

## **The Status of Health Infrastructure in Punjab : A Study of Post-Reform Period**

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### **Abstract**

Health is considered as a critical human capital component, which contributes significantly to the growth and development of a country. Health is an important factor in the socio-economic production function. Thus, the aim of the paper is to study the status of health infrastructure in Punjab for the post-reform period i.e. from 1991 to 2014. The various indicators of health infrastructure undertaken for the purpose of the study are medical institutions by location and ownership, medical institutions by type of institutions, number of ayurvedic, homeopathic & unani institutions and number of registered medical & para-medical personnel. The study found that the number of medical institutions and number of beds in medical institutions decreased during the study period. The study further revealed that the number of registered medical and para-medical personnel have shown an upward trend. The study concluded that government should invest more in health infrastructure and encourage the private sector to invest in the health infrastructure by promoting Public-Private Partnership (PPP).

### **Key Words**

Health, Health infrastructure, Punjab, Medical Institutions.

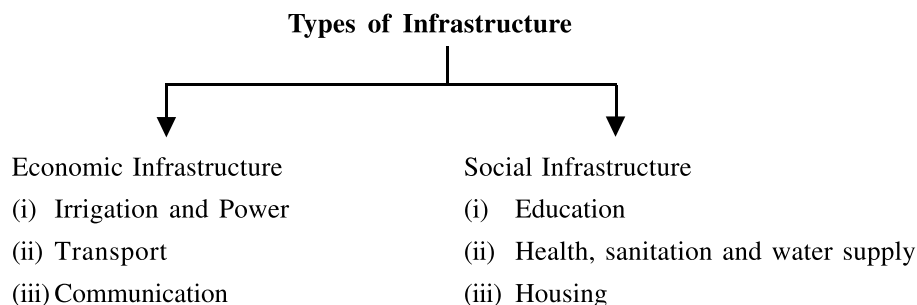
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### **INTRODUCTION**

Infrastructure is a basic physical and organizational structure required for the operation of a society or enterprise, or the services and facilities necessary for an economy to function. It can be generally defined as the set of inter-connected structure elements that provide the framework supporting an entire structure of

development. It is an important term for judging a country or region's development. The word is a combination of two Latin words *infra* meaning "beneath" and *structural* meaning "to construct." Infrastructure is an umbrella term for several activities. These include public works like railways, roads; major irrigation works etc. and also public utilities like power, telecommunication, tap water supply, sanitation and sewerage etc. The infrastructure term also includes facilities pertaining to health, education, skill formation, etc. These activities are necessary for the working of an economy. Infrastructure is categorized into two types: Economic Infrastructure and Social Infrastructure.

- Economic Infrastructure is defined as the infrastructure that helps in promoting economic activities such as roads, highways, railroads, airports, seaports, electricity, telecommunications, water supply and sanitation.
- Social Infrastructure (such as schools, libraries, universities, clinics, hospitals, courts, museums, theatres, parks, fountains and statues) is defined as the infrastructure that helps in promoting the health, education and cultural standards of the population – activities that have both direct and indirect impacts on the welfare.



The present paper focuses on the health infrastructure of Punjab. Health infrastructure is a significant indicator for understanding the healthcare policy and welfare mechanism in a nation. It indicates the investment priority with regard to the creation of healthcare facilities. The health of nation is an essential component of economic growth and development. As it is rightly said "Health is Wealth". The health of the people is treated as a direct measure of a country's energy and efficiency to achieve growth at a faster rate. Health is considered to be an important factor in the socio-economic production function. As an able-bodied and healthy worker is a more productive worker. Good health is not only the means, but also end of development. Thus, health infrastructure is an investment for human capital formation.

## **REVIEW OF LITERATURE**

In this section, an attempt is made to review the studies dealing with the health infrastructure.

