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## CULTURE AND CHANGING PATTERNS OF SANITATION AND HYGIENE PRACTICES: A COMPARATIVE STUDY OF HIMALAYAN AND TERRAIN REGION OF NEPAL

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### Abstract

This research paper explores the evolving sanitation and hygiene practices in two distinct ecological and cultural regions of Nepal-the Himalayan region and Terrain region. These regions, though geographically close, exhibit significant differences in terms of culture, infrastructure, and socioeconomic conditions, which influence their sanitation and hygiene practices. By comparing the patterns, challenges, and innovations in these regions, this study aims to explore and compare the changing patterns of sanitation and hygiene practices in the Himalayan and Terai regions of Nepal. By examining the influence of cultural norms, socio-environmental conditions and policy interventions, the research seeks to provide a comprehensive understanding of how sanitation behaviors differ across these two regions. The findings will contribute to designing culturally appropriate and region specific strategies for improving sanitation and public health in Nepal's diverse communities

**Keywords:** Sanitation, Hygiene Practices, Himalayan and Terrain Region, Cultural influence and Nepal.

### Introduction

Sanitation and hygiene are fundamental components of public health, playing a crucial role in preventing communicable diseases, reducing mortality rates, and improving the overall quality of life. Globally, inadequate sanitation and poor hygiene practices are linked to the spread of waterborne diseases such as diarrhoea, cholera, and dysentery, particularly in low- and middle-income countries (WHO, 2020). In Nepal, a country with diverse geographical and cultural landscapes, the patterns of sanitation and hygiene practices vary significantly between regions. The contrast between the high-altitude Himalayan region and the low-lying Terai plains is particularly striking due to differences in environmental conditions, cultural norms, and access to resources. These differences directly influence the adoption and adaptation of hygiene and sanitation behaviours, making it critical to examine regional variations for more effective public health interventions.

Sanitation and hygiene practices are not merely technical or infrastructural concerns but are deeply embedded in social and cultural frameworks (Douglas, 1966). Cultural beliefs, religious practices, and social norms significantly shape attitudes towards cleanliness, waste management, and sanitation. In the Himalayan region, harsh climatic conditions, geographical isolation, and limited access to modern sanitation infrastructure contribute to the persistence of traditional practices. In contrast, the Tarai region, with its fertile plains and greater population density, exhibits a different pattern of sanitation influenced by urbanization, accessibility to health services, and socio-economic changes. Understanding these differences requires an interdisciplinary approach, integrating public health, anthropology, and environmental studies.

The Himalayan region, characterized by its rugged landscape, extreme weather, and sparse population, faces numerous challenges in maintaining modern sanitation facilities. Traditional practices, limited access to clean water, and the physical difficulties of building infrastructure in remote areas all influence hygiene behaviours. In contrast, the Tarai region, with its flat plains and higher population density, is more accessible and has seen greater integration of modern sanitation systems. However, this region also faces issues such as water pollution, seasonal flooding, and social inequalities that affect hygiene



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practices. Understanding how sanitation and hygiene practices evolve in these two regions is vital for addressing public health disparities and promoting sustainable development.

Sanitation and hygiene practices are not only influenced by environmental conditions but are also deeply rooted in cultural beliefs and social norms. In many rural communities in Nepal, traditional customs and religious practices play a significant role in shaping behaviours related to cleanliness and hygiene. For example, cultural taboos around menstruation often limit access to proper menstrual hygiene management, particularly in remote Himalayan areas. In the Terrain region, caste-based social structures can restrict access to shared sanitation facilities for marginalized communities. These cultural dimensions must be considered alongside physical and economic factors when analyzing patterns of sanitation and hygiene.

Over the years, Nepal has made significant progress in improving sanitation through national campaigns and international collaborations. The government's "Open Defecation Free (ODF)" initiative, launched as part of the Sustainable Development Goals (SDGs), has contributed to increasing access to basic sanitation facilities. However, regional disparities persist, with remote areas lagging behind in achieving sanitation targets. Additionally, modernization and migration are influencing hygiene behaviours, as exposure to urban lifestyles brings new practices and expectations. These changes create a dynamic landscape where traditional practices interact with modern interventions, shaping the evolving patterns of sanitation and hygiene.

