020a), and Government consolation measures, if effectively enforced and administered, can rejuvenate the MSME sector by building economic resilience, which can further

accelerate sectoral growth and the process of technological and infrastructural improvement (Lal, 2020b).

3. Results and Discussion

The following variables have been discussed in detail to make the cause and relationship among them. Demographic variables of rural households, economic-related information of rural households, availability of medical facilities for rural households, sanitation and hygiene-related information, cross-tabulation between education and bathing facilities, and problems while using open defecation and sanitation facilities to improve the dignity of women.

Table 1: Demographic Variables of Rural Households

Variables	Indicators	Karimnagar
Age Group	15 - 25 Yrs	63(42.00)
	26 - 35 Yrs	71(47.33)
	36 - 45 Yrs	16(10.66)
	Total	150(100)
Marital Status	Married	135(90.00)
	Unmarried	08(5.33)
	Widow	07(4.66)
	Total	150(100)
Type of Family	Nuclear	139(92.66)
	Joint	11(7.33)
	Total	150(100)
Size of Family	3 -4	37(24.66)
	5 - 6	92(61.33)
	7 - 8	21(14.00)
	Total	150(100)
Education	Illiterate	71(47.33)
	Primary	58(38.66)
	Secondary	12(8.00)
	College	09(6.00)
	Total	150(100)
Type of House	Permanent	10(6.66)
	Semi Pucca	84(56.00)
	Huts	56(37.33)
	Total	150(100)

Table 1 Provides Demographic information about the Karimnagar district based on various socioeconomic, sanitation, and health variables. The age distribution reveals that most respondents are between 26 and 35 years old (47.33%), followed by those between 15 and 25 years old (42%). However, persons above 16 constitute the smallest group (10.66%). Marital status indicates that most participants are married (90%), with a small percentage being unmarried (5.33%). The family structure is predominantly nuclear families (92.66%) over joint families (7.33%). Family size data indicate that the majority of families have 5-6 members (61.33%), with a smaller proportion having fewer than four (24.66%) or more than seven (14%). Literacy levels in the primary stage (38.66%), or most of the people are illiterate (47.33%). The majority live in semi-pucca houses (56%). Huts accommodate a notable portion (37.33%) and are the only type of permanent housing infrastructure.

Table 2: Economic-Related Information of Rural Households

Variables	Indicators	Karimnagar
Occupation	Agriculture & Agri-Labour	125(83.33)
	Non-agriculture	02(1.33)
	Other	23(15.33)
	Total	**150(100)**
Days of employment in Agriculture	10 – 19 days	13(8.66)
	20 day	49(32.66)
	25 day	53(35.33)
	30 day	00(0.00)
	No	25(16.66)
	Total	**150(100)**
Nature of work	Daily	99(66.00)
	Contract	51(34.00)
	Total	**150(100)**
Average working hours per day	Up to - 8 hrs	45(30.00)
	8 - 10 hrs	93(62.00)
	10 - 12 hrs	12(8.00)
	12 - 14 hrs	00(0.00)
	Total	**150(100)**
Income Per Month in Rs.	Below 2000	06(4.00)
	2000 – 2500	115(76.66)
	2500 – 3000	27(18.00)
	Above 3000	02(1.33)
	Total	**150(100)**
Size of the Landholding	Below 2 Acres	38(25.33)
	2 – 4 Acres	16(10.66)
	No Land	96(64.00)
	Total	**150(100)**
Debts	Yes	136(90.66)
	No	14(9.33)
	Total	**150(100)**

