Availability of basic household amenities in Himachal Pradesh: An intra districts variation

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ABSTRACT:

Access to adequate housing and basic amenities, such as drinking water and sanitation, is essential for human development. In developing countries, like India, the access is unequally distributed and poor remain deprived of adequate housing facilities. Basic amenities like drinking water, sanitation, electricity and drainage is integral for a decent quality of life. Objective is to access the availability of basic amenities of households among social group of rural and urban areas of Himachal Pradesh. A stratified two-stage sampling design was adopted during the study. First stage sampling, the selection of census village in the rural areas and urban frame survey block in the urban sector. The second stage sampling was selection of the households. The study extracted data for Himachal Pradesh households from the study conducted by NSSO, Government of India. The study shows that the average monthly consumer expenditure for Himachal Pradesh was Rs.8628 where as intra variation district-wise was found between range Rs.12326 and Rs 7123. Una (Rs.12326) reported more expenditure and Mandi (Rs.7123) reported minimum expenditure. Monthly per capita expenditure was Rs.1972, more monthly per-capita expenditure found for Una (Rs.2833) and minimum found for Kinnaur (Rs.1659).Average sample size all districts have 5 members in Family. Septic tank/ flush system (80 %), Tap (86%), open kutcha (32%) and open pucca (27%) and firewood and chips (62%) were the main sources of sanitation, drinking water, drainage system and cooking fuel in Himachal Pradesh. Intra variation of districts shows, Hamirpur (92 %) and Bilaspur (84%), Septic tank/ flush system as main source of sanitation and Covered pucca drainage found in Lahul & Spiti (44%), Tap water found more in Lahul & Spiti (100%) and Kinnaur (100%) and where as Lahul & Spiti (88%) and Bilaspur (80%) showed LPG and Firewood and chips as main source of cooking fuel. Urban(91%), Non Hindu (84%)and Non SC(82%) and richest (94%) and one as well as more than three members family used as septic tank/ flush system as source of latrine. Urban (90%), other category of religion (84%)and each SC and Non SC(86%) and all quintiles has more than 90% and one members family(96%) used as septic tank/ flush system as source of drinking water. Urban (84%) self employed in non agriculture (61%), other (60%), Non SC (36%), Three member family (55%) and richest (66%) used more LPG than rural (21%) as source of cooking fuel respectively. From above results, it concluded that sanitation and drinking water is progressively in all districts of Himachal Pradesh. Government need to frame policy regarding improvement in drainage system, and improve cooking fuel in Himachal Pradesh.

Keywords: *Basic households Amenities, Cooking fuel, Drinking water, Monthly per capita expenditure (MPCE), Sanitation.*

I.INTRODUCTION

Access to adequate housing and basic amenities, such as drinking water, is essential for human development. In developing countries, like India, the access is unequally distributed and poor remain deprived of adequate housing facilities. Millennium development goals for India aim at improving access to safe drinking water and sanitation facilities by 2015. India is progressing towards achieving these goals, however regional variations are observable [1]. The access to basic amenities like electricity, drinking water, toilet facility, clean fuels etc are the determinants of quality of life. The access to basic amenities like electricity, drinking water, toilet facility and clean fuel are critical determinants of quality of life in most of the developing countries like India. Housing conditions and access to household's basic amenities are closely related to health status of family members. Poor condition of housing effect current as well as future health status of family members.[2] Many developed countries show inequality in housing across racial and ethnic communities [3-5]. Various study showed that better housing facilities are correlated with higher economic and social status [6-8]. Inequality is also seen in housing and examines access to basic amenities, namely, electricity, toilet facility and safe drinking water; across states in urban India. [9] The positive relation between political contacts and access to basic amenities found among slum dweller in Delhi.[10] In India, rural (46.1%) and urban (76.8%) has drinking water facilities within premises. In rural (32.3%) and urban (54.4%), the treatment of water was done by any method before drinking. Open defecation found 59.4% in rural and 8.8% in urban households.[11] Approximately 884 million people lack access to safe water sources and more than 2.6 billion people do not have access to sanitation [12]) [13]. Access to clean water and sanitation is also a major challenge faced by disabled people around the world [14] although concrete numbers do not exist. Access to toilets is also essential to disabled girls and boys [15-16] however no numbers exist as to extend of this problem. Sustainable management of water resources is seen as vital for economic growth, public health, food security and stable societies [17]. Access, availability and affordability to water and sanitation, is seen as essential for sustainable development and poverty eradication [18]. According to the World Health Organization World Report on Disability and Rehabilitation, "Households with a disabled member are more likely to experience material hardship including food insecurity, poor housing, lack of access to safe water and sanitation, and inadequate access to health care" [19]. Furthermore, "people with disabilities have poorer health outcomes, lower education achievements, less economic participation and higher rates of poverty than people without disabilities" [19]. Cramped urban settings are often linked to decrease in water and sanitation access with over proportional negative impact on disabled people [20]. Bharat Nirman and the Jawaharlal Nehru National Urban Renewal Mission (JnNURM) important programs launched in 2005 in order have contribution to development on rural and urban areas respectively. Under Bharat Nirman, various schemes (for improving the access to basic amenities in rural areas with special provisions for poor, excluded and marginalised groups), such as rural housing (Indira AwaasYojana), rural drinking water supply

