



"ADVANCEMENTS AND CHALLENGES IN SANITATION: A COMPREHENSIVE ANALYSIS OF COMMUNITY HEALTH AND INFRASTRUCTURE IN GREATER NOIDA."

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Abstract: Sanitation is a critical aspect of public health, and its importance cannot be overstated. Access to safe and reliable sanitation facilities is a fundamental human right, yet millions of people worldwide continue to lack access to these basic necessities. This report, highlight the advancements in sanitation practices and identify critical areas requiring immediate attention and focused interventions to foster improved community health and well-being.

The analysis begins by examining the various components of improved sanitation, including access to clean water, proper waste disposal, and hygienic facilities. A broad image arises across various disciplines, highlighting both positive tendencies and problems requiring quick action. The data suggest that the majority of respondents (85%) confirm the availability of government-provided garbage collection facilities, indicating a strong infrastructure. This, however, contrasts sharply with the 15% who do not have such services, highlighting the critical need for fair coverage and improvements in waste management infrastructure.

In conclusion, advancements in sanitation practices have improved access to safe and reliable sanitation facilities, promoted hygiene education, and innovated sanitation technologies. However, significant challenges remain, particularly in rural and marginalized communities. Further on the analysis concludes with policy recommendations and future research directions to maximize the impact of improved sanitation on public health.

IndexTerms— Sanitation, Infectious diseases, Health risk, Detrimental, Infectious

I. INTRODUCTION

Sanitation is necessary for protecting community well-being and preventing disease; It is the basis of public health. Proper waste disposal, provision of clean water, and maintenance of sanitary conditions are all part of effective sanitation. Its primary function is to prevent the spread of infectious diseases, and it is also essential for maintaining a healthy population. Poor hygiene practices increase the spread of infection and health complications are likely; This emphasizes the vital role sanitation plays in protecting the well-being of society as a whole (Mara et al., 2010).

Poor sanitation is a serious public health issue affecting billions of people worldwide. According to the World Health Organization (WHO) and UNICEF, a quarter of households weren't having access to safe drinking water in 2022. Almost half of the world's population lacks access to safe sanitation and cholera, dysentery, and other infectious diseases as it spreads, it is also associated with typhoid, intestinal worm disease, and polio, which is resistant to antibiotics. It also helps spread the infectious diseases. Each year, 1.2 million people die from inadequate access to water, sanitation, and hygiene in low- and middle-income countries (WHO).

Despite the challenges posed by the COVID-19 pandemic, access to water, sanitation, and hygiene (WASH) has shown some improvements in recent years. Between 2000 and 2022, the global share of safe drinking water consumption increased from 61% to 73% (UNICEF).

The areas of Greater Noida that are seeing rapid population growth face the difficulty of inadequate sanitation. Inadequate sewage and waste disposal systems are further factors that contribute to the contamination of the environment and the health risks that surround the area. To avoid similar public health crises, it is necessary to immediately monitor and respond to sanitation concerns, which are further complicated by the growing population and the activities of industrial institutions (Kumar et al., 2011)

The elimination of sanitation problems and an overall improvement in quality of life are two of the reasons why communities are increasingly accepting of improved hygiene practices. Public health outcomes have been facilitated and improved as a result of an increased understanding of the benefits of good hygiene, which has led to changes in practices such as regular handwashing, careful water use, and proper waste disposal (Kanda et al., 2021).

The information that was gathered from a survey that was conducted in the villages of Greater Noida is used to examine the connection between the improvement of sanitation and health risk. Considering the findings of the study, it is clear that there is a need to prioritize the reduction of health risks and better sanitation. In the end, this study contributes to the well-being of the community by analyzing data to assess the efficiency of the sanitation measures that are now in place as well as the potential enhancements that could be developed.

II. METHODOLOGY

The primary objective of this research was to investigate the repercussions of inadequate sanitation on community health and concurrently raise awareness about its detrimental effects. Two villages in Greater Noida were strategically selected as the focal points of the project. The goals encompassed disseminating information on sanitation, gathering relevant data from villagers, and placing a specific focus on enhancing public awareness regarding the consequences of improper waste disposal, associated health risks, provision of clean water, and the maintenance of sanitary conditions—all integral components of effective sanitation.

