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SOCIO-DEMOGRAPHIC DETERMINANTS OF HEALTH: AN ANALYSIS OF LITERACY, FERTILITY, AND DISEASE IN HIMACHAL PRADESH

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Abstract

विद्या प्रशस्यते लौके: विद्या सर्वत्र गौरवा ।

विद्या लभते सर्व विद्वान सर्वत्र पूज्यते ॥

Knowledge is extolled by everyone, knowledge is considered great everywhere, one can attain everything with the help of knowledge. A knowledgeable person is respected everywhere. Human resource is a significant contributor in a developing country like India. The young generation needs to be inspired so that our country can march ahead on the road to development and progress. Successful completion of every major initiative depends upon the combined effort of all contributing factors. Similarly, progress of a nation rests upon how well its states are contributing. The majestic Himachal Pradesh, situated in North India, is known not only for its breath-taking natural beauty but also for its unique demographic and educational profile (Census of India, 2011). The state enjoys a high rate of literacy irrespective of the fact that majority of its population is based in rural and tough terrains (Government of Himachal Pradesh, 2021). Higher literacy, particularly among women, plays a significant role in shaping society. Studies have shown that female literacy strongly predicts lower fertility and infant mortality in India (Saurabh et al., 2013). National Family Health Survey data highlights how women's education is linked to declining fertility and improved demographic health outcomes.

Keywords: Demography, Population Density, Child Sex Ratio, Maternal Health, Non-Communicable, Non-Infectious Diseases.

Introduction

Population plays a decisive role in shaping the future of any community. Studying its characteristics—such as size, distribution, and composition—is essential for understanding both the potentials and the challenges of a region. The term population derives from the Latin word *populus*, meaning “people,” and the study of populations is known as demography. Coined by A. Guillard, demography fuses the Greek words *demos* (people) and *graphein* (to describe), reflecting its nature as an observational science reliant on systematic data collection and analysis. Demographic data includes key attributes like birth rate, death rate, sex ratio, population density, literacy, and healthcare indicators. In India, such data is chiefly collected through the decennial census and supported by additional surveys and official records. This paper examines the demographic attributes of Himachal Pradesh, with a particular emphasis on its tribal regions. Himachal Pradesh—famed for its soaring Himalayan peaks and snow-draped landscapes—is equally notable for its distinctive demographic and educational profile. Spanning an area of 55,673 km², Himachal Pradesh is politically divisible into 12 districts, Bilaspur, Hamirpur, Kangra, Kullu, Una, Shimla, Sirmour, Solan, Mandi and the tough terrains of Chamba,



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Kinnaur and Lahaul-Spiti. (State Profile retrieved from www.hpidp.org) (NFHS-5 2019-21). 2011 Census recorded a total population of “6,864,602” people in Himachal Pradesh, male and female ratio was good, with “3,481,73” males and “3,382,729” females (Census of India 2011a). Himachal Pradesh contributes approximately 0.57% to India’s total population (Census of India, 2011a). The sex ratio in Himachal Pradesh is better than few other states with a satisfactory number of 930 females per 1,000 males (Demography, Health Dossier 2021) and majority of the population, approximately 90% lived in rural areas, with a meagre 10% in urban centres (Health Dossier 2021) (Census of India, 2011b). 25.19% of the total population is comprised of “Scheduled Castes “(calculated from Primary Census Abstract, Himachal Pradesh, 2011) (Demography, Health Dossier 2021) and “Scheduled Tribes” form 5.71 % of the total population (Census of India, 2011c). Tribal populations were notably concentrated in Chamba, Lahaul–Spiti, and Kinnaur, together accounting for more than half of the state’s ST population.

State Profile of Himachal Pradesh (Census of India, 2011a and 2011b).