(National Rural Drinking Water Programme under Rajiv GandhiNational Drinking Water Mission), Total Sanitation Campaign (which has been renamed Nirmal Bharat Abhiyan in May 2012 by the Ministry of Drinking Water and Sanitation), rural electrification (Rajiv Gandhi GrameenVidyutikaranYojana) among others, are functioning.

II.DATA AND METHODOLOGY

Objective:

1. To access the availability of basic household amenities in Himachal Pradesh.
2. To see the intra variation of basic household amenities among districts of Himachal Pradesh

Study area

Himachal is in the western Himalayas. Covering an area of 55,673 square kilometres (21,495 sq mi)[21] it is a mountainous state. At 6,816 m Reo Purgyil is the highest mountain peak in the state of Himachal Pradesh.[22] The drainage system of Himachal is composed both of rivers and glaciers. Himalayan rivers criss-cross the entire mountain chain. Himachal Pradesh provides water to both the Indus and Ganges basins.[23] Himachal Pradesh has a total population of 6,864,602 including 3,481,873 males and 3,382,729 females as per the final results of the Census of India 2011. This is only 0.57 per cent of India's total population, recording a growth of 12.81 per cent[24] The scheduled castes and scheduled tribes account for 25.19 per cent and 5.71 per cent of the population respectively.[25]The sex ratio stood at 972 females per 1000 males, recording a marginal increase from 968 in 2001.[26] The child sex ratio increased from 896 in 2001 to 909 in 2011.[26] The total fertility rate (TFR) per woman in 2015 stood at 1.7, one of the lowest in India.[27]

Study design

The study design based on the secondary data set of a nationwide survey collected by the National Sample Survey Organisation (NSSO), India.

Data source

The data source was the representative nationwide survey collected by the National Sample Survey Organization (NSSO) in its 71st round (2014) on ‘Health’ and ‘Education’. The data was collected in all states of India from January 2014 to June 2014. For this study unit levels data extracted for the Himachal Pradesh state for the mentioned above period.

Methodology

Two- state stratified sampling design was used for the study. First stage sampling covered the selection of census village in the rural areas and urban frame survey block in the urban sector. In second stage sampling covered household was selected by using random sampling. Survey covered total of 4577 villages and 3720 urban blocks were surveyed from which 36,480 and 29,452 households were sampled in rural and urban areas respectively. Survey covered 65,932 households and 333,104 persons were interviewed all over 36 states of India. For current study, unit data is extracted for urban and rural households in Himachal Pradesh.

Data analysis

Data was analysed using SPSS version 21.0 for analysis (SPSS Inc. SPSS Statistics for Windows, Version 21.0. Chicago). Wealth quintiles are calculated for all households using monthly per capita consumption expenditures. Based upon this, the households divide into five groups, ranging from the bottom 20% of the sample with lowest consumption expenditure, to the top 20% households of the sample with highest consumption expenditure. Data is extracted based on basic households amenities type of latrines, drainage system, types of cooking fuel, sources of drinking water and characteristics like religion, caste, family size, and nature of house type, urban and rural areas.

III.RESULT

Variation in average household monthly consumption expenditure (Rs.).

Average households consumer expenditure (Rs 8628), Monthly per capita consumer expenditure (Rs. 1972) and average family size 5 was found for Himachal Pradesh. Intra variation for districts shows average monthly consumption expenditure maximum for Una (Rs. 12326) and more than Rs. 8000 expenditure found in Kinnaur (Rs.8031), Bilaspur (Rs.8839), Shimla (Rs.8909), Sirmaur (Rs.8965), Hamirpur (R.9408), Solan (Rs.9162) and Hamirpur (Rs.9408) and remaining districts shows expenditure below Rs.8000 as Mandi (Rs.7123), Kullu (Rs.7341), Chamba (Rs.7757), Kangra (Rs.7567) respectively.(Table 1)

Variation in average monthly percapita household consumption expenditure (Rs.).