The research methodology employed for this project entailed an extensive offline survey conducted throughout the villages. Household visits were conducted, and data was systematically collected through interviews with 100 adult participants representing diverse segments of society, spanning various age groups from 18 to 50 years. The survey comprised 12 questions, with particular emphasis placed on three key inquiries: cleanliness on the premises, availability of waste collection facilities provided by the government, frequency of handwashing, access to filtered water, government-provided tap water timings, the perceived risk of infectious diseases (such as gastrointestinal infections, cholera, and diarrheal diseases), and the removal of standing water from the vicinity.

III. RESULTS AND DISCUSSION

The results from a comprehensive sanitation survey reveal intriguing insights into various facets of community health and infrastructure. Across different domains, a complex perspective emerges, showcasing both positive trends and areas necessitating immediate attention. Remarkably, results show that a sizable majority (85%) confirm the availability of government-provided waste collection facilities, a sign of strong infrastructure. However, this contrasts starkly with the 15% lacking such services, emphasizing an urgent need for equitable coverage and improvements in waste management infrastructure.

Together, these findings provide a complete picture that highlights advancements in sanitation practices while highlighting critical areas requiring immediate attention and focused interventions to foster improved community health and well-being.

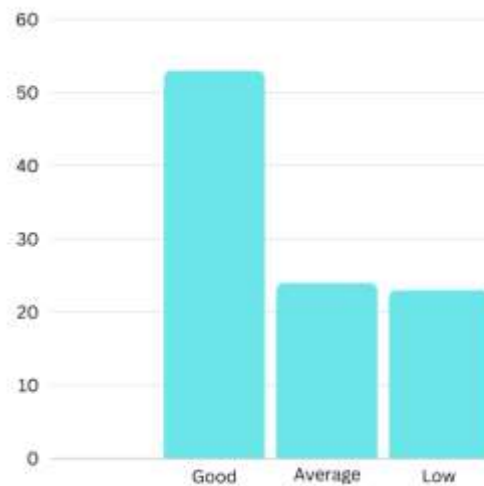


Fig. 1 Cleanliness around the premises

Figure 1 indicates approximately 53% were satisfied with premises cleanliness due to visible upkeep and prompt issue resolution. Around 24% found it average, suggesting room for improvement, possibly due to inconsistencies. According to the graph a notable 23% expressed dissatisfaction, citing inadequate maintenance, pinpointing areas needing attention for enhanced upkeep.

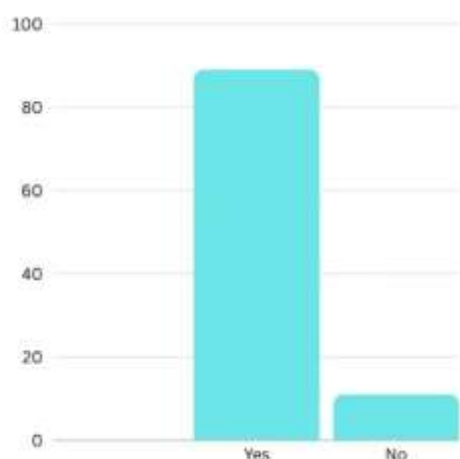


Fig. 2 Facility provided for waste water collection

Figure 2 illustrates a substantial majority (85%) of the surveyed population confirmed the provision of waste collection facilities by the government in their vicinity. However, a notable minority (15%) expressed the absence of such facilities, highlighting a necessity for enhanced sanitation infrastructure in these specific areas. This discrepancy underscores the need for improvements in waste management services to ensure comprehensive coverage and equitable access within the community.