Purohit and Tasleem (1994), analyzed the utilization of health services in India from various angles. It was found that the level of utilization was higher in states with higher per capita Governmental expenditure on healthcare, while the states with lower per capita governmental expenditure depicted lower levels of utilization. Banerjee and Esther (2004) examined the delivery of healthcare and the impact it had on the poor population based on a survey conducted in rural Udaipur. The study observed that villagers' health was poor despite the fact that they heavily used healthcare facilities and spent a lot on healthcare. Joshi (2006) analysed the expenditures incurred by the Central and State Governments on social sector during the pre-reform period and post-reform period. The study found that there had been a rise in health expenditure from 0.8% of GDP in 1980-81 to 0.92% in 1989-90 (i.e during pre-reform period). William, Mishra and Navaneetham (2008) made an attempt to study health inequality in India by utilizing National Family Health Survey-3 data. The study found that the degree of health inequalities escalated when the rising average income levels of the population were accompanied by rising income inequalities. Kumar and Gupta (2012) made an attempt to study health infrastructure in India and the impact of National Rural Health Mission (NRHM) initiated by the central government. The study found that government is required to take an integrated approach, which must take into consideration meeting the regional differences.

## **OBJECTIVE OF THE STUDY**

To analyze the trends in health infrastructure in Punjab during post-reform period i.e from 1991-2014.

## **DATABASE AND METHODOLOGY**

The present is based on secondary data. The data on different variables used in the study are taken from various issues of Statistical Abstract of Punjab, for the period of 24 years i.e from 1991-2014. For comparative analysis the period has been divided into two sections :

- (i) First period from 1991-2000
- (ii) Second period 2001-2014

The variables undertaken for the purpose of study are :

- (i) Public medical institutions according to location .

- (ii) Public medical institutions according to type of institutions
- (iii) Number of ayurvedic, homeopathic and unani institutions
- (iv) Number of beds by area and type of medical institutions
- (v) Number of registered medical and para-medical personnel.

For analyzing the data, the Compound Annual Growth Rate (CAGR), averages, standard deviation and coefficient of variation have been used. Moreover, graphs are also used.

### **Growth of Public Medical Institutions by Location**

Table 1 presented the public medical institutions according to location. Public medical institutions are those which are owned by state government, local government and voluntary organisations and includes hospitals, Primary Health Centres (PHCs), Dispensaries and Community Health Centres (CHCs). The Table reveals that the growth in the number of medical institutions in rural and urban areas. It is observed that during the first period (1991-2000) the number of medical institutions increased from 2204 to 2229 (showing a growth rate of 0.11% per annum). However, during the second period, i.e. from 2001-2014, the number of medical institutions declined from 2229 to 1979 revealing negative growth rate of -1.36%. During 1991-2014, the total number of medical institutions decreased from 2204 to 1979; depicting a negative growth rate of -0.57% per annum. The number of medical institutions during 1991-2014, rose from 2204 to 2242 till 2005, but afterwards it shows a decreasing trend, the number of medical institutions, declining to 1979 in 2014 (portraying a negative growth of -0.16% per annum. Thus, it is observed that the maximum growth in the number of medical institutions has been recorded during the first period.

The number of medical institutions declined in both rural and urban areas. During 1991-2014, the number of medical institutions in rural areas, decreased from 1799 to 1692 (showing a negative growth rate of -0.26% per annum) and number of medical institutions in urban areas also declined from 405 to 287 (showing a negative growth of -2.15 per annum). It is further observed that during the first period, the growth in the number of medical institutions in urban areas is greater as compared to rural areas, showing a growth rate of 1.08% whereas the medical institutions in rural areas depict a negative growth of -0.12%. During the second period (2001-2014), the number of medical institutions declined in urban and rural areas, at the negative growth rate of -0.51% and -5.41% respectively.

