

HYGIENE CHRONICLES OF PAKISTAN: RURAL-URBAN DISPARITIES

Kinza Riaz¹, Humera Amin^{*2}, Muhammad Azam³

^{*1}Student of Master in Information Technology, University of Potomac, Virginia Campus, United States of America.

²Assistant Professor, Department of Agricultural Extension & Rural Studies, Sargodha University, Sargodha, Pakistan.

³PhD Student, Institute of Development Studies, The University of Agriculture, Peshawar Pakistan.

^{*2}humeraamin@yahoo.com

Corresponding Author: *

Received	Revised	Accepted	Published
27 November, 2024	27 December, 2024	11 January, 2025	18 January, 2025

ABSTRACT

This study aimed to examine the disparities in hygiene practices between rural and urban populations in Pakistan, focusing on factors influencing these differences. A descriptive and comparative research design was used, combining quantitative and qualitative methods. Data were collected from 500 participants (250 urban and 250 rural) using structured surveys, semi-structured interviews, and focus group discussions. The results revealed that urban populations exhibited better hygiene practices, with greater access to clean water, sanitation, and education compared to rural populations. Factors such as income, education, and infrastructure significantly influenced hygiene behaviors. The study concluded that addressing these disparities requires targeted interventions, including improved access to clean water, enhanced sanitation facilities, and better hygiene education in rural areas. Recommendations include prioritizing rural sanitation, promoting hygiene education, strengthening public health campaigns, addressing socioeconomic inequalities, and fostering community-driven initiatives for sustainable improvement in hygiene practices.

Keywords: Hygiene, Factors, Multiple Regression, Rural-Urban Disparities, Pakistan.

INTRODUCTION

Hygiene practices are an essential aspect of public health, with a direct impact on the prevention of diseases, especially in developing countries like Pakistan (Kibria et al., (2023). Inadequate hygiene remains a significant challenge, particularly in rural areas, where poor sanitation, limited access to clean water, and inadequate hygiene education exacerbate public health issues (Azhar et al., 2020). Despite significant efforts to improve sanitation and hygiene, a considerable gap persists between rural and urban populations, leaving rural communities more vulnerable to preventable diseases like cholera, diarrhea, and typhoid (Hussain et al., 2019). The persistence of poor hygiene practices in rural areas of Pakistan not only exacerbates the spread of infectious diseases

but also leads to broader socio-economic challenges. Understanding the underlying causes of poor hygiene practices in rural settings is crucial to developing effective health interventions and improving public health outcomes (Saeed et al., 2021).

Access to clean water and sanitation is a critical determinant of hygiene practices. Studies have shown that rural populations in Pakistan are more likely to rely on contaminated water sources such as rivers, open wells, and ponds, which heightens the risk of waterborne diseases (Siddiqui et al., 2020). In contrast, urban areas benefit from more advanced water supply and sanitation systems, leading to lower incidences of waterborne illnesses and better hygiene standards (Khan et al., 2021). The lack of adequate sanitation

infrastructure in rural Pakistan forces many individuals to practice open defecation, further contributing to the spread of infectious diseases (Mughal & Ali, 2019).

In addition to the lack of infrastructure, the limited availability of hygiene education in rural areas plays a crucial role in shaping hygiene behaviors. The educational gap in rural Pakistan is stark, with rural literacy rates considerably lower than those in urban areas (Raza & Rauf, 2020). This educational disparity means that rural populations often lack the knowledge of simple yet effective hygiene practices, such as handwashing with soap, menstrual hygiene management, and safe disposal of waste (Baqai et al., 2021). Without proper knowledge about hygiene and health risks, rural individuals are less likely to adopt preventive measures, further perpetuating the cycle of disease transmission (Hassan et al., 2020).

Cultural norms and traditional beliefs also influence hygiene practices in rural Pakistan. In some rural communities, cultural practices may discourage modern hygiene behaviors, particularly when it comes to menstrual hygiene or the use of soap for handwashing (Khan et al., 2021). These beliefs often stand in opposition to recommended hygiene practices, making it difficult for public health campaigns to be effective in changing behavior. The role of culture and social norms in shaping hygiene behaviors is particularly important in rural areas, where traditional values and community practices hold more influence over individual behaviors than in urban areas (Ullah et al., 2020). Cultural resistance to changing hygiene practices, coupled with a lack of proper education, contributes to the persistence of poor hygiene conditions in rural communities.

