

PROJECT

MANAGING HUMAN CAPITAL

HOW DO WE BETTER OUTCOMES ON
EDUCATION AND HEALTH FOR OUR FUTURE
GENERATIONS

HEALTH IS THE GREATEST WEALTH!

SAYANTAN PAL(B19ME077)
VED THAKUR(B19ME090)



1) Education Sector

In the words of Nelson Mandela, “*Education is the most powerful weapon you can use to change the world*”

Education is to study to obtain a deeper knowledge and understanding of a variety of subjects to be applied to daily life. Education Provides one with stability, financial security, equality, confidence and a host of other things which one otherwise aspires to have.

For Education to be accessible to all in a rather Egalitarian manner, having a robust and fool-proof education system which is accessible, affordable and realisable is necessary. India has always aspired by this and is on a path to achieve such an education system. But properly inspecting the education system becomes a necessary factor in order to make way for a population that is educated, skilled and well-mannered.

Looking into the education sector in India, we see that,

Education in India is primarily managed by state-run public education system, which fall under the command of the government at three levels:-

- Centre
- State
- Local

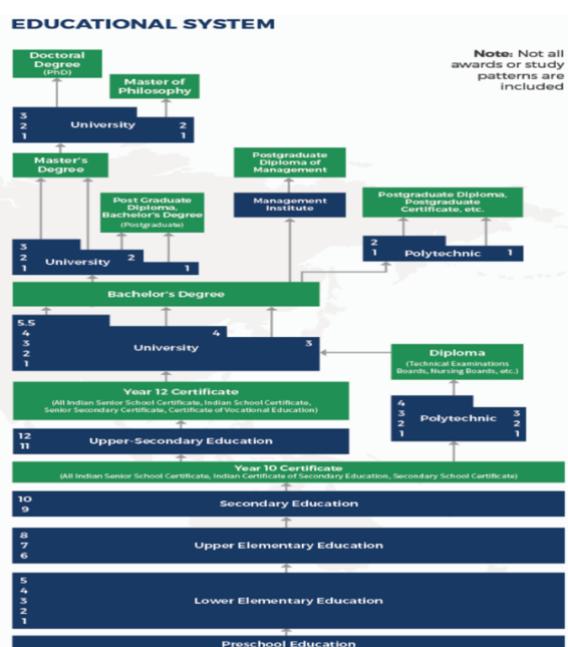
Alongside this there are private and private aided educational institutions too.

In India, the education system is divided into different categories based on age and level of education(Compulsory education ,Higher education and Continuing education).

A table for representation of different levels of education system in India can be represented as follows:-

Category		Grade	Ages	Comments
Compulsory education				
Foundational Stage	Preschool/Anganwadi	Pre-kindergarten	2-5	The focus is more on activity-based learning rather than theoretical learning
		Kindergarten	5-6	
Preparatory Stage	Primary School	1st grade	6-7	As moto based skills develop, more theoretical subject and more new skills are taught
		2nd grade	7-8	
Middle Stage	Middle School	3rd grade	8-9	It will introduction of concepts of mathematics, sciences, social sciences, arts and humanities is done in here
		4th grade	9-10	
Secondary Stage	Junior High school	5th grade	10-11	Multiple options of study are provided to inculcate multidisciplinary study,
		6th grade	11-12	
		7th grade	12-13	
		8th grade	13-14	
	Senior High school	9th grade	14-15	
		10th grade	15-16	
		11th grade	16-17	

		12th grade	17-18	coupled with depth and critical thinking.
Higher education				
College/University	Undergraduate school	First year	18-19	1-year Vocational Certificate
		Second year	19-20	2-years Vocational Diploma
		Third year	20-21	3-years Bachelor's degree
		Fourth year	21-22	4-years multidisciplinary Bachelor's degree
		Fifth year	22-23	5-years MBBS/dual degree
	Graduate school	First year	21+	Different specialisation degrees
		Second year	22+	
		Third year	23+	
	Doctorate		24+	For research(5 year+)
Research				
	Postdoctoral			
Continuing education				
Vocational school			18+	
Adult education				



← A flow chart explaining India's Educational system

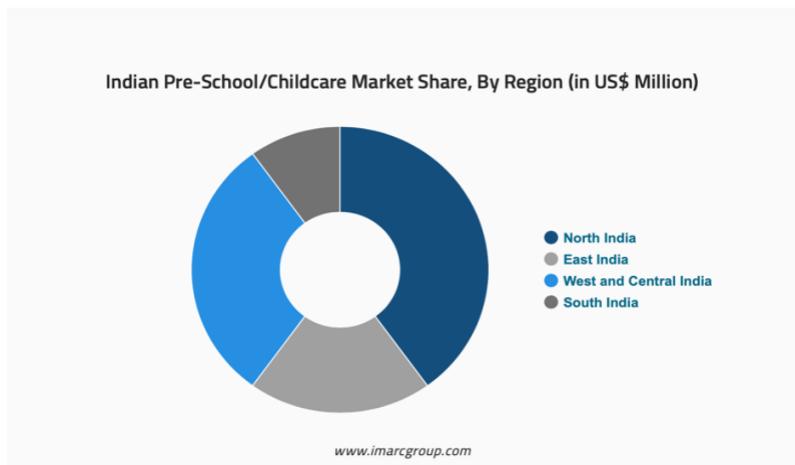
There are numerous major policy initiatives in Indian education. Periodically, national policy frameworks are created to guide states in their creation of state-level programs and policies.

For a better understanding of the whole process, we need to scrutinize each segment of Indian Education system starting from primary schools up to vocational schools in a meticulous manner

1.1.1)Pre-school

Pre-schools can be categorized on multifarious factors such as :-

By Region:	<ul style="list-style-type: none">• North India• East India• West and Central India• South India
By Facility:	<ul style="list-style-type: none">• Full Day Care• After School Care
By Ownership:	<ul style="list-style-type: none">• Public• Private
By Age Group:	<ul style="list-style-type: none">• Less Than 2 Years• 2-4 Years• 4-6 Years• Above 6 Years
By Location:	<ul style="list-style-type: none">• Standalone• School Premises• Office Premises
By Major Cities:	<ul style="list-style-type: none">• Delhi-NCR• Bengaluru• Hyderabad• Chennai• Mumbai• Kolkata• Rest of India



1.1.2)Schools

Types of Schools

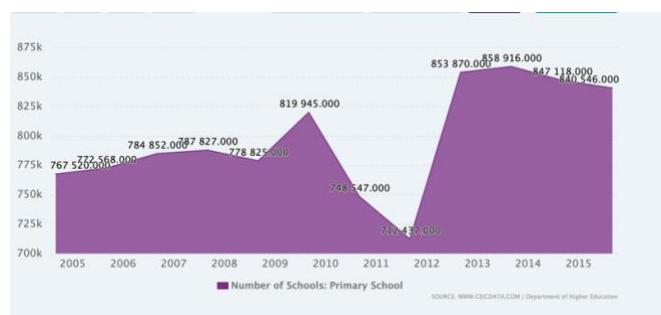
- **Public/government schools:** Most schools in India are funded and run by the government. These schools are fully funded by the government alongside a small amount of donation from NGO's and other people. However, the public education system faces serious challenges including a lack of adequate infrastructure, insufficient funding, a shortage of staff and scarce facilities.
- **Private schools:** Since many government schools do not provide adequate education, private schools have been on the rise in India. They can be further categorised into two types based on their funding:-
 - Private aided schools: Private aided schools are like public schools in the way they are governed. Although nominally run by their private management boards, they are funded and governed by the state.
 - Private unaided schools: Private unaided schools are autonomous fee-charging schools run by private managements which recruit/appoint their own teachers and determine their pay scales independently.
- **International schools:** There are international schools in all major cities. They can be further divided into three parts on the basis of their funding.
 - Government-funded international schools :-Some international schools are fully funded by national, state/provincial or municipal governments.
 - Partially funded international schools :-These schools are partially funded by the government and make up the difference with tuition fees paid by parents.
 - Privately funded international schools :-These schools make their income from tuition fees, registration fees etc. paid by parents

The total number of schools rose from around 200K in 1950-51 to around 1500K in 2011-12.

1.1.2.1) Primary schools

These are schools that cater to children of age 6-11 (from 1-5th grade) and traverse from a on activity-based learning to more theoretical subject based learning as time progresses.

In India, the number of primary school shave been on the rise, as shown in the chart:-

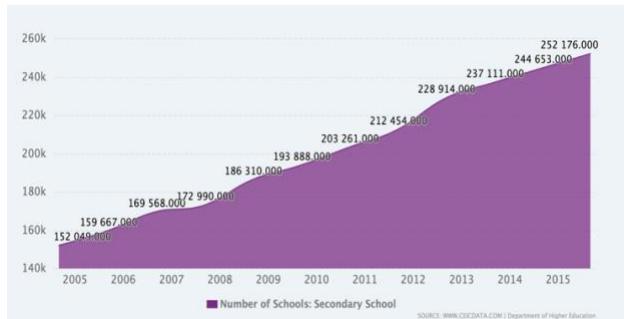


As per record, in 2015, there are around 840546 primary schools in India

1.1.2.2)Secondary Schools

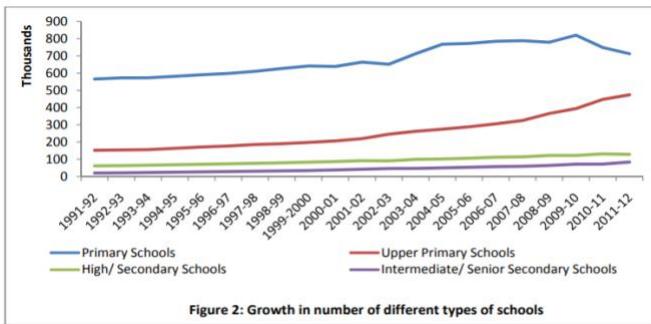
A secondary school provides secondary education . It is a school intermediate between elementary school and college and usually offering general, technical, vocational, or college-preparatory courses.

In India, the number of secondary school shave been on the rise, as shown in the chart:-



As per record, in 2015, there are around 252176 secondary schools in India

Growth of different types of schools in India:-



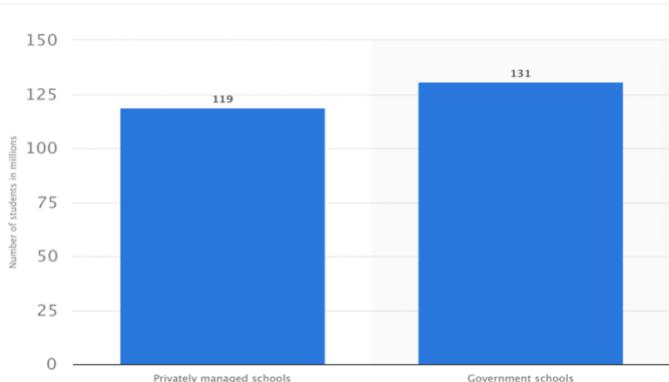
We, see that primary schools have decreased by some margin after 2010 after an increase from 1991, for the rest types of schools, there have been an increase that have been varied in percentage time of increase and rate on growth of schools.

In the year 2011-12, there are 7,12,437 Primary Schools, 4,74,294 Upper Primary Schools, 1,28,321 Secondary Schools and 84,133 Senior Secondary Schools.

As per the latest record (2019-20), there are **15,07,708** Government schools in India. Of this, the distribution is as follows:-

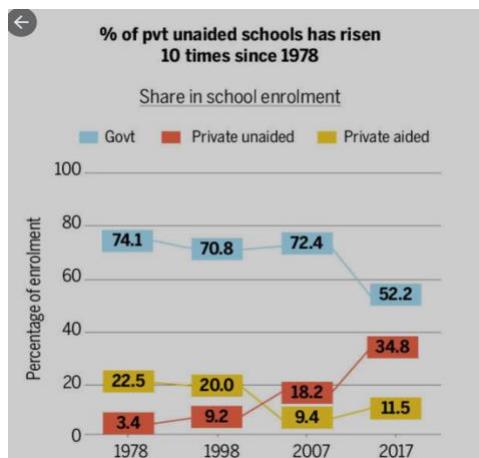
- **Government funded -1032570**
- **Government aided- 84362**
- **Private Unaided recognised -337499**
- **Others-53277**

1.1.2.3)Distribution of schools in India on the basis of Funding

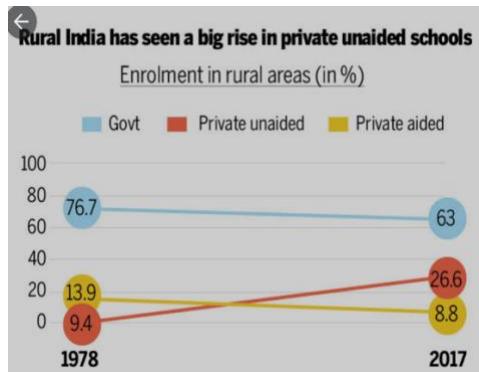


Number of enrolled students in India as of 2018, by school type

1.1.2.3.1)Growth of private unaided schools



The % enrollment in private unaided schools in India has risen from 3.4 to 34.8%. Whilst the % enrollment in government schools has dropped from 74.1 to 52.2%. Similar is the case for private aided that has seen % enrollment decrease from 22.5 to 11.5%

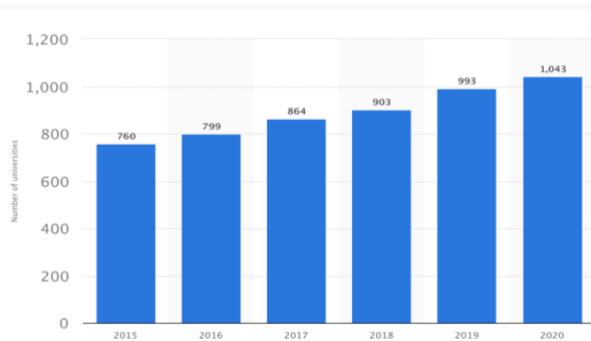


In Rural India, The % enrollment in private unaided schools in India has risen from 9.4 to 26.6%. Whilst the % enrollment in government schools has dropped from 76.7 to 63%. Similar is the case for private aided that has seen % enrollment decrease from 13.9 to 18.8%

1.1.3)Universities

In India, there are universities are majorly divided into 4 parts:-

- **Central:-** Centrally funded through University Grants Commission (UGC),
- **State:-** State government Funded, also some part funded by UGC.
- **Deemed university:-** Neither completely private universities, nor completely under the government. Receive grants from UGC(university grants commission).These
- **Private universities:-** They are privately funded



A chart representing growth of universities in India

Among 1043 Universities in the year 2019-2020, 408 Universities are privately managed and 420 Universities are located in rural area. 17 Universities are exclusively for women. Alongside this there are 307 Affiliating universities

1.1.4) Colleges

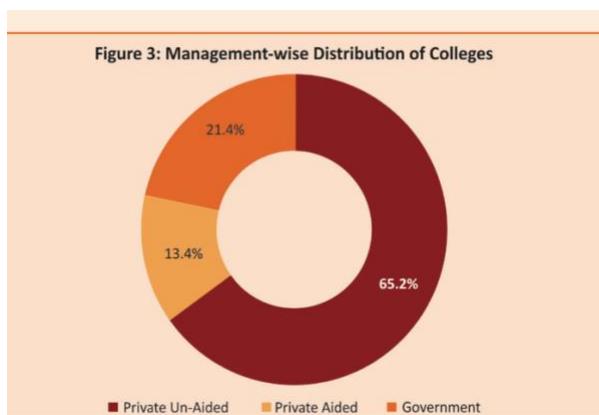
Only affiliated and constituent institutions of Central and State Public Universities are counted as colleges. Constituent units of deemed/private universities, Off-campus centres and Recognized centres have not been counted as Colleges. There are 307 affiliating Universities and they have 42343 colleges. There are 16 Universities, which have 500 or more colleges.

According to latest data,

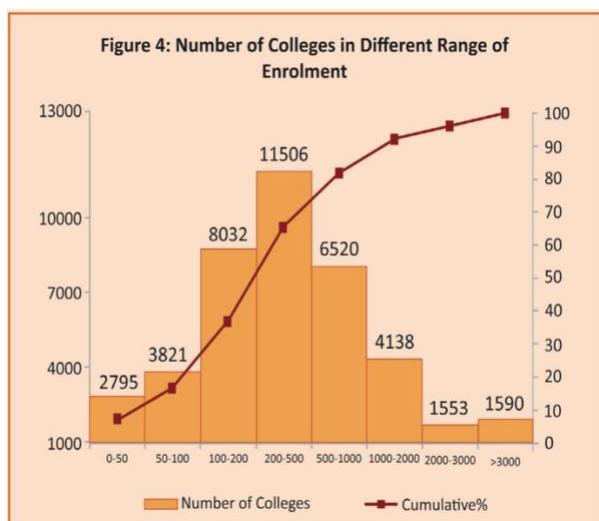
- 60.56% Colleges are located in rural areas.
- 10.75% colleges are for Girls
- Most of the Colleges run only Under Graduate level programmes. Only 2.7% of Colleges run Ph.D. level programmes and 35.04% of colleges run Post Graduate Level programmes.

Management-wise number of Colleges

Majority of the Colleges (78.6%) in the country, are privately managed; 65.2% are private unaided & 13.4% are Private aided; and the remaining 21.4% are Government Colleges. There are wide variations among states in number of private colleges.