The culture and changing patterns of sanitation and hygiene practices in Nepal reflect a complex interplay of traditional beliefs, socio-economic factors, and modern interventions. Over time, significant improvements have been made, though challenges remain.

## Literature Review

Sanitation and hygiene play a critical role in public health, environmental sustainability, and overall quality of life. However, access to sanitation facilities and hygiene practices varies significantly across different geographical regions, social structures, and cultural settings. This review examines existing literature on sanitation and hygiene practices, focusing on disparities between urban and rural areas, cultural influences, and the effectiveness of government and non-governmental interventions in Nepal, particularly in the Himalayan and Terrain regions.

According to the World Health Organization (WHO, 2019), inadequate sanitation and poor hygiene contribute to the spread of waterborne diseases such as diarrhoea, cholera, and typhoid, leading to significant health risks, especially in developing countries. Globally, 2.3 billion people lack access to basic sanitation facilities, with 892 million still practicing open defecation.

In Nepal, sanitation coverage has improved significantly over the past two decades, largely due to national policies promoting "Open Defecation Free" (ODF) status. The Government of Nepal (2020) reported that 96% of households had access to sanitation facilities, yet disparities remain, particularly in remote mountainous regions where infrastructure development is slow.

Despite national progress, rural regions, particularly in the Himalayas, continue to lag in sanitation coverage and hygiene practices (Water Aid Nepal, 2021). Studies indicate that while urban populations have access to improved sanitation and clean water sources, many rural communities, especially in high-altitude areas, still struggle with open defecation, lack of clean water, and poor waste disposal systems (UNICEF Nepal, 2020).

## Key Findings from Previous Research:

Shrestha et al. (2018) found that only 53% of rural Himalayan households had access to improved sanitation, compared to 87% in urban Terrain areas.



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Bhandari & Ghimire (2019) highlighted that seasonal water shortages and extreme cold conditions make it difficult for Himalayan households to maintain hygienic sanitation practices.

Acharaya et al. (2020) noted that urban areas, particularly in the Terrain, have benefited from municipal sanitation policies and better infrastructure development.

### Urban-Rural Disparities in Sanitation and Hygiene

Urban areas in Nepal, especially in the Terrain region, have better access to flush toilets, piped water, and solid waste management systems (CBS Nepal, 2022). In contrast, rural communities in the Himalayan region depend on traditional pit latrines, community water sources, and open defecation in some areas.

Adhikari et al. (2021) found that 93% of urban Terrain households have access to improved sanitation, while only 40% of Himalayan rural households do.

Water Aid Nepal (2018) reported that terrain challenges, extreme weather, and remoteness in the Himalayas hinder large-scale infrastructure projects, leaving many villages without proper sanitation systems.

### Hygiene Awareness and Practices

Hygiene practices, such as hand washing, menstrual hygiene management, and use of safe drinking water, show significant disparities across regions:

**WHO (2020)** states that hand washing with soap can reduce diarrheal disease by up to 50%, yet the practice is lower in rural areas due to limited access to water and awareness programs.

**Paudel et al. (2019)** found that only 40% of rural Himalayan households reported regular hand washing with soap, compared to 93% in urban Terai areas.

**Pokharel & Maharjan (2021)** studied menstrual hygiene management and found that 67% of rural Himalayan women still follow restrictive cultural taboos, limiting access to sanitary products and clean toilets.

### Culture, sanitation and Hygiene Practices

Cultural practices play a significant role in shaping sanitation behaviours in Nepal, particularly in rural Himalayan communities.

**Tamang et al. (2020)** found that many Himalayan households consider toilets inside homes as “impure” and prefer open spaces or separate latrines away from living areas.

**Chaudhary & Sharma (2018)** highlighted that caste-based discrimination affects toilet use in certain rural communities, where lower-caste groups are denied access to shared sanitation facilities.

**Karki (2019)** studied menstrual taboos and found that in some Himalayan villages, women are still restricted from using household toilets or touching water sources during menstruation, reducing their access to hygiene facilities.

Despite government efforts to improve sanitation, deep-rooted cultural beliefs slow down progress in rural areas. Study by Nepal Water Supply and Sanitation (2021) found that many rural communities resist modern sanitation interventions due to traditional beliefs.

