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A Case Study on Sanitation for Clean Water: SDG (Sustainable Development Goal) for Rural Communities in Girdharpur Village, Greater Noida

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Abstract

The changing situation of clean water and sanitation in Girdharpur Village: A step forward to achieve the Sustainable Development Goal 6 (SDG-6). An exploratory field survey of rural households using structured questionnaires was carried out to assess water accessibility, sanitation facilities, hygiene practices and awareness regarding sustainable development goals. The key results indicated widespread ignorance of SDG-6, reliance on hand-dug wells and underground water supplies, minimal sanitation facilities and intermittent supply challenges. Most of the households washed their hands regularly but a large number drank untreated water as water source which carries risk of waterborne diseases. In the village, the study also was able to identify limited support in healthcare and sanitation. These findings underscore the critical importance of implementing sustainable rural development, especially in strengthening water supply systems, sanitation facilities, hygiene education and community participation to improve the health of the wider public.

Keywords: Clean water, sanitation, health, water treatment

Introduction

Meeting the freshwater needs of an ever-expanding global population via groundwater will encounter numerous challenges, including contamination, the effects of climate change, a more rapid depletion than replenishment, and conflicts across borders. Global water supply, distribution, and treatment are essential for food, sanitation, health, energy, and ultimately human well-being through ecosystem services (UN, 2018).

However, only 3% of the earth's surface is made up of fresh water, and of that, two-thirds are buried deep underground or locked in the form of ice caps, glaciers, and permafrost. Another freshwater source is surface water, which can be found in lakes, rivers, dams, and streams. The United Nations launched the SDG6 Global Acceleration Framework in 2020 with the intention of greatly accelerating the achievement of universal access to clean water and sanitation by 2030 (United Nations-Water, 2020). To address this issue, SDG 6 (one of the 17 global goals) was added to the United Nations (UN) Agenda for 2030, "to ensure availability and sustainable management of water and sanitation for all by 2030"As a finite resource, water stress is brought on by rising demand for water due to factors including accessibility, demand, and quality. SDG-6 identifies eight worldwide

objectives. All of them are fundamental components of SDG-6. Although all governments agree on these goals, they all make sure they are carried out in accordance with their national obligations (Alshomali & Gulseven 2020).

In India, around 70% of people reside in rural areas. Actually, according to the 2011 census, 89% of families without toilets were located in rural areas. Rural open defecation rates have remained persistently high despite decades of economic improvement and the Indian government's investment in latrines (Cofey D, et al 2024). Diseases associated with water, sanitation, and hygiene include typhoid and paratyphoid fevers, infectious diarrhea, Future F, acute hepatitis E, and acute hepatitis A Fluorosis, Arsenosis, Legionellosis, Methamoglobinamia, Schistosomiasis, Trachomaa, Ascariasis, Trichuriasis, Hookworm, Dracunculiasis, Scabies, Dengue, Filariasis, Malaria, Japanese encephalitis, Leishmaniasis, Onchocerciasisa, Yellow fever, Impetigo, and drowning (Prüss A, Kay D, 2019). By promoting hygiene, cleanliness, and the abolition of open defecation, the study seeks to improve the general standard of living in rural regions. Increasing awareness and offering health education motivates communities (Girdhapur village) establishments to implement environmentally friendly infrastructure and sanitation methods. Promote the use of appropriate, long-lasting, and reasonably priced sanitation techniques that are also safe for the environment. For general cleanliness, create community-managed sanitation systems in rural areas, focusing on scientific solid and liquid waste management system Khurana & Sen, (2008), and sustainable development goal 2022. The primary goal of this research is to determine the progress of SDG targets 6.1, 6.2, 6.4, and 6 toward the attainment of SDG 6 in India at the district of Girdhapur.

Materials and Methods

Study Area

Girdharpur is a village in Gautam Buddha Nagar tehsil of Gautam Buddha Nagar district, Uttar Pradesh. It is in the area of Greater Noida and the National Capital Region (NCR). Girdharpur is roughly at 28.4705° North latitude and 77.5179° East longitude, which falls in the Indo-Gangetic Plains of north India. The height of Girdharpur varies between 140 to 250 meters above sea level, typical of the comparatively level landscape of the area. The village covers an approximate area of 750 hectares, with the land use being agricultural fields, residential areas, and small industrial units in the nearby area.