Table 2 highlights the occupational patterns, income levels, employment status, Income, land holding and Debts of the Karmnagar. Agriculture is the most common occupation, with 83.33% of the workforce being farmers, followed by agricultural labourers—a minor percentage of non-agriculture (1.33%) or others (15.33%). Most people work around 25 days in a month (35.33%), fewer than 25 working days (32.66%), and no one has a whole month off (16.66%), indicating seasonal or irregular work patterns. Nature of work: Daily wage labour is the most common form of employment (66%), and contract-based work is the second most common (34%). Monthly income falls mainly between ₹2000-2500 (76.66%) and ₹2500-3000 (18%), with a few earning less than ₹2000 (4%). Average working hours over (62%) of respondents work 8-10 hours, below 8 hours (30%), 10-12 hours (18%), and no one has above 12 hours of working hours. Below 2 acres of land holders are (25.33%), most of the respondents do not have land (64%), fewer people have above 2 acres (10.66%), and an alarming (90.66%) number of respondents are in debt. Only 9.33% are not bothered by debt. These figures highlight the agricultural dependence, backwardness and economic conditions.

Table 3: Availability of Medical Facilities for Rural Households

Variables	Indicators	Karimnagar
Hospital facilities	Yes	147(98.00)
	No	03(2.00)
	Total	150(100)
Nature of Hospital	Govt. Hospital	112(74.66)
	Pvt. Hospital	38(25.33)
	Total	150(100)
Distance to the Hospital	Below 2km	20(13.33)
	3 - 5 km	130(86.66)
	Total	150(100)
General Medical Checkup	Twice a Year	00(0.00)
	Annually	18(12.00)
	Rarely	34(22.66)
	Never	98(65.33)
	Total	150(100)

Table 3 highlights the medical facilities available to the Karimnagar district. A high percentage of respondents (98%) confirmed the presence of hospital facilities in their area. Only 2% of respondents reported a lack of access, indicating that healthcare is generally available. A total of 74.66% reported using government hospitals, while 25.33% opted for private health care facilities. The data reveal that only 13.33% of the population lives within a 2 km radius of a hospital.

On the other hand, the vast majority (86.66%) reside within a 3- to 5-km radius of a hospital. A modest number of respondents (22.66%) rarely attend checkups, and only 12% attend annual medical evaluations. Alarmingly, not a single respondent is undergoing checkups twice a year. At the same time, a significant number of individuals (65.33%) stated they never go for checkups. Efforts must be directed not only toward improving infrastructure but also toward enhancing public awareness about preventive healthcare.

Table 4: Sanitation and Hygiene Related Information

Variables	Indicators	Karimnagar
Bathroom facility	Yes	00(0.00)
	No	150(100.00)
	Total	150(100)
Source of bath	Made with gunny bags	60(40.00)
	small shed	24(16.00)
	Cloths shed	66 (44.00)
	Total	150(100)
Availability of Toilet Facility	Yes	00(0.00)
	No	150(100.00)
	Total	150(100)
Source of Toilets	Open fields	148(98.66)
	Bank of Canals	02(1.33)
	Total	150(100)
Problems While Going to the Toilet	Yes	124(82.66)
	No	26(17.33)
	Total	150(100)
Do you carry water for the toilet	Yes	150(100.00)
	No	00(0.00)
	Total	150(100)

Table 4: Sanitation and Hygiene Related Information provides an overview of health-related information in the Karimnagar district. A shocking revelation from the table is that none of the respondents (0%) have access to a proper bathroom facility. (44%) Respondents using temporary cloth sheds (40%) bathe in open areas and use a cloth screen for privacy. (16%) Respondents bathe using gunny bags for makeshift privacy. None of the respondents (0%) reported having access to proper toilet facilities, which forces the entire surveyed population to rely on open defecation. Due to the absence of toilet infrastructure (98.66%), open fields (1.33%), and the Bank of canals. Out of the total respondents (82.66%) reported facing problems while going to the toilet. Only 17.33% reported no issues. All the respondents carry water with them while going for defecation.

