



## Progress of Sustainable Development Goals in Uttarakhand: An Assessment of Health and Well-being (SDG-3)

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### Abstract

*This paper aims to investigate the disparities in health outcomes and service delivery between India as a whole and the state of Uttarakhand in the context of Sustainable Development Goal 3 (Good Health and Well-being). Analysing health-related indicators such as maternal mortality, institutional delivery rates, immunisation coverage, and access to universal health coverage, this paper seeks to evaluate the progress of Sustainable Development Goal-3 (Good Health and Well-Being) in Uttarakhand as compared to the national average. The research paper will further examine structural barriers, such as health workforce distribution and lack of research that may contribute to Uttarakhand's lag in certain indicators despite national progress. This comparative approach will help to identify targeted policy interventions required to bridge the sub-national development gap in health.*

**Keywords:** Sustainable Development, Uttarakhand, Health Disparities, Immunisation, Universal Health Coverage.

### I. Introduction

Under Article 21 of the Indian Constitution, health is recognised as an integral part of the fundamental right to life. The World Health Organization (2000) defines health not merely as the absence of disease or infirmity, but as a state of complete physical, mental, and social well-being. Accordingly, healthcare extends beyond treatment to encompass prevention, diagnosis, management, and rehabilitation of both physical and mental health conditions. Mahbub ul Haq (1999) emphasized that people should be regarded not simply as passive recipients of economic growth but as active agents shaping social, economic, cultural, and political development. By placing human well-being at the centre of development, he argued, economic growth is redefined to serve its ultimate purpose: enhancing human capabilities. Inclusive healthcare, therefore,

emerges as a critical mechanism for promoting equity and social justice, ensuring that all individuals, irrespective of socio-economic status, physical ability, or geographic location, can access essential health services (Pandey & Shekhar, 2024). This principle is especially pertinent in regions such as Uttarakhand, where difficult terrain and socio-economic disparities pose significant barriers to healthcare delivery.

Investment in human capital, particularly in health and education, is vital for sustainable development. A population that is healthy and educated contributes more effectively through innovation, productivity, and resilience (Sati, 2022). In this context, health is both a moral imperative and an economic necessity, reinforcing the view that improved health outcomes stimulate economic productivity and social development. The United Nations' 2030 Agenda for Sustainable Development underscores this interconnection, with Sustainable Development Goal 3 (SDG 3) aiming to "ensure healthy lives and promote well-being for all at all ages." SDG 3 comprises 13 targets and 28 indicators addressing maternal and child health, infectious and non-communicable diseases (NCDs), mental health, substance abuse, road safety, environmental health, and universal health coverage (Sati, 2022). The goal emphasizes that health is both a precondition and a driver for achieving other SDGs, including poverty reduction (SDG 1), zero hunger (SDG 2), gender equality (SDG 5), and climate action (SDG 13), highlighting the need for cross-sectoral strategies.

The global adoption of the SDGs in 2015 provided a comprehensive framework to address social, economic, and environmental priorities in an integrated manner (United Nations, 2015; Sachs et al., 2019). SDG 3 particularly emphasizes the importance of robust health systems, requiring investments in infrastructure, human resources, and financial planning to achieve measurable improvements in health outcomes. Its indicators—such as maternal mortality ratio, under-five mortality,



disease prevalence, and health insurance coverage—provide concrete metrics for assessing progress. Achieving these targets necessitates equity-driven policies, evidence-based interventions, and attention to broader social determinants of health, including income, education, gender equality, environmental conditions, and access to clean water and sanitation (WHO, 2022).

Empirical research underscores the interdependence of health and development. Mahbub ul Haq (1999) stressed that investing in health and education empowers individuals to be agents of change rather than passive beneficiaries of growth. Banerjee and Duflo (2011) illustrate how poor health both results from and contributes to poverty, creating a cycle of low productivity, high medical costs, and restricted opportunity. Their findings suggest that even modest, well-targeted interventions such as immunization campaigns, health education, or subsidized care can significantly improve outcomes, particularly in regions with limited access to healthcare.