**Table 1**

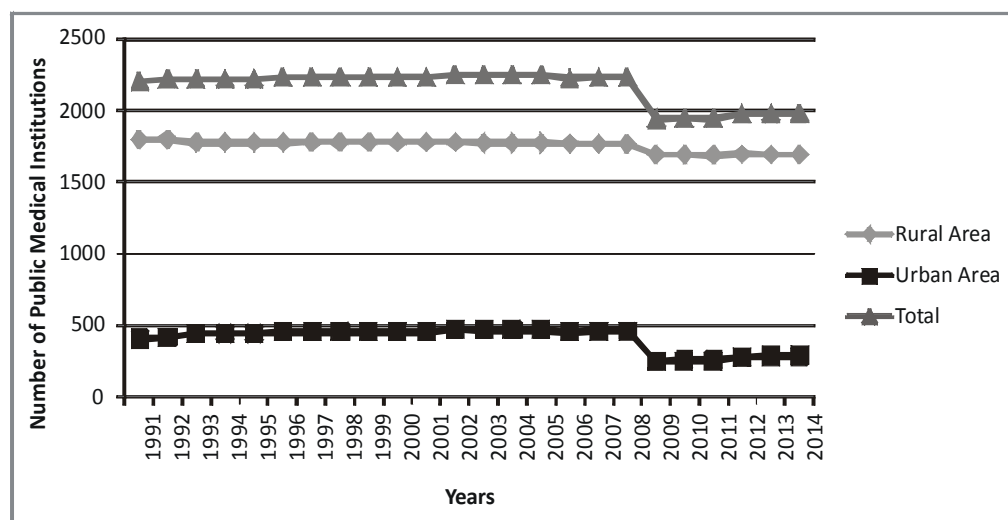
**Number of Public Medical Institutions by Location in Punjab**

Year	Public Medical Institutions Located in		Total
	Rural area	Urban area	
1991	1799	405	2204
1992	1800	417	2217
1993	1775	442	2217
1994	1775	445	2220
1995	1775	445	2220
1996	1775	453	2228
1997	1776	453	2229
1998	1776	453	2229
1999	1776	453	2229
2000	1776	453	2229
2001	1776	453	2229
2002	1776	470	2246
2003	1774	468	2242
2004	1774	468	2242
2005	1774	468	2242
2006	1771	454	2225
2007	1764	464	2228
2008	1764	464	2228
2009	1691	247	1938
2010	1688	255	1943
2011	1686	255	1941
2012	1696	275	1971
2013	1692	285	1977
2014	1692	287	1979
Average	1755.04	405.5	2160.54
S.D.	38.71	83.20	120.04
C.V. (%)	2.20	20.52	5.55
Compound Annual Growth Rate (per cent)			
1991-2000	-0.12	1.08	0.11
2001-2014	-0.51	-5.41	-1.36
1991-2014	-0.26	-2.15	-0.57

Source : Statistical Abstract of Punjab, Various Issues.

Thus, the number of medical institutions located in urban areas has witnessed remarkable growth during the first period only, but medical institutions in rural areas have registered negative growth during the period from 1991-2014. The mean value during 1991-2014 of total public medical institutions was 2160.54 registering a variation of 5.55%. The mean value during the same period in rural and urban areas was 1755.04 and 405.5 with a variation of 2.20% and 20.52% respectively. Figure 1 shows the number of public medical institutions.

**Figure 1 Number of Public Medical Institutions**



Source : Statistical Abstract of Punjab, Various Issues

### Growth of Different Types of Public Medical Institutions

The classification of public medical institutions by type (hospitals, dispensaries, PHCs and others) has been presented in table 2. During the first period (1991-2000), rural areas witnessed a decline in the number of all types of medical institutions, i.e. in hospitals, PHCs and Dispensaries depicting negative growth rates i.e. -1.47% per annum, -0.020% per annum and -0.21% per annum respectively. However the total number of medical institutions also declined, showing a growth rate of -0.12% per annum, whereas the number of other medical institutions showed a growth rate of 2.94%. The urban areas, on the other hand, witnessed an increase in all types of medical institutions, i.e. hospitals, PHCs, dispensaries, others and total of all these types revealing growth rates of 0.52%, 1.11%, 0.92%, 4.28% and 1.06% per annum respectively. The highest growth rate is recorded in other type of medical institutions. During the second period (2001-2014), in rural areas all types of institutions portrayed negative growth rates viz. hospitals, PHCs