Furthermore, economic challenges further exacerbate the disparity in hygiene practices between rural and urban populations. Rural Pakistan is home to many low-income households, with limited financial resources to invest in hygiene-related products such as soap, disinfectants, or sanitary pads (Saeed et al., 2021). The inability to afford hygiene products means that rural households often rely on substandard alternatives, which do not offer the same level of protection against disease (Baqai et al., 2021). Additionally, the economic burden of maintaining proper sanitation infrastructure is often too high for rural households, leaving them without access to improved toilets or water filtration systems (Azhar et al., 2020).

Government policies aimed at improving sanitation and hygiene in Pakistan often prioritize urban areas, where the need for infrastructure development is more visible due to higher population densities (Akhter et al., 2018). Rural areas, however, continue to be underserved, and the impact of existing public health initiatives is minimal in these regions (Shah et al., 2021). The failure to address the specific needs of rural populations, including the provision of clean water, waste management, and hygiene education, has contributed to the persistence of poor hygiene conditions in these areas. A study by Mughal and Ali (2019) highlighted the inadequacy of government efforts in rural areas, noting that rural populations face systemic challenges that prevent them from benefiting from urban-focused hygiene initiatives.

The research gap in this area lies in the insufficient understanding of the multi-dimensional factors contributing to poor hygiene practices in rural Pakistan. While some studies have focused on access to water or sanitation (Siddiqui et al., 2020), there is a lack of comprehensive research that combines the socio-economic, cultural, educational, and infrastructural factors that shape hygiene behaviors. Moreover, the effectiveness of government interventions in rural areas remains under-researched, particularly in evaluating the specific barriers rural populations face in adopting improved hygiene practices. Existing literature often overlooks the unique challenges that rural population's encounter, which hinders the development of tailored interventions for these communities (Raza & Rauf, 2020). There is also a need for more data on how cultural attitudes towards hygiene and sanitation impact the success of public health campaigns in rural regions (Khan et al., 2021).

The significance of this research lies in its potential to fill these gaps in the literature. By examining the multifaceted factors influencing hygiene behaviors in rural and urban Pakistan, this study aims to provide a more nuanced understanding of the disparities in hygiene practices. It will explore the role of infrastructure, education, culture, and economics in shaping hygiene behaviors, particularly in rural areas, and offer insights into how these factors interact to contribute to public health challenges. Understanding these influences is critical to formulating effective public health strategies that target the root causes of poor hygiene practices in rural areas and address the gaps in access to

hygiene resources. To fill in the above mentioned research gap, the current study is designed to achieve the following specific objectives of the study.

Objectives of the study

1. To compare hygiene practices between rural and urban areas of Pakistan.
2. To identify the factors contributing to hygiene disparities between rural and urban populations.
3. To explore the role of education, income, and access to resources in shaping hygiene practices.
4. To recommend policy interventions to reduce hygiene disparities between rural and urban areas.

Research methodology

The study employed a descriptive and comparative research design, utilizing both quantitative and qualitative methods (Naz et al., 2024a; Naz et al., 2024b; Afridi et al., 2022) to investigate hygiene disparities between rural and urban areas of Pakistan. In this study, various hygiene practices were measured to assess disparities between rural and urban areas of Pakistan. These practices included hand hygiene, which focused on the frequency of handwashing, especially before meals, after using the toilet, and during food preparation, along with the use of soap or cleaning agents. Water sanitation was examined by assessing access to clean drinking water and the use of filtration or purification methods within households. Sanitation practices were evaluated based on the availability and

regular maintenance of sanitation facilities such as toilets or pit latrines. Waste disposal practices included the proper disposal of solid waste and the use of trash bins, as well as safe disposal methods for human waste. Personal hygiene was measured by the frequency of bathing, maintaining cleanliness, and the use of sanitary products for menstrual hygiene where applicable. Kitchen and food hygiene were assessed through the cleanliness of cooking and food storage areas, and practices like washing fruits and vegetables and properly storing food to prevent contamination. Finally, environmental hygiene focused on the cleanliness of surrounding areas such as yards and public spaces, along with the presence of pest control measures. These hygiene practices were explored to understand the differences in hygiene maintenance between rural and urban populations and to identify factors contributing to these disparities.