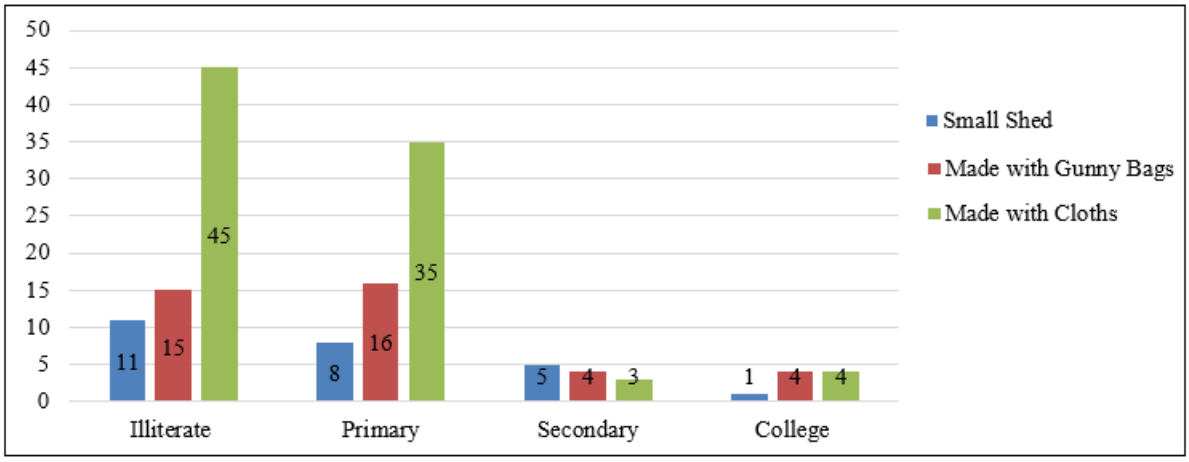

Figure 1: Cross-tabulation between Education and Bathing facilities

Cross Tabulation Analyses

Figure 1 describes the relationship between the source of bathing facilities and the level of education of the respondent women. The respondent households temporarily prepare the bathing facilities. Among the total respondents, 71 are illiterate. Of these, 45 respondents take a bath made with cloth, while 15 respondents use gunny bags, and 11 respondents take a bath in a Small shed. Both arrangements are temporary, with little scope for privacy. There are 58 respondents in the primary education level, of which 35 respondents bathe in cloth, 16 respondents bathe in gunny bags, and only eight respondents take a bath in small sheds. The secondary level of education respondents are 12, of whom 05 respondents take a bath in a Small shed, 04 respondents take a bath in gunny bags, followed by 03 respondents who take a bath in clothes. Out of 150

respondents, only nine have a college-level education, of whom four rely on bathing made with cloth and those made with gunny bags. Similarly, an equal percentage of respondents depend on bathing, and only one respondent has a small shed for bathing in the study area.

As a source of bathing, small sheds are relatively more common among secondary and lower-educated respondents. The sources of gunny bags and sheds are relatively more prevalent in illiterate respondent households and less so in college-level educated respondents. Cloth sheds are relatively more prevalent among college, primary, and secondary level educated respondents, while illiterate respondents are relatively low.