**Table 2**  
**Number of Different Types of Public Medical Institutions**

Year	Rural Areas					Urban Areas					Total
	Hosp-itals	PHCs	Disp.	Other	Total	Hos-pitals	PHCs	Disp.	Other	Total	
1991	88	419	1249	43	1799	131	23	224	27	405	2204
1992	79	418	1237	66	1800	126	16	237	38	417	2217
1993	73	422	1220	60	1775	132	24	242	44	445	2217
1994	73	422	1220	60	1775	135	24	242	44	445	2220
1995	73	422	1220	60	1775	135	24	242	44	445	2220
1996	73	422	1220	60	1775	135	24	250	44	453	2228
1997	73	422	1220	61	1776	135	24	250	44	453	2229
1998	73	421	1220	62	1776	135	24	249	45	453	2229
1999	72	418	1217	69	1776	135	22	248	48	453	2229
2000	72	418	1217	69	1776	135	22	248	48	453	2229
2001	72	418	1217	69	1776	134	22	248	48	453	2229
2002	73	416	1223	64	1776	147	25	259	39	470	2246
2003	73	416	1221	64	1774	146	25	258	39	468	2242
2004	73	416	1221	64	1774	146	25	258	39	468	2242
2005	73	416	1221	64	1774	146	25	258	39	468	2242
2006	73	416	1214	68	1771	146	25	239	44	454	2225
2007	73	416	1207	68	1764	146	25	247	46	464	2228
2008	73	416	1207	68	1764	146	25	247	46	464	2228
2009	44	383	1187	77	1691	65	12	118	52	247	1938
2010	1	423	1187	77	1688	62	23	118	54	255	1943
2011	1	423	1186	76	1686	62	21	118	54	255	1941
2012	4	412	1186	94	1696	67	16	135	57	275	1971
2013	4	412	1186	90	1692	66	15	144	60	285	1977
2014	4	412	1186	90	1692	66	15	146	60	287	1979
Average	57.92	416.62	1212.04	68.46	1755.04	119.96	21.92	217.71	45.95	405.62	2160.54
S.D.	29.71	7.95	17.23	11.23	38.71	33.13	3.95	52.74	7.61	83.26	120.04
C.V. (%)	51.29	1.91	1.42	16.41	2.20	27.62	18.04	24.23	16.58	20.53	5.55
<b>Compound Annual Growth Rate (per cent)</b>											
1991-2000	-1.47	-0.020	-0.21	2.94	-0.12	0.52	1.11	0.92	4.28	1.0	
2001-2014	-27.87	-0.094	-0.29	2.93	-0.50	-7.95	-3.97	-6.52	3.45	-5.41	
1991-2014	-13.46	-0.116	-0.17	1.94	-0.26	-3.16	-1.21	-2.76	1.75	-2.15	

Source : Statistical Abstract Of Punjab, Various issues.

Note : PHCs stand for Primary Health Centres

Disp. refer to dispensaries and Others refer to hospital/ Community Health Centres (CHCs), PHCs/CHCs.

and dispensaries of -27.87%, 0.094% and -0.29% per annum respectively, while other type of medical institutions presented growth of 2.93% per annum. Even , during the total period (1991-2014) in case of rural areas the negative growth rates are displayed in hospitals by -13.46%, PHCs by -0.116% and dispensaries by -0.17% per annum. The growth of other medical institutions was 1.94% during the same period. The urban areas during the same period, also witnessed negative growth in number of hospitals (-7.95%), PHCs (-3.97%), dispensaries (-6.57%) and in total number of medical institutions (-5.41%), however the type of medical institutions depicted growth of 3.45% per annum. On comparing rural and urban medical institutions it is observed that more decline is in urban medical institutions showing negative growth of -2.15% per annum. The mean value of rural public medical institutions was 1755.04 with a variation of 2.20% and of urban public medical institutions was 405.62 with a variation of 20.53%. Under the rural category, the mean value of hospitals, dispensaries, PHCs and others was 57.92, 416.62, 1212.04 and 68.46 with a variation of 51.29%, 1.91%, 1.41% and 16.41% respectively. Whereas under urban category, the mean value of hospitals, dispensaries, PHCs and others was 119.96, 21.92, 217.71 and 45.95 with a variation 18.04%, 24.23%, 16.58% and 20.53% respectively.