Data were collected through structured surveys, semi-structured interviews, and focus group discussions (FGDs). A stratified random sampling technique was used to ensure that the sample represented both rural and urban populations adequately. The sample size consisted of 500 participants, with 250 individuals from rural areas and 250 from urban areas, distributed across various provinces to capture regional variations (Table 1). The surveys targeted households, with respondents selected based on their willingness to participate and their ability to provide insights into household hygiene practices.

Table-1: Sample size distribution

Province	Rural Sample Size	Urban Sample Size	Total Sample Size
Punjab	83	83	166
Sindh	80	80	160
Khyber Pakhtunkhwa	87	87	174
Total	250	250	500

In addition to the surveys, 30 semi-structured interviews were conducted with healthcare workers, educators, and community leaders to gain professional perspectives on hygiene challenges and disparities. Furthermore, 6 focus group discussions were organized, three in rural settings and three in urban areas, each comprising 8-10 participants. These discussions provided in-depth qualitative data on community hygiene practices, challenges, and perceptions. The data were analyzed using various statistical tools to handle the quantitative information.

Descriptive statistics and percentages were used to summarize the data. For comparative analysis between rural and urban hygiene practices, t-tests was employed to assess the significance of differences. Additionally, regression analysis was used to identify factors influencing hygiene practices. The qualitative data from interviews and focus group discussions were analyzed using thematic analysis (Naz et al., 2024c; Riaz et al., 2024; Naz et al., 2023), where key themes and patterns were identified to understand the underlying reasons for hygiene disparities.

Results

The table 2 presents a comparison of hygiene scores between rural and urban areas. The **Mean Hygiene Score** is 60 for rural areas and 80 for urban areas, with **Standard Deviations** of 15

and 10, respectively. The **Minimum Hygiene Score** is 40 in rural areas and 70 in urban areas, while the **Maximum Hygiene Score** is 80 for rural and 95 for urban areas. The **Percentage of Good Hygiene Practices** is 40% in rural areas and 80% in urban areas.

Table-2: Comparison of hygiene practices between rural and urban areas

Area	Mean Hygiene Score	Standard Deviation	Minimum Hygiene Score	Maximum Hygiene Score	Percentage of Good Hygiene Practices
Rural	60	15	40	80	40%
Urban	80	10	70	95	80%

Data in table 3 show the results of a multiple regression analysis examining factors influencing hygiene practices. The Intercept has an unstandardized coefficient (B) of 45.00, with a t-value of 12.86 and a p-value of 0.000, indicating its significance. For Education Level, the unstandardized coefficient is 1.80, the standardized coefficient (Beta) is 0.35, with a t-value of 7.20 and a p-value of 0.000, showing a significant positive relationship with hygiene practices. For Income Level, the unstandardized coefficient is 0.03, the standardized coefficient

(Beta) is 0.30, with a t-value of 6.00 and a p-value of 0.000, also indicating a significant positive relationship. Access to Clean Water has an unstandardized coefficient of 0.90, a standardized coefficient (Beta) of 0.40, with a t-value of 4.50 and a p-value of 0.000, showing a significant positive effect. Sanitation Facilities have an unstandardized coefficient of 1.20, a standardized coefficient (Beta) of 0.35, with a t-value of 8.00 and a p-value of 0.000, indicating a significant positive impact on hygiene practices.

Table-3: Multiple Regression Analysis of Factors Influencing Hygiene Practices

Variable	B (Unstandardized Coefficients)	Std. Error	Beta (Standardized Coefficients)	t-value	p-value
Intercept	45.00	3.50	-	12.86	0.000
Education Level	1.80	0.25	0.35	7.20	0.000
Income Level	0.03	0.01	0.30	6.00	0.000
Access to Clean Water	0.90	0.20	0.40	4.50	0.000
Sanitation Facilities	1.20	0.15	0.35	8.00	0.000

The table 4 presents mean values of education level, income level, and access to clean water for rural and urban areas in Pakistan, along with their respective t-test p-values. In rural areas, the mean education level is 5.2 years, while in urban areas, it is 9.3 years, with a p-value of 0.000, indicating a significant difference. The mean

income level in rural areas is 15,000 PKR compared to 40,000 PKR in urban areas, also showing a significant difference with a p-value of 0.000. Access to clean water is 50% in rural areas and 95% in urban areas, with a p-value of 0.000, indicating a significant disparity between the two regions.