NGOs working in rural areas report that projects that integrate cultural and religious leaders into sanitation promotion programs see higher acceptance rates (Gurung, 2020). Sanitation programs should integrate cultural sensitivity, involving local religious leaders, elders, and community influencers in awareness campaigns to gradually change traditional beliefs.

### Research Gaps

Existing literature highlights significant disparities in sanitation and hygiene practices between urban and rural populations in Nepal, with the Himalayan region facing the most challenges. While government and NGO interventions have improved sanitation coverage, cultural beliefs, geographical constraints, and infrastructure limitations continue to hinder progress in remote areas. Research gaps identified are---

Lack of in-depth studies on the long-term impact of sanitation policies in remote areas.

Limited research on sustainable, culturally acceptable sanitation solutions for Himalayan communities.

Need for more studies on gender-based sanitation issues, particularly regarding menstrual hygiene practices in rural Nepal.

The Future research should focus on developing context-specific sanitation strategies that address cultural barriers,



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environmental challenges, and infrastructure limitations in Nepal's diverse regions. Therefore present research paper is a comparative study of two different climatic regions Himalayan and Tarain identifying prevailing socio-cultural

## Objectives

Against this background the present study designed to explore:

1. The cultural ethics pertaining to sanitation and hygiene in Himalayan and Tarai region.
2. The prevailing practices pertaining to sanitation and hygiene in both the regions.
3. The impact of cultural ethics on sanitation and hygiene habits in Nepal.

## Methods and techniques

### Research Design

The study adopts a comparative cross-sectional design to examine the changing patterns of sanitation and hygiene practices in the Himalayan and Terrain regions of Nepal. The research aims to explore how environmental conditions, cultural norms, and modernization influence sanitation behaviors and hygiene practices in these two distinct geographical regions. The design enables a detailed analysis of regional differences while capturing the evolving nature of sanitation and hygiene over time.

### Sampling

150 participants from the Himalayan region i.e.. (75 rural and 75 urban participants) and 150 participants from Terrain Region i.e. (75 rural and 75 urban participants). The sample size ensures adequate representation from both regions, allowing for meaningful comparisons and robust statistical analysis. To ensure the study captures a broad range of experiences and practices, the sampling method will incorporate stratified random sampling. This method will allow for a balanced representation across different demographic groups (e.g., geographic location, living status, i.e., rural & urban) within the two regions.

### Measures

An interview schedule was constructed. Respondents were administered an interview schedule to elicit demographic information and also to explore their constructions regarding sanitation, hygiene habits and socio-cultural ethics pertaining sanitation and hygiene habits in two regions (hilly and terrain) of Nepal. Some open -ended single item measures were used to draw out narratives about sanitation and hygiene habits like, drinking water facilities, sanitation facilities, hand washing facilities, Menstrual hygiene, solid and liquid waste management and sludge waste management. The next part of the interview schedule consist of socio cultural part and gender roles in pertaining health habits in two regions (hilly and terrain) of Nepal

### Procedure

For collecting the data personal face-to face interviews were conducted. A verbal consent was taken from each respondent after taking him/her in confidence and informing the purpose of the study. They were assured that the information they provide would be kept strictly confidential and used only for research purposes. The respondents were briefly interviewed and handed over copies of the questionnaire to respond. They were helped if they faced any difficulties regarding understanding or responding to the questionnaire items. Respondents were requested to respond honestly and to answer all the items. After they completed the questionnaire they were collected back from them.



## Results

The result section based on a sample of 300 respondents.150 respondents from the Himalayan region (75 urban and 75 rural) and 150 from the Tarai region (75 urban and 75 rural). The results are presented in key categories, with detailed tables comparing sanitation and hygiene practices across urban and rural areas in both regions.

Table.1.1: Showing access to sanitation facilities of both the regions

No.	Category Themes	Himalaya Regions N=150			Terrain Regions N=150		
		Rural N=75	Urban N=75	Total (%)	Rural N=75	Urban N=75	Total (%)
1	Flush Toilet	15	50	43.3	35	65	66.6
2	Pit Latrine	45	20	43.3	30	08	25.3
3	Open Defecation	15	5	13.3	10	02	8

**Table 1.1** contains percentages regarding access to sanitation facilities of Himalaya and Terrain regions. The responses were categorized in term of different categories like flush toilet, Pit latrine and open defecation. From the table it can be seen that Flush toilets are more common in urban areas of both regions (43.3% and 66.6%), especially in Terrain region (66.6%) it is more common. Pit latrines are widely used in Himalaya rural (45) and Terrain rural (30). Open defecation is highest in Himalaya (13.3%), showing a sanitation gap.