At the regional level, Uttarakhand's unique topography and dispersed population present significant challenges to healthcare delivery. Despite government initiatives, health infrastructure remains inadequate in hilly and remote districts, with shortages of trained personnel, limited transportation, and seasonal inaccessibility during monsoons exacerbating disparities (Sati, 2022; Pandey & Shekhar, 2024). NFHS-5 (2021) data indicate improvements in institutional deliveries, antenatal care, and immunization coverage, but non-communicable diseases, child malnutrition, and tobacco use persist as challenges. Bhattacharya and Kundu (2020) highlight uneven progress across SDG 3 indicators in Indian states, noting that Uttarakhand shows moderate but inconsistent performance, especially in disease control and mental health services. Environmental vulnerabilities further compound health risks: floods and landslides result in injuries, trauma, waterborne diseases, and disruption of health services, with direct relevance to SDG 3.9, which targets reductions in deaths and illnesses from hazardous environmental exposures (Dobhal et al., 2020).

Financial barriers remain a critical impediment to equitable healthcare. High out-of-pocket expenditures, particularly in private facilities, limit access for economically disadvantaged groups. While health insurance schemes such as Ayushman Bharat have expanded coverage, gaps in awareness, enrolment, and service quality persist, especially in rural and remote areas (Patel et al., 2015; Banerjee & Duflo, 2011). Addressing these challenges requires

both systemic reforms and localized strategies tailored to Uttarakhand's geographical and socio-economic context.

The literature consistently demonstrates that health is both an intrinsic human right and an instrumental factor in broader development. The SDG framework emphasizes the interconnectedness of health with poverty reduction, education, gender equity, and environmental sustainability (Sachs et al., 2019). Realizing SDG 3 necessitates strengthening health systems, addressing social determinants of health, promoting financial risk protection, and adopting context-specific policies that ensure equitable access to care. For regions like Uttarakhand, this entails overcoming the dual challenges of difficult terrain and socio-economic inequality, making inclusive and accessible healthcare a critical priority.

Advancing health outcomes in Uttarakhand aligns with both national and global development objectives. By integrating investments in infrastructure, human resources, and social determinants of health with targeted interventions for vulnerable populations, policymakers can promote both human well-being and economic development. Achieving SDG 3 in such contexts requires a holistic approach that combines health system strengthening, environmental risk mitigation, equity-driven policies, and evidence-based planning, reinforcing the broader vision of sustainable and inclusive development.

## II. Methodology

This study adopts both qualitative and quantitative approaches to assess Uttarakhand's progress toward achieving Sustainable Development Goal 3 (SDG 3): "Ensure healthy lives and promote well-being for all at all ages." The analysis relies on secondary data collected from authentic government sources, including the National Family Health Survey (NFHS-5), Health Management Information System (HMIS), Sample Registration System (SRS), NITI Aayog's SDG India Index, Census of India, Uttarakhand's Economic Survey, CAG audit reports and other government surveys and reports. While the study emphasises quantitative analysis, it acknowledges limitations due to the unavailability of consistent, disaggregated state-level data for certain indicators, such as antimicrobial resistance, which may be addressed in future research.

Indicators were selected based on their inclusion in the official UN SDG 3 framework. The data has been collected from each respective ministry with latest reports published by them. Data for each target and corresponding indicator were compiled in tabular format. When available, state-level data



specific to Uttarakhand were extracted and contrasted with national figures to highlight regional disparities and contextual challenges.

This paper tries to find to answer how Uttarakhand's performance on SDG 3 indicators compares with the national average, with objectives focused on analysing the state's progress as well as its successes and failures in achieving the targets and indicators of SDG 3.

### Study Area

Uttarakhand, carved out of Uttar Pradesh in 2000, is a northern Himalayan state of India known for its diverse geography and socio-cultural richness. Comprises of 13 districts it shares international borders with China (Tibet) in the north and Nepal in the east, as well as domestic borders with Himachal Pradesh and Uttar Pradesh. As per the Census of India 2011, the state has witnessed considerable demographic transitions over the last two decades,

particularly in terms of urbanisation, literacy, and gender-related indicators.