Table-4: Comparison of Education Level, Income Level, and Access to Clean Water between Rural and Urban Areas

Variable	Rural Mean	Urban Mean	t-test/p-value
Education Level (Years)	5.2	9.3	0.000
Income Level (PKR)	15,000	40,000	0.000
Access to Clean Water (%)	50	95	0.000

The thematic analysis presented in table 5 highlights several critical factors contributing to the hygiene disparities between rural and urban populations in Pakistan. Each theme reflects the complexity of the issue and the need for multifaceted solutions:

1. **Education and Awareness:** Education plays a pivotal role in shaping hygiene practices. In rural areas, lower educational attainment often leads to a lack of awareness about the importance of hygiene, which impacts daily practices such as handwashing, sanitation, and food safety. Urban areas, with better access to education, tend to have populations more knowledgeable about hygiene, which translates into better personal and environmental hygiene practices.
2. **Economic Factors:** Economic disparity is a significant contributor to hygiene differences. Urban residents generally have higher incomes, allowing them to afford necessary hygiene products and services such as clean water, sanitation, and healthcare. In contrast, rural residents with lower income levels often cannot afford these essentials, leading to compromised hygiene practices.
3. **Access to Resources:** The availability of clean water, sanitation facilities, and hygiene products is crucial for maintaining good hygiene. Urban areas usually have better infrastructure and more resources, ensuring that residents can maintain high hygiene standards. Rural areas, on the other hand, frequently suffer from limited access to these resources, leading to poorer hygiene and associated health issues.
4. **Cultural and Social Norms:** Traditional beliefs and practices prevalent in rural areas can sometimes hinder the adoption of modern hygiene practices. For

instance, misconceptions about health and hygiene can perpetuate practices that are not conducive to good health. In urban areas, more exposure to modern lifestyles and public health campaigns tends to foster better hygiene practices. Social norms and community behaviors in rural areas can either support or detract from good hygiene, depending on how they align with modern health practices.

5. **Health Outcomes:** The link between hygiene and health is clear, with poor hygiene leading to higher rates of diseases such as diarrhea, respiratory infections, and skin conditions. Rural areas, with their lower hygiene standards, experience higher incidences of these diseases, adversely affecting child and maternal health. Urban areas, with better hygiene, see fewer health issues of this nature, showcasing the direct impact of hygiene on public health.
6. **Policy and Governance:** Effective policies and their enforcement are critical for ensuring good hygiene practices across populations. Urban areas benefit more from government hygiene initiatives due to better infrastructure and governance. In contrast, rural areas often suffer from a lack of effective implementation and monitoring of hygiene policies, which exacerbates the disparities in hygiene practices.

These results emphasize that the hygiene disparities are not merely due to individual behaviors but are deeply rooted in systemic issues such as education, economic inequality, resource access, cultural norms, and governance. Addressing these disparities requires comprehensive policy interventions that consider all these factors to improve hygiene standards, especially in rural areas.

Table-5: Thematic Analysis of Factors Contributing to Hygiene Disparities Between Rural and Urban Populations

Themes	Sub-Themes
Education and Awareness	Knowledge of hygiene practices Importance of education in promoting hygiene
Economic Factors	Income levels and affordability Employment status
Access to Resources	Availability of clean water Sanitation facilities

	accessibility of hygiene products
Cultural and Social Norms	Traditional beliefs and practices Community support and behavior
Health Outcomes	Prevalence of hygiene-related diseases Impact on child and maternal health
Policy and Governance	Government initiatives and programs Implementation and enforcement of hygiene standards

Discussion

The disparities in hygiene practices between rural and urban areas of Pakistan have significant implications for public health and quality of life. The results of this study highlight how differences in education, income, access to resources, and other social factors contribute to these disparities. In this section, we will discuss these findings in the context of existing literature and relevant studies.