We see that Majority of the Colleges (78.6%) in the country, are privately managed; 65.2% are private unaided & 13.4% are Private aided; and the remaining 21.4% are Government Colleges



We see that there is a lot of variation in colleges with different range of enrollment. Maximum colleges are with enrollment of 200-500 followed by enrollment of 100-200

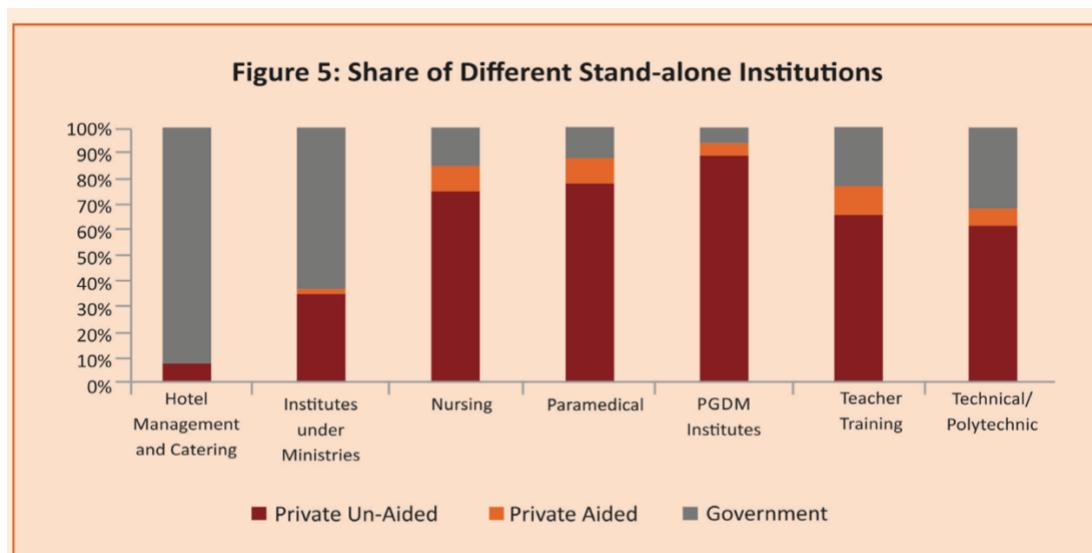
1.1.5) Stand Alone Institutions

Stand Alone Institutions are categorised into 7 categories as described below:

- **Type I-** Diploma Level Technical Institutes such as Polytechnics, which are generally recognised by All India Council for Technical Education (AICTE) and administered by State Directorate of Technical Education.
- **Type II-** Diploma Level Teacher Training Institutes including District Institute of Education and Training (DIETs) recognised by National Council for Teacher Education (NCTE) and generally administered by State Council for Education Research and Training (SCERT).
- **Type III-** Diploma Level Nursing Institutes recognised by Indian Nursing Council (INC) and generally administered by State Nursing Council/Boards.
- **Type IV-** PGDM (Post Graduate Diploma in Management) Institutes recognised by AICTE
- **Type V-** Institutes directly under the control of various Central Ministries
- **Type VI-** Paramedical Institutes
- **Type VII-** Hotel Management & Catering Institutes

1.1.5.1)Funding of standalone institutions

Stand-alone Institutions are mainly run by Private sector (76.2%); Private unaided – 67.1% and Private aided – 9.1%. Only 23.8% Institutions are in Government sector. 56.1% Institutions are located in Rural Area.



1.1.6)Vocational schools

The Central Board of Secondary Education (CBSE) in India has included vocational subjects from following topics in their senior secondary education:

- **Commerce based**
- **Engineering based**
- **Health and Para Medical based**
- **Home Science based**
- **Agriculture based**

- Hospitality and Tourism based
- Others

There are **more than 2128** Polytechnic Colleges in India.

There exist different types of polytechnic colleges based on type, they can be divided as:-

- Private Polytechnic Colleges-Funded privately
- Government Polytechnics Colleges -funded by government
- Women Polytechnic Colleges-can be funded either by government or by private.

1.1.b)Expenditure of Government on Education and Segments of Education sector:-

There has been a considerable increase in the spread of educational institutions since independence. As represented above in point 2.1, during the period 1950-51 and 2011-12 the number of Primary Schools increased by 3.4 times, while the Upper Primary Schools increased by 34.9 times each (Figure 2).

TABLE NO. (4) - PUBLIC EXPENDITURE ON EDUCATION AS PERCENTAGE OF GDP FROM 2000-01 TO 2019-20

S.NO.	YEAR	GDP AT CURRENT PRICES (AT FACTOR COST) (RS. IN CRORE)	TOTAL EXPENDITURE ON EDUCATION BY EDUCATION DEPARTMENTS (RS. IN CRORE)						TOTAL EXPENDITURE ON EDUCATION BY EDUCATION & OTHER DEPARTMENTS (RS. IN CRORE)					
			STATES	CENTRE	STATES+ CENTRE	STATES AS % OF GDP	CENTRE AS % OF GDP	(STATES+ CENTRE) AS % OF GDP	STATES	CENTRE	STATES+ CENTRE	STATES AS % OF GDP	CENTRE AS % OF GDP	(STATES+ CENTRE) AS % OF GDP
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
1	2000-01	1999802.00	54572.84	7925.25	62498.09	2.74	0.40	3.14	72290.53	10195.95	82486.48	3.63	0.51	4.14
2	2001-02	2167745.00	56810.73	8036.98	64847.71	2.62	0.37	2.99	65746.19	14119.52	79865.71	3.03	0.65	3.68
3	2002-03	2338200.00	59472.29	9089.25	68561.54	2.54	0.39	2.93	69350.70	16156.63	85507.33	2.97	0.69	3.66
4	2003-04	2622216.00	62867.44	10177.47	73044.93	2.40	0.39	2.79	71978.28	17100.97	89079.25	2.74	0.65	3.40
5	2004-05	2971464.00	68169.62	13111.23	81280.85	2.29	0.44	2.73	78668.14	18025.96	96694.10	2.65	0.61	3.26
6	2005-06	3390501.00	76660.54	17823.16	94483.70	2.26	0.53	2.79	90019.94	23209.77	113228.71	2.66	0.68	3.34
7	2006-07	3953276.00	86466.89	23873.47	110340.36	2.19	0.60	2.79	103147.47	34236.52	137383.99	2.61	0.87	3.48
8	2007-08	4582086.00	98609.88	26769.75	125379.63	2.15	0.58	2.74	115877.90	39919.37	155797.27	2.53	0.87	3.40
9	2008-09	5303567.00	118386.73	34435.67	15232.40	2.23	0.65	2.88	141091.25	47977.59	189668.84	2.66	0.90	3.56
10	2009-10	6108903.00	150194.39	39941.69	190136.08	2.46	0.65	3.11	177232.79	64023.23	241256.02	2.90	1.05	3.95
11	2010-11	7248860.00	181604.73	51905.38	233510.11	2.51	0.72	3.22	212817.50	80660.73	293478.23	2.94	1.11	4.05
12	2011-12	8736329.00	209830.99	60260.79	27099.178	2.40	0.69	3.09	24785.86	86074.52	333930.38	2.84	0.99	3.82
13	2012-13	9944013.00	233124.92	66087.62	29912.54	2.34	0.66	3.01	278375.27	89757.60	368132.87	2.80	0.90	3.70
14	2013-14	11233522.00	261737.14	71494.77	33231.91	2.33	0.64	2.97	318249.79	112629.03	430878.82	2.83	1.00	3.84
15	2014-15	12467959.00	292386.00	68925.78	361311.78	2.35	0.55	2.90	373457.32	133391.82	506849.14	3.00	1.07	4.07
16	2015-16	13771874.00	319808.70	67346.62	387155.32	2.32	0.49	2.81	435229.55	142562.97	577792.52	3.16	1.04	4.20
17	2016-17	15391669.00	3560031.31	71930.65	420018.96	2.31	0.47	2.78	484777.08	1688322.25	653099.33	3.15	1.09	4.24
18	2017-18 (Actual)	17090042.00	378542.46	79992.63	458535.09	2.21	0.47	2.68	495593.80	166557.65	662151.45	2.90	0.97	3.87
19	2018-19 (RE)	18886957.00	457541.52	80875.86	538417.38	2.42	0.43	2.85	601951.18	185489.57	787440.74	3.19	0.98	4.17
19	2019-20 (BE)	20351013.00	513761.76	92733.64	606495.40	2.52	0.46	2.98	666105.47	227080.74	893186.21	3.27	1.12	4.39

Figure 7:- Expenditure on Education as percentage of GDP

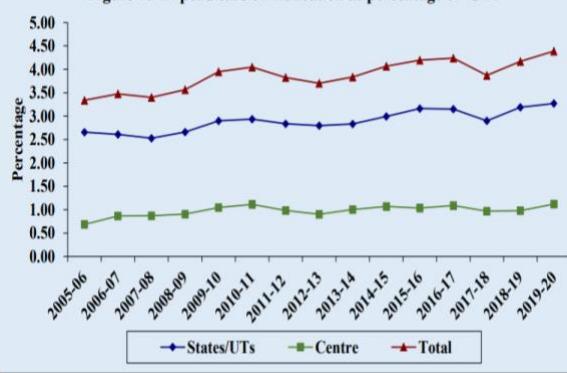
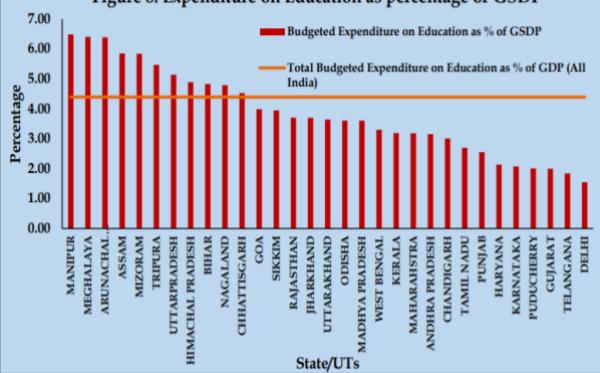


Figure 8: Expenditure on Education as percentage of GSDP



We see that the state has a major part in the expenditure on education alongside this we also note that there has been a year on year increase in the public expenditure on education although as a percent of

GDP this percent has been fluctuating either an increase in some year and a decrease in some another. As a total, there has been a small marginal increase in the expenditure on education as a percentage of GDP from 2005-06 to 2019-20.

The value of expenditure on education as a percentage of GSDP varies from state to state with Delhi being the lowest and Manipur being the highest. A total of 11 states are over national average in this data.

Table 6: Statement indicating Public expenditure on Education as percentage of GDP Sector-wise (Estimated)

S.NO.	Sector	Expenditure (Rs in crore)			Expenditure(As % of GDP)		
		States/Uts	Centre	Total	States/Uts	Centre	Total
Year 2013-14(Actual) GDP :- Rs.11233522 crore							
1	Elementary Education	138053.48	44096.93	182150.40	1.23	0.39	1.62
2	Secondary Education	94939.21	12135.54	107074.74	0.85	0.11	0.95
3	University & Higher Education	48957.90	26254.15	75212.05	0.44	0.23	0.67
4	Adult Education	512.06	421.88	933.94	0.00	0.00	0.01
5	Technical Education	35787.14	29720.53	65507.67	0.32	0.26	0.58
Total (Education)		318249.78	112629.03	430878.81	2.83	1.00	3.84
Year 2014-15(RE) GDP :- Rs.12467959 crore(Provisional)							
1	Elementary Education	173849.69	44909.35	218759.03	1.39	0.36	1.75
2	Secondary Education	112121.04	12733.88	124854.42	0.90	0.10	1.00
3	University & Higher Education	55415.31	23883.18	79298.48	0.44	0.19	0.64
4	Adult Education	957.00	461.04	1418.04	0.01	0.00	0.01
5	Technical Education	44455.15	31343.21	75798.36	0.36	0.25	0.61
Total (Education)		386798.18	113330.16	500128.34	3.10	0.91	4.01
Year 2015-16(BE) GDP :- Rs.13764037 crore (Provisional)							
1	Elementary Education	203914.28	42169.14	246083.42	1.48	0.31	1.79
2	Secondary Education	124999.86	12348.47	137348.34	0.91	0.09	1.00
3	University & Higher Education	66757.88	31401.18	98159.06	0.49	0.23	0.71
4	Adult Education	878.18	539.63	1417.81	0.01	0.00	0.01
5	Technical Education	44580.19	32484.54	77064.73	0.32	0.24	0.56
Total (Education)		441130.40	118942.96	560073.36	3.20	0.86	4.07

TABLE NO. (5)- PUBLIC EXPENDITURE ON EDUCATION AS PERCENTAGE OF GDP SECTOR-WISE (ESTIMATED)

S.NO.	SECTOR	EXPENDITURE (RS. IN CRORE)			EXPENDITURE (AS % OF GDP)		
		STATES/UTS	CENTRE	TOTAL	STATES/UTS	CENTRE	TOTAL
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Year 2017-18 (Actual) GDP :- Rs.17090042 crore (3rd Revised Estimate)							
1	Elementary Education	217766.05	57306.47	275072.52	1.27	0.34	1.61
2	Secondary Education	151052.24	22692.32	173744.56	0.88	0.13	1.02
3	University & Higher Education	57127.36	27449.11	84576.47	0.33	0.16	0.49
4	Adult Education	615.36	260.54	875.89	0.00	0.00	0.01
5	Technical Education	69032.80	58849.21	127882.00	0.40	0.34	0.75
Total (Education)		495593.80	166557.65	662151.45	2.90	0.97	3.87
Year 2018-19 (RE) GDP :- Rs.18886957 crore (2nd Revised Estimate)							
1	Elementary Education	271079.32	71328.34	343207.66	1.44	0.38	1.82
2	Secondary Education	180801.35	25836.52	206637.86	0.96	0.14	1.09
3	University & Higher Education	71664.73	28832.94	100497.67	0.38	0.15	0.53
4	Adult Education	630.66	99.48	730.14	0.00	0.00	0.00
5	Technical Education	76975.13	59392.29	136367.42	0.41	0.31	0.72
Total (Education)		601951.18	185489.57	787440.74	3.19	0.98	4.17
Year 2019-20 (BE) GDP :- Rs.20351013 crore (1st Revised Estimate)							
1	Elementary Education	299344.29	86048.08	385392.37	1.47	0.42	1.89
2	Secondary Education	192502.60	16265.00	208767.60	0.95	0.08	1.03
3	University & Higher Education	72433.63	32479.76	104913.39	0.36	0.16	0.52
4	Adult Education	678.37	92.20	770.57	0.00	0.00	0.00
5	Technical Education	101146.58	92195.71	193342.28	0.50	0.45	0.95
Total (Education)		666105.47	227080.74	893186.21	3.27	1.12	4.39

We see that the Public expenditure has increased by more than 116% on elementary education, more than 102% on secondary education, more than 48% on University and higher education ,More than 32% on Adult education and more than 126% on Technical education from fiscal year 2013-14 to 2019-20

1.2)Outcomes and performance on outcomes of Education Sector

There are a host of ranking to corroborate the outcome of expenditure and steps taken towards improvement in education sector.

India's HDI value and rank

India's HDI value for 2019 is 0.645 which put the country in the medium human development category positioning it at 131 out of 189 countries and territories.

Between 1990 and 2019, India's HDI value increased from 0.429 to 0.645, an increase of 50.3 percent. Table A reviews India's progress in each of the HDI indicators. Between 1990 and 2019, India's life expectancy at birth increased by 11.8 years, mean years of schooling increased by 3.5 years and expected years of schooling increased by 4.5 years. India's GNI per capita increased by about 273.9 percent between 1990 and 2019.

	Expected years of schooling (years)
Education index	12.2
Expected years of schooling, female (years)	0.555
Expected years of schooling, male (years)	12.6
Government expenditure on education (% of GDP)	11.7
Gross enrolment ratio, pre-primary (% of preschool-age children)	3.8
Gross enrolment ratio, primary (% of primary school-age population)	14
Gross enrolment ratio, secondary (% of secondary school-age population)	113
Gross enrolment ratio, tertiary (% of tertiary school-age population)	75
Literacy rate, adult (% ages 15 and older)	28
Mean years of schooling (years)	74.4
Mean years of schooling, female (years)	6.5
Mean years of schooling, male (years)	5.4
Percentage of primary schools with access to the internet	8.7
Percentage of secondary schools with access to the internet	n.a.
Population with at least some secondary education (% ages 25 and older)	n.a.
Population with at least some secondary education, female (% ages 25 and older)	39.3
Population with at least some secondary education, male (% ages 25 and older)	27.7
Primary school dropout rate (% of primary school cohort)	47.0
Primary school teachers trained to teach (%)	8.8
Programme for International Student Assessment (PISA) score in mathematics	70
Programme for International Student Assessment (PISA) score in reading	n.a.
Programme for International Student Assessment (PISA) score in science	n.a.
Pupil-teacher ratio, primary school (pupils per teacher)	33
Survival rate to the last grade of lower secondary general education (%)	95

India's HDI trends based on consistent time series data and new goalposts

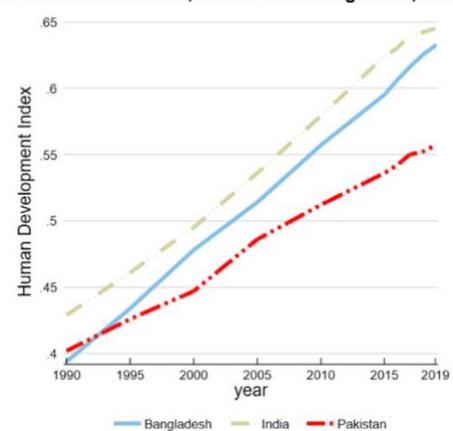
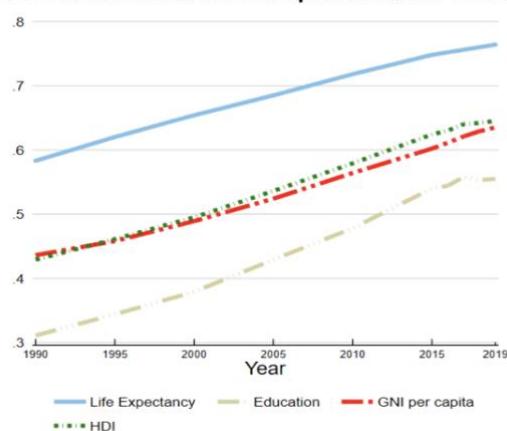
	Life expectancy at birth	Expected years of schooling	Mean years of schooling	GNI per capita (2017 PPP\$)	HDI value
1990	57.9	7.6	3.0	1,787	0.429
1995	60.3	8.2	3.5	2,078	0.461
2000	62.5	8.3	4.4	2,548	0.495
2005	64.5	9.7	4.8	3,217	0.536
2010	66.7	10.8	5.4	4,182	0.579
2015	68.6	12.0	6.2	5,391	0.624
2016	68.9	11.9	6.4	5,722	0.630
2017	69.2	12.3	6.5	6,119	0.640
2018	69.4	12.2	6.5	6,427	0.642
2019	69.7	12.2	6.5	6,681	0.645

There has been a significant increase in expected years of schooling with the increase being from 7.6 in 1990 to 12.2 in 2019.

Mean years of schooling is another factor that has seen an increase from a value of 3.0 in 1990 to around 6.5 in 2019.

Alongside this GNI per capital has also increased from \$ 1787 in 1990 to \$6681 in 2019.

Figure 1: Trends in India's HDI component indices 1990-2019 Figure 2: HDI trends for India, Pakistan and Bangladesh, 1990-2019



India's 2019 HDI of 0.645 is above the average of 0.631 for countries in the medium human development group and above the average of 0.641 for countries in South Asia. From South Asia, India is compared with Bangladesh and Pakistan, which have HDIs ranked 133 and 154, respectively (see Table B).