According to the 2011 Census, Girdharpur's population was 1,887, with 1,034 males and 853 females, in 335 households. The population has been increasing slowly over the years due to urbanization and the village's location near Greater Noida and the National Capital Region.

Data Collection

In this study, simple random sampling was used. In March, a field study was conducted in Girdharpur village, Greater Noida, after obtaining permission from local authorities and community leaders. The instrument used for this study is the questionnaire. However, the questionnaire is structured in three parts A, B, and C. Part A is the

'personal data' of the respondents. At the same time, section B is the 'General questions' section that seeks to find answers to the questions raised from the study and it was conducted through the review of related literature. Section C constitutes the 'Specific questions' part. The questionnaire contains answers in options and spaces for filling. A total of 100 questionnaires were administered to the respondents. The distribution of the questionnaire was done on a random basis.

Method of Data Analysis

The data collected will be interpreted and analyzed using a frequency distribution table and simple percentages, which will be presented.

Results and Discussion

This report summarizes findings from a simulated survey of 50 respondents concerning awareness and experiences related to Sustainable Development Goals (SDGs), water accessibility, and sanitation conditions fig 1.

SDG Awareness

Only 1 in 5 people are aware of the Sustainable Development Goals related to clean water and sanitation. This shows a need for more awareness campaigns.

Need Water

Most respondents agree that all living things need water, showing good basic understanding.

Water Accessibility

Only 4 in 10 find water easily accessible. This suggests moderate challenges in water supply.

Primary Water Source

Diverse sources indicate that some rely on natural sources like rivers, which could pose health risks.

Water Shortages

Some experience frequent shortages, which affects health, hygiene, and daily routines.

Sanitation Adequate

Sanitation is a concern for a large portion. Room for improvement in hygiene infrastructure.

Water Treatment

Most treat water sometimes or always, but 20% never treat it. This raises concern over waterborne diseases.

Community Program Participation

There's strong interest in community involvement. A good sign for launching local initiatives.