As per census 2011, with a total population of 10,086,292. Uttarakhand ranks 20th among Indian states by population. The state is predominantly rural, with 69.45% of the population residing in rural areas and 30.55% in urban areas. However, urbanization is on a gradual rise, driven by migration to cities like Dehradun, Haridwar, and Haldwani for education, healthcare, and employment. Uttarakhand boasts a literacy rate of 78.82%, slightly above the national average of 74.04% (Census 2011). The male literacy rate stands at 87.40%, whereas the female literacy rate is 70.01%, indicating persistent gender disparities in educational attainment, especially in hilly and remote districts. The sex ratio of Uttarakhand is 963 females per 1000 males, better than the national average of 943.

The following table 1 provides a summary of key demographic indicators for Uttarakhand based on Census 2011 and updated estimates:

**Table 1: Key Demographic Indicators of Uttarakhand (as per Census 2011)**

Indicator	Uttarakhand	National Average
Total Population (2011)	10,086,292	1,210,854,977
Rural Population (%)	69.45%	68.84%
Urban Population (%)	30.55%	31.16%
Population Density (per sq km)	189	382
Sex Ratio (females per 1000 males)	963	943
Literacy Rate (Total)	78.82%	74.04%
Male Literacy Rate	87.40%	82.14%
Female Literacy Rate	70.01%	65.46%
Scheduled Castes (SC) (%)	18.76%	16.6%
Scheduled Tribes (ST) (%)	2.89%	8.6%

**Sources:** Census of India (2011); Ministry of Statistics and Programme Implementation (MoSPI); Government of Uttarakhand.

In the SDG India Index 2023–24 released by NITI Aayog, Uttarakhand **ranked joint first** alongside Kerala, with a composite score of 79 out of 100, outperforming the national average of 71. This marks a notable improvement from previous years, with the state ranking ninth in 2019 and seventh in 2020–21. Uttarakhand's advancement is largely attributed to strong performances in health (SDG 3), education (SDG 4), clean water and sanitation (SDG 6), and poverty reduction (SDG 1) (NITI AYO,2024). Effective governance mechanisms such as decentralised planning, SDG institutionalisation, and integration of goals into district and Panchayat-level frameworks have further enhanced the state's sustainable development outcomes.

Despite this progress, achieving SDG 3 in Uttarakhand remains challenging due to its mountainous terrain, scattered rural population, and seasonal migration patterns that hinder equitable access to healthcare. Although policy interventions like the National Health Mission (NHM), Ayushman Bharat, and various state-level health schemes have been implemented, critical issues such as maternal mortality, immunisation gaps, shortage of trained health professionals, high out-of-pocket expenditure in healthcare and inadequate health infrastructure in remote areas persist.

This paper, therefore, aims to assess Uttarakhand's performance on SDG 3 indicators by analysing available data, identifying key health disparities, and highlighting systemic challenges. The



findings offer valuable insights for tailoring more equitable, decentralised, and resilient health policies suited to the unique geographic and demographic realities of the state. By focusing on sub-national dynamics, the research contributes to a deeper understanding of SDG implementation at the state level in India and emphasises the importance of localised policy responses for achieving sustainable health outcomes.

### III. Result and Discussion

This section aims to analyse all the data findings resulting in progress in all target indicators of SDG3

in Uttarakhand and India. The section also highlights the Uttarakhand Health Profile to get an overall analysis of health delivery in the state.

#### Uttarakhand Health Profile

Uttarakhand, being a Himalayan state, faces many challenges regarding health infrastructure. This section aims to highlight the state-specific health infrastructure and key indicators of healthcare in Uttarakhand and India. In this regard, Table 1 describes the current healthcare infrastructure in Uttarakhand.