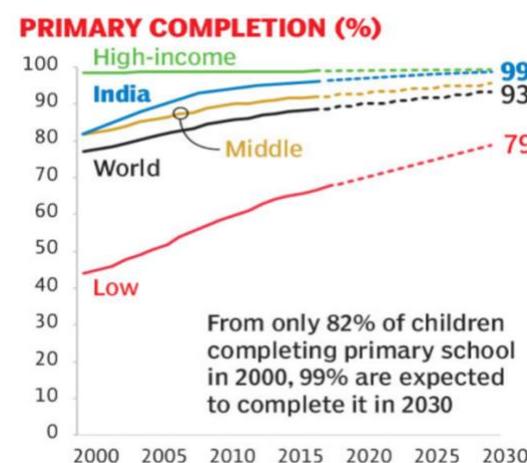
Expected years of schooling (years)

This factor represents the number of years of schooling that a child of school entrance age can expect to receive if prevailing patterns of age-specific enrolment rates persist throughout the child's life.

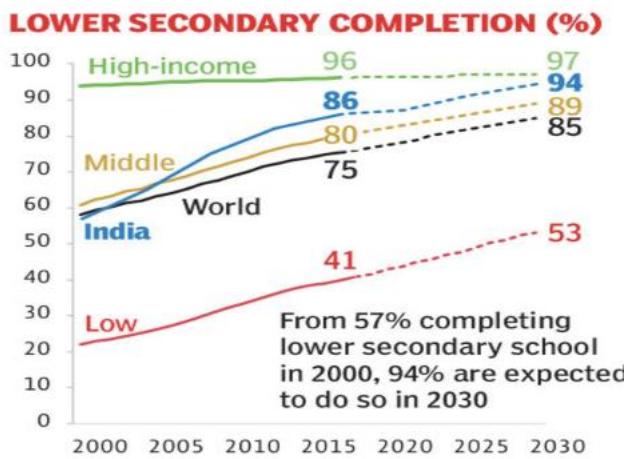
HDI Rank	Country	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
131	India Regions	7.6	7.7	7.9	8.0	8.1	8.2	8.2	8.2	8.3	8.3	8.4	8.6	9.2	9.4	9.7	9.9	10.2	10.5	10.4	10.8	11.3	11.5	11.6	11.9	12.0	11.9	12.3	12.2	a	
	Arab States	8.9	8.9	9.0	9.1	9.2	9.3	9.5	9.6	9.6	9.9	10.0	10.2	10.4	10.5	10.7	10.9	10.9	11.1	11.2	11.3	11.4	11.6	11.7	11.6	11.7	11.8	12.0	12.1		
	East Asia and the Pacific	8.9	8.9	9.0	9.1	9.0	9.2	9.4	9.5	9.6	9.8	9.8	10.0	10.3	10.6	10.8	11.0	11.4	11.8	12.1	12.3	12.5	12.7	12.9	13.1	13.2	13.3	13.4	13.4	13.6	
	Europe and Central Asia	11.0	11.0	10.9	10.8	10.8	10.8	10.9	11.0	11.2	11.4	11.5	11.9	12.2	12.4	12.4	12.5	12.7	12.8	12.8	13.0	13.2	13.5	13.6	14.0	14.2	14.3	14.5	14.5	14.6	14.7
	Latin America and the Caribbean	11.2	11.2	11.4	11.4	11.5	11.7	11.9	12.1	12.3	12.6	12.8	13.0	13.2	12.9	13.0	13.1	13.1	13.2	13.4	13.5	13.6	13.7	13.7	14.2	14.3	14.3	14.4	14.4	14.5	14.6
	South Asia	7.2	7.4	7.5	7.6	7.7	7.9	7.9	8.0	8.0	8.1	8.1	8.2	8.4	8.8	9.0	9.3	9.5	9.8	10.0	10.1	10.4	10.8	11.0	11.1	11.3	11.4	11.8	11.8	11.8	11.7
	Sub-Saharan Africa	6.3	6.3	6.3	6.4	6.4	6.6	6.6	6.7	6.8	7.0	7.2	7.4	7.6	7.8	8.0	8.2	8.4	8.6	8.9	9.2	9.3	9.1	9.4	9.5	9.8	9.8	9.9	10.0	10.0	10.1
	Least Developed Countries	5.2	5.3	5.4	5.5	5.6	5.7	5.9	6.1	6.3	6.6	6.8	7.0	7.3	7.4	7.6	7.9	8.1	8.3	8.6	8.8	9.0	9.2	9.3	9.4	9.5	9.6	9.7	9.8	9.8	9.9
	Small Island Developing States	9.7	9.7	9.7	9.8	9.7	9.7	9.9	9.9	10.0	10.2	10.2	10.4	10.5	10.6	11.0	11.2	11.5	11.8	12.0	12.1	12.2	11.9	11.9	12.0	12.2	12.2	12.2	12.3		
	Organization for Economic Co-operation and Development	13.3	13.5	13.0	13.8	14.0	14.2	14.3	13.9	14.5	14.6	14.5	14.7	14.8	14.9	15.0	15.1	15.1	15.2	15.2	15.3	15.5	15.6	15.7	16.0	16.0	16.1	16.3	16.3	16.3	16.3
1	World	9.2	9.3	9.1	9.4	9.5	9.6	9.7	9.6	9.9	10.0	10.1	10.2	10.4	10.6	10.8	11.0	11.2	11.4	11.6	11.7	11.8	12.1	12.2	12.4	12.5	12.5	12.7	12.7	12.7	12.7

We see that India has 12.2 years of Expected years of schooling and this value has risen from a low of 7.8 in 1990. This is attributed to increase in public expenditure, increase in number of schools and also an increase in the governmental effort in making children go to school for longer.

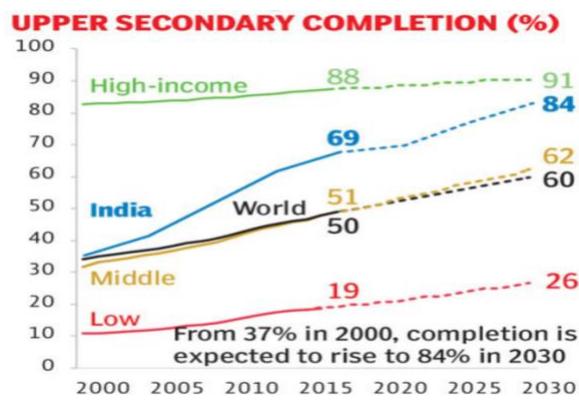
This value of 12.2 puts near but short of the world average of 12.7 Expected years of schooling. This therefore needs to be addressed further but India seems to be on the right path and can plod its way onto a more a better value in this parameter meaning children going to school for longer,



We see that there has been a significant increase in the primary completion percentage amongst the Indian population showing development in the education sector pertaining to continued spending.



We see that there has been a significant increase in the lower secondary completion percentage amongst the Indian population showing that India has achieved noticeable growth wrt more students completing lower secondary.



On interpreting this graph we see that India has risen from a value closer to the world average to a value that is in between high income country average and the world average. In the future, India will further bolster itself on this parameter .

Government expenditure on education (% of GDP)

We see that the government expenditure as a percentage of GDP has been fluctuating since that of the early 2000's but as Indian GDP has multiplied manifold during this time, we can safely say that the public expenditure of education has increased by quite some margin as already calculated earlier.

HDI Rank	Country	1990	1995	2000	2005	2010	2011	2012	2013	2014	2015	2016	2017	2018	2013-2018
131	India	4.3	3.2	3.4	3.8	3.9	3.8	3.8

Primary school teachers trained to teach (%)

This represents the percentage of primary school teachers who have received the minimum organized teacher training (preservice or in-service) required for teaching at the primary level.

We see that India has 70% Primary school teachers trained to teach and this value is pitted against a world average of 81% and an South Asia average of 71%.Therefore we can say that this factor is one of the drawbacks that India faces and push towards more upskilling of primary school teachers is needed.

HDI Rank	Country	2000	2005	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2010-2019
131	India	70	70	70
Regions															
Arab States		90
East Asia and the Pacific		99
Europe and Central Asia		94
Latin America and the Caribbean		94
South Asia		70	71
Sub-Saharan Africa		79
Least Developed Countries		77
Small Island Developing States		93
Organization for Economic Co-operation and Development		97
World		81

Gross enrolment ratio, pre-primary (% of preschool-age children)

Definition of this factor states that it is the total enrolment in a given level of education (pre-primary, primary, secondary or tertiary), regardless of age, expressed as a percentage of the official school-age population for the same level of education.

We see that India has a significant increase in pre-primary gross enrolment ratio from 1990 to 2014 (from 3 to 14) and this factor on a world average has a value of 52 .So India is quite far back but the growth with regards to India has been noticeable

HDI Rank	Country	1990	1995	2000	2005	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2014-2019
131	India	3	4	..	6	7	8	8	10	12	12	13	14	14
Regions																
Arab States		18	18	27	25	..	26	31
East Asia and the Pacific		..	25	40	74	79	79	80	82
Europe and Central Asia		49	28	24	30	38	41	42	40	34	35	36	39
Latin America and the Caribbean		68	70	73	75	75	76	78
South Asia		11	9	11	17	20	20	22	23	24	26
Sub-Saharan Africa		16	26	28
Least Developed Countries		13	16	23	25
Organization for Economic Co-operation and Development		60	68	77	79	80	78	79	79	80	81
World		27	29	34	38	43	46	48	49	52	52

Gross enrolment ratio, primary (% of primary school-age population)

This factor states that the total enrolment in a given level of education (pre-primary, primary, secondary or tertiary), regardless of age, expressed as a percentage of the official school-age population for the same level of education.

We see that India has a significant increase in primary gross enrolment ratio from 1995 to 2019 (from 91 to 113 and this factor on a world average has a value of 104. So Therefore, India is quite ahead of the rest of the world with regards to the enrolment ratio in primary and India has shown significant improvement in this factor

HDI Rank	Country	1990	1995	2000	2005	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2014-2019	
131	India	91	94	94	..	109	108	110	111	108	108	115	113	113	
	Regions	
	Arab States	98	95	100	99	101	99	100	..	100	100	
	East Asia and the Pacific	119	109	107	107	106	105	102	102	103	103	103	
	Europe and Central Asia	107	100	103	101	100	100	99	104	103	103	102	98	
	Latin America and the Caribbean	116	..	114	113	109	108	107	107	108	
	South Asia	88	95	91	..	107	107	108	109	107	107	112	111	
	Sub-Saharan Africa	73	77	86	97	98	99	100	100	100	102	98	100	
	Least Developed Countries	68	95	102	102	102	..	102	102	101	104	
	Small Island Developing States	..	93	99	94	108	105	
	Organization for Economic Co-operation and Development	105	103	103	103	102	102	102	102	102	102	102	103	
	World	99	98	96	..	104	104	105	104	103	104	104	104	

Gross enrolment ratio, secondary (% of secondary school-age population)

This states that the total enrolment in a given level of education (pre-primary, primary, secondary or tertiary), regardless of age, expressed as a percentage of the official school-age population for the same level of education

We see that India has a significant increase in primary gross enrolment ratio from 1995 to 2019 (from 45 to 75 and this factor on a world average has a value of 78. So Therefore, India is near the world average with regards to Gross secondary enrolment ratio .This factor has shown significant improvement but still India needs much work on this factor.

HDI Rank	Country	1990	1995	2000	2005	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2014-2019	
131	India	..	45	45	54	63	66	69	69	74	74	75	73	75	..	75	
	Regions	
	Arab States	63	..	69	72	77	
	East Asia and the Pacific	39	..	58	..	84	..	89	
	Europe and Central Asia	81	..	85	87	89	91	90	97	99	100	101	101	
	Latin America and the Caribbean	88	..	91	90	95	95	95	96	98	
	South Asia	..	48	47	51	60	62	65	65	70	69	71	71	
	Sub-Saharan Africa	28	34	40	42	44	46	44	
	Least Developed Countries	34	41	41	43	47	49	
	Small Island Developing States	79	77	
	Organization for Economic Co-operation and Development	84	93	93	97	97	98	98	102	103	105	107	107	
	World	52	58	59	64	71	74	75	78	78	77	79	76	

Gross enrolment ratio, tertiary (% of tertiary school-age population)

Total enrolment in a given level of education (pre-primary, primary, secondary or tertiary), regardless of age, expressed as a percentage of the official school-age population for the same level of education. Is shown by this factor.

The world has a percentage value of 39 in here whereas the India has a current value of 28 in 2019. This shows that the world is ahead on average than that of India.

India needs work in this segment and although there has been significant improvement in this factor but still more work is needed.

HDI Rank	Country	1990	1995	2000	2005	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2014-2019
131	India	6	6	10	11	18	23	24	24	25	27	27	27	28	..	28
	Regions
	Arab States	12	22	26	25	29	31	33	35	38
	East Asia and the Pacific	10	44
	Europe and Central Asia	27	29	..	40	48	50	53	56	57	58	63
	Latin America and the Caribbean	44	48	52
	South Asia	5	10	20	21	23	24	24	..	25	24	26
	Sub-Saharan Africa	5	7	8	9
	Least Developed Countries	3	5	..	9	9	11
	Organization for Economic Co-operation and Development	39	46	70	71	73	75	72
	World	14	17	17	21	26	28	31	36	38	40	41	39

Population with at least some secondary education (% ages 25 and older)

Definition: Percentage of the population ages 25 and older that has reached (but not necessarily completed) a secondary level of education.

In India there are 39.3% of population that has some secondary education. The world average for the same factor is 64.5%. Therefore improvement in this factor is needed.

HDI Rank	Country	1990	1995	2000	2005	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	a
131	India	24.0	26.9	30.4	37.4	42.1	37.5	37.9	38.3	38.5	38.8	39.0	39.2	39.2	39.3	39.3
	Regions
	Arab States	20.6	25.1	30.4	34.2	41.5	43.3	45.1	46.7	48.3	49.1	50.7	52.1	52.5	52.5	52.5
	East Asia and the Pacific	32.7	39.3	45.5	54.4	60.7	62.8	64.8	66.9	68.9	69.0	70.9	71.0	72.1	72.4	..
	Europe and Central Asia	55.9	60.8	66.1	69.4	77.5	79.0	80.1	80.9	82.2	81.3	83.4	83.9	83.8	83.7	..
	Latin America and the Caribbean	29.1	34.6	39.0	46.3	50.6	52.8	54.9	55.7	56.6	57.7	58.4	59.2	60.1	60.3	..
	South Asia	23.4	26.6	30.3	37.8	41.9	38.4	39.0	39.3	39.9	40.6	40.9	41.1	41.3	41.4	..
	Sub-Saharan Africa	16.4	21.4	24.0	26.2	29.2	30.3	31.1	32.0	32.2	32.4	33.3	33.6	33.9	32.8	..
	Least Developed Countries	12.3	14.7	17.0	19.1	23.4	23.6	24.4	24.6	25.5	27.1	27.9	28.5	29.1	28.4	..
	Small Island Developing States	34.9	42.3	47.6	52.0	46.4	48.4	57.4	58.5	59.5	59.6	60.4	60.6	60.9	59.5	..
	Organization for Economic Co-operation and Development	61.1	68.4	73.0	78.0	82.4	83.3	83.1	83.6	84.1	84.3	85.0	85.1	85.4	85.4	85.4
	World	40.2	45.4	49.8	55.9	60.0	60.4	61.3	62.3	63.1	63.3	64.2	64.2	64.6	64.6	64.5

1.3) Issues inhibiting Functioning of Educational institutions

Lower Expenditure on education as compared to other countries.

In terms of education spending, notably higher education, the government spent roughly Rs.15,440 crore in the fiscal year 2010–11. Education spending increased by 378 percent in rural regions and 345 percent in urban areas of the country between 1999 and 2009. Spending on children's education is also on the rise. However, when we look at education spending as a percentage of GDP, India falls below several developed and developing countries. We understand that there is a funding shortage, which can perhaps be fulfilled by investments from private sector. But the lack of Public Expenditure cannot be negated as the % expenditure of GDP has barely increased in the past few years. Higher Public expenditure would mean a shift of students from public to private, leaving only poor households tied to the public system.

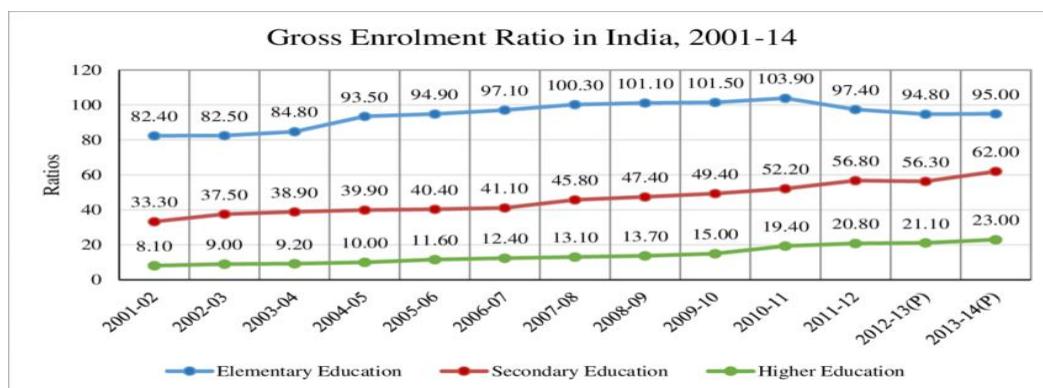
Expenditure on education			
Country	Spending on education as a % of GDP	Country	Spending on education as a % of GDP
Switzerland	5.8	South Africa	5.3
U.S.	5.7	Thailand	5.2
France	5.6	Chile	4.2
U.K.	5.3	Brazil	4.2
Malaysia	8.1	India	4.1
Mexico	5.3	Russia	3.8

Note: Government education expenditure as a percentage of GDP (2000–2002).

Source: United Nations Human Development Programme.

Low Gross Enrolment

Approximately 1.86 crore students are enrolled in various fields of higher education in India, including Business Management. Despite the enormous number of students studying in many fields, we have not seen a significant increase in production since skills and talents are in short supply to support economic activities. As a result, there is severe worry about these educated people's employability. In 2010, India's gross enrolment ratio (GER) for higher education was 13%. However, the number of students enrolled varies each state. We must also acknowledge that our enrolment rate is far lower than that of numerous other nations. China has a GER of 23%, Brazil has a GER of 34%, the United Kingdom has 57% and the US has 83%. In India, it is even difficult to reach a GER of 30 percent. In 2019 the GER for tertiary schools was 28%. This situation hence is one of the major factors for health systems not being able to work properly.