Total Population	68, 64, 602
Rural Areas	~90%
Urban Areas	~10%
Number of Scheduled Castes in the state	17,29,252
Number of Scheduled Tribes in the state	3,92,126
Cumulative Literacy Rate	82.8%
Literate Males	89.53%
Literate Females	75.93%
Political Divisions	12
Surface Area	55, 673 km ²

ST Dominant Districts of Himachal Pradesh

District	Percentage of ST Population
Lahaul-Spiti	81.44%
Kinnaur	57.94%
Chamba	26.10%



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SC Dominant Districts of Himachal Pradesh

District	Percentage of SC Population
Sirmaur	30.33%
Mandi	29.38%
Solan	28.3%

Demographic Profile

Sex Ratio: “Sex ratio refers to the number of females per 1000 males in a given area at a specified time period” (<https://ncert.nic.in>) . According to Census 2011 sex ratio at birth in Himachal was found to be 930 females for 1000 males. This number is higher than the national average of 899 (Health Dossier 2021)

Parity line can be described as a condition where there are 1000 females per 1000 males. Hamirpur, Kangra and Mandi lie above the parity line.

District	Sex ratio
Hamirpur	1095
Kangra	1012
Mandi	1007
Chamba	989
Lahaul-Spiti	903
Kinnaur	819

Population Density: It is defined as number of people living per square kilometre. According to the Census of 2011, population density of Himachal Pradesh was 123 persons/km², showing an increase of 14% in one decade (from 2001-2011). Hamirpur is densely populated with a population density of 407 persons/km² and Lahaul - Spiti is sparsely populated with merely 2 persons/km².

District	Population Density
Hamirpur	407
Una	338
Bilaspur	327
Chamba	80
Kinnaur	13
Lahaul-Spiti	2

Crude Birth Rate or Natality: It is defined as number of live births per thousand per year (World Health Organization). The Crude Birth Rate in the state has declined from 20.0 in 2005 to 15.7 in 2018 (Health Dossier



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2021) (Sample Registration Survey SRS Bulletin 2018 &19). It is lower than the national average of India. Decline in CBR is beneficial as it reduces the stress on resources, improves mother and child health and plays an important role in maintaining quality of life.

Crude Death Rate or Mortality: It is “a measure of mortality and represents the number of deaths per 1000 per year” (source: Wikipedia). The Crude Death Rate of Himachal according to the latest surveys is 6.9 (Census of India, 2011a). Low CDR indicates better standard of healthcare, availability of medical facility and awareness against diseases.

Crude Birth Rate	15.7
Crude Death Rate	6.9

Literacy

In Himachal Pradesh, significant educational progress is evident: the literacy rate increased from 76.5% in the year 2001 to 82.8% in 2011 with male and female literacy rates being 89.5% and 75.9 respectively (Census 2011). At the district level, literacy disparities remain notable. The literary rate was found to be as high as 88.15% in Hamirpur, 86.53% in Una and 85.67% in Kangra, among the tribal districts, Kinnaur recorded a literacy rate of 80.0%, Lahaul and Spiti stood at 76.81%, and Chamba trailed at 72.17%, highlighting ongoing educational challenges in geographically remote and underserved areas (Census 2011).

District	Literacy Percentage
Kinnaur	80.0%
Lahaul-Spiti	76.81%
Chamba	72.17%

(Source: Census 2011)

Child Population

The National Policy for Children, 2013 states that an individual who is below the age of eighteen years is considered to be a child. However more emphasis has been laid on the health of children belonging to the age group 0-6 years. Child population data helps to formulate policies for healthcare and education. According to Census 2011, Child in Himachal Pradesh was recorded to be 11.14% which is surprisingly lower than that recorded in 2001 (13.05%). This decline was seen in all districts across the state but the highest percentage of decline was recorded in Chamba (13.38%).

Decline in Child population ensures rational use of resources, less burden and improves quality of life.



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District	Decline in Child Population
Chamba	13.38%
Sirmaur	12.82%
Lahaul-Spiti	9.90%
Kinnaur	9.47%

Child Sex Ratio

The girl to boy ratio for the age group 0-6 years is called juvenile or Child Sex Ratio (<https://ncert.nic.in>). “In 2001 the Child Sex Ratio was 896 girls per thousand boys. However, in 2011 the Child Sex Ratio of the entire state had gone up and reached 906 girls per thousand boys” (MoHFW, 2021) This shows the state’s acceptance of girl child which is highly appreciable. According to the available data, district wise list of Himachal Pradesh by Child Sex Ratio is as follows:

District	Census 2001	Census 2011
Lahaul-Spiti	961	1033
Kinnaur	979	963
Kullu	960	962
Chamba	955	953
Sirmaur	934	928
Shimla	929	925
Mandi	918	916
Bilaspur	882	900
Solan	900	899
Hamirpur	850	887
Kangra	836	876
Una	837	875

Age

Elderly people aged 60 years and above in the state contribute 13 % of the state’s total population (Health Dossier 2021)

Expected Lifespan in Men (After 60)	Expected Lifespan in Women (After 60)
18 years	22.7 years

(Source: The Health Dossier 2021)

The life expectancy at birth in India is 70.7 (World Health Organization) which is lower than that in the state. Higher life expectancy is an indicator of overall good health of the population.



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Maternal Health

While motherhood is often a fulfilling and positive experience, in some cases it is associated with health complications, and in severe conditions may even prove fatal. The primary causes of maternal morbidity and mortality include severe bleeding, infection, high blood pressure (pre-eclampsia), and obstructed labour. Death of an infant, new born baby and a still birth are important indicators of maternal health and these numbers have significantly gone down (Health Dossier 2021) (Sample Registration Survey (SRS) Bulletin 2018 & 2019). Ensuring access to antenatal care, skilled care during childbirth, and postnatal support is crucial.

The National Health Mission has formulated a strategy named “Reproductive, Maternal, Newborn, Child, Adolescent Health and Nutrition” (RMNCAH+N) in 2013 with an objective to significantly improve maternal and child health services (NHM) (Health Dossier 2021). Key interventions include antenatal care, institutional deliveries, caesarean sections when required, iron-folic acid supplementation, high-risk pregnancy management, and postnatal care. (Health Dossier 2021) (HMIS 2019-20)

77.7 % of women in Himachal Pradesh received four antenatal check-ups. District-level variations are evident: Bilaspur, Kinnaur, Shimla, and Sirmaur reported better ANC coverage ranging from 75.3%–88.2%, whereas Chamba, Hamirpur, Kangra, Kullu, and Lahaul-Spiti lagged with 56.3%–65.6% (HMIS2019-20) (Health Dossier 2021)

Health Management Information System 2019–20 reported that 92.5% of deliveries in Himachal Pradesh were conducted by skilled professionals in health institutions, with 82.9% occurring in public health facilities (Health Dossier 2021). However, the caesarean section rate was 24.1%, significantly higher than the WHO-recommended 10–15% (MoHFW, 2020; WHO, 2018).

Postnatal care also shows progress, with 97.4% of women attending their first post-partum check-up between 48 hours and 14 days to total reported deliveries (HMIS 2019-20) (Health Dossier 2021). Anaemia remains a major concern among females coming in the bracket of 15–49 years, with its prevalence being nearly 53% (NFHS-5), also the women are three times more likely suffer from anaemia compared to men of the same age group (NFHS 4 & 5).

Women receiving 4 antenatal checkups	77.4%
Deliveries by skilled professionals	92.5 %
Rate of Caesarean Section	24.1%
Women turning up for first Post Partum check-up	97.4%



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New-born, Infant and Child Health

Since its inception in 2005, NHM has shown a significant decline in Infant Mortality Rate. Neonatal Mortality Rate or NNMR is the death of an infant under 29 days and still birth is the birth of a baby without any sign of life.

	2005	2018
IMR	48.6	19
NNMR	30	13
Still Birth	19	7

(Source: Health Dossier 2021)

IMR in Himachal Pradesh is significantly lower than the national average of 32 (Sample Registration Survey SRS Bulletin 2018 & 19)). The decline in these indicators has been possible due to strong initiatives taken at the state level and infrastructure strengthening like establishment of Facility Based Newborn Care Units. (NHM Himachal Pradesh)

Number of Facility Based Newborn Care Units in Himachal:

Special New Born Care Corners	16
New Born Stabilization Units	51
New Born Care Corners	124

(Source: NHM Himachal Pradesh)

	2006-10	2014-18
Life Expectancy at Birth	70 years	72.9 years

***National Average:** 69.4 years

According to the data of NFHS-5, 96.4 % children between 12-23 months of age have been fully vaccinated. There has been a considerable increase in this percentage when compared to NFHS-4.