**Table 2: Distribution of current healthcare infrastructure in Uttarakhand.**

Category	Number
Number of District Hospitals	13
Number of Sub-District Hospitals	19
Number of Government (Central + State) Medical College	4
Number of Private (Society + Trust) Medical College	2

*Source: Health Dossier 2021: Reflections on Key Health Indicators – Uttarakhand*

Table 2 analyses that, as per the health dossier in 2021, there are 13 district hospitals in Uttarakhand, which makes 1 district hospital in each district, whereas there are 19 sub-district hospitals in

Uttarakhand. Also, there are 4 government medical colleges in Uttarakhand. There are two private medical colleges which are under any society or trust, as per the Health Dossier 2021.

**Table 3: Indicators related to Health Care delivery in India and Uttarakhand.**

Indicators	India	Uttarakhand
Infant Mortality Rate (IMR)	30	27
Crude Death Rate (CDR)	6	6
Crude Birth Rate (CBR)	19.7	17.1
Maternal Mortality Ratio (MMR)	113	99
Neo Natal Mortality Rate (NNMR)	23	22
Under Five Mortality Rate (U5MR)	36	33
Total Fertility Rate (TFR)	2.2	1.8
Life expectancy at birth	69.4	70.9
Sex Ratio at Birth	899	840

*Source: Health Dossier 2021: Reflections on Key Health Indicators – Uttarakhand*

Table 3 presents a comparative analysis of key health indicators between India and the state of Uttarakhand. The data highlights that Uttarakhand performs slightly better than the national average in several critical metrics such as Infant Mortality Rate

(27 vs. 30), Maternal Mortality Ratio (99 vs. 113), and Total Fertility Rate (1.8 vs. 2.2). Life expectancy at birth in Uttarakhand (70.9 years) also exceeds the national average (69.4 years), reflecting improved health outcomes. However, the state lags behind in



terms of the Sex Ratio at Birth (840 compared to the national average of 899), indicating persistent gender-based disparities. These indicators

collectively provide insights into the health care delivery and demographic profile of the region, emphasising both progress and ongoing challenges.

**Table 4: Distribution of Healthcare Infrastructure in Hill and Plain Districts of Uttarakhand**

District	Medical College Hospital	District Hospital	Sub-District Hospital	Other Hospital	CHC	PHC (A)	PHC (B)	Sub Center	Population (2018)(in Lakh)	Health center per 1000	Health Specialists
<b>Hill Districts</b>	1	12	9	9	51	301	125	1247	41.80	0.42	191
<b>Plain Districts</b>	5	7	11	15	28	112	43	634	69.85	0.122	229
<b>Uttarakhand</b>	6	19	20	24	79	413	168	1881	111.64	0.24	420

*Source: Health Dossier 2021: Reflections on Key Health Indicators – Uttarakhand*

Table 4 illustrates the distribution of healthcare infrastructure across the hill and plain districts of Uttarakhand, highlighting disparities in access and availability of medical facilities. Hill districts, despite serving a population of 41.8 lakh, have fewer medical college hospitals (1) compared to plain districts (5) but show a higher density of health centres per 1000 population (0.42 vs. 0.122), reflecting a wider spread of basic health facilities to reach remote areas. Conversely, plain districts, with a larger population base (69.85 lakh), have better hospital infrastructure—including more district and sub-district hospitals—but fewer primary health centres relative to their population, suggesting a concentration of services in urbanised zones. Overall, Uttarakhand has 6 medical college hospitals, 19 district hospitals, and 1,881 sub-centres, with a total of 420 health specialists catering to over 11 million people. This distribution underscores the need for targeted policy interventions to bridge the healthcare accessibility gap between hill and plain regions.

Uttarakhand’s health profile reflects the dual challenges of mountainous terrain and limited healthcare infrastructure, especially in rural and remote districts. Although the state has made considerable strides in improving key health

indicators over the past two decades, disparities in access, quality, and outcomes persist—particularly between hilly and plain regions.