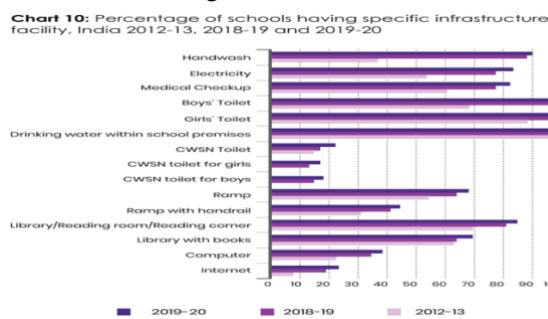


Lack of Facilities/ Low Student-Teacher Ratio:

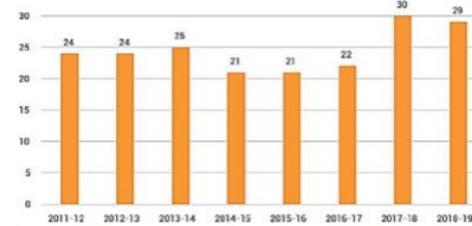
Another issue that has to be addressed in order to enhance the Indian education system is the student-to-teacher ratio. This percentage is extremely high in India when compared to other comparable

countries across the world. For example, whereas this ratio is 11.4 in industrialised nations, it is as high as 22.0 in India. According to the 2016 Annual Survey of Education Report, 3.5 percent of Indian schools had no toilet facilities, while just 68.7% had usable toilet facilities. In 2016, 75.5 percent of the schools surveyed had a library, down from 78.1 percent in 2014. From 32.9 percent in 2010 to 61.9 percent in 2016, the percentage of schools having separate girls' toilets has grown. 74.1 percent of schools had access to drinking water, while 64.5 percent had playgrounds. Internet/ WIFI Facilities are out of reach of many students in private universities. This makes the situation quite difficult to handle and it is the students and hence the future of the country that takes the hit.

Also, as already stated, the teacher to student ratio is very high in India meaning the interaction between students and teacher is not as good. This therefore, is not a situation that renders effect transfer of knowledge.



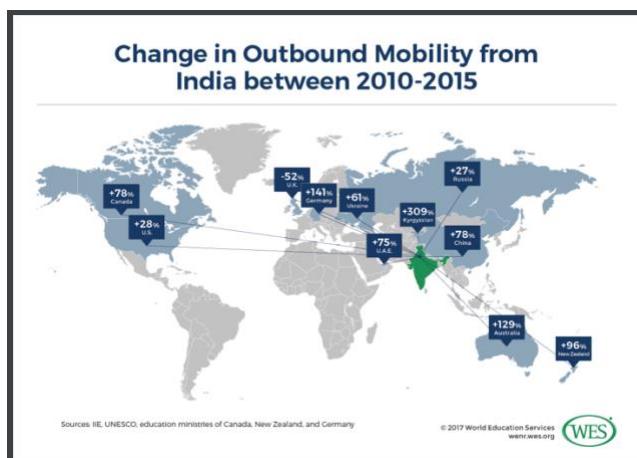
Student Teacher Ratio:



“Figure 7 Student Teacher Ratios (2011-2018)”
(Data Source UGC (2018) and AISHE - various years)

Lack of Good Quality of teaching

Raising the quality and standards of our education system is necessary in order to develop the abilities and potential of our big population. Numerous of our experts (engineers, physicians, and management professionals) are unemployed, despite the fact that many chances exist in the globalised world. One of the key issues is a lack of quality education, which results in people who are competent yet unemployed. Only two of India's leading business schools appeared in the top fifteen of the Financial Times' worldwide ranking of business schools for the year 2011. The majority of the top-ranked business schools were from the United States. China was even ahead of India in this list. However, there is a bright side. We have faculties with doctoral qualifications and of global standards in these high ranked Indian Schools to deliver quality education. This all shows the need to develop a Centre for excellence of global standards.



Preponderance of Traditional Teaching Methods and lack of Project Based Learning:-

Traditional teaching techniques are used in educational institutions, and instructors do not use technology or audio-visual aids in the classroom, especially in nursery schools. In the school system,

there is a need for technology and the internet, particularly in rural regions, which is not being met. A learning-based initiative is lacking in higher education. Young graduates must gain new skills, particularly vocational ones that will help them find work. As a result, we don't put much emphasis on project-based learning. In India, most colleges provide multiple curricula that are rich in theoretical knowledge. The main goal of this programme is to pass the test. This situation is further exacerbated by the fact that the curriculum falls short of market need. Most colleges continue to use outdated and out-of-date curricula as the quality and skill of education is changing every day due to globalization.

1.4) Solutions to issues inhibiting effective functioning of the organisations that deliver Education

By establishing a connection between Industry and Academics and redesigning of courses taught by educational institutions.

By Establishing a link between industry and academia (which is critical), individuals should acquire skills and knowledge that can ensure employability and make effective use of information, skills, and talents in the execution of tasks and functions in today's world.

- Programs and courses in educational institutions should be prepared/designed in a way that students can choose multifarious roles and companies.
- Also, having a corporation, academic affiliation can help in bolstering research and act as a bulwark for students. This can also help in increasing funding for institutes which in turn help in improving facilities, infrastructure etc.
- Alongside this, Various training events, workshops, and short courses should be conducted by the industry to assist students. These industries could help students by conducting various consulting training activities, workshops, short courses and student industrial training.

Give importance to technology in education/ High Tech Libraries

As the world is entering the information era. Advances in communication, information, and technology will lead to the creation of new, innovative, and cost-effective means of providing higher education to individuals.

We see that, Libraries in educational institutions in several sections of the country are undeveloped. A library should be accessible online and conducive to serious study.

- It is, therefore, critical to guarantee that libraries in nursery schools, other schools, colleges, and universities are well-developed, well-organized, and include all of the necessary resources relevant to all of the disciplines that are important to the students. It is also imperative to make sure that computers and the internet are also only available at higher educational institutions, colleges, and universities, where students can utilise them.
- This can be made sure by creation of new libraries, computer centres and public wifi hotspots so that all can access internet with ease.
- Whilst, courses are designed in schools and in primary schools respectively, it is of fundamental importance to make sure that good use of technology is made. This will not only help students reach out and develop at a global level by creation of a multicultural environment around them but support them in all-round development by providing with educational material from different parts of globe in abundance. This is not possible with conventional modes of teaching.

Student-Centred Education and Dynamic Methods

it is a fact that higher education methods must also meet the requirements of learning to learn, learning to do, learning to be, and learning to become.

- To ensure this, Teachers will need to adopt new attitudes and abilities as a result of student-centred education and the use of dynamic educational approaches.
- Lecture-based teaching approaches will have to be replaced by methods that emphasise self-study, personal interaction between professors and students, alongside having dynamic seminars and workshops.
- Distance education methods will have to be used on a large basis.
- The student ratio must be reduced. (Currently, the ratio is around 29, it should be reduced to 15 so that a student can gain maximum attention from an instructor).
- Also the curriculum should have specific parts dedicated to student interest. (The Indian educational system is based on the premise that what is beneficial for one child is good for all children). However, one large educational system cannot meet the needs of everyone. Some people learn visually, while others learn auditorily. Some children learn more quickly, while others take longer.
- The curriculum should be constructed in such a way that each learner's latent talent is recognised and encouraged. Quick and hurried learning should be avoided.

Give more significance to primary and secondary education

Primary education is the foundation of a country's educational system. All future studies will be jeopardised if primary and secondary school instructors are inexperienced, unqualified, and underpaid. As a result, basic education requires greater attention than secondary education. Higher education institutions are currently competing for excellent students. Poor students attend the poorer and less reputable universities. This has a knock-on effect on youth's employability and develops a class divide. Therefore,

- Instructors should be given incentives so that the quality of instruction does not suffer.
- External experts must undertake an academic and administrative audit at colleges every three years to ensure excellence in all elements of academic activities.
- Self-financing colleges must apply for accreditation and meet the accreditation standards.
- Universities and colleges should recognise the importance of high-quality education and develop an action plan to improve quality in higher education.

Enabling World Class Education

The advancement of educational standards is not a priority for the Indian government. In terms of education, India must strive for world excellence.

- Many national institutions, such as those in the United States, the United Kingdom, and Australia, enable overseas students to study higher education in their nations as well as via correspondence courses. Similarly, by leveraging the globalisation process, India's world-class universities may offer courses to international students.
- consistent worldwide curriculum should be implemented
- International collaboration should be promoted. An increasing emphasis on international collaboration and action should be placed in order to discover suitable answers to global challenges, one of which is higher education

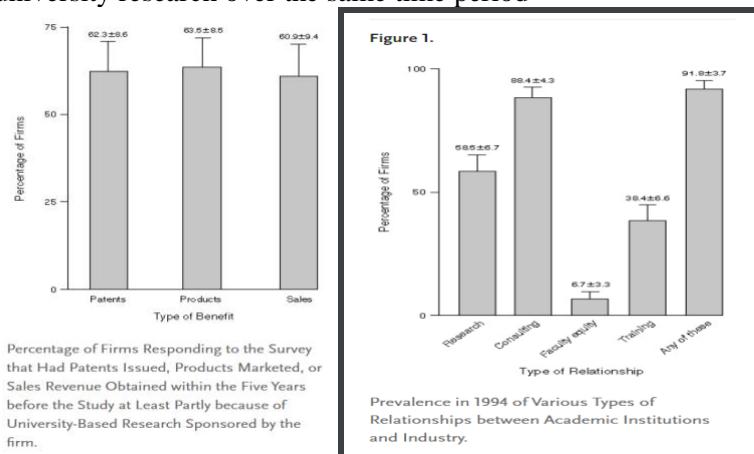
1.5)Reason out the solutions and evidence

By establishing a connection between Industry and Academics and redesigning of courses taught by educational institutions.

Courses in Indian Education system lack Industry interaction. They are more theory based than practical based/project based. Therefore, a shift in the structure of courses to more project based courses would ready students for the future. Seminars, workshops and skill building sessions are imperative to acclimatize one to the industrial world. Academic affiliation also helps in creating research opportunities which caters to the interest of students in the institution. Such a method is powerful way of strengthening our education system and would help achieve long term goals.

Real life example of establishing a connection between Industry and Academics

As seen in the figure, almost 90% of life-science enterprises in the United States have some sort of academic link. The utilisation of university faculty members as consultants was the most common sort of engagement (88 percent). More over half of life-science corporations (59 percent) contributed to university research, and 38% supported training by providing grants, fellowships, or scholarships to students and fellows. According to the survey respondents, their corporations funded more than 1500 university research projects worth more than \$340 million in 1994. According to the National Institutes of Health (NIH), nonindustrial sources provided roughly \$10.7 billion to higher education institutions in 1993 to fund life-sciences research. As a result of their investment in university research, more than 60% of corporations have gotten patents, products, and revenues (Figure 3). Using statistics on businesses' total quantities of patents and products over the last five years, patents, products, and revenues arising from research investments, and firms' spending in university and non-university research over the same time period



By Giving importance to technology in education

Because 1:1 technology is a relatively new phenomena in the educational environment, it must be adopted with caution and thought. Technology, whether in the form of laptops or other devices, should be viewed as a supplement to rather than a replacement for best practises in the classroom. Student motivation is another key aspect of 1:1 technology. In the classroom, the instructor must be aware of how and why pupils are driven to study. When introducing 1:1 technology into the classroom, teachers must first assess their student population to determine who they are working with, how they learn best, and how to build their confidence with technology so that they are satisfied with their learning experience and thus motivated to learn. Educators can't only rely on technology as a replacement.

Seeing the results of the above research, technology should be adopted with the use of tech personalised to the required level. This makes this factor that is sure to succeed

Research Questions :-1) Does 1:1 Technology effect student academic achievement?

2) Does 1:1 Technology effect student motivation?

Real life example of use of technology in education

Table 1. Comparison of Topic Tests Scores between 1:1 Implementation Classroom and the Traditional Classroom

Name of Test	1:1 Implementation Classroom	Traditional Classroom
Topic Test 1	78.26%	68.16%
Topic Test 3	82.58%	65.87%
Topic Test 4	72.35%	70.67%
Topic Test 5	67.05%	78.81%
Topic Test 6	71.53%	82.24%
Topic Test 7	71.30%	73.95%

In terms of the outcomes, the Topic 3 Test was the first test given in both classrooms at the start of the school year. On this Topic Test, the 1:1 Implementation Classroom scored much higher than the Traditional Classroom. The newness of the computers, the joy of the children participating, and the capacity to better discriminate using a laptop might all have contributed to these results

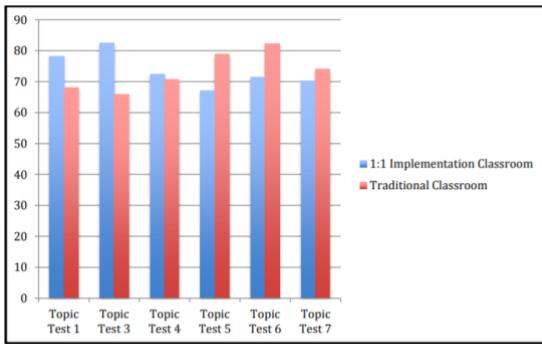


Figure 1. Comparison of Topic Tests Scores between 1:1 Implementation Classroom and the Traditional Classroom

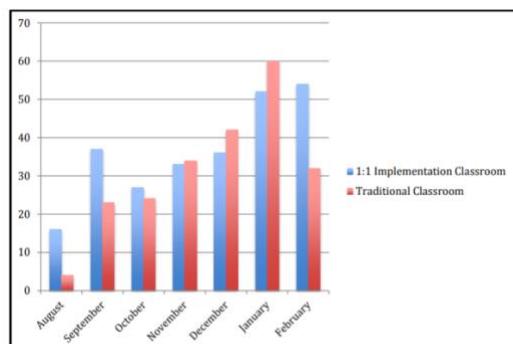


Figure 3. Comparison of Attendance Records between the 1:1 Implementation Classroom and the Traditional Classroom

Student centred Education and dynamic model:

In India there is a lack of courses that are focussed more on student rather than on teacher. With the older structure, there is a stagnancy that has fell upon everyone involved. With some changes which have been time tested and already shown success, there is a high possibility that these would succeed in India too.

Real life example of Student centred Education and dynamic model

Since 2001, the 2nd year Macroeconomics Unit Panel has seen an increasing number of students who are having difficulty completing the unit. The bulk of these kids appeared to be taking a more passive approach to their studies. They were less likely to ask questions in lectures and tutorials, to attend one-on-one consulting sessions, to examine their tutorial replies, and/or to discuss their grades with lecturers.

Research Objectives The objectives of this research are to: 1. Redesign lectures, tutorials and assessments in the Macroeconomics unit (HBE220N) in a manner which would facilitate student-centred teaching and learning. 2. Evaluate the effectiveness of the measures taken in (1) above. The adopted implementation was based on a shift from a teacher-centered to a student-centered approach, which began in semester 2 of 2010 and lasted throughout 2011. The action learning paradigm provides a significant role for reflection on teaching practise. Since the introduction, the percentage of students earning credits, distinctions, and high distinctions has grown. This is in line with student comments obtained at the end of each of the previous two semesters, which revealed that more students recognise the unit's importance. Also the attendance rates in tutorials were observed to increased slightly.

2) Health Sector

Health is considered to be a stock of capital that yields return in the form of healthy days just as wealth is a stock of capital that yields a stream of income. Efficiency of any person/worker depends considerably on his/her health. Workers whose health is not good or who fall sick quite often cannot do their job efficiently and their productivity as well as income declines.

Health is not only lack of illness or absence of disease but according to WHO “Health is a state of complete physical, mental and social well-being and not merely the absence of disease.” .

Health care means provision of services to improve health status of individuals. Anything that contributes to producing better health such as nutritious food, clean air, exercise, medical intervention etc. is considered to be health care. Health care infrastructure means an optimum mix of physical structure (building etc.) and human resources as both are required to deliver the desired health service

The Indian Healthcare system:-

India has a multi-payer universal health care model in which , a combination of public and private health insurance funds bears the cost with almost purely tax-funded public hospitals.

In India, The network of public hospital system is essentially free for all Indian residents except for small, often symbolic co-payments in some services.

At the federal level, a national publicly funded health insurance program was launched in 2018 called Ayushman Bharat. This aims to cover the bottom 50% (500 million people) of the country's population working in the unorganized sector (enterprises having less than 10 employees) and offers them free treatment at both public and private

The Indian Healthcare system

Public healthcare

Public healthcare is free for every Indian resident. Middle and upper class individuals living in India tend to use public healthcare less than those with a lower standard of living. The public health care system was originally developed in order to provide a means to healthcare access regardless of socioeconomic status or caste.

The healthcare system is organised into primary, secondary, and tertiary levels.

- At the primary level are Sub Centres and Primary Health Centres (PHCs).
- At the secondary level there are Community Health Centres (CHCs) and smaller Sub-District hospitals.
- At the top level of public care provided by the government is the tertiary level, which consists of Medical Colleges and District/General Hospitals.

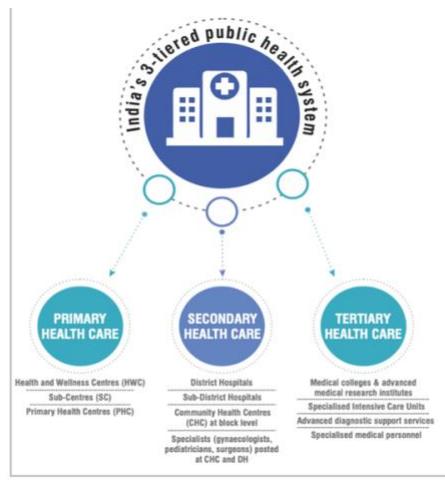


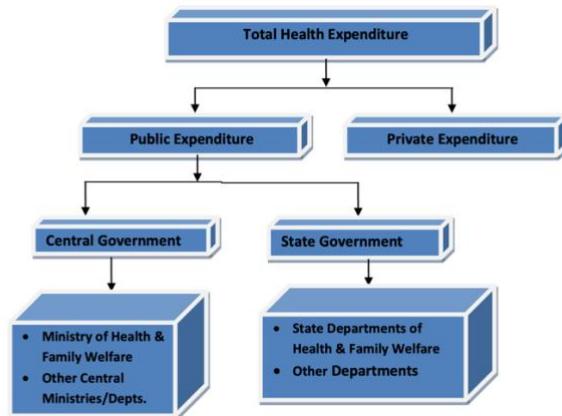
Figure 1: India's three-tiered public health system

Primary health care provides the first level of contact between the population and health care providers. It has three types of health care institutions, namely, sub-centre (SC), primary health centre (PHC) and, more recently, Health and Wellness Centre (HWC).

