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Adherence to preventive health practices: A survey analysis among young adults in Kashmir

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Abstract
Preventive health practices are crucial for reducing disease risk and enhancing well-being, particularly in regions with unique climatic challenges such as Kashmir, where icy winters and dry summers impact health behaviors. This study examines adherence to five key preventive habits-vaccination, hydration, adequate sleep, oral hygiene, and hand washing-among young adults using the *Healthy Lifestyle Scale* (HLS) developed by Wani *et al*. (2025). A cross-sectional online survey was conducted in August 2025 with 106 respondents. Descriptive statistics revealed high adherence to adequate sleep (88.7%) and hygiene-related behaviors (85.8% for both hydration and hand washing), while oral hygiene (70.8%) and vaccination (74.5%) had lower compliance. Females, younger adults (18-25 years), and students exhibited higher adherence across most domains. The findings reflect post-pandemic hygiene awareness and emphasize targeted interventions to improve vaccination and oral hygiene, particularly for older adults and males.

Keywords: Kashmir, preventive health, lifestyle behaviors, vaccination, hygiene, healthy lifestyle scale

Introduction
Preventive health practices encompass behaviors that proactively reduce disease risk and enhance long-term health outcomes. These include immunization, maintaining hydration, adequate rest, personal hygiene, and hand hygiene. In the context of Kashmir, with its extreme seasonal variations-icy winters and hot, dry summers-these practices are essential for mitigating climate-related health risks.

The *Healthy Lifestyle Scale* (HLS) developed and validated by Wani *et al*. (2025) [9] offers a culturally and climatically adapted framework for assessing health behaviors in such regions. While preventive health behaviors have been studied globally, there is limited research contextualized to Kashmir's environmental and socio-cultural setting. This study aims to fill that gap by assessing the prevalence of adherence to five preventive practices and analyzing variations across demographic factors.

Literature Review
Global studies have consistently shown that preventive practices significantly reduce the burden of communicable and non-communicable diseases. For example, hand hygiene reduces diarrheal disease risk by up to 47% (Curtis & Cairncross, 2003) [3] and is strongly promoted Post-COVID-19 (Lee *et al*., 2023) [5]. Oral hygiene influences systemic health and quality of life (Sheiham, 2005) [8], with brushing and handwashing behaviors often interlinked (Lee *et al*., 2020) [6]. Vaccination rates are shaped by access, hesitancy, and cultural factors, while hydration and adequate sleep are less studied despite their foundational role in overall health (Dangour *et al*., 2013) [4].

The *Healthy Lifestyle Scale* (HLS) provides a validated tool for assessing these preventive behaviors in the Kashmiri context, offering a lens to understand health practices in regions facing seasonal climate extremes (Wani *et al*., 2025) [9].

Methodology

Design and Instrumentation

A cross-sectional online survey was conducted in August 2025, targeting young adults in Kashmir. The survey used the *Healthy Lifestyle Scale* (HLS) developed by Wani *et al.* (2025) [9], which includes domains relevant to preventive health in climates with icy winters and dry summers.

Preventive Health Items Assessed

Five preventive practices were measured:-

- Following recommended vaccination schedules for self and family.
- Drinking adequate water daily.
- Ensuring adequate sleep nightly.
- Brushing teeth twice daily and flossing regularly.
- Washing hands frequently with soap, especially before meals and after using the restroom.

Sampling and Analysis

A total of 106 valid responses were analyzed. Demographic variables included gender, age, and profession. Descriptive statistics were computed using Python's panda's library. Participation was voluntary, anonymous, and without personal identifiers.

Results

Table 1: Demographic profile of participants (N=106)

Variable	Category	N	%
Gender	Male	67	63.2
	Female	39	36.8
Age Group	18-25	52	49.1
	25-30	40	37.7
	30-34	10	9.4
	Above 35	4	3.8
Profession	Student	72	67.9
	Employee	16	15.1
	Unemployed	15	14.2
	Student/Unemployed	3	2.8

The sample (Table 1) was predominantly male (63.2%), with nearly half aged 18-25 years. Students formed the largest professional group (67.9%), reflecting the young adult focus of this survey.