### **Growth of Ayurvedic, Homeopathic and Unani Institutions**

Table 3 presented the number of ayurvedic, homeopathic and unani institutions in Punjab. It shows that during 1991 to 2014 the total number of ayurvedic, homeopathic and unani institutions has increased from 634 to 640 registering a growth rate of 0.032% per annum. During this period, maximum growth has been observed in homeopathic institutions (depicting a growth rate of 0.19% per annum) while ayurvedic and unani institutions showed negative growth rates of -0.0034% per annum and -0.029% per annum respectively. During the first period, the ayurvedic institutions registered a growth rate of 0.0037% per annum, while the homeopathic institutions have not shown any growth in the number of homeopathic institutions being 106 throughout this period and the number of unani institutions declined registering a negative growth rate of -0.16% per annum. During the second period (2001-2014), the number of ayurvedic and unani institutions remain constant 495 and 34, thus does not show any growth. Whereas the number of homeopathic institutions increased from 106 to 111 registering a growth rate of 0.37% per annum. However, during the total period (1991-2014), the number of ayurvedic and unani institutions registered a negative growth rate of -0.0034% and 0.029 per annum respectively, while the number of homeopathic institutions presented growth of 0.19% per annum. Thus, it is observed that the maximum growth in homeopathic

**Table 3**

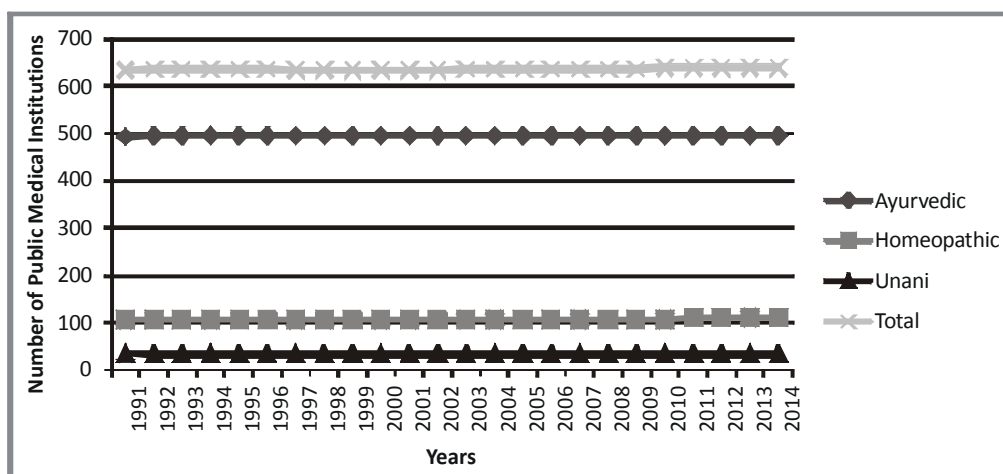
**Number of Ayurvedic, Homeopathic and Unani Institutions in Punjab**

Year	Ayurvedic	Homeopathic	Unani	Total
1991	493	106	35	634
1992	496	106	34	636
1993	496	106	34	636
1994	496	106	34	636
1995	496	106	34	636
1996	496	106	34	636
1997	495	106	34	635
1998	495	106	34	635
1999	495	106	34	635
2000	495	106	34	635
2001	495	106	34	635
2002	495	106	34	635
2003	495	107	34	636
2004	495	107	34	636
2005	495	107	34	636
2006	495	107	34	636
2007	495	107	34	636
2008	495	107	34	636
2009	495	107	34	636
2010	495	107	34	640
2011	495	111	34	640
2012	495	111	34	640
2013	495	111	34	640
2014	495	111	34	640
Average	495.12	107.17	34.04	636.5
S.D.	0.61	1.81	0.20	1.91
C.V. (%)	0.12	1.69	0.60	0.30
<b>Compound Annual Growth Rate (per cent)</b>				
1991-2000	0.0037	0.00	-0.16	0.0057
2001-2014	0.00	0.37	0.00	0.070
1991-2014	-0.0034	0.19	-0.029	0.032