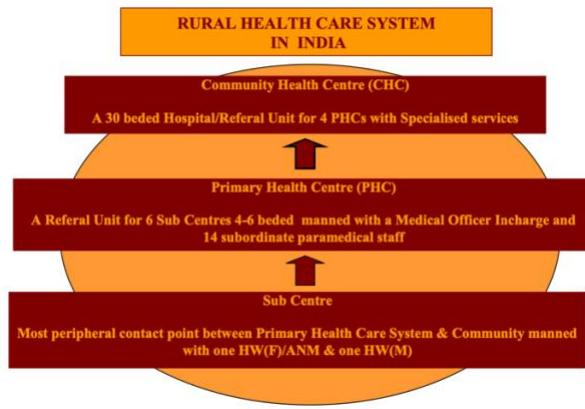
Secondary health care refers to a second tier of health system, in which, patients from primary health care are referred to higher hospitals for treatment. In India, the institutions for secondary health care include district hospitals, sub-district hospitals, and community health centres at the block level.

Tertiary health care is the third level of health system that includes specialized consultative care, provided mostly on referral basis, from primary and secondary health care. Tertiary care service is usually provided by medical colleges and advanced medical research institutes.

The expenditure on healthcare system in India is as follows:-



The Rural healthcare system in India can be represented as:-



As per the Rural Health Statistics (RHS) 2020, the status of public health facilities function in the Country is as under:

- 1,57,921 Sub Centres (SCs), as compared to 157411 in 2019, 158417 in 2018, 156355 in 2015 and 146026 in 2005
- 30,813 Primary Health Centres (PHCs) as compared to **24855 PHCs in 2019**, 25743 in 2018, 25308 in 2015 and 23236 in 2005
- 5,649 Community Health Centres (CHCs) as compared to **5335 in 2019**, 5624 in 2018, 5396 in 2015 and 3346 in 2005
- 1193 Sub-divisional Hospitals (SDHs) & 810 Districts Hospitals (DH) in the country
- Number of FRUs has increased significantly from 940 in 2005 to 2996 in 2020
- Also, There is a shortfall of 46140 SCs (24%), 9231 PHCs (29%) and 3002 CHCs (38%) across the country as per the Rural Health Statistics (RHS) 2020.

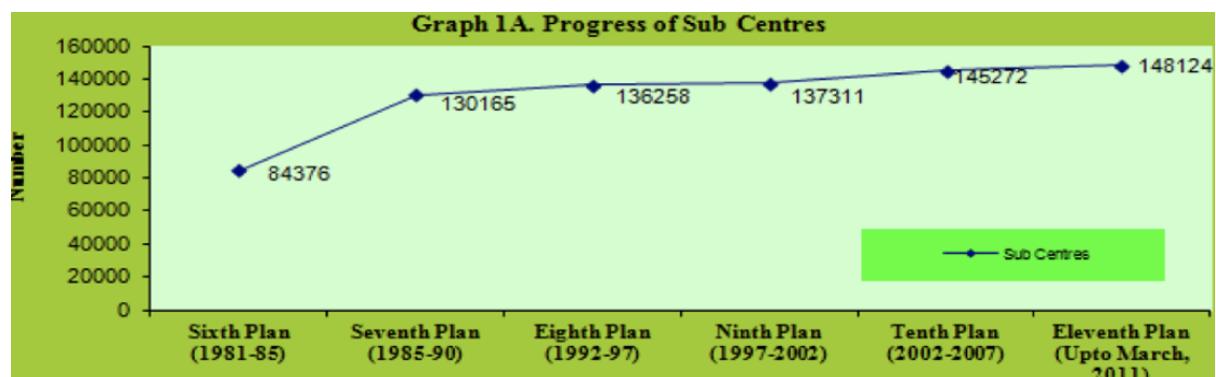
2.1.1)Sub Centres

A Sub Centre is designed to serve extremely rural areas with the expenses fully covered by the national government. Mandates require health staff to be at least two workers (male and female) to serve a population of 3000-5000 people Sub Centres also work to educate rural people about healthy habits for a more long-term impact.

Each subcentre is manned with manned by at least one auxiliary nurse midwife (ANM) and one male health worker. One lady health visitor (LHV) is entrusted with the task of supervision of six Sub Centres

A total 157541 SCs are functioning in rural areas of the country as on 31st March, 2019.

A chart representing the progress of sub centre in India:-



Sub Centres in India are located in 3 different locations , they are:-

- Government provided area
- Rented
- Rent free location in Panchayat or Societies

Percentage of Sub-Centres functioning in the Government buildings has increased from 43.8% in 2005 to 75.3% in 2019.

S. No.	State/UT	Total Number of Sub Centres functioning	Comparative Statement 2.					
			2005			2019		
			Sub Centres functioning in Govt. Building	Rented Building	Rent Free Panchayat / Vol. Society Building	Sub Centres functioning in Govt. Building	Rented Building	Buildings under construction
1	Andhra Pradesh	12522	4221	8301	0	7437	1769	5668
2	Arunchal Pradesh	379	NA	NA	NA	385	385	0
3	Assam	5109	2637	2472	0	4643	4049	466
4	Bihar	10337	NA	NA	NA	9949	5643	3277
5	Chhattisgarh	3818	1458	0	2360	5205	4202	56
6	Goa	172	40	132	0	219	46	173
7	Gujarat	7274	5554	0	1720	9166	8515	272
8	Haryana	2433	1499	0	934	2604	1669	275
9	Himachal Pradesh	2068	1262	14	792	2089	1588	25
10	Jammu & Kashmir	1879	NA	NA	NA	3025	956	2069
11	Jharkhand	4462	NA	NA	NA	3848	2277	698
12	Karnataka	3143	1450	280	790	9758	7936	1243
13	Kerala	5092	2995	1998	1014	5138	4260	3224
14	Ladakh	8874	3996	4878	0	10226	7595	1157
15	Maharashtra	10453	6527	1098	2828	10668	9863	347
16	Manipur	420	216	131	73	490	459	31
17	Meghalaya	401	391	10	0	477	468	2
18	Madras	366	366	0	0	370	370	0
19	Nagaland	394	NA	NA	NA	433	316	1
20	Odisha	5927	2542	3385	0	6688	4797	1724
21	Punjab	2858	1443	0	1415	2950	1907	0
22	Rajasthan	10512	8211	0	2301	13512	10647	1206
23	Sikkim	147	108	31	8	176	175	0
24	Tamil Nadu	8682	6510	2172	0	8713	6579	1833
25	Telangana	NA	NA	NA	NA	4721	4421	3417
26	Tripura	539	278	202	59	972	810	28
27	Uttarakhand	1576	562	1014	0	1847	1304	506
28	Uttar Pradesh	20521	6494	14027	0	20782	20782	0
29	West Bengal	10356	1923	8433	0	10557	7819	1887
30	A&N Islands	107	107	0	0	124	124	0
31	Chandigarh	13	8	5	0	0	0	0
32	D & N Haveli	38	38	0	0	71	63	4
33	Daman & Diu	21	20	1	0	23	19	4
34	Delhi	41	NA	NA	NA	12	1	11
35	Lakshadweep	14	8	6	0	14	8	6
36	Padmavati	76	36	40	0	54	44	9
All India Total		146026	63901	50338	14295	157411	118600	26770
NA - Not Available								

We see that the location of subcenters have changed from 63901 in government building, 50338 in Rented building and 50338 in rent free building in 2005 to 118600 in government building, 26770 in Rented building and 12041 in rent free building in 2019

This means that more number of subcenters are being given in government building rather than rented or rent free locations. This helps in better functioning and outreach of these subcenters thereby increasing their effectiveness

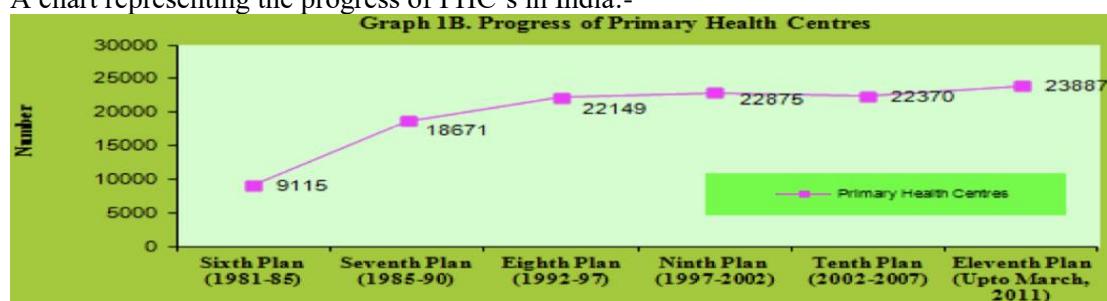
2.1.2)Primary Health Centres

Primary Health Centres exist in more developed rural areas of 30,000 or more (20,000 in remote areas) and serve as larger health clinics staffed with doctors and paramedics. Patients can be referred from local sub centres to PHCs for more complex cases. A major difference from Sub Centres is that state governments fund PHCs, not the national government. PHCs also function to improve health education with a larger emphasis on preventative measures.

The PHCs are established and maintained by the State governments under the Minimum Needs Programme (MNP)/ Basic Minimum Services (BMS) Programme.

At the national level, there are 24855 PHCs functioning in rural areas as on 31st March 2019.

A chart representing the progress of PHC's in India:-



Just like Sub Centres ,PHC's are also located in:-

- Government provided area
- Rented

- Rent free location in Panchayat or Societies
- Percentage of PHCs functioning in Government buildings has increased significantly from 69% in 2005 to 94.5% in 2019.

S. No.	State/UT	Total Number of PHCs functioning	Comparative Statement 3. BUILDING POSITION FOR PRIMARY HEALTH CENTRES IN Rural Areas 2005			PHCs functioning in Buildings under construction	
			PHCs functioning in				
			Govt. Building	Rented Building	Rent Free Purchaser / Govt. PHC's functioning		
1	Andhra Pradesh	1570	1281	289	0	1145	
2	Arunchal Pradesh	85	NA	NA	NA	143	
3	Assam	4170	310	0	3465	3460	
4	Bihar	1648	NA	NA	NA	1899	
5	Chhattisgarh	517	326	0	191	792	
6	Goa	19	18	1	0	24	
7	Gujarat	1070	663	0	407	1476	
8	Haryana	408	388	9	120	378	
9	Himachal Pradesh	439	312	46	81	586	
10	Jammu & Kashmir	334	NA	NA	NA	622	
11	Jharkhand	561	NA	NA	NA	298	
12	Karnataka	1681	1439	92	150	1277	
13	Kerala	911	837	34	40	848	
14	Madhya Pradesh	1192	746	446	0	1199	
15	Maharashtra	1780	1417	7	356	1825	
16	Nagaland	72	NA	NA	NA	59	
17	Meghalaya	101	101	0	0	118	
18	Minoras	57	57	0	0	59	
19	Nagaland	87	87	0	0	126	
20	Nagaland	1282	1282	0	0	1288	
21	Punjab	484	409	0	75	416	
22	Rajasthan	1713	1446	0	267	2082	
23	Sikkim	24	24	0	0	29	
24	Tripura & Naga	1380	1340	40	0	1422	
25	Telangana	-	-	-	-	636	
26	Tripura	73	73	0	0	108	
27	Uttarakhand	225	182	43	0	257	
28	Uttar Pradesh	5667	4825	1825	0	5936	
29	West Bengal	1173	1173	0	0	908	
30	A&N Islands	20	20	0	0	22	
31	Chandigarh	0	0	0	0	0	
32	D&N Islands	6	6	0	0	9	
33	Delhi & Dm	3	3	0	0	4	
34	Delhi	8	8	0	0	5	
35	Lakshadweep	4	4	0	0	4	
36	Puducherry	39	36	3	0	24	
All India Total		23236	166023	2826	1687	24855	
						23497 699 659 997	

We see that the location of PHC's have changed from 16023 in government building, 2826 in Rented building and 1687 in rent free building to 23497 in 2005 in government building, 699 in Rented building and 659 in rent free building in 2019

This means that more number of PHC's are being given in government building rather than rented or rent free locations. This also helps in better functioning as well as in monitoring whilst reducing costs.

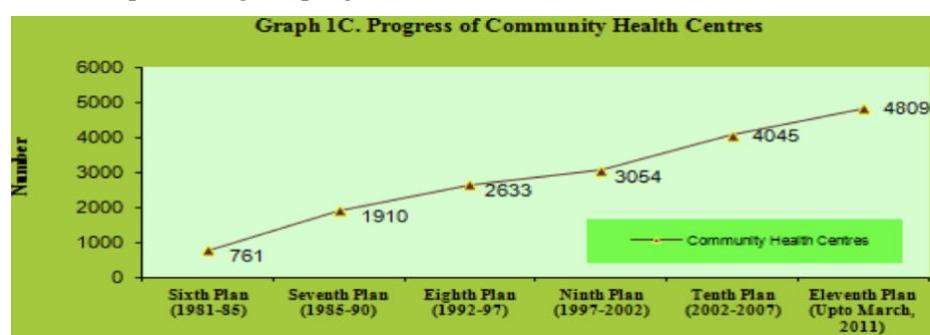
2.1.3)Community Health Centres

A Community Health Centre is also funded by state governments and accepts patients referred from Primary Health Centres. It serves 120,000 people in urban areas or 80,000 people in remote areas. Patients from these agencies can be transferred to general hospitals for further treatments. Thus, CHC's are also first referral units, or FRUs, which are required to have obstetric care, new born/childcare, and blood storage capacities at all hours every day of the week.

CHCs are being established and maintained by the State government under MNP/BMS programme. As per minimum norms, a CHC is required to be manned by four medical specialists i.e. surgeon, physician, gynaecologist and paediatrician supported by 21 paramedical and other staff. It has 30 indoor beds with one OT, X-ray, labour room and laboratory facilities.

As on 31st March 2019, there are 5335 CHCs functional in rural areas of the country

A chart representing the progress of CHC's in India:-



The % of CHCs in Govt. buildings has increased from 91.6% in 2005 to 99.3% in 2019

Sl. No.	State/UT	Comparative Statement 4: BUILDING POSITION FOR COMMUNITY HEALTH CENTRES in Rural Areas						
		2005			2019			
		Total Number of CHC's	CHC's functioning in Govt. Building	Rented Building	Total Free Passchayat / Other Building	CHC's functioning in Govt. Building	Rented Building	Buildings under commercial
1	Andhra Pradesh	163	163	0	0	140	0	0
2	Bihar & Jharkhand	31	NA	NA	NA	63	0	0
3	Assam	100	100	0	0	177	177	0
4	Gujarat	107	103	NA	NA	179	0	0
5	Chhattisgarh	116	116	0	0	170	159	0
6	Goa	5	0	0	0	5	0	0
7	Jharkhand	72	72	0	0	135	112	1
8	Himachal Pradesh	66	65	0	1	87	85	1
9	Jammu & Kashmir	70	NA	NA	NA	84	0	0
10	Karnataka	47	NA	NA	NA	171	171	0
11	Kerala	254	207	0	47	198	0	0
12	Kerala	254	207	0	47	198	0	0
13	Kerala	106	105	0	0	229	227	0
14	Kerala	279	279	0	0	309	270	0
15	Maharashtra	382	290	5	87	364	364	0
16	Madhya Pradesh	16	NA	NA	NA	23	23	0
17	Madhya Pradesh	24	24	0	0	28	0	0
18	Madhya Pradesh	9	9	0	0	9	0	0
19	Nagaland	21	21	0	0	21	21	0
20	Nagaland	21	21	0	0	377	375	0
21	Punjab	116	115	0	1	89	89	0
22	Rajasthan	326	256	0	70	571	552	2
23	Sikkim	4	4	0	0	2	2	0
24	Tamil Nadu	35	35	0	0	385	385	0
25	Telangana	-	-	-	-	85	85	0
26	Tripura	10	10	0	0	18	18	0
27	Uttarakhand	44	44	0	0	67	67	0
28	Uttar Pradesh	386	386	0	0	679	679	0
29	Uttar Pradesh	95	95	0	0	348	348	0
30	Uttar Pradesh	4	4	0	0	0	0	0
31	Chandigarh	1	1	0	0	0	0	0
32	D.R.N.Haveli	1	1	0	0	2	2	0
33	Delhi & Dus	1	1	0	0	0	0	0
34	Delhi	0	0	0	0	0	0	0
35	Lakshadweep	3	3	0	0	3	0	0
36	Lakshadweep	4	4	0	0	2	2	0
All India/ Total		3346	2822	5	254	5335	5299	5

Note: Values come to existence in 2012 after bifurcation of Andhra Pradesh

We see that the location of CHC's have changed from 2822 in government building, 5 in Rented building and 284 in rent free building in 2005 to 23497 in government building, 699 in Rented building and 659 in rent free building in 2019. This means that more number of CHC's are being opened in government building thereby further bolstering its capabilities.

2.1.4)District Hospitals

District Hospitals are the final referral centres for the primary and secondary levels of the public health system. It is expected that at least one hospital is in each district of India. These are funded for by the Public.

A total of 810 district hospitals across India provide critical services to the population

Each district hospital is linked with public hospitals/ health centres such as the community health centre (CHC), the primary health centre (PHC), and the sub-centre (SC).

As per the Indian Public Health Standards (IPHS), district hospitals are mandated to provide comprehensive secondary health care (specialist and referral services) to the community; achieve and maintain an acceptable standard of quality of care; and make services more responsive and sensitive to the needs of the people of the district and the hospitals/centres from where the cases are referred.

Table 3: Categorization of district hospitals

Hospital Category	Criteria
Small hospital	District hospital having up to 200 beds
Mid-sized hospital	District hospital having 201 to 300 beds
Large hospital	District hospital having more than 300 beds

Categorization of district hospital by Niti aayog in their report.