Study found that urban areas exhibit better hygiene practices compared to rural areas, with higher mean hygiene scores (80 vs. 60) and a greater percentage of individuals exhibiting good hygiene practices (80% vs. 40%). This disparity is consistent with the findings of various studies that show urban populations generally have better access to hygiene-related resources and education. According to Khan et al. (2021), urban populations benefit from improved infrastructure, including access to clean water, sanitation facilities, and waste disposal systems, which are essential for maintaining good hygiene. In contrast, rural areas in Pakistan often struggle with inadequate sanitation infrastructure, leading to poorer hygiene practices (Alam et al., 2020). Additionally, studies by Jafar et al. (2019) suggest that urban populations also tend to have better awareness of hygiene practices, which contributes to more consistent handwashing, sanitation, and food hygiene behaviors.

Several factors significantly influence hygiene practices in rural and urban areas, with education, income, and access to resources emerging as the most significant determinants. Our regression analysis found that education level, income, access to clean water, and sanitation facilities all had significant positive relationships with hygiene practices. This finding aligns with previous research indicating that education plays a critical role in promoting hygiene practices. As noted by Sheikh et al. (2020), better-educated individuals are more likely to understand the importance of sanitation, hand hygiene, and safe food handling, resulting in healthier behaviors. Income, another critical factor identified in our study, influences the ability to purchase hygiene products, access clean water, and invest in

sanitation facilities. Higher-income urban populations are able to afford more reliable sanitation systems, clean drinking water, and personal hygiene products, while rural populations face economic barriers to maintaining these standards. A study by Hassan et al. (2019) found that individuals with higher incomes tend to have better hygiene practices, as they are more likely to afford hygiene-related services and products. Access to clean water is another major contributor to hygiene disparities. The significant difference between rural (50%) and urban (95%) areas in access to clean water, as shown in our study, highlights a critical challenge in rural Pakistan. Access to clean water has long been a significant issue in rural areas, where households often rely on contaminated water sources that contribute to the spread of waterborne diseases. A report by the World Health Organization (2021) underscores the importance of clean water for maintaining proper hygiene and preventing diseases like diarrhea, which are more common in rural regions due to unsafe water practices. Sanitation facilities, too, play a vital role in hygiene outcomes. Rural areas in Pakistan are often lacking proper sanitation infrastructure, which exacerbates hygiene issues. According to a study by Iqbal et al. (2018), inadequate sanitation facilities in rural Pakistan lead to open defecation and the spread of infectious diseases. In contrast, urban areas generally have better access to latrines and sewage systems, which significantly improve hygiene practices and health outcomes.

Our thematic analysis found that education and awareness are key factors influencing hygiene practices. In rural areas, lower levels of educational attainment result in a lack of awareness about the importance of hygiene and proper sanitation. This lack of knowledge contributes to poor hygiene practices such as irregular handwashing, inadequate waste disposal, and improper food handling, which are linked to higher incidences of hygiene-related diseases like diarrhea and respiratory infections. As highlighted by Qadir et al. (2020), education can significantly influence hygiene behaviors by increasing awareness and promoting positive

health behaviors. Furthermore, the importance of education in promoting hygiene is reflected in the urban-rural divide in access to educational resources. In urban areas, educational institutions are more likely to integrate hygiene education into school curricula and community health initiatives. A study by Ali et al. (2017) suggests that urban areas benefit from better public health campaigns and access to sanitation and hygiene training programs, which contribute to better overall hygiene practices. Rural populations, on the other hand, often lack these resources, making hygiene education more challenging and less widespread. Economic inequality is a significant contributor to hygiene disparities between rural and urban areas. As noted in our regression analysis, income level is positively associated with hygiene practices, with urban populations having higher average incomes than their rural counterparts. Economic disparities limit rural populations' ability to afford hygiene products, access clean water, and maintain proper sanitation facilities. According to a study by Malik et al. (2020), rural households in Pakistan are less likely to have access to sanitation services due to financial constraints, which directly affects their ability to maintain good hygiene. The economic divide also has a direct impact on public health. Poor hygiene practices, which are often a result of economic limitations, contribute to the spread of preventable diseases. A study by Syed et al. (2021) found that lower-income households in rural Pakistan are more susceptible to waterborne diseases due to limited access to clean water and sanitation, highlighting the importance of addressing economic disparities to improve hygiene and health outcomes. Cultural beliefs and social norms also play a role in shaping hygiene practices. In rural areas, traditional beliefs and customs sometimes hinder the adoption of modern hygiene practices. For instance, misconceptions about the causes of diseases and hygiene may lead individuals to neglect handwashing, proper sanitation, and safe food handling. In contrast, urban areas tend to have more exposure to public health messages, modern sanitation practices, and better healthcare infrastructure, which foster improved hygiene behaviors. As noted by Tariq et al. (2020), rural populations may hold on to traditional practices that conflict with scientific hygiene recommendations, leading to poor health outcomes. Effective policy and governance are critical for addressing hygiene disparities. Our study found that urban areas benefit from better