Table.1.2: Hygiene Practices of both the regions

No.	Category Themes	Himalaya Regions N=150			Terrain Regions N=150		
		Rural N=75	Urban N=75	Total (%)	Rural N=75	Urban N=75	Total (%)
1	Regular hand washing (with Soap)	30	55	56.6	55	70	83.3
2	Use of safe drinking water	40	60	66.6	65	75	93.3
3	Mensurational Hygiene management	20	50	46.6	45	60	70

**Table 1.2** represents hygiene practices of both regions. From the table it was found that hand washing with soap is higher in urban areas, especially in terrain region (83.3%). Safe drinking water access is lowest in Himalaya rural (40), indicating water supply challenges. Mensurational hygiene management is lower in Himalayan rural (20), due to cultural taboos and resource sanitation.



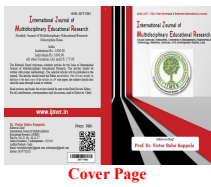


Table.1.3: Cultural Ethics and beliefs in sanitation and hygiene

No.	Category Themes	Himalaya N=150 Regions			Terrain N=150 Regions		
		Rural N=75	Urban N=75	Total (%)	Rural N=75	Urban N=75	Total (%)
1	Belief that sanitation is linked to health	55	70	83.3	65	72	91.3
2	Mensurational taboos affecting hygiene practices	50	30	53.3	35	20	36.6
3	Preference for traditional sanitation practices	50	20	46.6	25	10	23.3

**Table 1.3** depicts responses regarding cultural ethics and beliefs in sanitation and hygiene in both the regions. Sanitation awareness is generally high in both the regions but lower in Himalayan rural (50). Mensurational taboos are stronger in Himalayan rural, affecting hygiene. Preference for traditional sanitation is highest in Himalayan region (46.6%), showing resistance to modern sanitation practices.

Table 1.4: Showing independent Sample t-test results for cultural factors

Cultural Score	Himalayan region N=150 M & SD	Terrain region N=150 M & SD	t-value	p-value	significance
Traditional practices score	72.5 ± 9.8	65.3 ± 10.2	5.82	<0.01	Significant
Religious influence score	80.1 ± 8.4	75.6 ± 9.5	4.32	<0.01	Significant
Social Structure Score	69.3 ± 10.5	74.7 ± 9.8	-4.21	<0.01	Significant

Table represents independent Sample t-test for cultural factors. The above data shows that traditional practices and religious influences are stronger in the Himalayan region due to remote locations and historical continuity.

## Discussion

The key findings of the study in the context of existing literature on sanitation and hygiene practices in Nepal shows regional and urban-rural disparities, cultural influences, and the effectiveness of sanitation interventions over time. Findings are compared with previous research to provide a broader understanding of the challenges and opportunities in improving sanitation and hygiene in Nepal.

The study found that urban areas, particularly in the Terrain region, have significantly better sanitation infrastructure than rural regions, especially in the Himalayas. Flush toilets are more common in urban areas (50 in Himalayan urban and 65 in Terrain urban), while pit latrines dominate in Himalaya regions (43.3%) as compare to terrain region (25.3%).



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Research by Water Aid Nepal (2018) highlights that urban areas benefit from greater government investment, better infrastructure, and accessibility to water resources, while rural communities struggle with limited sanitation coverage and poor waste management systems. The Government of Nepal's National Sanitation and Hygiene Master Plan (2011) also emphasizes that rural areas, particularly in the mountains, face logistical difficulties in constructing sanitation facilities due to difficult terrain and lower population density.

The main reason of this urban- rural disparity is due to geographical constraints in the Himalayas make it difficult to construct water and sanitation infrastructure. Higher population density in urban areas allows for better resource allocation and government intervention. Economic disparities limit rural households from investing in improved sanitation. Policies should prioritize low-cost, locally adaptable sanitation solutions for remote Himalayan communities. Decentralized sanitation models, such as eco-friendly latrines, should be promoted in rural regions.