Intra variation for districts shows monthly per capita average consumption expenditure maximum for Una (Rs. 2833) and more than Rs. 2000 expenditure found in Lahul & Spiti (Rs.2322), Hamirpur (Rs.2221),Shimla (Rs.2083), Solan (Rs. 2024), Bilaspur (Rs.2126) where remaining shows less than Rs.2000 as Chamba (Rs.1629), Kangra (Rs.1821), Kullu (Rs.1695), Mandi (Rs.1709) and Sirmaur (Rs.1694) respectively. (Table 1)

Variation in average family size

Most of districts has average 5 member family size, whereas Lahul & Spiti and Sirmaur shows 4 and 6 average family size.(Table 1)

Table 1: District-wise average monthly consumer expenditure (Rs.) Monthly percapita consumer expenditure and household size in Himachal Pradesh

Name of districts	Average monthly Household consumer expenditure (Rs.)	Average Monthly Per capita consumer expenditure (Rs.)	Average Household size
Chamba	7757	1629	5
Kangra	7567	1821	5
Lahul & Spiti	7656	2322	4
Kullu	7341	1695	5
Mandi	7123	1709	5

Hamirpur	9408	2221	5
Una	12326	2833	5
Bilaspur	8839	2126	5
Solan	9162	2024	5
Sirmaur	8965	1694	6
Shimla	8909	2083	5
Kinnaur	8031	1659	5
Himachal Pradesh	8628	1972	5

Latrine services (2%), pit (7%), septic tank/ flush system (80%) shows availability of different type of latrine in Himachal Pradesh where as 10 % houses do not have latrine. (Table2)

Latrine among Area

Services latrine found in rural (2%) and urban (2%), Pit latrine found in rural (9%) and urban (1%), septic tank/ flush system found in rural (77%) and urban (791%) and other latrine found in urban (1%) respectively. Open defecation found rural (12%) and urban (7%) respectively. (Table2)

Latrine among Religion

Services latrine found in Hindu (2%), Non-Hindu (1%) and other (4%), Pit latrine found in Hindu (7%), Non-Hindu (2%) and other (12%), septic tank/ flush system found in Hindu (812%), Non-Hindu (84%) and other (80%) respectively. Open defecation found in Hindu (10%), Non-Hindu (12%) and other (4%) respectively.

Latrine and social group

Services latrine found in SC (3%) and Non-SC (1%), Pit latrine found in SC (15%) and Non-SC (7%), septic tank/ flush system found in SC (64%) and Non-SC (82%), respectively. Open defecation found in SC (16%) and Non-SC (10%) respectively. (Table2)

Type of drainage among Area

Open kutch (36%), open pucca (24%), covered pucca (11%) and underground (3%) were the main source of drainage in rural and Open kutch (15%), open pucca (38%), covered pucca (28%) and underground (18%) were the main source of drainage in urban area. (Table 2)

Type of drainage among Religion

Open kutch (32%), open pucca (27%), covered pucca (15%) and underground (6%) were the main source of drainage in Hindu households and Open kutch (54%), open pucca (24%), covered pucca (4%) and underground (2%) were the main source of drainage in non Hindu where as Open kutch (16%), open pucca (36%), covered pucca (12%) and were the main source of drainage in other households. (Table2)

Type of drainage and social group

Open kutch (30%), open pucca (8%), covered pucca (11%) and underground (2%) were the main source of drainage in SC households and Open kutch (32%), open pucca (29%), covered pucca (15%) and underground (6%) were the main source of drainage in Non-SC households. (Table2)

Major source of drinking water

Tap (86%), tube-well/hand pump (8%), pucca well (2%) and other (3%) were the main source of drinking water in Himachal Pradesh. (Table2)

Major source of drinking water among Area

Tap (85%), tube-well/hand pump (8%), pucca well (3%) and other (3%) were the main source of drinking water in rural households where as Tap (95%), tube-well/hand pump(0%), tanker(1), pucca well (0%) and other (4%) were the main source of drinking water in urban households.(Table2)

Major source of drinking water among Religion

Tap (86%), tube-well/hand pump (8%), pucca well (3%) and other (3%) were the main source of drinking water in Hindu, Tap (95%), tube-well/hand pump(0%), tanker(1%), pucca well (0%) and other (4%) were the main source of drinking water in Non Hindu and Tap (100%) found in other. (Table2)

Major source of drinking water and social group

Tap (86%), tube-well/hand pump (0%), tank (1%), pucca well (2%) and other (10%) were the main source of drinking water in SC, Tap (86%), tube-well/hand pump (9%), tanker (0%), pucca well (2%) and other (10%) were the main source of drinking water in Non SC households. (Table2)

Primary source of energy for cooking

Firewood and chips (62%), LPG (35%), Charcoal/kerosene (2%) were main source of fuel in Himachal Pradesh.