Source : Statistical Abstract of Punjab, Various Issues

institutions has been recorded during second period, whereas no significant growth has been witnessed in number of ayurvedic and unani institutions. The mean value of number of ayurvedic, homeopathic and unani institutions was 495.12, 107.17, 34.04 registering a variation of 0.12%, 1.69% and 0.60% respectively. However, the mean value of total number of these institutions was 636.5 with a variation of 0.30%. Figure 3 shows the number of ayurvedic, homeopathic and unani institutions.

**Figure 3 Number of Ayurvedic, Homeopathic and Unani Institutions in Punjab**



Source : Statistical Abstract of Punjab, Various Issues

### Number of Beds in Medical Institutions by Area and Type

Table 4 depicts the number of beds in various types of medical institutions and according to area for the period 1991-2014. The total number of beds in medical institutions declined from 24179 to 21962 showing a negative growth rate of -0.71% per annum. The number of beds according to area have moved down showing negative growth of -0.18% per annum in rural areas and -1.16% per annum in urban areas. During the first period, in rural areas the number of beds witnessed negative growth of -0.006% per annum. On the other hand, in urban areas growth was 0.74% per annum. Whereas during the second period number of beds revealed growth of -0.38% per annum and -2.97 in rural and urban areas respectively. During the first period, the growth rate of the number of hospitals, PHC, dispensaries and other medical institutions was 0.087% , -0.38% , -0.09% and 3.36 per annum. However, during the second period the growth of hospitals, PHCs, dispensaries and other medical institutions was -5.36%, 5.73%, -0.47% and 2.81%. During the total period (1991-2014), the number of hospitals showed a negative growth of -2.24% p.a., PHCs showed growth rate of 2.32% per annum dispensaries -0.16 per annum and others 1.27% per annum.

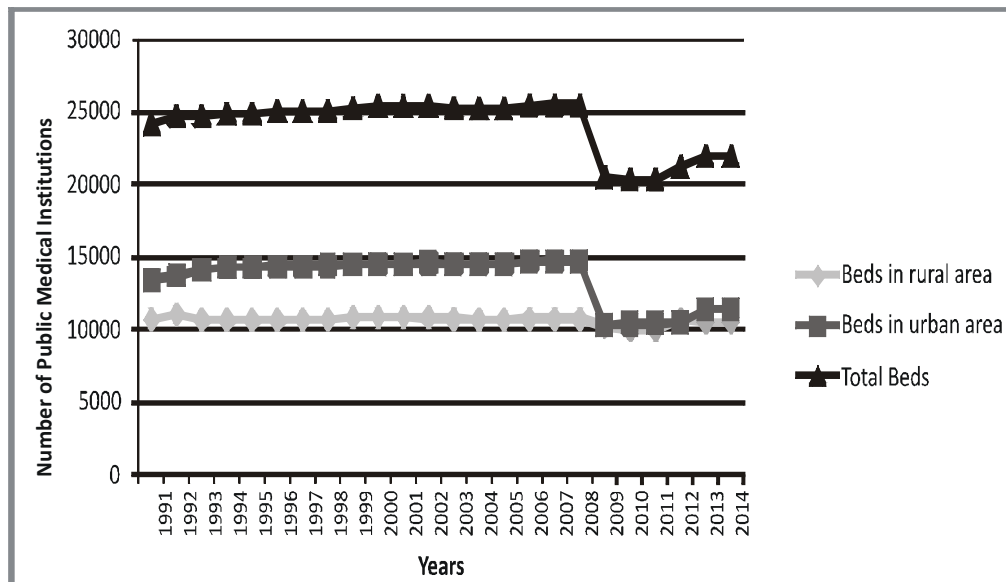
**Table 4**  
**Number of Beds in Medical Institutions in Punjab**