Hygiene behaviours, such as hand washing with soap, safe drinking water consumption, and menstrual hygiene management, vary significantly across urban and rural areas. The study found that 83.3% of Terrain respondents practice regular hand washing with soap, compared to only 56.6% in Himalaya areas.

A study by Adhikari et al. (2020) found that hand washing practices are influenced by education levels, accessibility to water, and awareness campaigns. Similarly, WHO (2019) reports that lack of water supply in rural areas directly affects hygiene behaviours, making it difficult to maintain proper hand washing habits.

Urban communities have better access to water and hygiene facilities, whereas rural Himalayan areas experience seasonal water shortages. Higher literacy rates in urban settings contribute to better hygiene awareness. GO-driven hygiene campaigns are more effective in urban centres due to ease of implementation and accessibility. Efforts should focus on improving water supply systems in rural areas and expanding hygiene education programs in schools and communities.

The study also found the cultural Influence on Sanitation and Hygiene Practices. There is a strong traditional beliefs and resistance to change these beliefs play an important role. The study found that 67% of Himalayan rural populations still prefer traditional sanitation methods and that menstrual hygiene taboos are stronger in rural areas in Himalayan rural vs. Terrain rural. Many women are prohibited from using household toilets, touching water sources, or staying indoors during menstruation.

Studies by Paudel et al. (2017) and Tamang (2021) confirm that deep-rooted cultural beliefs in rural Nepal, particularly in high-altitude regions, hinder the adoption of modern sanitation practices. These studies highlight that caste-based practices, religious taboos, and generational habits shape sanitation behaviours, making behaviour change more challenging.

Cultural factors particularly traditional practices, Religious Practices, and Social Structure have an a profound impact on sanitation and hygiene habit. In Himalayan region traditional practices and religious practices dominates sanitation and hygiene habits but in tarai region Social structure has an overarching impact on sanitation and hygiene habits which is evident from the data drown in the table number 1.4. The Himalayan people are more sensitised to protect their culture than that of Tarain people in Nepal. Max weber's study of protestant Ethics and spirit of capitalism had also found the similar findings.

Cultural norms dictate sanitation choices, particularly in remote communities where religious traditions are strictly followed. Lack of awareness and education perpetuates sanitation-related stigma. Government and NGO programs often fail to consider cultural barriers, leading to limited acceptance of modern sanitation solutions. Sanitation and hygiene promotion should be integrated with cultural sensitivity. Programs should involve local religious leaders and elders to facilitate gradual behavioral change.



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## Recommendations for Sustainable Sanitation Improvement

**Strengthening Rural Sanitation Infrastructure:** Develop low-cost, eco-friendly latrines in Himalayan rural areas to address geographical challenges. Improve rural water supply systems to support better hygiene practices.

**Integrating Cultural Awareness into Sanitation Campaigns:** Work with local religious and cultural leaders to break taboos and promote behaviour change. Introduce sanitation education in rural schools to encourage generational shifts in attitudes. **Expanding Government and NGO Collaboration:** Decentralize sanitation programs to empower local governments in rural areas. Encourage long-term partnerships between NGOs and local communities to sustain hygiene practices. **School-Based Hygiene and Sanitation Education:** Implement structured hygiene education programs in all schools, particularly in rural areas. Provide affordable sanitary products to rural communities to improve menstrual hygiene management.

## Conclusion

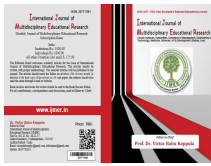
The findings indicate significant disparities in sanitation and hygiene practices between urban and rural populations in the Himalayan and Terrain regions of Nepal. While urban areas, particularly in the Terrain, show strong progress in sanitation infrastructure and hygiene awareness, rural communities in the Himalayas continue to face serious challenges due to cultural traditions, limited infrastructure, and geographical constraints.

Addressing these disparities requires culturally inclusive, community-driven approaches that integrate infrastructure development, behaviour change education, and policy interventions. Government and NGO efforts should focus on sustainable rural sanitation solutions that respect cultural sensitivities while promoting health and hygiene improvements.

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