governance structures, which ensure the implementation of sanitation and hygiene policies. In rural areas, the lack of effective governance and infrastructure leads to inadequate sanitation systems and hygiene services. The World Bank (2020) emphasizes the importance of strong governance in addressing public health issues, particularly in rural areas, where infrastructure and resources are often lacking. To reduce hygiene disparities, it is crucial that policies are tailored to the specific needs of rural populations, with a focus on improving access to clean water, sanitation, and hygiene education.

Conclusion

This study examined the disparities in hygiene practices between rural and urban populations in Pakistan, identifying key factors influencing these differences. The findings reveal significant disparities in hygiene behaviors, with urban populations generally exhibiting better hygiene practices compared to their rural counterparts. These differences can be attributed to factors such as education, income, access to clean water, sanitation facilities, and cultural norms. The study highlights the importance of addressing these disparities through targeted interventions and public health policies. Urban populations tend to have better access to clean water and sanitation services, which are crucial for maintaining hygiene. In contrast, rural populations often face inadequate infrastructure and limited access to resources, directly impacting their hygiene practices. These challenges align with existing literature, which shows that rural areas in Pakistan struggle with access to clean water and sanitation facilities, contributing to poor hygiene behaviors. Education plays a key role in promoting good hygiene practices. Higher education levels are linked to better hygiene behaviors, as individuals with more education are more likely to understand the importance of hygiene and sanitation. In rural areas, lower education levels and lack of awareness lead to poor hygiene practices, increasing the risk of disease transmission. Income is another determinant of hygiene practices. Urban populations, with higher incomes, are better able to afford hygiene products, sanitation facilities, and clean drinking water, leading to improved hygiene behaviors. Economic disparities between rural and urban areas present significant challenges in improving hygiene practices in rural populations. Cultural norms and social beliefs also influence hygiene

behaviors. Traditional practices in rural areas sometimes conflict with modern hygiene recommendations, resulting in poor hygiene practices. Urban populations, exposed to public health education, tend to adopt modern hygiene practices, contributing to better hygiene outcomes.

In conclusion, the disparities in hygiene practices between rural and urban populations are driven by various factors, including education, income, infrastructure, cultural norms, and governance. Addressing these disparities requires a multi-faceted approach, including improved access to resources, increased awareness, and the implementation of effective policies to enhance sanitation and hygiene in rural areas.

Recommendations

To address the disparities in hygiene practices between rural and urban populations, the following recommendations are proposed:

1. Improving Access to Clean Water and Sanitation in Rural Areas

The government and relevant stakeholders must prioritize improving access to clean water and sanitation in rural areas. This includes expanding the availability of safe drinking water, providing proper sanitation facilities, and improving waste management systems. The installation of water filtration plants, construction of latrines, and establishment of waste disposal systems in rural areas will have a significant impact on improving hygiene practices.

2. Enhancing Hygiene Education and Awareness Programs

Educational initiatives should be launched to increase awareness about the importance of hygiene practices in rural areas. These programs should focus on promoting handwashing, proper food handling, and sanitation practices. Schools, community centers, and local health workers can play a crucial role in spreading these messages. Incorporating hygiene education into school curricula will help ensure that future generations are better equipped with the knowledge to maintain good hygiene practices.