Primary source of energy for cooking among Area

Firewood and chips (75%), LPG (21%), Charcoal/kerosene (3%) were main source of fuel in rural households and Firewood and chips (12%), LPG (84%), Charcoal/kerosene (3%) were main source of fuel in urban household.(Table2)

Primary source of energy for cooking among Religion

Firewood and chips (62%), LPG (34%), Charcoal/kerosene (2%) were main source of fuel in Hindu households, Firewood and chips (69%), LPG (25%), Charcoal/kerosene (6%) were main source of fuel in Non Hindu households, Firewood and chips (40%), LPG (60%)were main source of fuel in other households. (Table2)

Primary source of energy for cooking and social group

Firewood and chips (74%), LPG (25%), Charcoal/kerosene (1%) were main source of fuel in SC households and Firewood and chips (61%), LPG (36%), Charcoal/kerosene (2%) were main source of fuel in Non –SC households. (Table2)

Table2: Availability of type of latrine, drainage system, source of drinking water and Energy source of cooking among household characteristics in Himachal Pradesh

			Area		Religion			Social Group	
		Overall	Rural	Urban	Hindu	Non Hindu	Other	SC	Non SC
Type of	latrine: service	2	2	2	2	1	4	3	2

latrine	Pit	7	9	1	7	2	12	15	7
	septic tank/ flush system	80	77	91	81	84	80	64	82
	No Latrine	10	12	6	10	12	4	16	10
	others	0	0	1	0	0	0	1	0
Type of drainage	open kutcha	32	36	15	32	54	16	30	32
	open pucca	27	24	38	27	24	36	8	29
	covered pucca	15	11	28	15	4	12	11	15
	underground	6	3	18	6	2	0	2	6
	no drainage	20	26	2	20	16	36	48	17
Major source of drinking water	bottled water	0	0	1	0	0	0	0	0
	tap	86	85	90	86	95	100	86	86
	tube-well/hand pump	8	8	8	8	0	0	0	9
	tankers	0	0	1	0	1	0	1	0
	pucca well	2	3	2	3	0	0	2	2
	others	3	4	0	3	4	0	10	3
Primary source of energy for cooking	coke, coal	0	0	0	0	0	0	0	0
	firewood and chips	62	75	12	62	69	40	74	61
	LPG	35	21	84	34	25	60	25	36
	Gobar gas/ dung cake	0	0	0	0	0	0	0	0
	charcoal	1	2	0	1	0	0	0	1
	Kerosene	1	1	3	1	6	0	1	1
	No cooking	0	0	1	0	0	0	0	0

Latrine and family size

Services latrine found in one member (4%), three member (1%) and more than 3 member (2%), Pit latrine found in one member (9%), two member(13%),three member(5%) and more than 3 member (7%), septic tank/ flush system found in one member (78%), two member (79%), three member (88%) and more than 3 member (79%) and other latrine found in three member (1%) and more than three members (12%) respectively. Open defecation found in one member (9%), two members (7%), three members (5%) and more than 3 members (12%) respectively.

Latrine and socio-economic status

Services latrine found in Poorest (2%), Poor (1%), Medium (2%), rich (2%) and richest (2%), Pit latrine found in Poorest (12%), Poor (11%), Medium (7%), rich (6%), richest (0%), septic tank/ flush system found in Poorest (65%), Poor (73%), Medium (80%), rich (87%), richest (94%) and other latrine found Poor (1%) and Medium

(1%) respectively. Open defecation found in Poorest (21%), Poor (15%), Medium (10%), rich (4%), and richest (5%) respectively.

Type of drainage and family size

Open kutch (51%), open pucca (24%), covered pucca (11%) and underground (4%) were the main source of drainage in one member, Open kutch (28%), open pucca (40%), covered pucca (10%) and underground (2%) were the main source of drainage in two member family, Open kutch (24%), open pucca (30%), covered pucca (21%) and underground (12%) were the main source of drainage in three member family and Open kutch (32%), open pucca (26%), covered pucca (14%) and underground (5%) were the main source of drainage in more than three member family

Type of drainage and socio-economic status

Open kutch (45%), open pucca (20%), covered pucca (9%) and underground (2%) were the main source of drainage in poorest, Open kutch (36%), open pucca (22%), covered pucca (12%) and underground (5%) were the main source of drainage in poor, Open kutch (36%), open pucca (26%), covered pucca (12%) and underground (4%) were the main source of drainage in medium, Open kutch (28%), open pucca (35%), covered pucca (16%) and underground (3%) were the main source of drainage in rich and Open kutch (13%), open pucca (32%), covered pucca (16%) and underground (17%) were the main source of drainage in richest group

Major source of drinking water and family size

Tap (96%), tube-well/hand pump(2%), Tanker(0%), pucca well(2%) and other (0%) were the main source of drinking water found in one member family, Tap (88%), tube-well/hand pump(6%), Tanker(0%), pucca wel l(4%) and other (2%) were the main source of drinking water found in two member family, Tap (86%), tube-well/hand pump(8%), pucca well (4%) and other (2%) were the main source of drinking water found in three member family, Tap (85%), tube-well/hand pump(8%), pucca well (3%) and other (4%) were the main source of drinking water found in more than three member family

Major source of drinking water and socio-economic status

Tap (89%), tube-well/hand pump (2%), tanker(1%), pucca well(3%) and other (6%) were the main source of drinking water in poorest, Tap (87%), tube-well/hand pump (7%), pucca well (3%) and other (3%) were the main source of drinking water in poor, Tap (86%), tube-well/hand pump(9%), pucca well (2%) and other (4%) were the main source of drinking water in medium, Tap (84%), tube-well/hand pump(11%), pucca well(2%) and other (2%) were the main source of drinking water in rich and Tap (85%), tube-well/hand pump (8%), tanker(1%), pucca well(3%) and other (3%) were the main source of drinking water in richest houses.