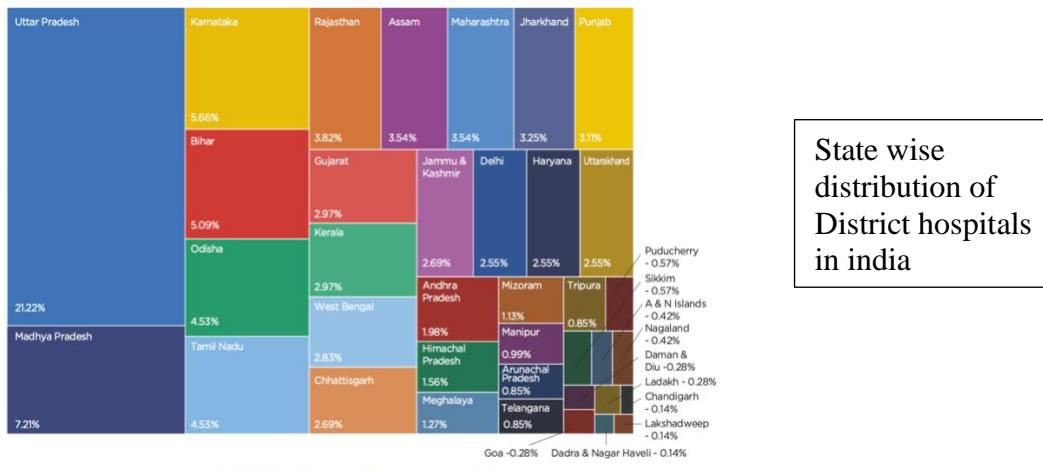


Figure 3b: Distribution of district hospitals by State/UT

State wise
distribution of
District hospitals
in india

2.1.5)Medical Colleges and Research Institutions

Medical colleges in India are both government owned and private owned depending on the nature of institution.

On the governmental side of the funding, for e.g. All India Institutes of Medical Sciences is owned and controlled by the central government. These are referral hospitals with specialized facilities. Government Medical Colleges are owned and controlled by the respective state governments and also function as referral hospitals.

In India there are a total of 543 medical colleges. Also, there are 64 Standalone PG institutes in India.

The Government of India has given a nod to as many as 157 new medical colleges in India since 2014 and has invested a total of ₹17,691.08 crore on these projects.

Also, under the Centrally Sponsored Schemes (CSS), the Central Government has also provided about ₹2,451.1 crore for upgradation of existing state government or central government medical colleges.

Funding (public expenditure)towards new medical colleges in India:-

Phase	Launched	No. of Medical Colleges planned	No. of Functional Medical Colleges	States/UTs covered	Outlay per college	Total Outlay	Central Share	Central Share released
I	January 2014	58	48	20	189 Cr	10,962 Cr	7541.1 Cr	7541.1 Cr
II	February 2018	24	8	8	250 Cr	6000 Cr	3675 Cr	3675 Cr
III	August 2019	75	8	18	325 Cr	24,37.41 Cr	15,499.74 Cr	6719.11 Cr

First Referral Unit (FRU)

An existing facility (District Hospital, Sub-divisional Hospital, Community Health Centre etc.) can be declared a fully operational First Referral Unit (FRU) only if it is equipped to provide round-the-clock services for emergency obstetric and New Born Care, in addition to all emergencies that any hospital is required to provide. It should be noted that there are three critical determinants of a facility being declared as a FRU:

- Emergency Obstetric Care including surgical interventions like caesarean sections;
- new-born care; and blood storage facility on a 24-hour basis

As on 31st March 2019, there are 3204 FRUs functioning in the country. Out of these, 95.7% of the FRUs are having Operation Theatre facilities, 96.7% of the FRUs are having functional Labour Room while 75.3% of the FRUs are having Blood Storage/ linkage facility.

Distribution of Public and Private Healthcare infrastructure in India:-

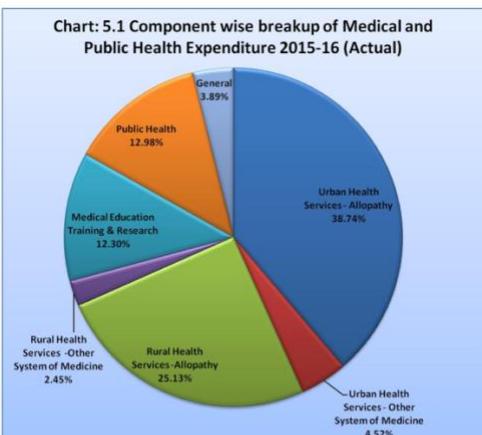
Private Infrastructure forms 69-70% of all health infrastructure in these 15 states. Private infrastructure in other states (where government infrastructure exceeds or equals private infrastructure) forms nearly 35-36% of all health infrastructure.

Total private infrastructure accounts for nearly 62% of all of India's health infrastructure

Table 3: Comparison of budget estimates and the actual expenditure (2010-20) (in Rs crore)

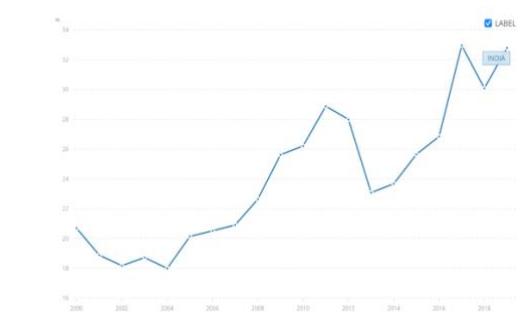
Year	BE	Actuals	Actuals/BE
2010-11	23,530	22,765	97%
2011-12	26,897	24,355	91%
2012-13	30,702	25,133	82%
2013-14	33,278	27,145	82%
2014-15	35,163	30,626	87%
2015-16	29,653	30,626	103%
2016-17	37,066	37,671	102%
2017-18	48,853	51,382	105%
2018-19	52,800	52,954	103%
2019-20	62,659	62,659*	100%

Budget for public expenditure on Healthcare. We see that expenditure has increased from 2010-11 to 2019-20 by nearly 166%

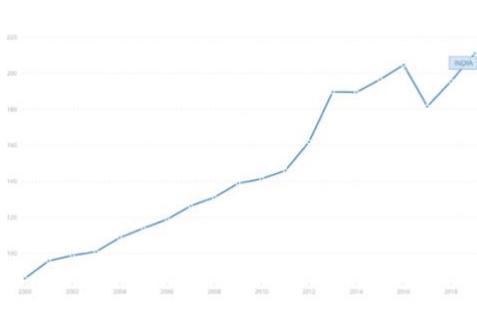


Component wise breakup of public health in 2015-16. Expenditure, it shows that maximum expenditure was on urban allopathy health services followed by rural allopathy health services. This demonstrates that these sectors are the most demanded for and are also of the most importance.

Domestic general government health expenditure (% of current health expenditure) - India



Current health expenditure per capita, PPP (current international \$) - India

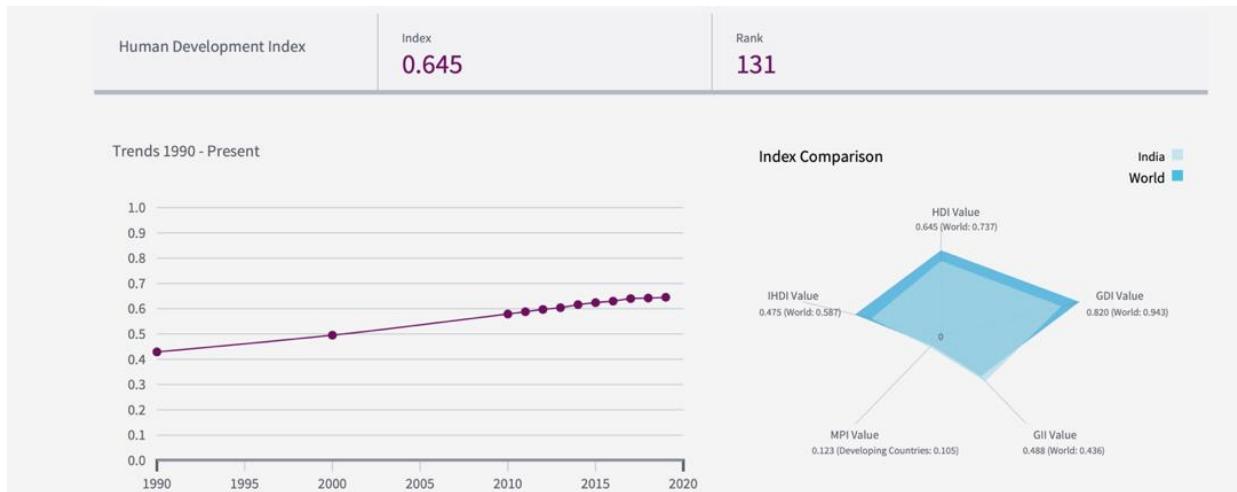


2.2.)Outcomes and performance on outcomes of Health Sector

India under the national health mission has adumbrated objectives that seem achievable.

But whilst these are supposed to be achieved, it is necessary to have a look into where India currently stands and what have been the outcomes of increased expenditure on health over the past few decades.

On the Human development index, India ranks at 131 with a H-index of 0.645 .India's 2019 HDI of 0.645 is above the average of 0.631 for countries in the medium human development group and above the average of 0.641 for countries in South Asia



This value of H-index has been increasing since the past few years consistently. But it is of the essence to meticulously scrutinize the outcomes of on a host of other factors that are essential for HDI index over the years.

Life Expectancy

HDI Rank	Country	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
131	India - regions	57.9	58.4	58.9	59.3	59.8	60.3	60.8	61.2	61.7	62.1	62.5	62.9	63.3	63.7	64.1	64.5	64.9	65.3	65.8	66.2	66.7	67.1	67.5	67.9	68.3	68.6	68.9	69.2	69.4	69.7
	Arab States	64.4	64.8	65.2	65.5	65.9	66.3	66.6	67.0	67.3	67.6	67.9	68.2	68.4	68.7	69.0	69.3	69.5	69.8	70.0	70.3	70.4	70.6	70.8	71.0	71.2	71.3	71.5	71.7	71.9	72.1
	East Asia and the Pacific	67.9	68.1	68.2	68.4	68.6	68.8	69.0	69.3	69.6	69.9	70.2	70.5	70.8	71.1	71.4	71.7	72.0	72.3	72.5	72.8	73.1	73.4	73.7	74.0	74.3	74.5	74.8	75.0	75.3	75.4
	Europe and Central Asia	67.3	67.2	67.1	67.1	67.1	67.1	67.2	67.4	67.6	67.9	68.1	68.4	68.7	69.0	69.3	69.6	69.9	70.2	70.6	71.0	71.5	71.9	72.3	72.7	73.1	73.4	73.7	74.0	74.2	74.4
	Latin America and the Caribbean	68.3	68.6	69.0	69.3	69.7	70.0	70.3	70.7	71.0	71.3	71.6	72.0	72.2	72.5	72.8	73.0	73.3	73.5	73.7	73.9	74.1	74.3	74.4	74.6	74.8	74.9	75.1	75.3	75.4	75.6
	South Asia	58.4	58.9	59.5	60.0	60.5	61.0	61.4	61.9	62.3	62.7	63.2	63.6	63.9	64.3	64.7	65.1	65.5	65.9	66.3	66.7	67.2	67.6	68.0	68.3	68.6	68.9	69.2	69.5	69.7	69.9
	Sub-Saharan Africa	50.1	50.0	50.0	49.9	49.9	49.8	49.8	49.8	49.8	49.9	50.1	50.4	50.8	51.3	51.9	52.6	53.3	54.1	54.9	55.7	56.5	57.3	58.0	58.6	59.3	59.8	60.3	60.8	61.2	61.5
	Least Developed Countries	51.7	52.0	52.3	52.6	53.0	53.3	53.7	54.1	54.6	55.0	55.5	56.0	56.5	57.1	57.6	58.3	58.9	59.5	60.2	60.8	61.4	62.0	62.5	63.0	63.5	63.9	64.3	64.7	65.0	65.3
	Small Island Developing States	65.8	66.0	66.3	66.5	66.7	66.9	67.1	67.3	67.6	67.8	68.0	68.2	68.4	68.7	68.9	69.2	69.4	69.7	69.9	70.1	70.3	70.5	70.7	70.9	71.1	71.3	71.5	71.7	71.8	72.0
	Organization for Economic Co-operation and Development	74.8	75.0	75.2	75.4	75.6	75.9	76.1	76.4	76.6	76.9	77.1	77.4	77.7	77.9	78.1	78.4	78.6	78.8	79.0	79.2	79.4	79.5	79.7	79.8	80.0	80.1	80.2	80.3	80.4	80.4
	World	65.4	65.6	65.8	66.0	66.2	66.4	66.6	66.8	67.0	67.3	67.5	67.8	68.1	68.3	68.6	68.9	69.2	69.6	69.9	70.2	70.5	70.9	71.2	71.4	71.7	72.0	72.2	72.4	72.6	72.8

We see that in India, a long distance has been walked with regards to increasing life expectancy and this factor has increased from an average life expectancy of 57.9 in 1990 to a value of 69.7 in 2019

The world average for this value lies at 72.8 years. This therefore corroborates the fact that India has achieved success in increasing life expectancy and in a short time, India would get its life expectancy above the world average

Tuberculosis incidence (per 100,000 people)

Definition: The estimated number of new and relapse tuberculosis cases of all forms, including cases in people living with HIV, expressed per 100,000 people.

HDI Rank	Country	2000	2005	2010	2011	2012	2013	2014	2015	2016	2017	2018
131	India	289.0	279.0	247.0	241.0	234.0	228.0	223.0	217.0	211.0	204.0	199.0
	Regions
	Arab States	67.6	60.5	56.0	54.4	53.7	52.0	51.2	50.9	49.6	48.0	47.0
	East Asia and the Pacific	184.7	169.5	155.2	154.2	152.6	149.9	148.3	146.4	144.8	143.6	143.8
	Europe and Central Asia	93.3	94.0	76.1	73.2	68.2	64.4	60.9	57.2	54.4	52.1	49.2
	Latin America and the Caribbean	53.9	48.4	42.7	43.1	42.4	42.0	41.2	40.9	41.2	42.3	43.4
	South Asia	263.2	256.0	233.4	229.1	224.1	219.7	215.5	211.3	206.7	201.6	197.8
	Sub-Saharan Africa	343.8	356.7	321.2	309.8	300.1	288.3	279.8	268.1	252.9	243.9	237.2
	Least Developed Countries	298.7	280.0	255.9	249.4	244.4	237.9	232.8	227.4	222.2	217.4	213.3
	Small Island Developing States	129.6	138.2	131.8	131.5	132.0	131.8	130.7	130.6	130.2	128.1	126.6
	Organization for Economic Co-operation and Development	18.7	17.4	15.4	15.3	14.6	13.9	13.5	12.9	12.9	12.3	12.7
	World	170.6	167.0	153.8	151.5	148.6	145.3	142.8	139.7	136.3	133.6	131.9

Over the years, The number of tuberculosis incidences in India has nearly halved and now the value although is far above the world average, is still acceptable owing to the fact that India has shown significant progress in this factor.

Mortality rate, under-five (per 1,000 live births)

Mortality rate in India, has reduced from 126.2 in 2000 to 26.6 in 2018 .This is a commendable achievement .India now has a mortality rate that is close to the world average and it is a matter of time before India achieves a mortality rate lower than that of the world average

HDI Rank	Country	2000	2005	2010	2011	2012	2013	2014	2015	2016	2017	2018
131	India	126.2	109.4	91.6	74.4	58.2	55.1	52.1	49.1	46.3	43.6	41.1
	Regions
	Arab States	78.3	67.3	58.0	49.8	41.8	40.5	39.3	38.2	37.1	36.2	35.2
	East Asia and the Pacific	59.2	51.7	41.5	30.5	22.9	21.6	20.5	19.5	18.6	17.8	17.0
	Europe and Central Asia	58.2	53.7	43.2	31.8	23.5	22.2	20.9	19.8	18.7	17.7	16.9
	Latin America and the Caribbean	54.4	42.6	32.7	25.5	24.0	20.3	19.7	19.1	18.7	18.2	18.2
	South Asia	125.1	108.9	91.9	75.6	60.8	58.0	55.4	52.8	50.3	48.0	45.8
	Sub-Saharan Africa	178.6	171.5	154.0	126.1	100.1	95.5	91.2	87.3	83.8	80.5	77.4
	Least Developed Countries	173.1	156.2	135.3	109.1	88.6	83.5	79.9	76.6	73.6	70.7	68.1
	Small Island Developing States	75.1	66.7	58.9	54.1	77.5	48.2	47.1	45.8	44.7	43.5	42.4
	Organization for Economic Co-operation and Development	20.8	16.1	12.7	10.2	8.3	8.0	7.8	7.6	7.4	7.2	6.9
	World	88.3	82.2	73.0	61.0	49.8	47.4	45.4	43.6	41.9	40.4	39.0

Age-standardized mortality rate attributed to noncommunicable diseases, female

Definition: The age-standardized mortality rate attributed to noncommunicable diseases is a weighted average of the age-specific mortality rates per 100,000 persons, where the weights are the proportions of persons in the corresponding age groups of the WHO standard population. Noncommunicable diseases include cardiovascular disease, cancer, diabetes and chronic respiratory disease.

HDI Rank	Country	2000	2010	2015	2016
131	India	602.0	559.0	528.5	524.9

Regions					
Arab States		664.3	625.9	617.2	606.3
East Asia and the Pacific		587.1	527.7	507.8	501.9
Europe and Central Asia		655.4	575.0	514.5	505.6
Latin America and the Caribbean		485.3	421.4	391.7	384.9
South Asia		618.7	574.4	546.4	543.1
Sub-Saharan Africa		716.8	651.3	634.7	633.6
Least Developed Countries		683.5	619.2	596.9	595.2
Small Island Developing States		564.6	498.6	494.1	491.2
Organization for Economic Co-operation and Development		375.5	319.7	307.4	306.6
World		570.5	517.0	496.3	491.9

Age-standardized mortality rate attributed to noncommunicable diseases, male

Definition: The age-standardized mortality rate attributed to noncommunicable diseases is a weighted average of the age-specific mortality rates per 100,000 persons, where the weights are the proportions of persons in the corresponding age groups of the WHO standard population. Noncommunicable diseases include cardiovascular disease, cancer, diabetes and chronic respiratory disease

HDI Rank	Country	2000	2010	2015	2016
131	India	760.8	689.1	675.5	672.5
	Regions	
	Arab States	818.6	756.9	742.5	730.7
	East Asia and the Pacific	759.8	693.4	668.5	663.0
	Europe and Central Asia	1031.0	916.9	826.4	812.6
	Latin America and the Caribbean	697.5	597.0	551.9	541.7
	South Asia	748.6	688.3	673.5	670.8
	Sub-Saharan Africa	769.0	703.6	685.7	684.3
	Least Developed Countries	736.0	684.3	669.8	668.7
	Small Island Developing States	705.3	622.8	627.7	623.4
	Organization for Economic Co-operation and Development	590.9	489.8	460.7	456.9
	World	749.4	670.7	643.7	638.3

Age standardized mortality rate for both males and females in India have just like mortality rate shown great reduction and although the value stand over the world average right now. In the next couple of years, this factor will strong arm the world average.