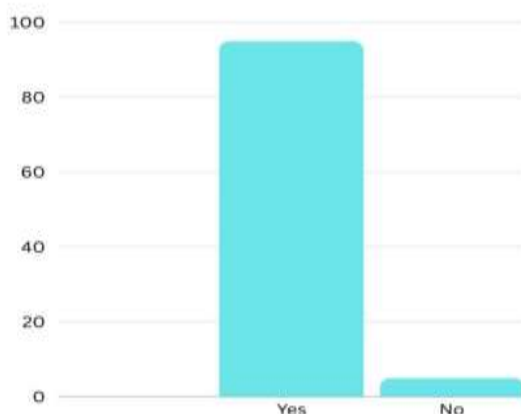


Fig. 3 The percentage of resident practicing regular handwashing

Figure 3 shows a positive trend with 95% of respondents regularly practicing handwashing, reflecting strong awareness of personal hygiene. However, the 5% reporting infrequent handwashing raises concerns for potential disease transmission linked to poor sanitation. It's crucial to promote proper handwashing in this minority to enhance overall sanitation and reduce health risks in the surveyed community.

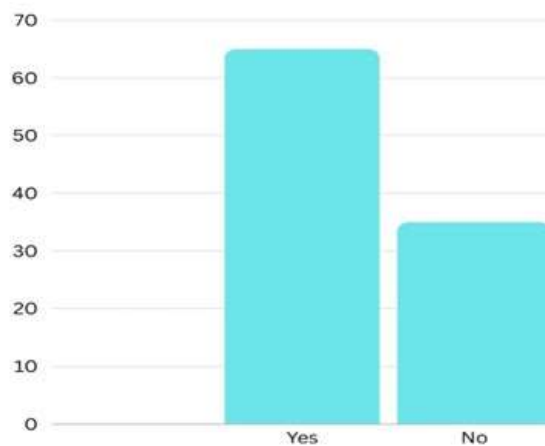


Fig. 4 Access to filtered water

Figure 4 shows 65% have access to filtered water, indicating positive sanitation infrastructure. Yet, the 35% without this access raise concerns for potential health risks linked to unfiltered water and waterborne illnesses. Addressing this gap becomes crucial for better community health, necessitating improved access to clean, and filtered water for those currently lacking it.

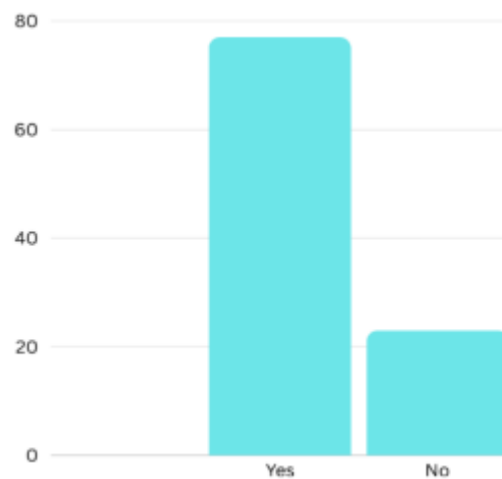


Fig. 5 The percentage of residents satisfied with timings provided for water facility

Figure 5 demonstrates a significant majority (75%) expressed contentment with the adequacy of tap water timings, reporting no accessibility issues and deeming service provision satisfactory. Conversely, a notable quarter (25%) indicated dissatisfaction with the timeframe of tap water supply, highlighting a perceived need for enhanced service provision and improvements in accessibility.

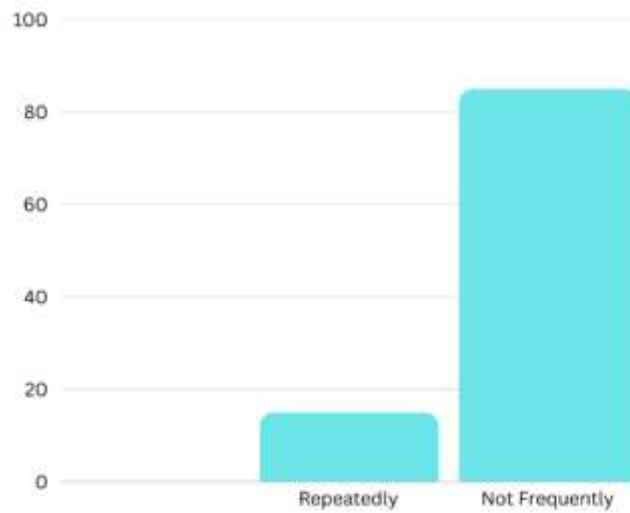


Fig. 6 Frequency of occurrence of diseases like Typhoid, Diarrhea, Malaria and Cholera