Year	Beds in		Beds Installed in				Total
	Rural	Urban	Hospitals	PHCs	Dispensary	Other	
1991	10702	13477	14472	1842	5531	2334	24179
1992	11036	13706	14069	1734	5523	3416	24742
1993	10627	14115	14069	1786	5471	3416	24742
1994	10627	14265	14219	1786	5471	3416	24892
1995	10627	14265	14219	1786	5471	3416	24892
1996	10627	14397	14319	1786	5511	3416	25032
1997	10653	14397	14319	1786	5503	3442	25050
1998	10671	14423	14319	1774	5499	3502	25094
1999	10806	14501	14319	1728	5458	3802	25307
2000	10832	14545	14319	1728	5458	3872	25377
2001	10832	14522	14296	1728	5458	3872	25354
2002	10787	14605	14875	1758	5651	3108	25392
2003	10747	14545	14815	1758	5611	3108	25292
2004	10647	14545	14815	1758	5511	3108	25192
2005	10647	14545	14815	1758	5511	3108	25192
2006	10751	14738	14865	1758	5501	3373	25489
2007	10743	14746	14865	1758	5493	3373	25489
2008	10743	14746	14865	1758	5493	3373	25489
2009	10224	10317	9230	2120	5321	3870	20541
2010	9962	10413	8065	3119	5321	3870	20375
2011	9934	10428	8065	3096	5301	3900	20362
2012	10631	10545	8275	3014	5297	4590	21176
2013	10507	11455	9155	3010	5297	4500	21962
2014	10507	11455	9155	3010	5297	4500	21962
Average	10619.58	13487.33	13033.29	2047.46	5456.62	3570.21	24107.25
S.D.	254.27	1648.67	2607.88	531.19	99.36	507.89	1852.99
C.V. (%)	2.39	12.22	20.01	25.94	1.82	14.22	7.69
<b>Compound Annual Growth Rate (per cent)</b>							
1991-2000	-0.006	0.74	0.087	-0.38	-0.09	3.36	0.42
2001-2014	-0.38	-2.97	-5.36	5.73	-0.47	2.81	-1.80
1991-2014	-0.18	-1.16	-2.24	2.32	-0.16	1.27	-0.71

Source : Statistical Abstract of Punjab, Various Issues.

The mean value of total number of beds in medical institutions was 24107.25 with a variation of 7.69%, whereas the mean value of number of beds in rural and urban areas was 10619.58 and 13487.33 registering a variation of 2.39% and 12.22% respectively.

**Figure 4 Number of beds in medical institutions in Punjab**



Source : Statistical Abstract of Punjab, Various Issues

### Number of Registered Medical and Para-medical Personnel

Table 5 presented the number of registered medical and para-medical personnel. The Table also presented the population served per medical and para-medical personnel. During 1991-2014, the data highlights the number of doctors increased from 13237 to 25254, number of midwives enhanced from 12581 to 42989 and number of nurses swelled from 7647 to 59489. During the first period, maximum growth is observed in the number of midwives (1.96 times) followed by number of nurses (1.85 times) and doctors (1.25 times). During the second period, maximum increase in number of nurses (3.82 times), followed by number of midwives (1.72 times) and doctors (1.51 times). However, during the total period, again number of nurses witnessed highest increase (7.77 times) followed number of midwives (3.42 times) and number of doctors (1.91 times).