**Progress of SDG-3 target indicators in Uttarakhand**

This section examines the progress of Sustainable Development Goal 3 (SDG-3) indicators in Uttarakhand in comparison with national averages. SDG-3, which seeks to ensure healthy lives and promote well-being for all at all ages, provides a comprehensive framework for evaluating health outcomes across maternal and child health, communicable and non-communicable diseases, and health system performance. Uttarakhand, owing to its mountainous terrain and dispersed population, faces distinctive challenges in healthcare access and service delivery. Against this backdrop, the state’s achievements and shortfalls in meeting SDG-3 targets offer critical insights into the effectiveness of current health interventions. The analysis not only highlights areas of progress but also identifies gaps that require urgent policy attention to align Uttarakhand’s performance with national and global health commitments.

**Table 5: Progress of SDG-3 Target Indicators in Uttarakhand Compared with National Averages and Global Targets**

Target	Indicator	Global Target	National Average	Uttarakhand
3.1	3.1.1 Maternal mortality ratio (per 100,000 live births)	< 70	97 (2018–20)	103 (2018–20)
	3.1.2 Skilled birth attendance / Institutional deliveries (%)	100 %	89% (NFHS-5)	68.6% (NFHS-5)
3.2	3.2.1 Under-5 mortality rate (per 1,000)	≤ 25	32	26



	3.2.2 Neonatal mortality rate (per 1,000)	≤ 12	20.2	27.6
3.3	3.3.1 New HIV infections (per 1,000 uninfected)	0	0.05	0.04
	3.3.2 TB incidence/notification (per 100,000)	—	210	178
	3.3.3 Malaria incidence per 1,000 population	—	0.17	NIL
3.4	3.4.1. Mortality rate attributed to cardiovascular disease, cancer, diabetes or chronic respiratory disease	—	63 percent of all deaths	61.5 percent of all deaths
	3.4.2 Suicide mortality rate (per 100,000)	↓by one-third	12.4	7
3.5	3.5.2 Alcohol per capita consumption (15+ years)	Reduce	38 % of men and 9 % of women	25.5% of Men and 0.3 % of Women
3.6	3.6.1 Road traffic death rate (per 100,000)	↓50 % by 2030	11.3(MoRTH,2022)	9.02
3.7	3.7.1 Proportion of women (15–49 years) whose need for family planning is satisfied with modern methods (%)	100% by 2030	66.70%	71.20%
	3.7.2 Adolescent birth rate (per 1,000 women aged 15–19 years)	↓ to minimal	18.8	14.6
3.8	3.8.1 UHC service coverage index	Universal	63% (2021)	58
	3.8.2 Out-of-pocket health expenditure (% consumption)	Minimized	16.10%	12.5
3.9	3.9.1 Mortality rate from air pollution (per 100,000)	↓	124	NA
	3.9.2 Mortality from unsafe water and sanitation (per 100,000)	↓	18.6	NA
3.a	3.a.1 Tobacco use prevalence (15+ years)	↓	28.6% (GATS-2)	25.30%
3.b	3.b.1 Vaccine coverage (DPT3, etc.)	100%	76.4% (NFHS-5)	82%
3.c	3.c.1 Health worker density (per 10,000 population)	≥ 44.5	21.9	51.77
3.d	3.d.1 IHR core capacity score	100	68%	NA

Sources: National AIDS Control Organization (NACO), 2023; Central TB Division (CTBD), 2023; National Vector Borne Disease Control Programme (NVBDCP), 2022; World Health Organization (WHO), 2021, 2023; United Nations (UN), 2023; National Crime Records Bureau (NCRB), 2022; Ministry of Health and Family Welfare (MoHFW), 2021, 2022; Ministry of Road Transport and Highways (MoRTH), 2022; National Family Health Survey-5 (NFHS-5), 2019–21; Sample Registration System (SRS), 2022; Institute for Health Metrics and Evaluation (IHME), 2020; Global Adult Tobacco Survey (GATS-2), 2016–17; Ministry of Health and Family Welfare. Rural Health Statistics, 2021; International Health Regulations (IHR) Annual Report, 2022

Table 5 provides a comprehensive comparison of the progress of Sustainable Development Goal 3 (SDG-3) target indicators in Uttarakhand, in relation to national averages and global targets. The table illustrates how the state is performing across critical domains of maternal and child health, communicable and non-communicable diseases, lifestyle risk factors, environmental health, universal health coverage, and health system

capacity. The findings reflect a mixed picture where Uttarakhand has achieved notable progress in some areas, yet continues to struggle with persistent challenges in others.