Primary source of energy for cooking and family size

Firewood and chips (44%), LPG(47%), Charcoal/kerosene (4%) were main source of fuel in one member family, Firewood and chips (57%), LPG(42%), Charcoal/kerosene (1%) were main source of fuel in two members family, Firewood and chips (39%), LPG(55%), Charcoal/kerosene (5%) were main source of fuel in three members family, Firewood and chips (67%), LPG(30%), Charcoal/kerosene (3%) were main source of fuel in more than three members family respectively.

Primary source of energy for cooking and socio-economic status

Firewood and chips (76%), LPG(21%), Gobar gas(0.5%),Charcoal/kerosene (2%) were main source of fuel in poorest, Firewood and chips (67%), LPG(27%), Charcoal/kerosene (5%) were main source of fuel in poor, Firewood and chips (70%), LPG(27%), Charcoal/kerosene (4%) were main source of fuel in medium, Firewood and chips (61%), LPG(37%), Charcoal/kerosene (3%) were main source of fuel in rich, Firewood and chips (33%), LPG(66%), Gobar gas (0.5%),Charcoal/kerosene (1%) were main source of fuel in richest households.

Table 3: Availability of type of latrine, drainage system, source of drinking water and Energy source of cooking among household characteristics in Himachal Pradesh

		Family Size				Scio-Economics status				
		One Member	Two member	Three member	> Three members	Poorest	Poor	Medium	rich	richest
Type of latrine	latrine: service	4	0	1	2	2	1	2	2	1
	Pit	9	13	5	7	12	11	7	6	0
	septic tank/ flush system	78	79	88	79	65	73	80	87	94
	No Latrine	9	7	5	12	21	15	10	4	5
	others	0	0	1	0	0	1	1	0	0
Type of drainage	open kutcha	51	28	24	32	45	36	36	28	13
	open pucca	24	40	30	26	20	22	26	35	32
	covered pucca	11	10	21	14	9	12	12	16	26
	underground	4	3	12	5	2	5	4	3	17
	no drainage	9	18	14	23	24	26	22	18	12
Major source of drinking water	bottled water	0	0	0	0	0	0	0	0	0
	tap	96	88	86	85	89	87	86	84	85
	tube-well/hand pump	2	6	8	8	2	7	9	11	8
	tankers	0	1	0	0	0	1	0	0	1
	pucca well	2	0	4	3	3	3	2	2	3
	others	0	4	2	4	6	3	4	2	3
Primary source of energy for cooking	coke, coal	0	0	1	0	0	1	0	0	0
	firewood and chips	44	57	39	67	76	67	70	61	33
	LPG	47	42	55	30	21	27	27	37	66
	Gobar gas/ dung cake	0	0	0	0	0	0.5	0	0	0.5

	charcoal	0	1	0	2	0	1	2	3	1
	Kerosene	4	0	5	1	2	4	2	0	0
	No cooking	4	0	0	0	1	0	0	0	0

Services (2%), Pit (7%), Septic tank/ flush system (80%) and other (0.2%) were the source of latrine in Himachal Pradesh. Service found in Solan (7.5%), Una (1.3%), Shimla (5.5%) and Sirmaur (2.5%) respectively. Pit Latrine found less than 15% in Shimla (0.8%), Una (2.5%), Solan (3.8%), Hamirpur (3.1%), Chamba (7.5%), Kangra (8%), Kullu (10.9%) and more than 15% in Mandi (21.4%), Lahul & Spiti (25%) and Kinnaur (56.3%) respectively. Septic tank/ flush system found less than 50% in Kinnaur (43.8%), 50%-80% in Lahul & Spiti (56.3%), Mandi (74.1%), Kullu (79.7%), Kangra (78.6%), Chamba (78.8%) and, Solan (78.8%) and more than 80% in Bilaspur (81.3%), Sirmaur (81.3%), Una (83.8%), Shimla (85.9%) and Hamirpur (92.2%) respectively. Districts with no latrine less than 10% found in Kullu (7.8%),Shimla (7.8%), Hamirpur (4.7%) and Mandi (4.5%) and 10-20% found in Lahul & Spiti (18.8%), Bilaspur (18.8%), Sirmaur (16.3%), Kangra (13.4%), Chamba (12.5%) Una (12.5%) and Solan (10%) respectively, where as other latrine found in Chamba (1.3%), Kullu (1.6%).Fig 1