Infants lacking immunization, measles (% of one-year-olds)

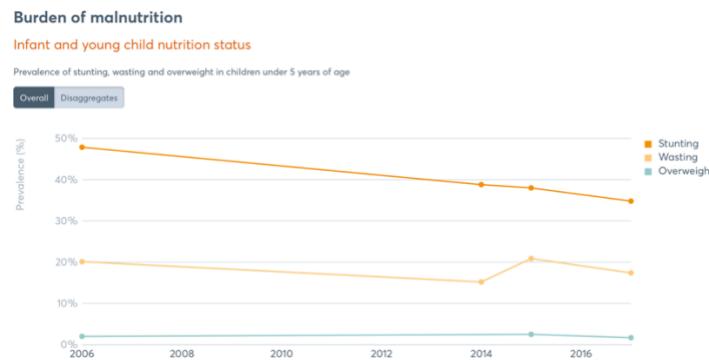
Definition: Percentage of surviving infants who have not received the first dose of measles vaccine.

HDI Rank	Country	1990	1995	2000	2005	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
131	India	44	28	44	32	18	16	17	17	15	13	12	10	7	5
	Regions
	Arab States	23	23	18	18	13	13	15	14	15	15	13	13	15	16
	East Asia and the Pacific	10	23	17	14	7	6	6	6	8	8	7	8	8	7
	Europe and Central Asia	21	20	9	7	9	7	6	5	8	7	9	4	4	4
	Latin America and the Caribbean	24	14	6	7	7	5	5	8	7	7	8	13	11	14
	South Asia	43	30	41	30	21	19	19	19	16	14	14	12	12	9
	Sub-Saharan Africa	42	45	48	40	28	29	30	31	31	30	26	26	26	31
	Least Developed Countries	45	42	43	33	24	23	24	24	24	23	23	23	22	25
	Small Island Developing States	32	30	23	22	20	18	16	15	15	16	18	19	18	23
	Organization for Economic Co-operation and Development	18	13	9	7	6	6	6	7	6	6	6	9	6	9
	World	26	27	28	23	16	15	16	16	16	15	14	14	14	14

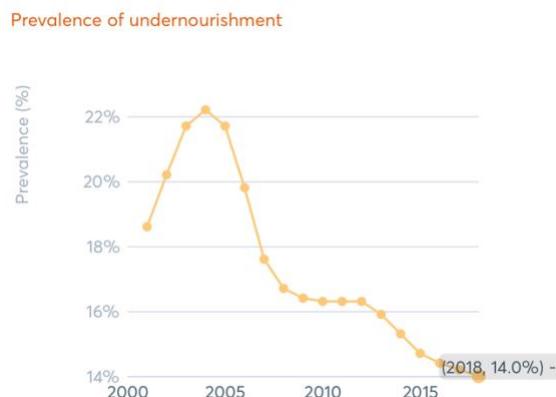
As is well known, India has for long focussed on full immunisation of infants and this has shown significant progress in recent times.

In India, The percentage of surviving infants who have not received first dose of measles has been reduced to only 5% as compared to a value of 44 percent in 1990.

It is also of significant importance that India has been able to topple the world average in the early part of the 2010's and since then has further bolstered its immunization percentage.



As India grows, There is a significant burden of infant malnutrition that comes with its increasing population. But with its efforts and expenditure, India has been able to reduce the malnutrition percentage from a value of nearly 45% to a value of 38% in a matter of a decade



Undernourishment is a concerning factor that haunts many countries especially the under developed and the developing economies.

India has been able to reduce prevalence of undernourishment to a all-time low of 14% in 2018. This factor supports the claims of expenditure on a lot of factors pertaining to expenditure on schemes such as mid day meal scheme etc.

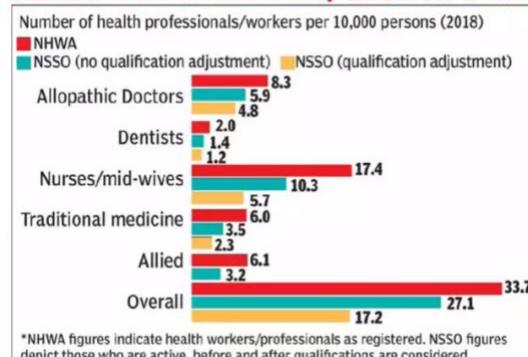
2.3) Issues inhibiting effective functioning of the organisations that deliver healthcare

Absence of Human Capital

India suffers from a shortage of trained medical professionals such as doctors, nurses, paramedics etc.

India should in six years meet the WHO benchmark of one doctor per 1,000 people, but the national average hides deep imbalances where individual states are concerned. Long queues outside doctors' clinics, overcrowded hospitals and the huge backlog of patients for surgeries clearly suggest that the country needs more doctors.

NURSE-DOC RATIO 1.7:1, OECD AVG 4:1



WHERE IS THE SHORTAGE?

Best		Worst	
States	People per doctor	States	People per doctor
Tamil Nadu	253	Jharkhand	8,180
Delhi	334	Haryana	6,037
Karnataka	507	Chhattisgarh	4,338
Kerala	535	Uttar Pradesh	3,767
Goa	713	Bihar	3,207
Punjab	789	Himachal Pradesh	3,124

- The doctor-patient ratio is extremely low at **0.74 per 1000** individuals, the WHO official recommendation being **1 per 1000** individuals.
- The nurse-to-doctor ratio is at 1.7:1
- The allied health workers to doctors ratio is 1:1.1

The world's average doctor-to-patient ratio is 2.5 doctors per 1000 people, but India has only 0.7. It is critical to raise this metric.

In Tamil Nadu, the density of doctors per 1,000 inhabitants is as high as 4, virtually matching that of nations such as Norway and Sweden, where it is 4.3 and 4.2, respectively. The density in Delhi is three times higher than in the United Kingdom, the United States, Canada, and Japan, where it ranges from 2.3 to 2.8. The density is roughly 1.5 in Kerala and Karnataka, and about 1.3 in Punjab and Goa.

Due to the high concentration of doctors in Urban regions, even states with doctor-to-population ratios of more than 1:1,000 may face shortages in rural areas. According to the data, India has to recruit 4.3 lakh doctors to its present pool in order to meet the WHO guideline of 1:1,000 doctor–patient ratio instead of the current 1:1,499.

Shortfall of specialists:- India faces a shortfall of 86.5% surgeons; 74.1% obstetricians & gynaecologists; 84.6% general physicians and 81% paediatricians at CHCs alongside this, there is shortage of almost 40% in laboratory technicians and a critical 12-16% shortage of nurses and pharmacists at community and public health centres (CHCs and PHCs).

In most states, the gap between required and available specialists in these centres, which are often the first port of call and are also expected to act as early warning and referral systems, is in the range of 80-99%

In addition to doctors and specialists there is shortage of other category of health staff too such as There was shortfall of nearly 10,000 ANM and Health worker (F) at SCs and PHCs.

Lack of Infrastructure

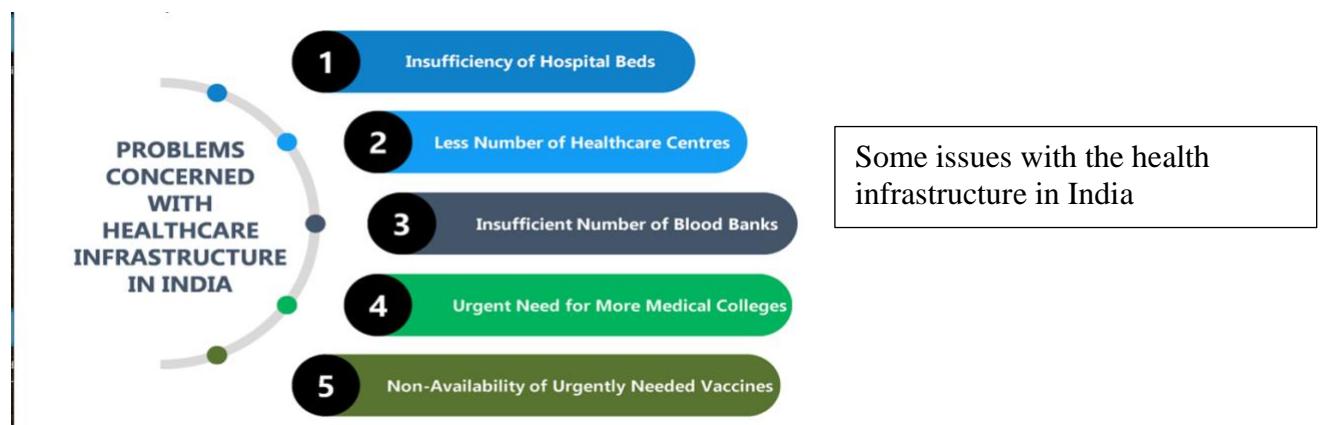
India faces a serious problem on the front of healthcare infrastructure in the country. There is an acute shortage of well-equipped medical facilities in the country capable of handling a wide spectrum of cases successfully.

Even if there buildings for hospitals in place, in most cases there is a dearth of basic facilities such as toilets, beds, wards etc. leave alone the case of having the right amount of medicines and of the right quality of them.

According to The government Rural Health Survey only 55.6% of CHCs have functional X-ray machine while only 18% of specialists required (surgeon, physician, gynaecologist and paediatrician) are in place. Alongside this, only 8% subcentres, 12% PHCs and 13% CHCs met Indian Public Health Standards.

Many prim government policies prevent fast development of these facilities and it is only after a long time that such facilities are developed due to slow disbursement of funds, approval issues etc.

Add to this problem the low rate of training professionals compared to other countries and we can conspicuously see that the workload on this struggling healthcare system is hanging by a thread at this point.



High Cost of healthcare

As opposed to Nordic countries and even NHS of UK where public universal healthcare system is in place. India has a multipayer system with a Public health sector that has become infirm due to lack of proper funding since years.

This has in turn increased the preponderance of Public health facilities in India and due to easier access(as opposed to log wait times in Public hospitals) and in most cases better treatment, people choose private facilities as its their only recourse.

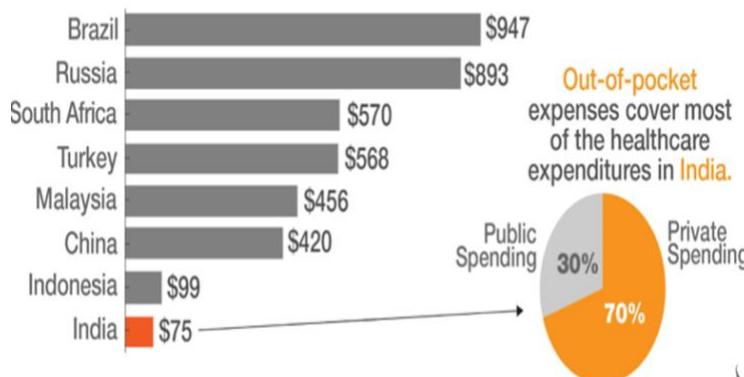
This comes at a higher cost and in turn higher out of the pocket expenditure which affects both the individual and the healthcare system, be it on the training of the professionals or the individuals of the country who are forced to avail low cost and cheap services because decent services are too expensive to afford.

Public financing of health is among the lowest in the world at just over 1% of GDP, and out-of-pocket (OOP) spending is very high at around 3% of GDP. Share of OOP in total spending in India is one among the highest in the world

Poor Health expenditure per capita

Health expenditure per person

Among the BRICS and other newly industrialised nations, India spends the least on health per capita.



INDIA'S PER CAPITA HEALTH SPENDING DISMAL

₹1,657*

MEAGRE IMPROVEMENT

2009-10	2017-18
₹621	₹1,657
1.12% of GDP	1.28% of GDP

SOUTH EAST ASIA STANDING

COUNTRY	EXPENDITURE**
MALDIVES	7.70%
THAILAND	2.90%
BHUTAN	2.55%
EAST TIMOR	2.24%
SRI LANKA	1.68%
INDONESIA	1.40%

Although there has been a significant increase in per capita expenditure over the past few years. India has a very low per capita expenditure on healthcare. As can be seen from the above diagram, India spends only Rs. 1657 which is only 1.28% of GDP which is low as compared to 7.7% of Maldives, and even 1.4% of Indonesia. At present, in India on healthcare for an individual, 30% constitutes government funding. That suggests that, a large number of people have to pay majority of the healthcare expenses out of their pockets.

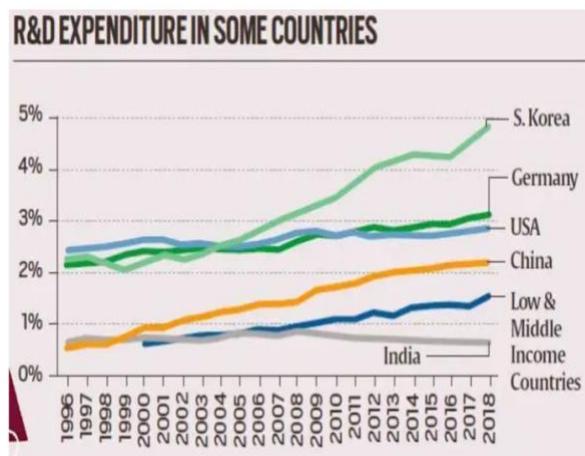
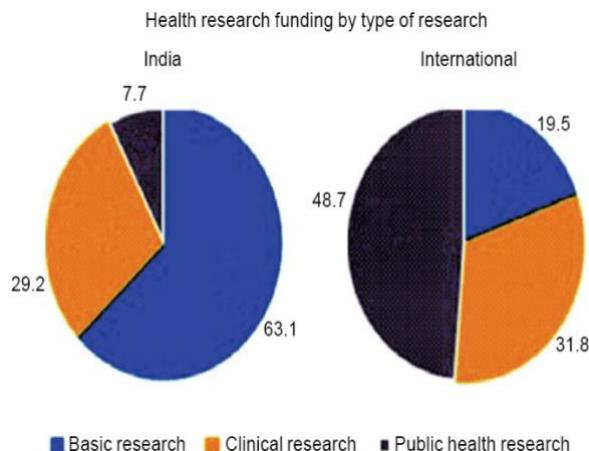
The main contributing factor of the same is the low number of health insurance availing individuals in India. The high out-of-pocket payment stems from this fact.

According to research, around about 76% of the Indian population doesn't have health insurance.

Insufficient Medical Research and Lack of Funding

From a survey carried out over 1150 health institutions in the country, it was seen that during 2011-12 the total funding available for funding in India was \$1.42 billion, which was about 0.09% of the GDP at the time, only 0.02% from the public peripherals.

Though the funding increased by 8.8% from 2007 till 2011, only about 3.2% of this funding was available for public health research. Thus it was concluded that the total amount of funding available in India for healthcare is less than the estimates and even then, only a small proportion of these funds are allocated for public health research.



We can see from the graphs above that the public healthcare research funds allocation is only a minuscule percentage of the total expenditure. Other countries have shown significantly higher levels of expenditure on medical research. This seriously limits the nation's growth and directive in healthcare.

Further on in future, this would lead to India being a mere importer of medical healthcare facilities that come at high cost. This would in turn increase the cost of health services

Unmanageable patient-load

India being a country with 1.4 billion population, it is not a matter of shock that in case of pandemic's or some catastrophic events, patient load would become unmanageable. India has a dearth of beds, doctors, nurses, medicines etc. In short, India lacks in medical facilities. These kind of situations made it difficult for one to manage load whilst doing work efficiently.

In case of high patient load on doctors or nurses, proper care cant be administered to patients and this in turn has adverse effects. Leave alone the mental stress and work-life imbalance that medical professionals have to go through.

In many cases, patients are refused admission in hospitals due to lack of beds, these situations put a patient's life in jeopardy and it is at this point that one sees the critical condition of India's medical system

Neglect of Rural Population

A serious drawback of India's health service is the neglect of rural masses. Although, there are large no. of PHC's and rural hospitals yet the urban bias is visible. According to health information only 31.5% of hospitals and 16% hospital beds are situated in rural areas where 75% of total population resides. We can therefore say that, Health care infrastructure is heavily skewed in favour of urban areas. The growth of private sector has been urban and metro centric.

Moreover the doctors are unwilling to serve in rural areas due to various issues pertaining to lack of career opportunities etc. Instead of evolving a health system dependent on paramedical to strengthen the periphery. India has evolved one dependent on doctors giving it a top-heavy character. Therefore , there is always a neglect of rural population due to doctors refraining to serve in such areas. Not to mentioned the lack of good experienced doctors in such areas leading to patients having to travel for 100's of kilometres before being able to consult an experienced specialist.

According to a Research, Of the total 1.14 million allopathic doctors registered with medical council of India by December 2017, around 80% work in urban areas while 69% of rural India is

heavily dependent on public health system where allopathic doctor population ratio is 1:11,082 while World Health Organization recommends a ratio of 1:1000

2.4) Proposed solutions to Issues inhibiting effective functioning of organisations that deliver healthcare

2.4.a) Telemedicine, Tele-conferencing and Mobile Medical Units

To cater to the problem of lack of doctors and specialist in rural areas leading to neglect of rural population, use of Telemedicine and Mobile Medical Units is emerging as an effective way to take primary healthcare services and specialist advice to the doorsteps of people in remote corners of the country.

The telemedicine units have a well-equipped infrastructure and work on a hub-and-spoke model. Doctors based in a central hub consult patients virtually, whilst a trained nurse facilitates in remote locations where patients reside.

Alongside this, tele- conferencing can open new avenues with regards to consulting specialist doctors. This will eliminate the need for patients to travel to long distance to consult doctors whilst they are ill.

The mobile medical units on the other hand, have trained medical officers and nurses. Patients can access free consultations and point of care diagnostic tests besides regular prescriptions for a host of primary conditions at scheduled intervals of time.

This can help patients in getting home treatment in case one is too ill to travel to hospital or nearby clinic for consulting doctors.