For maternal and child health (Targets 3.1 and 3.2), the maternal mortality ratio (MMR) in Uttarakhand remains above both the global target (<70 per 100,000 live births) and the national average, with the state reporting 103 deaths per



100,000 live births. This points to gaps in maternal health interventions and obstetric care. Similarly, the proportion of institutional deliveries (68.6%) is significantly below the national coverage of 89% and far from the global target of 100%, raising concerns about accessibility, cultural barriers, and infrastructure in remote areas. In terms of child health, under-five mortality in Uttarakhand (26 per 1,000) is slightly better than the national figure (32) and close to the global benchmark ( $\leq 25$ ), suggesting improvements in child survival. However, neonatal mortality (27.6 per 1,000) remains higher than the national average (20.2), underscoring a continued need for neonatal intensive care and better postnatal services. Progress in controlling communicable diseases (Target 3.3) is relatively encouraging. New HIV infections are slightly lower in Uttarakhand (0.04 per 1,000 uninfected) compared to the national level (0.05), reflecting effective prevention programs. Tuberculosis incidence has also declined, with 178 cases per 100,000 in the state compared to 210 nationally. Perhaps most striking is the elimination of malaria in Uttarakhand, with zero reported incidence against a national average of 0.17 per 1,000, showcasing successful vector control and public health interventions.

Table 5 also highlights the burden of non-communicable diseases (Target 3.4), however, remains significant. Around 61.5% of all deaths in Uttarakhand are attributed to major NCDs such as cardiovascular diseases, cancers, diabetes, and respiratory illnesses, aligning closely with the national pattern (63%). While this reflects the epidemiological transition towards chronic diseases, it also signals rising challenges for the state's health system. On a positive note, suicide mortality in Uttarakhand is considerably lower (7 per 100,000) than the national figure (12.4), suggesting stronger community resilience or protective socio-cultural factors. When considering lifestyle-related risk factors (Targets 3.5 and 3.a), Uttarakhand performs better than the national average. Alcohol consumption is markedly lower, with only 25.5% of men and 0.3% of women reporting alcohol use compared to 38% and 9% nationally. Similarly, tobacco use prevalence is lower in Uttarakhand (25.3%) than at the national level (28.6%). These patterns may reflect social norms, awareness campaigns, or enforcement of tobacco and alcohol regulations. In terms of road safety (Target 3.6), the state demonstrates positive progress, with a road traffic death rate of 9.02 per 100,000, which is below the national average of 11.3. While this indicates some success, further reductions are essential to align with the global goal of halving road traffic deaths by

2030. Reproductive health outcomes under Target 3.7 are relatively better in Uttarakhand. The proportion of women whose need for family planning is met with modern methods stands at 71.2%, higher than the national average of 66.7%. Moreover, the adolescent birth rate is lower in the state (14.6 per 1,000 women aged 15–19 years) compared to the national figure (18.8), reflecting improved access to reproductive health services and greater awareness among adolescents.

Indicators for universal health coverage (Target 3.8) reveal uneven progress. While the UHC service coverage index in Uttarakhand (58) is below the national average (63), the state performs better in reducing the financial burden of healthcare, with out-of-pocket expenditure at 12.5% compared to 16.1% nationally. This suggests that while service availability remains a challenge, financial protection measures such as state insurance schemes may be easing household healthcare costs. Environmental health indicators (Target 3.9) remain a gap area for Uttarakhand, as state-level data on mortality from air pollution and unsafe water or sanitation are unavailable. However, national data point to continued health threats from environmental determinants.