Vaccination	NFHS-4	NFHS-5
DPT	85%	96%
Measles	88%	96%
BCG	95%	98%
Polio	82%	90%



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Almost 96% children in Himachal have been administered with all three recommended doses of Hepatitis B vaccine (NFHS-5).

Percentage of Children exclusively breast fed till the age of 6 months	
NFHS 4	67.2%
NFHS 5	70%

(Source: NFHS 5)

An increase in childhood anaemia has been reported. As per the data available in NFHS-5, anaemia in children belonging to the age group 6 to 59 months has increased to 55%. (NFHS 5)

Stunting or low height for age data as per NFHS-5

High Burden of Stunting (32.2 - 42.6)	Low Burden of Stunting (24.7 - 28.5)
Kinnaur	Una
Solan	Shimla
Kullu	Lahaul-Spiti
Bilaspur	Hamirpur
Chamba	Kangra

*Burden of Stunting in Himachal Pradesh is 25.5 on an average which is lower than the national average of 32.1.

Under-5 Wasting is the proportion of children who are underweight for their age. The data available in NFHS-5 has been summarized in the table.

High Burden of Under-5 Wasting (16.3 - 20.9)	Low Burden of Under-5 Wasting (11.3 -15.4)
Kangra	Kinnaur
Lahaul-Spiti	Bilaspur
Mandi	Una
Sirmaur	Hamirpur
Solan	Chamba

Family Planning

Family planning ensures a smaller family size and less burden on natural resources



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Trend of Total Fertility Rate

	2005	2018
TFR	2	1.6

Education plays a major role in controlling fertility rate. Women who have not received school education are reported to have more children than a woman with 12 or more years of formal education. Lower Fertility Rate ensures better mother and child health, population stability, sustainable use of natural resources, increased per capital income and improvement in the standard of living. It also offers women opportunities to pursue their education and career, achieve superior health and create a better life for their offsprings.

Unmet needs are requirements that are not being fulfilled. One of the vital unmet need in Himachal is access to family planning.

Total Unmet need in State (NFHS-5)	7.9%
Total Unmet need for Spacing (NFHS-5)	2.8%

(source: NFHS-5, 2019-21)

National Family Health Survey data states that in females aged 25-29 years, the median age at first marriage should is 22.5 years (NFHS 2019-21)

Contraceptive Prevalence Rate (CPR) among married women:

CPR in women (NFHS-4)	57%
CPR in women (NFHS-5)	74%
Female Sterilization (NFHS-4)	35%
Female Sterilization (NFHS-5)	38%
Acceptance of Surgical Method for FP in Females	37.7%
Acceptance of Surgical Method for FP in Males	3.3%



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Approximately 63.4% of married women reported to avail any modern method of family planning in the state (NFHS-5) however surgical methods of family planning are not so common with the percentage of their acceptance being quite low.

Communicable or Infectious Diseases

A communicable or infectious disease is one that can be transmitted from an infected person to a healthy individual. In Himachal Pradesh, the key communicable diseases of concern include dengue, hepatitis A and E, swine flu, scrub typhus, and tuberculosis. The proportion of communicable, maternal, neonatal, and nutritional diseases [CMNND] contribute to 20.81% of the total disease burden (Global Burden of Disease Data, 2019 <https://vizhub.healthdata.org/gbd-compare>). Lower respiratory tract infection is one the leading causes of mortality in Himachal (Health Dossier 2021) (Global Burden of Disease Data, 2019).

Himachal Pradesh currently has 12 functional Integrated Disease Surveillance Programme (IDSP) units, supporting surveillance and rapid response (MoHFW, 2020). As per TB Progress Reports, the annual total case notification rate in the state is 210 per 100,000 population with a new smear-positive success rate of 87%, higher than the national average of 163 and 79% respectively (MoHFW, 2021). The prevalence rate of leprosy is reported as 0.18 per thousand, below the national average of 0.61 (MoHFW, 2020). In 2019–20, two deaths from dengue were reported, while no deaths occurred from malaria (MoHFW, 2020).