Table 2: Overall adherence to preventive practices

Habit	% Adhering (Yes)
Vaccination	74.5
Hydration	85.8
Sleep	88.7
Oral Hygiene	70.8
Hand Washing	85.8

Adequate sleep and hygiene behaviors showed the highest adherence rates (Table 2). Oral hygiene had the lowest compliance, suggesting an area for targeted health interventions.

Table 3: Adherence by gender

Habit	Female (%)	Male (%)
Vaccination	79.5	71.6
Hydration	89.7	83.6
Sleep	92.3	86.6
Oral Hygiene	82.1	64.2
Hand Washing	97.4	79.1

Females outperformed males across all preventive behaviors (Table 3), particularly in oral hygiene and hand washing. This trend may be linked to higher health awareness or behavioral norms among women.

Table 4: Adherence by age group

Habit	18-25 (%)	25-30 (%)	30-34 (%)	Above 35 (%)
Vaccination	78.8	80.0	60.0	0.0
Hydration	90.4	87.5	70.0	50.0
Sleep	84.6	92.5	90.0	100.0
Oral Hygiene	76.9	62.5	70.0	75.0
Hand Washing	94.2	77.5	70.0	100.0

Younger adults (18-25) generally reported higher adherence, particularly for hydration and hand washing. Alarmingly, vaccination adherence in the above-35 group was 0%, signaling a critical public health gap (Table 4).

Table 5: Adherence by profession

Habit	Student (%)	Employee (%)	Unemployed (%)	Student / Unemployed (%)
Vaccination	77.8	68.8	66.7	66.7
Hydration	90.3	81.3	66.7	100.0
Sleep	86.1	100.0	86.7	100.0
Oral Hygiene	72.2	68.8	60.0	100.0
Hand Washing	88.9	75.0	80.0	100.0

Students reported the highest adherence rates in most behaviors, possibly due to greater exposure to health education. Employees showed strong sleep habits but weaker hygiene adherence (Table 5).

Discussion

This study assessed five domains of preventive health behaviors-vaccination, hydration, adequate sleep, oral hygiene, and hand washing-among young adults in Kashmir using the *Healthy Lifestyle Scale* (HLS) developed by Wani *et al.* (2025) [9]. The findings highlight notable strengths in certain preventive behaviors but also reveal persistent gaps that require targeted interventions.

Vaccination Adherence

As shown in Table 2, 74.5% of respondents reported following recommended vaccination schedules. While this reflects a relatively high uptake compared to some rural Indian populations, the figure still falls short of WHO's 90% target for community-level protection. The drop to 0% vaccination adherence among participants over 35 years (Table 4) is particularly concerning, as older adults face higher risks from vaccine-preventable diseases. This aligns with studies suggesting that logistical barriers, harsh winter conditions, and vaccine hesitancy contribute to poor adult immunization rates in cold-climate regions.

Hydration Practices

Adequate water intake was reported by 85.8% of participants (Table 2), with higher adherence among females (89.7%) and younger adults aged 18-25 years (90.4%) (Tables 3 & 4). These findings are encouraging given the arid summer climate in Kashmir, which increases dehydration risk. However, older adults and unemployed individuals reported lower hydration rates, indicating that public health messages on hydration may not effectively reach all demographic groups. Similar hydration disparities have been documented in other cold

regions where fluid intake is perceived as less important during cooler seasons.

Adequate Sleep

Sleep adherence was the highest of all behaviors (88.7%) (Table 2), with employees and those over 35 years achieving 100% compliance (Tables 4 & 5). Adequate rest is critical for immune function, stress regulation, and cognitive performance, suggesting that sleep behaviors in this population are well-established. However, younger adults' slightly lower sleep adherence may be linked to academic pressures, social commitments, or excessive screen time, consistent with findings by Lemola *et al*. (2015).