Table 5 shows that Uttarakhand shows commendable performance in vaccination and immunization (Target 3.b), where coverage is 82%, surpassing the national average of 76.4% and moving closer to universal coverage. The state also excels in health workforce density (Target 3.c), reporting 51.77 health workers per 10,000 population, which exceeds both the national average (21.9) and the WHO benchmark (44.5). This indicates a relatively stronger human resource base for healthcare delivery. In terms of health system preparedness (Target 3.d), while national IHR (International Health Regulations) core capacity scores stand at 68%, state-specific data for Uttarakhand are unavailable, highlighting the need for more robust monitoring and evaluation frameworks at sub-national levels.

Overall, Table 5 highlights a dual narrative for Uttarakhand. The state has made commendable advances in communicable disease control, immunization coverage, family planning, and health workforce availability. However, persistent challenges remain in maternal and neonatal health, institutional deliveries, universal health coverage, and NCD burden. These findings underline the importance of targeted interventions that bridge healthcare access gaps in rural and remote areas, while also strengthening preventive and curative services to address the double burden of communicable and non-communicable diseases.



### Key Findings

The analysis of SDG-3 indicators reveals that Uttarakhand demonstrates a mixed performance, with areas of commendable progress coexisting alongside persistent health system challenges. Maternal and child health outcomes remain a critical concern. The state's maternal mortality ratio stands at 103 per 100,000 live births, higher than the national average of 97 and still distant from the global target of fewer than 70 deaths. Institutional deliveries are particularly low, with only 68.6 percent coverage compared to the national average of 89 percent, reflecting systemic gaps in maternal and neonatal healthcare. While the under-five mortality rate in Uttarakhand (26 per 1,000 live births) is better than the national average (32), the neonatal mortality rate (27.6) is alarmingly higher than both the national figure (20.2) and the SDG target of 12, underscoring deficiencies in early-life care.

In terms of communicable disease control, Uttarakhand shows relatively stronger performance. New HIV infection rates (0.04 per 1,000 uninfected) are marginally lower than the national average (0.05), while tuberculosis incidence (178 per 100,000) is also below the national figure of 210. Malaria transmission has been effectively contained, with the state reporting zero cases compared to the national average incidence of 0.17 per 1,000, signalling effective surveillance and prevention efforts. These outcomes suggest that targeted disease-control interventions have yielded measurable success.

The burden of non-communicable diseases (NCDs) presents a growing challenge for the state. Approximately 61.5 percent of all deaths in Uttarakhand are attributed to cardiovascular diseases, cancers, diabetes, or chronic respiratory conditions, mirroring the national pattern. Although the suicide mortality rate (7 per 100,000) is lower than the national average (12.4), mental health remains an emerging area of concern. Alcohol consumption is relatively lower in Uttarakhand, with 25.5 percent of men and only 0.3 percent of women reporting use, compared to national averages of 38 percent and 9 percent respectively. Despite lower prevalence, substance abuse continues to pose localized risks, particularly in vulnerable communities.

On road safety, Uttarakhand fares slightly better than the national picture. The road traffic death rate in the state (9.02 per 100,000) is lower than the national average (11.3), yet the figure remains high relative to the SDG target of halving traffic-related deaths by 2030. In reproductive health, Uttarakhand performs relatively well, with 71.2 percent of women reporting their need for family planning met with

modern methods, surpassing the national average of 66.7 percent. The adolescent birth rate (14.6 per 1,000 women aged 15–19) is also below the national figure (18.8), indicating comparatively better reproductive health outcomes for young women in the state.

In the domain of Universal Health Coverage (UHC), the state lags behind the national average in service delivery. Uttarakhand's UHC service coverage index is estimated at 58, lower than the national average of 63, reflecting limitations in healthcare access, particularly in the hilly regions. However, the state performs relatively well in terms of financial protection, as out-of-pocket health expenditure accounts for 12.5 percent of household consumption, compared to the national average of 16.1 percent. Immunization rates are also encouraging, with 82 percent coverage for vaccines such as DPT3, higher than the national average of 76.4, though still short of the universal target.