**Table 5****Number of Registered Medical and Para-medical Personnel in Punjab**

<b>Year</b>	<b>Doctor</b>	<b>Midwife</b>	<b>Nurse</b>
1991	13237(1514)	12581(1538)	7647(2600)
1992	13931 (1481)	15175(1360)	8763(2355)
1993	14190(1608)	15851(2149)	9313(2192)
1994	14600 (1501)	17323(1265)	9876(2219)
1995	15063(1487)	18468(1213)	10546(2214)
1996	15198(1499)	19887(1145)	11576(1967)
1997	15728(1472)	21128(1095)	12462(1857)
1998	15901(1483)	22218(1062)	13213(1786)
1999	16190(1485)	23683(1015)	14179(1696)
2000	16526(1470)	24714(982)	14844(1636)
2001	16634(1472)	24915(982)	15563(1573)
2002	17367(1324)	25347(981)	16836(1478)
2003	17717(1489)	26175(988)	18874(1370)
2004	18594(1468)	27013(1010)	21110(1293)
2005	19129(1388)	27849(954)	23346(1138)
2006	19829(1263)	28422(850)	26257(927)
2007	20879(1316)	28816(954)	31817(864)
2008	22423(1225)	30404(903)	35208(780)
2009	22547(1264)	31182(914)	39728(717)
2010	22162(1250)	31907(868)	43969(630)
2011	23926(1207)	32642(851)	47816(598)
2012	25167(1170)	33729(834)	50629(565)
2013	24385(1163)	39067(726)	54693(519)
2014	25254(1124)	42989(662)	59489(482)
Average	18607.38	25985.21	24906.42
S.D.	3850.46	7456.20	16330.21
C.V. (%)	20.69	28.79	65.57
<b>Compound Annual Growth Rate (per cent)</b>			
1991-2000	2.36	7.25	7.46
2001-2014	3.14	3.68	11.49
1991-2014	2.89	4.25	9.51

Source : Statistical Abstract of Punjab, Various Issues.

Figures in parenthesis indicate population served per medical and para-medical personnel in Punjab.

It is observed that during the period 1991-2014, population served per doctor declined from 1514 to 1124, per midwife slipped down from 1538 to 662 and per nurse dropped from 2600 to 482. Thus, it is specified that the number of registered medical and para-medical personnel is showing increasing trend, whereas population served per registered medical and para-medical personnel shows decreasing trend. The mean value of number of doctors, midwives and nurses was 18607.38, 25985.21 and 24906.42 respectively with a variation of 20.69%, 28.79% and 65.57% respectively. During 1991-2014, the growth rate of number of doctors, midwives and nurses was 2.89% per annum, 4.25% per annum and 9.51% per annum respectively.

## CONCLUSION

Health is an important factor in the socio-economic production function. Health infrastructure is a significant indicator for understanding the healthcare policy and welfare mechanism of a nation. The health of nation is a significant component of economic growth and development. The study found that the number of public medical institutions have reduced over a period of time. The number of medical institutions in rural areas have shown decreasing trend depicting negative in the period (1991-2014) undertaken for study. The medical institutions in urban areas, however, showed upward trend in the first period but decreased in second period. The number of hospitals, dispensaries and Primary Health Centres (PHCs) declined in rural areas during this period. However, the number of other medical institutions showed upward trend and revealed growth in both the time periods. On the other hand, the number of hospitals, dispensaries and PHCs in urban areas also decreased in the second period but showed growth in the first period. The other medical institutions (comprising hospital / Community Health Centres or Primary Health Centres / Community Health Centres) in urban areas showed upward trend. The ayurvedic and unani institutions did not show growth and the homeopathic institutions increased during this period. The total number of beds in medical institution has declined. The number of beds has shown decreasing trend area wise also. The number of beds in urban areas has depicted more decline as compared to number of beds in rural areas. The number of beds in hospitals and dispensaries has gone down, while the number of beds in PHCs and other medical institutions has risen. The number of registered medical and para-medical personnel has shown upward trend. The number of doctors, midwives and nurses increased during this period. The study depicts that the situation is not good and not upto mark in Punjab. The public sector is not rendering better services as desired by people. It is, therefore, required on

the part of the Government to invest more funds in health sector and to encourage private sector by promoting Public-Private Partnerships (PPP).

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