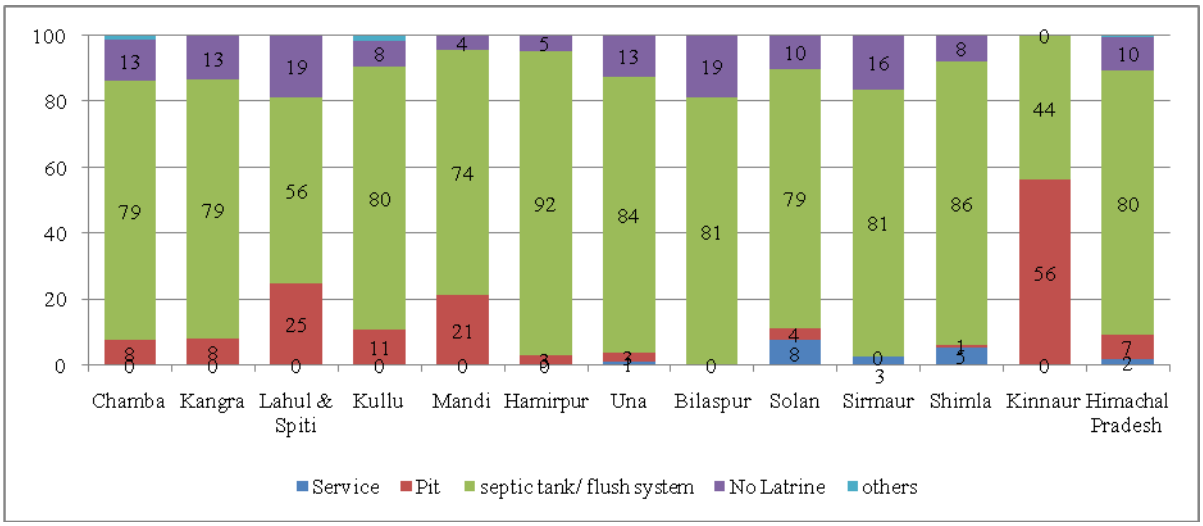

Figure 1: District-wise availability of types of Latrine in Himachal Pradesh

Open kutch (32%), Open pucca (27%), cover pucca (15%), underground (6%) was the source of drainage in Himachal Pradesh where 20% household have no drainage system. Intra variation in districts shows less than 30% open kutcha drainage in Kullu (19%), Chamba (13%), Sirmaur (13%), 30-60% in Bilaspur (56%), Hamirpur (50%), Kangra (40%), Solan (39%), Mandi (36%) respectively. Open pucca drainage found less than 30% in Mandi (29%), Shimla (23%), Chamba (20%), Sirmaur (9%) and 30-60 % in Solan (30%), Bilaspur (30%), Una (33%), Hamirpur (33%), Kangra (38%) and Kullu (41%). Covered pucca drainage found less than 15% in Solan (9%), Hamirpur (8%) and Kangra (4%). Underground drainage found in less than 25% in Sirmaur

(21%), Solan (15%), Una (11%), Hamirpur (9%), Shimla (6%), Mandi (1%) respectively. Non availability of drainage less than 20 % found in Mandi (19%), Kangra (19%), Kullu (11%), Solan (8%), Bilaspur (2%), >20% non availability found in Shimla (23%), Lahul & Spiti (25%),Sirmaur (41%), Chamba(55%) and Kinnaur (100%) respectively.(Fig2)