Non-Communicable or Non-Infectious Diseases and Injuries

Premature deaths resulting from non-communicable or non-infectious diseases contribute 59% of the disease burden, while disability contributes another 41%.

Among few of the reasons for Disability Adjusted Life Years (DALYs) in Himachal are coronary artery disease and chronic bronchitis (ICMR, PHFI & IHME, 2017) (Health Dossier 2021). NCDs and injuries together contribute 67.83% and 11.36% of DALYs respectively.

Himachal Pradesh ranks 20th in India for fatal road accidents (MoRTH, 2020). Lifestyle risks such as tobacco and alcohol use are also significant. According to NFHS-5, 32.3% of men use tobacco in any form compared to 1.7% of women, while 31.9% of men consume alcohol compared to 0.6% of women (IIPS & MoHFW, 2021).

Health Care Financing

Healthcare expenditure plays a vital role in shaping population health. In India, healthcare financing is primarily a state government responsibility, with support from centrally sponsored schemes. The Net State Domestic Product (NSDP) of Himachal Pradesh was reported at ₹1,33,303 crores in 2018–19, with a per capita income of ₹1,83,108, ranking the state 14th nationally (MoSPI, 2020).

“According to the National Health Accounts (2017–18), per capita Government Health Expenditure in the state is ₹3,177, which is higher than the national average of ₹1,753” (Health Dossier 2021).



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Out-of-pocket expenditure (OOPE) as a share of Total Health Expenditure is 49.2%, which is more than the national average of 48.8% (Health Dossier 2021)

As per NSS 2017-18, the OOPE for IPD care and childbirth in **rural areas** is as shown in the table:

	Public Facility	Private Facility
In Patient Department	₹14,874	₹45,971
Childbirth	₹3,893	₹27,058

(source: Health Dossier 2021)

However, the OOPE for IPD care and childbirth in **urban areas** is as follows:

	Public Facility	Private Facility
In Patient Department	₹ 12,415	₹ 31, 447
Childbirth	₹ 6,700	₹25,914

(source: Health Dossier 2021)

Health Infrastructure

As per the recent RHS data, the number of health centres in Himachal has been increasing since 2005. (Health Dossier 2021)

Public Health Facility	In Place	Required
Sub Centre	2092	1375
Primary Health Centre	564	226
Community Health Centre	85	56

The state has 9 District Hospitals, 83 Sub Divisional Hospitals and 6 Government Medical Colleges. In **tribal areas**, the data recorded is as follows:

Public Health Facility	In Place	Required
Sub Centre	105	133
Primary Health Centre	47	20
Community Health Centre	8	5

The flagship scheme of Government of India introduced **Ayushman Bharat – Health and Wellness Centre** to achieve universal health coverage. State of Himachal Pradesh is fully committed to effectuating Health and Wellness Centres in all Health Working Centres (Health Dossier 2021)



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Number of Health Working Centres are listed below:

Health Centre	Number
SC	2092
PHC	564
CHC	85

(source: Health Dossier 2021)

According to information available on Ayushman Bharat- Health and Wellness Centre portal all 12 districts of Himachal Pradesh are equipped with Mobile Medical Units.

Conclusion

Literacy plays a key role in the demographic transition of a society. A literate person is one of the most important indicators of overall development and growth. It directly influences marriageable age, fertility rate, infant and maternal health, life expectancy, and migration patterns. An increase in the percentage of educated females has enhanced their workforce participation and reduced economic dependence on families, thereby leading to greater empowerment (Census of India, 2011). Since Independence, the status of women in India has undergone significant transformation. Education has not only elevated women's social position but has also enabled them to become active contributors to the development process. Higher female literacy has played a vital role in promoting family planning, reducing fertility, and improving maternal and child health (UNESCO, 2014). Literate individuals are more aware of nutrition, hygiene, sanitation, immunization, and healthcare services, thereby demanding better facilities. Migration for education and employment further reshapes population distribution and socio-economic dynamics. It is therefore justified to say that literacy is the driving force behind demographic trends. A better-educated generation ensures smaller, healthier families and contributes more effectively to economic growth. Literacy thus directly fosters balanced demographic development.

Summing up, in the golden words of Nelson Mandela, "Education is the most powerful weapon which you can use to change the world."

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