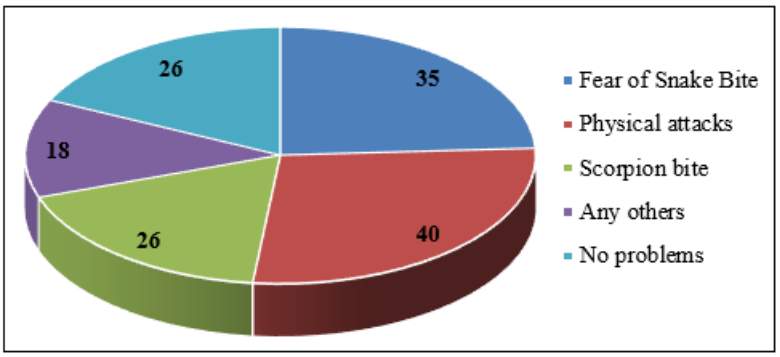

Figure 2: Problems While Going to an Open Defecation

Figure 2 illustrates the types of problems encountered when going out for toilet purposes. Fear of snake bite is stated as a significant problem by 35 respondents. Forty respondents have stated threats and physical attacks by anti-socials are relatively more common. A fear of scorpion bites has been reported by 26 respondents, with a relatively higher number of respondents from the Karimnagar district. Other problems include threats to privacy, fear of darkness, insect bites, feelings of inferiority, and the like. Eighteen per cent of respondents have stated this problem. Twenty-six respondents stated that they have no specific problems except for inconvenience and loss of time going out. Informally, most respondents have stated that there is a mix-up of two or more problems. Besides stating the most important problem in their perception, most of them accept the mix-up of the problems analysed.

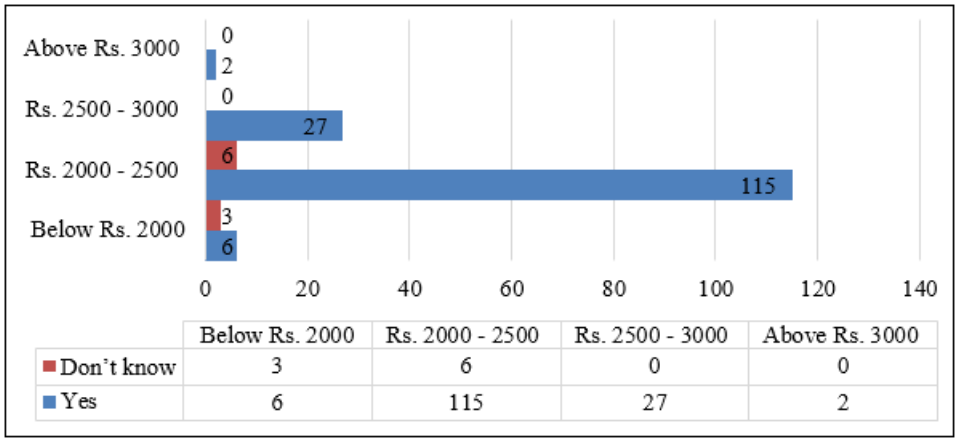

Figure 3: Sanitation Facilities Improve the Dignity of Women

Figure 3 describes how the Sanitation facilities improve the mindset of the women. They feel dignified, and their modesty is assured as the threat to privacy is reduced. This aspect of good sanitation is examined. 115 out of 150 respondents, who are in the income range of Rs. 2000-2500, state that a sanitation facility improves the dignity of women. Moreover, 27 respondents fall within the income range of Rs 2,500-3,000, and only two respondents are in the income range above Rs 3,000. Their confidence levels increase, and they feel that life is worth living. However, out of the nine respondents' accounts, 9 pleaded their inability to offer an opinion. Sanitation facilities make life colourful, as different problems of ill health are driven out, in the opinion of most respondents: status and dignity. Thus, 97 per cent of the respondents in the study accept the proposition that sanitation facilities enhance their dignity and quality of life. It is observed that the higher the income, the higher the positive aspects and awareness of sanitary facilities in the study. The higher-income groups are in strong agreement with the need to improve sanitation facilities.

4. Conclusion and Suggestions

Approximately two billion people worldwide consume alcohol, and an estimated 76 million of them are estimated to be suffering from alcohol consumption disorders (Naik, 2013). In rural and tribal areas, people spend more on alcohol consumption; they do not bother about health and dignity-related facilities, particularly sanitation facilities. Therefore, there is a need to create awareness among rural

and tribal people. Moreover, they were engaged in self-help group programmes and MSMEs. It requires lower investment in machines and equipment, raw materials, and energy consumption, as well as other resources that help run MSMEs (Lal, 2020b), allowing them to earn money and create improved sanitation facilities, which in turn promotes the well-being of their health and the dignity of women.

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