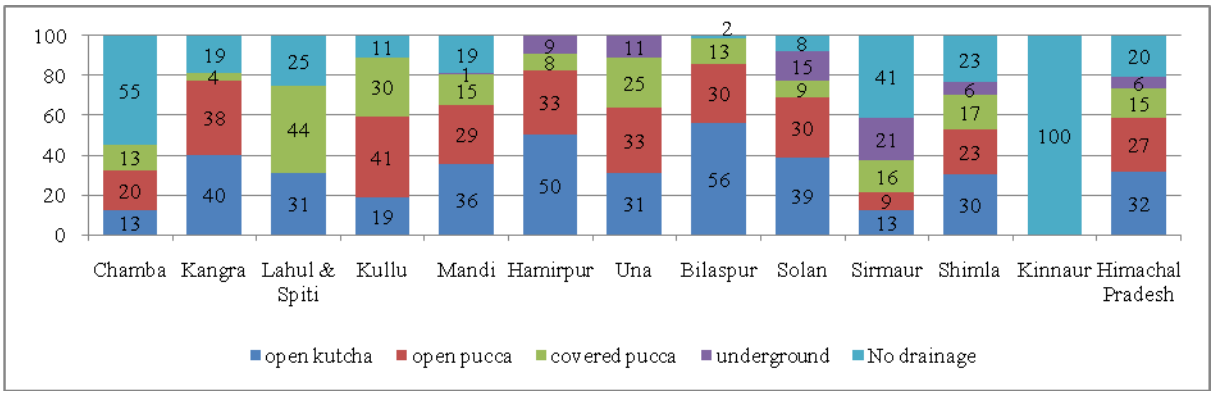

Figure 2: District-wise availability of drainage system in Himachal Pradesh

Coke & coal fuel found in Kangra and Mandi each1%, Firewood and chips found more than 80% in Kinnaur (100%) and Bilaspur (80%), 80-60% found in Chamba (73%), Mandi (72%), Sirmaur (63%), Shimla (6%) and Solan (60%) where less than 60% found in Hamirpur (58%), Kangra (54%),Una (52%), Kullu (48%) respectively. LPG found in Lahul & Spiti (88%), 30-50% found in Una (48%), Kullu (48%), Kangra (44%), Hamirpur (42%), Solan (34%), Shimla (32%) and less than 30 % found in Mandi (27%), Sirmaur (26%), Chamba(25%) and Bilaspur (18%) respectively. Gobar gas found in Bilaspur (2%) and dung cake found in Kangra (1%), Charcoal found in Sirmaur (10%) and Solan (5%) respectively, where as kerosene found in Lahul & Spiti (13%), Shimla(4%), Kullu(3%),Chamba (3%),Sirmaur (1%) and Solan (1%) respectively.(Fig3)

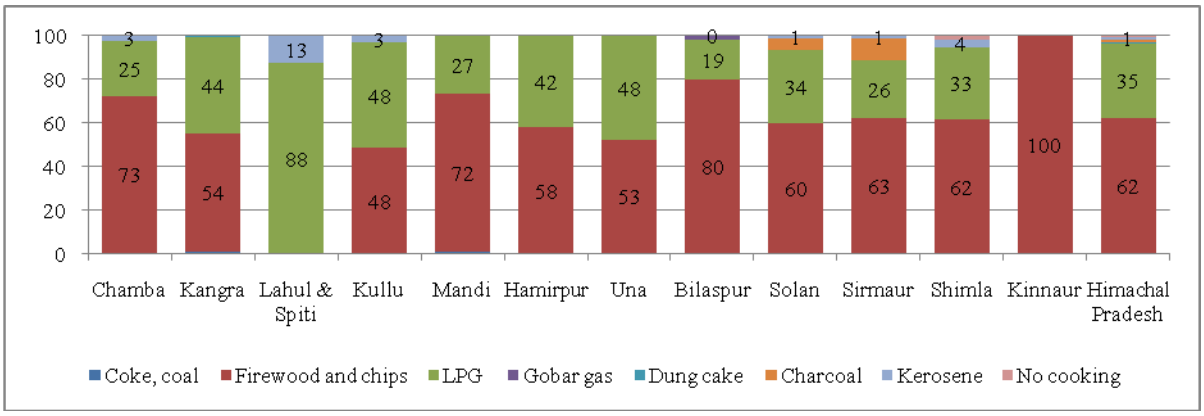

Figure 3: District-wise availability of source of cooking in Himachal Pradesh

Bottle water found in Kullu (2%), Tap water found more than 90% in Lahul & Spiti (100%),Kinnaur (100%), Shimla (99%), Mandi (98%), Kullu (97%), 80-90% found in Solan (90%), Sirmaur (88%), Una (85%) and

Chamba (83%) and less than 70% found in Kangra (76%), Hamirpur (66%) and Bilaspur (58%) respectively.(Fig4)