Complementing these outcome indicators, the state's healthcare infrastructure provides further insight into Uttarakhand's performance. As of the Health Dossier 2021, the state has 13 district hospitals (one in each district), 19 sub-district hospitals, and 6 medical colleges, of which 4 are government-run and 2 are private institutions managed by trusts or societies. Across all levels, there are 1,881 sub-centres and 420 health specialists serving more than 11 million residents. A comparative analysis with national indicators further highlights Uttarakhand's relative strengths and weaknesses. The state outperforms the national average in terms of Infant Mortality Rate (27 vs. 30), Maternal Mortality Ratio (99 vs. 113), and Total Fertility Rate (1.8 vs. 2.2). Life expectancy at birth is also higher in Uttarakhand (70.9 years) compared to India overall (69.4 years). However, the sex ratio at birth remains considerably worse (840 vs. 899), reflecting persistent gender-based disparities in survival and care.

Significant disparities exist within the state itself, particularly between the hill and plain districts. Although hill districts, which serve a population of 41.8 lakh, report a higher density of primary health centres (0.42 per 1,000 population compared to 0.122 in plain districts), they have only one medical college hospital compared to five in the plains. Conversely, plain districts with a population of nearly 70 lakhs enjoy better access to advanced hospital infrastructure, including more district and sub-district hospitals, but have fewer primary health facilities relative to their population. This uneven distribution illustrates a dual challenge: while the plains benefit from concentrated tertiary services, remote hill



regions remain underserved despite a wider distribution of basic health centres.

One of the most notable findings is related to the health workforce. Uttarakhand reports a health worker density of 51.77 per 10,000 population, significantly exceeding both the global benchmark of 44.5 and the national average of 21.9. This positions the state favourably in terms of workforce availability; however, challenges remain in ensuring equitable deployment between plain and hill districts. Despite this strength, the absence of data on critical indicators such as mortality attributable to air pollution, unsafe water and sanitation, and International Health Regulations (IHR) core capacity score highlights significant data gaps in environmental health and emergency preparedness, which are essential dimensions of SDG-3 monitoring.

Uttarakhand demonstrates notable progress in communicable disease control, immunization, family planning, financial protection, and health workforce availability. Yet, serious gaps persist in maternal health, neonatal survival, institutional delivery coverage, and service delivery under UHC. The dual burden of rising NCDs and environmental health risks, coupled with stark geographic disparities between hill and plain regions, presents a complex challenge. These findings suggest that while Uttarakhand is outperforming national averages in several areas, achieving SDG-3 targets by 2030 will require targeted interventions to address persistent maternal and child health gaps, strengthen UHC service delivery, and integrate environmental and mental health concerns into the state's health policy framework.

#### IV. Conclusion and Policy Implications

Achieving Sustainable Development Goal 3 in Uttarakhand requires an integrated, equity-oriented health strategy that addresses both persistent challenges and emerging health needs. While the state has made significant gains in immunization coverage, fertility reduction, and life expectancy, systemic weaknesses—such as high neonatal mortality, inadequate institutional deliveries, health workforce shortages, and pronounced disparities between hill and plain districts—continue to impede progress. The increasing burden of non-communicable diseases, mental health issues, and environmental risks further complicates this landscape.

Policy interventions must therefore focus on strengthening maternal and neonatal healthcare by improving referral systems and expanding institutional delivery coverage, particularly in remote and hilly regions. Bridging the rural–urban and hill–

plain divide in healthcare infrastructure, alongside deploying a trained health workforce in underserved areas, is critical. Expanding Universal Health Coverage through effective Ayushman Bharat implementation, reducing out-of-pocket expenditures, and enhancing health system financing will also be vital. Preventive strategies must be mainstreamed, including community-based suicide prevention, substance abuse programs, road safety initiatives, and targeted interventions for NCDs and mental health. Equally important is the integration of environmental health measures, such as air quality regulation, clean cooking solutions, and safe sanitation under Jal Jeevan Mission.

Ultimately, progress will depend on building a strong health information system, fostering inter-sectoral coordination, and enabling decentralized health governance suited to Uttarakhand's unique Himalayan geography and socio-cultural realities. If these measures are adopted with urgency and innovation, the state can convert its achievements into sustainable health outcomes and emerge as a model for advancing SDG-3 in other resource-constrained mountainous regions of India.

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