3. Strengthening Public Health Campaigns

Public health campaigns should be expanded to address common

misconceptions about hygiene and disease transmission. These campaigns should target rural populations and use culturally appropriate methods to communicate the importance of hygiene practices. Additionally, the use of mass media, such as radio, television, and social media, can help reach a wider audience in both rural and urban areas.

4. Addressing Socioeconomic Inequalities

Reducing socioeconomic disparities is crucial for improving hygiene practices. Income inequality in rural areas often limits access to hygiene products and services. Policymakers should focus on poverty alleviation programs, job creation, and economic development in rural areas to enable households to afford hygiene-related services and products. Subsidies for hygiene products and services can also be considered to make them more affordable for low-income households.

5. Promoting Community-Led Initiatives

Community-driven initiatives can play a significant role in improving hygiene practices in rural areas. Empowering local communities to take ownership of sanitation and hygiene issues can lead to more sustainable improvements. Community health workers and local leaders can be trained to provide hygiene education and mobilize resources for sanitation projects.

6. Improving Governance and Policy Implementation

Effective governance is essential for ensuring that sanitation and hygiene policies are implemented effectively. In rural areas, local governments must be empowered to prioritize sanitation and hygiene in their development plans. Regular monitoring and evaluation of hygiene-related programs will help assess their impact and make necessary adjustments. Collaboration between government, non-governmental organizations, and local communities is essential to improving hygiene outcomes.

7. Encouraging Public-Private Partnerships

Public-private partnerships can be an effective way to improve access to hygiene-related services in rural areas. By involving private companies in the

development of sanitation infrastructure and the provision of hygiene products, the government can leverage additional resources and expertise to address the challenges of rural hygiene.

Limitations of the study

This study has several limitations. First, it primarily compared rural and urban populations, without exploring variations within these groups based on factors like socio-economic status or geography. Second, self-reported data may have introduced biases, as participants could overstate their hygiene behaviors. Third, the study did not assess the long-term impact of public health interventions or policies. Additionally, it did not account for seasonal or environmental factors that could influence hygiene practices, particularly in rural areas. Lastly, the study focused on hygiene without considering broader socio-economic determinants, such as nutrition and healthcare access. Future research should address these gaps for a more comprehensive understanding of hygiene practices.

References

- Afridi, M. J., Zada, U., & Younas, I. (2022).** Factors influencing the Effectiveness of Dispute Resolution Council in Khyber Pakhtunkhwa-Pakistan. *Journal of Development and Social Sciences*, 3(4), 452-461.
- Akhter, N., Haque, R., & Siddiqui, F. (2018). Community-based sanitation projects in rural Pakistan: A case study of the Punjab Rural Support Program. *Journal of Development Studies*, 54(4), 568-589.
- Alam, G., Akhtar, S., & Yousaf, M. (2020). Urban-rural disparities in sanitation and hygiene practices: A comparative analysis of Pakistan. *Environmental Health Insights*, 15(2), 71-80.
- Ali, S., Khan, A., & Noor, Z. (2017). Impact of Hygiene Education on the Hygiene Practices of School Children in Urban and Rural Areas of Pakistan. *Journal of Health Education Research & Development*, 35(4), 122-130.
- Azhar, M., Zahid, F., & Khan, N. (2020). Waterborne diseases in rural Pakistan: A study of sanitation and hygiene practices in rural households. *Pakistan Journal of Public Health*, 10(3), 77-84.
- Baqai, Z., Shah, S. M., & Raza, H. (2021). Hygiene education in rural Pakistan: Addressing the challenges of access and awareness. *International Journal of Hygiene and Environmental Health*, 224(7), 87-95.
- Hassan, F., Khan, S., & Ali, A. (2020). The impact of education on hygiene practices in rural Pakistan. *Journal of Community Health*, 45(3), 231-239.
- Hassan, Z., & Qureshi, M. (2019). Economic determinants of hygiene behaviors in Pakistan: A rural-urban comparison. *Social Science & Medicine*, 227, 20-27.
- Hussain, S., Shah, S. Z., & Rauf, M. (2019). The role of water sanitation in the hygiene practices of rural Pakistan. *Journal of Water and Health*, 17(4), 524-535.
- Iqbal, M., Ahmed, R., & Shah, M. (2018). Sanitation Infrastructure and Its Effect on Public Health in Pakistan. *Journal of Public Health*, 12(1), 56-65.
- Jafar, A., Anwar, M., & Butt, A. (2019). A comparative study of hygiene awareness in urban and rural Pakistan. *Environmental Research Journal*, 25(3), 45-50.
- Khan, M., Khan, Z., & Rehman, S. (2021). Water, Sanitation, and Hygiene Disparities in Pakistan: A Rural-Urban Comparison. *International Journal of Environmental Health*, 30(1), 1-10.
- Khan, M., Shah, S., & Ali, M. (2021). Cultural beliefs and their impact on hygiene practices in rural Pakistan. *Journal of Health and Social Behavior*, 62(1), 42-49.
- Kibria, Z., Nasim Khan, M., Aleem, S., & Zia Ul Haq. (2023). Linkages between poverty and food insecurity in Pakistan: Evidence from urban and rural households in Peshawar. *Pakistan Journal of Medical Sciences*, 39(2). <https://doi.org/10.12669/pjms.39.2.7122>
- Malik, S., & Abbas, Z. (2020). Economic Inequality and Its Impact on Hygiene Practices in Rural Pakistan. *Public Health*, 177, 100-105.
- Mughal, S. A., & Ali, S. (2019). Urban-rural disparities in sanitation: A case study from Peshawar, Pakistan. *Journal of Public Health Policy*, 40(2), 200-212.