Figure 6 depicts a significant majority (83%) of respondents noted infrequent occurrences of specific infectious diseases in their vicinity. However, a notable minority (17%) reported repeated occurrences, signaling a requirement for targeted healthcare interventions, resource allocation, and intensified public health endeavors to diminish these frequent instances.

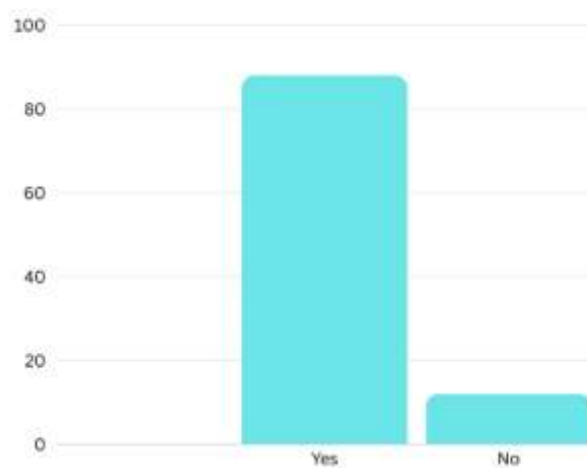


Fig. 7 Removal of standing water by residents

Figure 7 shows vast majority (84%) of respondents actively eliminate standing water around their residences, indicating widespread community engagement in minimizing associated risks. Conversely, a minority (16%) acknowledged not removing standing water, underscoring the potential impact of educational initiatives. These findings underscore the need for community-wide education highlighting the pivotal role of eliminating standing water in mitigating health risks.

Positive trends are also shown in hand hygiene practices, with a staggering 95% of respondents reporting regular handwashing, demonstrating admirable knowledge. However, the 5% neglecting this practice raise concerns regarding disease transmission, underscoring the importance of reinforcing proper handwashing habits within the community (Alene et al., 2022). While 65% of people have access to filtered water, which indicates that the sanitation infrastructure is adequate, the other 35% do not, and this presents a risk to public health due to the association between unfiltered water and waterborne illnesses. Therefore, improved access and prompt attention are necessary to improve community health (Hubbard et al., 2020). Moreover, while 75% express contentment with tap water timings and service provision, the dissatisfied 25% highlights the need for enhanced accessibility and service improvements in this domain. Additionally, the majority (83%) report infrequent occurrences of specific infectious diseases, calling for targeted healthcare interventions and intensified public health efforts to address the 17% reporting repeated occurrences (Caliendo et al., 2013). Lastly, the active removal of standing water by 84% of respondents showcases community engagement in risk reduction, while the remaining 16% necessitate educational initiatives to underscore the importance of eliminating standing water in mitigating health risks (CDC).

The survey findings reflect positive sanitation trends in waste management, hand hygiene practices, and tap water accessibility for a majority of respondents. However, challenges persist in providing equitable waste collection services, promoting consistent handwashing habits, ensuring access to filtered water, and enhancing tap water service provision. Addressing these disparities is vital to fortify overall community health and sanitation standards.

IV. CONCLUSION

In conclusion, the survey highlights significant advancements in water, sanitation, and hygiene access. However, it also underscores the persistent challenges in cleaning practices, infrastructure, and waste management, especially for a minority lacking adequate facilities. The urgent need for targeted interventions, education, and community-wide programs is evident to combat infectious diseases and the health risks associated with improper waste disposal. Continuous dedication to enhancing sanitation and hygiene, coupled with collaborative efforts from communities and stakeholders, is essential to foster a healthier environment and mitigate disease transmission.

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