Oral Hygiene

Only 70.8% of respondents adhered to twice-daily brushing and regular flossing (Table 2), with females significantly outperforming males (Table 3). This mirrors Sheiham's (2005) [8] observations that oral hygiene often receives lower priority compared to other health practices, especially in male populations. Cost, access to dental services, and limited preventive dental education may contribute to these patterns, particularly in rural and resource-limited settings.

Hand Washing

High rates of hand washing (85.8%) (Table 2) reflect the lingering positive impact of COVID-19 public health campaigns, with females (97.4%) and younger adults (94.2%) showing the highest adherence (Tables 3 & 4). These results align with Alzyood *et al*. (2024) [1], who found that hygiene behaviors improved significantly during and after the pandemic, particularly among women. However, male adherence (79.1%) suggests room for continued reinforcement, possibly through community and workplace-based hygiene promotion.

Demographic Trends

The gender gap in preventive health behaviors is consistent with global research indicating that women are generally more health-conscious and proactive in adopting preventive practices. Age differences, particularly the steep decline in vaccination and hydration among older adults, highlight the importance of targeted outreach programs for these groups. Professionally, students demonstrated higher adherence in most domains, possibly due to greater exposure to health promotion in academic settings.

Implications for Policy and Practice

The findings underscore the need for sustained, targeted health education that addresses the identified gaps. Strategies may include mobile vaccination units during winter months, school and workplace-based oral hygiene campaigns, hydration awareness drives in summer, and gender-sensitive approaches to encourage male engagement in hygiene and preventive behaviors.

Conclusion

The present study provides valuable insight into the preventive health practices of young adults in Kashmir, assessed through the culturally and climatically adapted *Healthy Lifestyle Scale* (HLS) developed by Wani *et al*. (2025) [9]. Overall, the findings indicate encouraging adherence to adequate sleep, hydration, and hygiene-related behaviors, suggesting that post-pandemic health awareness campaigns and educational outreach have had a measurable impact on the daily practices of this population.

Gender differences were pronounced, with females exhibiting higher adherence rates in all five preventive domains, particularly oral hygiene and hand washing. This pattern is consistent with prior studies highlighting women's greater engagement in self-care and health-protective behaviors. Age-related differences were also evident, with younger adults (18-25 years) showing stronger compliance with hydration, hand washing, and vaccination schedules compared to older age groups. Alarmingly, vaccination adherence among participants over 35 was non-existent, underscoring an urgent need for targeted vaccination drives in this demographic.

Professionally, students displayed better overall preventive behavior adherence, which may be attributed to their exposure to structured health education and institutional health promotion programs. Employees demonstrated excellent sleep habits but lower scores in hygiene-related practices, suggesting workplace-centered health interventions could be beneficial.

Despite the positive trends in some areas, gaps remain-most notably in oral hygiene and vaccination uptake. Oral hygiene compliance at 70.8% points to barriers such as cost of dental care, limited access to preventive dental services, and possibly underestimating its importance in overall health. Vaccination rates, particularly in older adults, may be hindered by accessibility issues during harsh winters, vaccine hesitancy, or lack of awareness about recommended immunization schedules.

From a policy perspective, these findings highlight the need for:

- Targeted awareness campaigns emphasizing the link between oral hygiene, systemic health, and quality of life.
- Seasonally adaptive vaccination programs that bring services closer to communities during difficult weather conditions.
- Gender-sensitive health interventions that encourage male participation in hygiene and preventive health programs.
- Workplace-based health education modules to address hygiene gaps among employed individuals.

In conclusion, while young adults in Kashmir are engaging in many preventive health practices at encouraging rates, there is still substantial room for improvement in certain key areas. Sustained, culturally tailored interventions-coupled with infrastructural support-can further strengthen preventive health behaviors, ultimately reducing the burden of preventable diseases in the region.

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