- Naz, S., Riaz, K., & Nawab, S. (2024a). E-pharmacy in rural Pakistan: evaluating platforms' reach, opportunities and challenges. *Journal of Health and Rehabilitation Research*, 4(3), 1-6.
- Naz, S., Ishtiaq, M., & Riaz, K. (2024b). Effectiveness of e-pharmacy services in managing chronic diseases in rural Pakistan. *Journal of Development and Social Sciences*, 5(3), 442-542.
- Naz, S, M. Ayub., M. J. Afridi. (2023). Factors affecting the choice of delivery among the rural women of Khyber Pakhtunkhwa Pakistan. *Journal of Development and Social Sciences*, 4(3), 23-30.
- Naz, S., Amin, H., Sayed, A. (2024c).** Maternal mortality in Pakistan; the potential role of community midwives. *Journal of Development and Social Sciences*, 5(2), 45-52.
- Qadir, F., Rizvi, S., & Rahim, M. (2020). Hygiene Education and Practices in Rural Pakistan: A Study of Schoolchildren. *Asian Journal of Public Health*, 40(5), 140-145.
- Raza, A., & Rauf, A. (2020). Educational attainment and hygiene practices in Pakistan: A rural-urban comparison. *International Journal of Educational Development*, 70(5), 117-125.
- Riaz, K., Sajid, K, Ishtiaq, M., Amin, H. (2024). Barriers and access to mental healthcare in rural areas of Pakistan: An inferential statistical analysis. *Journal of Population Therapeutics and Clinical Phramcology*, 31(9), 2892-2902.
- Saeed, S., Ali, I., & Zaman, M. (2021). Socioeconomic determinants of hygiene behaviors in urban and rural Pakistan. *BMC Public Health*, 21(1), 345-352.
- Sheikh, N., Khan, A., & Ali, M. (2020). The Role of Education in Improving Hygiene Practices in Rural Pakistan. *Journal of Global Health*, 29(3), 178-184.
- Shah, S. M., & Ali, M. (2021). Public health campaigns and their impact on hygiene practices in rural Pakistan. *Asian Journal of Public Health*, 34(2), 112-121.
- Syed, R., & Alam, M. (2021). Access to Sanitation and Its Impact on Hygiene-Related Diseases in Rural Pakistan. *Pakistan Journal of Public Health*, 10(2), 120-126.
- Tariq, H., & Chughtai, A. (2020). Cultural Influences on Hygiene Practices in Rural and Urban Pakistan. *International Journal of Hygiene*, 22(3), 45-53.
- World Bank. (2020). Pakistan: Improving Sanitation and Hygiene in Rural Areas. World Bank Publications.
- World Health Organization (WHO). (2021). Water, Sanitation, and Hygiene: Key Facts. World Health Organization.