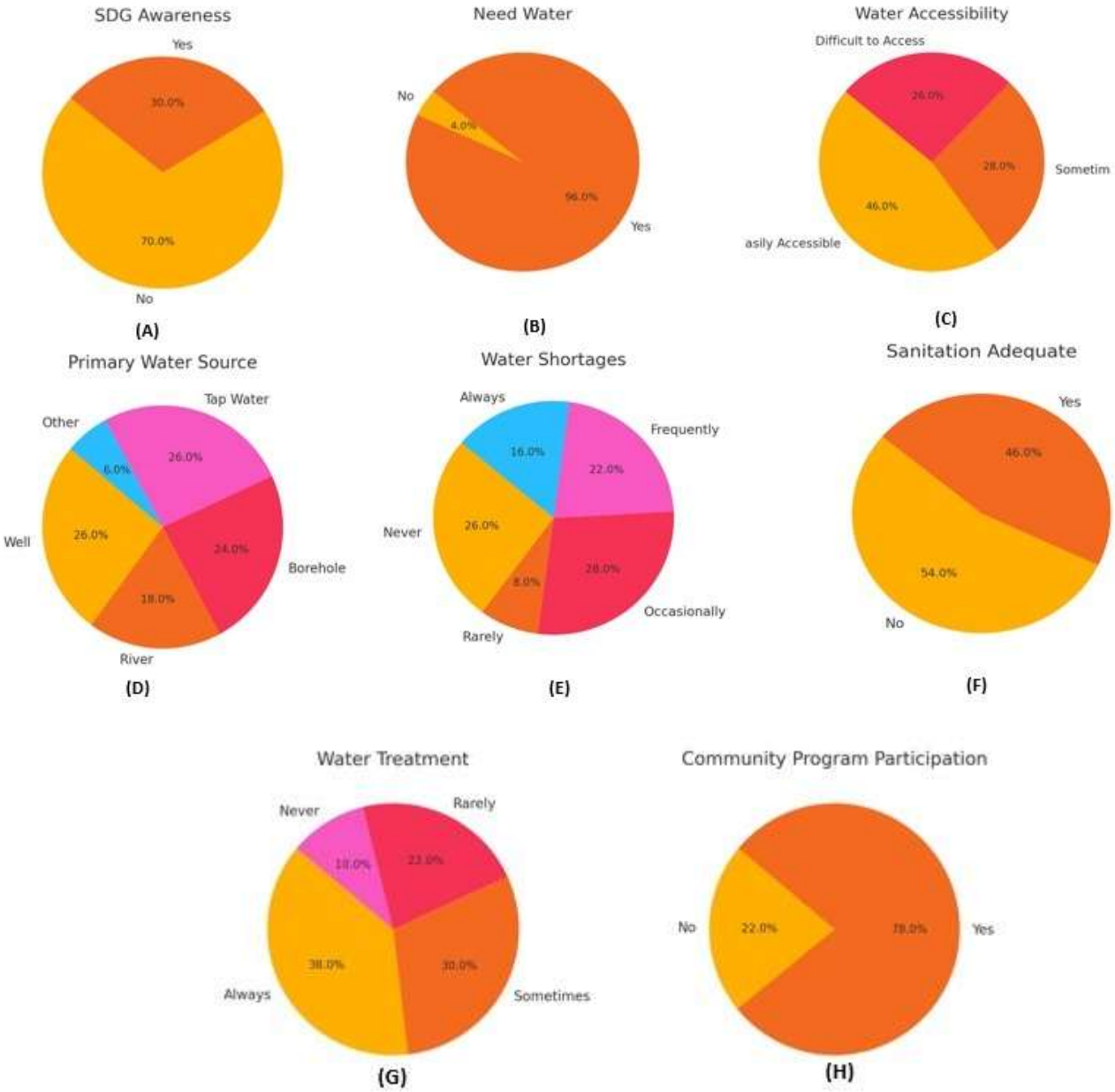

Figure 1: (a) SDG Awareness, (b) Need Water, (c) Water Accessibility, (d) Primary Water Source, (e) Water Shortages, (f) Sanitation Adequate, (g) Water Treatment, and (h) Community Program Participation

Water Sources

No household in this community is even partially independent on the hand-dug wells that provide all of the water they need on a daily basis. The community's widespread reliance on excavated wells is a sign of a significant part of its water infrastructure. It highlights how important it is to understand and address the effects associated with this primary water source.

It emphasizes how crucial it is to comprehend and deal with the consequences related to this main source of water. Prioritizing should go to projects that increase the availability of drinkable water, enhance the water's quality, and improve the infrastructure that provides water supply. Such initiatives have the potential to be extremely important in both reducing the health hazards linked to poor water quality and promoting a more just and resilient water supply system that is advantageous to the community as a whole.

Sanitation Facilities

The distribution of sanitary facilities among the homes in this neighborhood is indicative of a diverse landscape. Water-based sanitary systems are not readily available in most dwellings. The community's varied sanitary infrastructure is demonstrated by the fact that most of the families use dry pit latrines to meet their sanitation needs. The villagers are making admirable efforts to guarantee that the few restrooms in their houses meet accepted standards for sanitation and hygiene. Basic cleanliness requirements must be followed in order to protect the general public's health, stop the spread of disease, and preserve general well-being.

Health Hygiene

Hand washing is a regular practice in the great majority of households. An important preventive measure is washing your hands as often as is advised, especially when it comes to enhancing public health by reducing the danger of infectious diseases.

The village's dedication to this practice shows that everyone there understands how important it is to keep up proper hygiene practices. This shows how successful community-based educational programs or campaigns that spread knowledge about health and cleanliness are. Every attempt is made to ensure that the remaining households are included in instructional programs and encouraged to adopt hygienic practices.

Conclusion

The study highlights significant challenges related to clean water accessibility, sanitation infrastructure, and SDG-6 awareness in Girdharpur Village. Although the community demonstrates positive hygiene practices and willingness to participate in sanitation programs, dependence on unsafe water sources and inadequate sanitation facilities continue to pose serious public health risks. The findings emphasize the need for improved water treatment systems, better sanitation infrastructure, health awareness campaigns, and active collaboration among local authorities, NGOs, and community members to achieve sustainable rural development and improve overall quality of life.

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