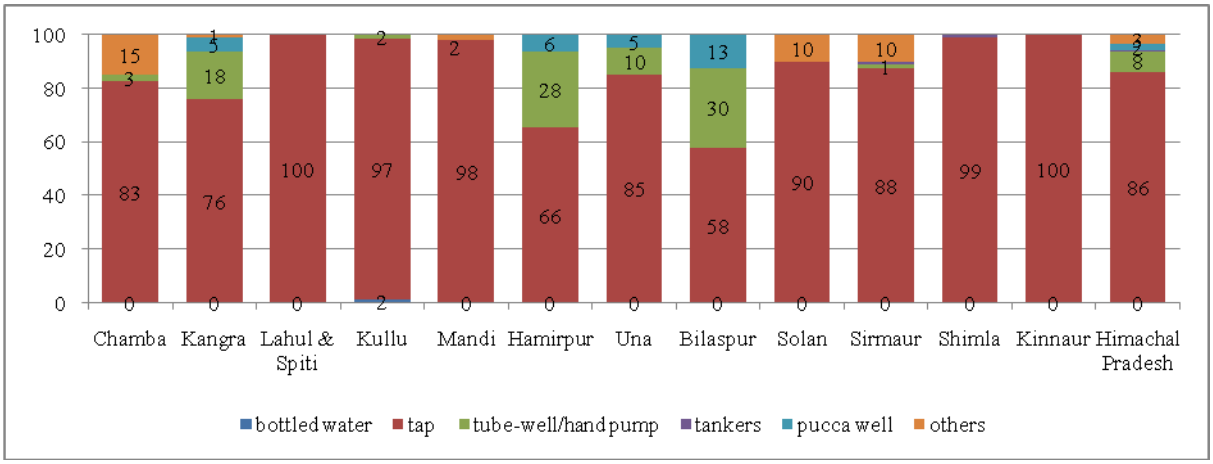

Figure 4: District-wise availability of drinking water in Himachal Pradesh

IV.DISCUSSION

Study reveals that average monthly expenditure and monthly per capita expenditure was Rs. 8628 and Rs.1972 for Himachal Pradesh. District Una (Rs.12326) and Solan (Rs.9162) both has more average monthly expenditure. Average family size was 5 members in Himachal Pradesh. Septic tank/ flush system and Pit (87%) were the main source of Latrine. According to the 2011 census, 30.7 % households in rural areas and 81.4 % households in urban areas have access to toilet, where as in HP, 52.5 % of rural households had access to toilet, while it was 88.2 % for urban households areas.[29] 54.5% houses had Flush to sewer/septic/pit Pit with slab Pit ventilated improved and 90.3% Piped water into dwelling/yard/plot were the main source of latrine and water.[28]. From Census 2011, it is seen that in rural areas 25.1 percent households and in urban areas 77.3 percent households had improved latrine.[29]Septic tank/ flush system and Pit found more urban (97%) households, Non-Hindu (92%), Non-SC (91%) , Two member (93%) & Three members (91%), rich (91%) and richest (94%) respectively.[30] Open defecation found more in rural households, Non-Hindu (12%), SC (16%), More than 3 members (12%), poorest (21%) respectively.[30]. Open kutcha was the main source of drainage in Himachal Pradesh. Study reveals that open kutcha found more in rural (36%), Non-Hindu (54%), Non-SC (32%), one member (51%) and poorest (45%) respectively. Tap and tube-well/hand pump (94%) was the main source of drinking water in Himachal Pradesh. According to NFHS-4, Piped water into dwelling/yard/plot and Public tap/standpipe was main source of water and found more in urban households [31]. Tap and tube-well/hand pump found more in urban (98%), other religion (95%), Non SC (95%), one member family (98%), and more than 95% in higher socio-economic status.[30] Firewood and chips (62%) & LPG (35%) were the main source of energy for cooking in Himachal Pradesh. Based on NFHS-4, Firewood and chips used more in rural houses and LPG uses in urban houses. [31]. Firewood and chips found more in rural (75%), Non-Hindu (69%), SC (74%),

more than three members (67%) and poorest (76%) and LGP more in Urban (84%), other religion(60%) and Non-SC(36%), Three members (55%), richest (66%) respectively.[30]. Intra analysis shows Hamirpur (92.2%) showed more uses of Septic tank/ flush system and Kinnaur (56%) shows more use of Pit latrine in Himachal Pradesh. According to DLHS-3, Mandi (75.2%) and Hamirpur (70.2%) shows more availability of toilet facility and Hamirpur (97.1%) and Bilaspur (93.6%) showed more use of sanitation.[29] Open kutch found more in Bilaspur (56%), open pucca found in Kullu (41%), Covered pucca found in Lahul & Spiti (44%), underground found in Sirmaur (21%). Tap water found more in Lahul & Spiti (100%) and Kinnaur (100%). Firewood and chips found more in Kinaur (100%) and Bilaspur (80%) where as LPG found more in Lahul & Spiti (88%) and Una(48%). According to DHSL3, Kinnaur (44.1%) and Shimla (39.6%) showed more use of LPG [28].

V.CONCLUSION

Major variations are found in the availability of drainage and household amenities in rural and urban areas. Disparities in access to basic amenities were observed to have increased between the poor and non-poor households, between ST and SC households and between SC and other households. This article highlights the intra variation of access to basic amenities like drinking water, sanitation, cooking fuel and drainage in districts of Himachal Pradesh. Access to improved sanitation and drinking water shows significant improvement among districts. Household assets and amenities reflect a households quality of life. Provision of electricity, clean drinking water, road condition, sanitary condition, health and hygiene, accessibility to cleaner fuel and smokeless stove for domestic use in households determines the overall development of a region. Since, basic amenities position in urban and rural areas of Himachal Pradesh is not worse in order to take necessary action. Urban areas showed more access as compared to rural area. Social inequality showed some pattern in access to basic amenities. Hence, access to basic amenities in rural Himachal Pradesh need an attention along with appropriate policy measures, with an emphasis upon backward districts and targeted social and economic groups.

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Competing interests

The authors declare that they have no competing interests.

Consent for publication

Not applicable.

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