2.4.b) Ambience management and structural reforms to existing PHCs and hospitals

Several PHCs and other hospitals (especially the public ones) in the country are in the need of modernisation and structural reforms. 80-90% health needs of a person in a life time can be provided by primary health care centres that ranges from maternity to child care, disease prevention through immunisation, management of seasonal and life style diseases like flu, cold, fever, hypertension, diabetes etc., supporting care to aging people who have multiple diseases. For this in urban areas

Mohalla clinics can be a good alternative while in villages SCs and PHCs should be strengthened. This can be achieved with minimum cost and maximum efficiency,

Alongside this, Use of technology can help a lot to reduce the cost as well as improving facilities in health area. On line monitoring of all the facilities of a health centre can be done. This would help in improving the patient experience and accessibility. In this manner, both new health centres(primary/community) can be maintained as well as cost can be kept at bare minimum.

2.4.2) Building capacity of frontline workers and putting more focus on creation of local workers

A community health worker is perhaps the most important cog in the wheel of primary health services, Frontline workers are not just helpful in disease control, they can also be used effectively in spreading awareness and in the prevention of disease at the community level. Their role is indispensable.

To meet shortage and availability of trained staff at PHCs and CHCs preference should be given to local people. To solve problem of abstaining from leaves or resistance to live in rural areas local people should be trained and posted in SCs, PHCs and CHCs of difficult/ tribal and hilly areas. Skills of good performing ASHA, ANM workers and nurses should be upgraded and they should be posted in their own rural and remote areas of PHCs and CHCs.

For upskilling, empirical studies have found that providers in such rural areas in India with formal medical training do not provide significantly higher-quality care compared to informal providers—which suggests that increasing the supply of formally trained providers alone might not solve the problem

Therefore an alternative strategy for improving the quality of care, in the interim, might be to increase the capacity of the existing supply of informal providers in rural areas by providing them with tools and incentives to deliver better care.

2.4.3)Blending with the community to find customised solutions

To tackle the problem of sudden rise in patient load in case of some pandemic(e.g. COVID-19) or some disease which is more seasonal(e.g. Dengue). Blending with the community to find customised solutions becomes imperative.

The help of community people should be sought for providing health care to all because no programme can be successful without active involvement of community.

One such example is the creation of in-house beds for patients with non-communicable disease.

Another example is the creation of society based temporary beds (as was in the case of COVID-19 in Delhi)

2.4.4) Increasing technology adoption in improving healthcare

If India is to realise its goal of universal health coverage (UHC), it is imperative that technology and healthcare talk to each other seamlessly.

Technology can be used for creation of medical devices, patient records, and from screening data to assessing the impact of interventions and treatment

Following can be the ways, technology can help us in improving healthcare:-

- With the use of technology, creation of continuous patient monitoring system would become possible and the data gathered through EHRs can help in further refining the analytics models to improve clinical outcomes.
- The process of drug creation can be automated by AI programs. This would lower the costs of developing pharmaceuticals through traditional clinical trials.

- Precision medicine can adopt technology wherein AI-powered body scans can spot cancer and vascular diseases early and predict the health issues people might face because of their genetics.
- AI-based apps can be used to provide medical consultation based on personal medical history and intelligence gathered through analytics.
- IoT can also be used to derive valuable insights from data derived from foetal monitors, electrocardiograms, temperature monitors or blood glucose levels.
- Smart IoT devices can provide the required health information remotely and lessen the need for direct patient-physician interaction.

2.4.5) Strengthening systems through research, data, partnerships and policy advocacy

The Indian healthcare system faces enormous challenges that need to be constantly monitored through research and examined through data analysis. The resultant findings need to flow back to the system where policies are developed, for policies to be effective and the impact long-lasting.

Partnering with academic organisations that have the relevant scientific and technical know-how helps to build expertise within the healthcare system and improve access and outcomes.

Improvement in policies would help in development of more number of P.H.C.'s and CHC's leave alone the case of Mohalla clinics. Also, private entities would in the long run become interested in case doors are opened to them for opening of Private PHC's in the countries. But these solutions need a support of the government,

With the help of partnerships, a new world of collaboration can be started starting from sharing of doctors to equipment's and facilities. With this , there can be collective growth of Indian healthcare system.

New regimes of research should be started in different segments of the Indian healthcare system. More focus should be put on the rural side of the system. With this, more personalised solutions and better manageability of problems in primary health centres would be achieved. This would also enable better treatment in rural health centres as research in these areas would surely open up loop holes which would then we addressed.

2.5) Reasons for the above solutions working alongside example of solution being employed in real life.

2.5.A) Telemedicine, Tele-conferencing and Mobile Medical Units

This reason should work due to a host of factors such as the growth of internet use in India. The chart attached below shows the increase in the amount of internet users in the country.

This in turn means that although doctors may not be accessible, there is a great possibility that internet would be accessible to the patient .This would mean that tele-conferencing and telemedicine would become a matter of ease. Telemedicine is a great solution for people who don't know much about their medicines and a nurse can help administer it to the patient.

Mobile Medical Units on the other hand can be useful for cases when the patient is serious and cant visit the doctor in rural areas where there is accessibility , this solution would work wonders.

Telemedicine and Mobile Medical Units real-life example:-

Tata Trusts deployed a model in Mathura and Varanasi districts in UP, and Vijayawada in AP. Under this, Thirty-five telemedicine unit spokes connected to two doctors' hubs and were supported by six mobile medical units. This translates into 500,000 medical consultations and screening, diagnosis, and on-going treatment of more than 100,000 individuals for NCDs such as diabetes, hypertension, and cancer. Besides, these hub-and-spoke models also provide necessary care for minor ailments that range from fevers to musculoskeletal disorders, etc.

2.5.b) Ambience management and structural reforms to existing PHCs and hospital

As India lacks infrastructure, generally, PHC's don't have adequate infrastructure to cater to even the most basic needs .This make patients refer second and third tier of our healthcare system.

By upgradation of the infrastructure, we can ensure that the extra load from higher segments the healthcare system is removed whilst making sure that patients don't have to travel to long distance in order to get treatment.

Also by using technology, monitoring and other new ways of treatment such as telemedicine can be implemented which can make inaccessible regions of India well connected to other regions. This would also reduce cost whilst bolstering India's network of health centre and is bound to work.

Mohalla clinics real-life example:-

In Delhi, Mohalla clinics have been opened and they have been working in a manner that resonates with the objectives. There are around 500 Mohalla clinics currently functional in Delhi

PHC reform real-life example:-

- Tata Trusts, have employed a PPP with Nagpur Municipal Corporation helped modernize 25 urban PHCs. Advocacy of this model helped Chhattisgarh adopt a similar model to modernize over 20 UPHCs while the Government of Telangana has created over one hundred urban clinics. All this has resulted in increased utilisation of the same government facilities – in Nagpur, for instance, there was a 250% increase in utilisation.
- At the 129-year-old Regional Mental Hospital in Nagpur, The Tata Trusts have been working to address the critical needs of patients by building acute wards, washrooms, drinking water facilities and a salon. Tribal hospitals in Bilaspur, Bissamcuttack and Gadchiroli, supported by large grants from the Trusts, have created centres of excellence in India's hinterland.

2.5.2) Building capacity of frontline workers and putting more focus on creation of local workers

In India, there is a lack of skill when we talk about the workers of health sector in rural India. There needs to be a concerted effort towards building a stronger base by upskilling people in the most obscure sections of the healthcare system for if the foundation is strong, the healthcare system would become strong.

By upgrading skills of good performing ASHA, ANM workers and nurses and posting them in their own rural and remote areas of PHCs and CHCs. We would encourage other to work harder and perform better to get posted in their own rural and remote areas of PHCs and CHCs. Also, by upskilling them in the future they could in turn teach 100's of other workers thereby creating a compounding effect and whole process of upskilling would become easier.

By employing and giving preference to local people, we could solve the problem of leaves or resistance to live in rural areas. The reason for this working out is the fact that a sense of belonging would be created in amongst the people who are working as trained worker. This is due to the people being served being the one with whom he(the trained worker) interacts in daily life. Also, a sense of pride would further encourage him to abstain from leaves and live in rural areas. This further encourages creation of local workers

Building capacity of frontline workers real-life example:-

The Tata Trusts are helping mentor and build the capacity of frontline workers in 29 states and 9 union territories. More than 60,000 health workers across the country have been trained in NCD detection and management through the Tata Trusts Pan India NCD programme. The programme aims to screen over 100 million Indians over the age of 30 for NCDs. Screening and management will be done for hypertension, diabetes and three cancers: oral, breast and cervical. Frontline workers have continued to play a critical role in making the programme a success. Any primary healthcare initiative for that matter can only be successful when frontline workers are trained and empowered.

Interventions like home-based neonatal care have contributed to fruitful learnings in RMNCH programmes in Eastern UP under the Mission Asha project.

Use of training sessions on real-life example:-

In an experimental intervention in 2013 in West Bengal, the Liver Foundation in collaboration with researchers offered more than seventy sessions of training (covering a range of critical topics in health and health care) to informal-sector providers over a period of nine months.²⁸ Not only did the intervention significantly improve the quality of care in terms of providers' correctly managing cases, but it also improved adherence to checklists for best practices.

2.5.3) Blending with the community to find customised solutions

As India lacks dedicated number of beds in hospitals as well as means to reach out to every nook and corner of the country. To tackle the problem of sudden rise in patient load in case of some pandemic(e.g. COVID-19) or some disease which is more seasonal(e.g. Dengue becomes imperative. The help of community people should be sought for providing health care to all because no programme can be successful without active involvement of community.

By reaching out to people in community, there can be better transmission of intended information as well as mimicking of practices(such as wearing masks) can be achieved in a better manner.

Also, in situation where the health system fails due to lack of infrastructure, society can help by creating solutions that are easy to implement and a good temporary alternative to a malady.

Use of community based solution in cases of pandemic real-life example:-

An example is the creation of society based temporary beds (as was in the case of COVID-19 in Delhi).

Use of community based solution in for implementing health programme and creating community awareness real-life example:-

- Kerala is a good example that took help of educated youth and Panchayati Raj Institutions for implementing her health programmes.
- The Tata Trusts has been working in these geographies to counter the malaria and AES challenges through community awareness of environmental engineering for vector control. Accessible healthcare at the doorstep by mobile medical units also make a big difference.

2.5.4) Increasing technology adoption in improving healthcare

Technology is the need of the day. By the adoption of newer technologies managing, operating as well as attending patients would be made easier. Patients will be able to get in depth analysis.

Today ,already, technology is being used in urban India in abundance and it this will also work in rural India as this is a time tested model.

As patient history is not available in rural India health centres due to lack of technology. Doctors would find it easier to check anamnesis of the patient.

Also creation of drugs using newer technologies would help reduce the cost of medicine which would in turn help in medicines reaching out to a wider set of population. Same is the case for precision medicine.

With IOT and industry 4.0) newer technologies and machines for operating surgical procedures automatically can be created and this will reduce cost of conventional machine which can then be easily transferred to health centres.

Use Technology for improving healthcare real-life example:-

The Tata Trusts has been using technology in various healthcare interventions to provide efficient health care to patients across the country, to improve the effectiveness of programmes, and to enhance health outcomes. Technology upgradation is an integral part of hospital infrastructure development initiatives undertaken by the Trusts.

ASMAN is an application that incorporates clinical decision support systems on a platform that utilises online and offline medical oversight for timely interventions in intrapartum and neonatal care. Health system strengthening efforts in Telangana have showcased the comprehensive healthcare model leveraging technology, with Care Coordination Centres being central to this effort. Over 1.1 million electronic health records (EHR) were created in Telangana, pushing the state to aggressively adopt telehealth to network over 60 HUB hospitals and 3000 PHCs.

2.5.5) Strengthening systems through research, data, partnerships and policy advocacy:

In India, there has always been a lack of policy changes without a significant push. There exist policies which hinder the growth of PHC and their capabilities .With the amendment of these policies, improvement of the network of PHC's would become possible.

Also, as already pointed out, the investment in medical research sector in India is poor. Therefore newer investments are needed to bolster India's research and take it on a path of self-reliance.

Partnerships can be a path to a better medical network in India with a new world of collaboration that will start starting from sharing of doctors to equipment's and facilities. With this , there can be collective growth of Indian healthcare system.

Research, partnership and policy advocacy to improve healthcare real-life example:-

The Tata Trusts has been working extensively in this area.

To eradicate and prevent the incidence of TB, the Tata Trusts supports research institutes such as ICMR for studies on various interventions in tuberculosis management. The Trusts have also seeded the India Health Fund to foster innovations to eliminate TB by 2025 and malaria by 2030 from India.

The Tata Trusts has incubated the Health Systems Transformation Platform (HSTP), to be an enabler of state-level capacity to evaluate, redesign and strengthen healthcare systems. The not-for-profit HSTP partners with the prestigious Harvard TH Chan School of Public Health at Harvard University, USA. Besides these Trusts have working relationships with Institutions like Sri Chitra Institute Kerala, AIIMS Gorakhpur, AIIMS Nagpur, ILBS Delhi etc.

REFERENCES

HEALTH

- <http://icds-wcd.nic.in/icds.aspx>
- <http://dise.in/Downloads/Use%20of%20Dise%20Data/The%20Status%20Of%20Health%20&%20Education%20In%20India%20Critical%20Questions%20in%20the%20Nation's%20Development.pdf>
- <https://www.thehindubusinessline.com/news/national/5-reasons-why-indias-healthcare-system-is-struggling/article34665535.ece>
- <https://www.ibef.org/industry/healthcare-india>
- https://www.niti.gov.in/sites/default/files/2021-03/InvestmentOpportunities_HealthcareSector_0.pdf
- <https://www.google.com/search?client=safari&rls=en&q=india+health+institution+funding&ie=UTF-8&oe=UTF-8>
- <https://www.indiahealthfund.org>
- <https://wellcome.org/grant-funding/funded-people-andprojects/affordablehealthcareindia-projects-funded>
- <https://nmji.in/mapping-of-health-research-funding-in-india/>
- <https://nhm.gov.in/index1.php?lang=1&level=2&sublinkid=1220&lid=190>
- <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5144115/>
- https://www.niti.gov.in/sites/default/files/2021-10/District_Hospital_Report_for_digital_publication.pdf

- <https://www.indiabudget.gov.in/doc/eb/sbe46.pdf>
- <https://home.kpmg/in/en/home/insights/2021/02/india-healthcare-sector-transformation-in-the-post-covid-19-era.html>
- <https://www.healthaffairs.org/doi/10.1377/hlthaff.2016.0676>
- <https://www.ncbi.nlm.nih.gov/books/NBK207347/>
- <https://www.moneycontrol.com/news/trends/health-trends/analysis-india-has-long-been-short-of-hospital-beds-the-pandemic-intensified-the-shortage-6836021.html>
- <https://www.optum.in/thought-leadership/library/technology-role-challenges.html>
- <https://globalnutritionreport.org/resources/nutrition-profiles/asia/southern-asia/india/>
- <https://prsindia.org/budgets/parliament/demand-for-grants-2020-21-analysis-health-and-family-welfare>
- <https://hdr.undp.org/en/indicators/98306>
- http://indpaedia.com/ind/index.php/File:The_Density_of_doctors_in_Indian_states,_presumably_as_in_2017.jpg
- <https://voxeu.org/article/when-government-increases-funding-research-disease-others-spend-less>
- <https://www.nhm.gov.in/images/pdf/monitoring/rhs/rural-health-care-system-india-final-9-4-2012.pdf>
- https://main.mohfw.gov.in/sites/default/files/Final%20RHS%202018-19_0.pdf
- https://main.mohfw.gov.in/sites/default/files/Final%20RHS%202018-19_0.pdf
- https://wcd.nic.in/sites/default/files/RHS_1.pdf
- <https://link.springer.com/article/10.1007/s41669-019-00176-9>
- https://niti.gov.in/planningcommission.gov.in/docs/reports/peoreport/peo/peo_chc.pdf
- <https://www.tribuneindia.com/news/archive/nation/india-s-per-capita-health-spending-dismal-rs-1-657-855027>
- <https://blog.forumias.com/research-and-development-in-india-status-challenges-and-recommendation/>
- <https://www.futurelearn.com/info/futurelearn-international/challenges-healthcare-system-india>

EDUCATION

- <https://www.gnu.org/education/edu-system-india.en.html>

- <https://www.education.gov.in/en/institutions-national-importance>
- <http://www.thecivilindia.com/pages/education/structure-of-education-india.html>
- <https://www.imarcgroup.com/indian-pre-school-child-care-market>
- <https://timesofindia.indiatimes.com/india/why-half-of-india-prefers-private-schools/articleshow/77107620.cms>
- https://www.google.com/search?q=number+of+preschool+in+india+data&client=safari&rls=en&source=lnms&tbo=isch&sa=X&ved=2ahUKEwiweX5sO32AhVURmwGHTOOCcIQ_AUoAnoECAEQBA&biw=1454&bih=847&dpr=2#imgrc=90158MSKZ9Ys4M
- <https://www.ceicdata.com/en/india/number-of-schools-primary-school/number-of-schools-primary-school>
- <https://wenr.wes.org/2018/09/education-in-india>
- <https://allschoolsinindia.in/how-many-government-and-private-schools-in-india/>
- <https://economictimes.indiatimes.com/what-are-the-different-types-of-universities-in-india/articleshow/1510954.cms>
- <https://www.statista.com/statistics/660862/higher-education-institutions-bytype-india/>
- https://www.education.gov.in/sites/upload_files/mhrd/files/statistics-new/aishe_eng.pdf
- https://www.education.gov.in/sites/upload_files/mhrd/files/ebook/ebook_files/chapter1.html
- <https://economictimes.indiatimes.com/what-are-the-different-types-of-universities-in-india/articleshow/1510954.cms>
- <https://www.ndtv.com/education/centre-approves-new-india-literacy-programme-adult-education-now-education-for-all>
- https://skillsip.nsdcindia.org/sites/default/files/kps-document/NSDC_Skill%20Financing_27May2020%28F%29%20%282%29.pdf
- https://en.wikipedia.org/wiki/Vocational_education_in_India
- https://www.education.gov.in/sites/upload_files/mhrd/files/statistics-new/ESAG-2018.pdf
- <https://www.tilasto.com/en/topic/education-and-science/average-years-of-schooling/total/average-years-of-schooling-ages-20-24-total/india>
- https://www.researchgate.net/publication/293452542_Challenges_in_Indian_Education_Sector
- <https://www.bis.org/review/r110809b.pdf>

- <https://www.forbesindia.com/article/iim-bangalore/challenges-of-online-education-in-rural-karnataka/62349/1>
- <https://www.gapinterdisciplinaries.org/res/articles/Paper%2027.pdf>
- <https://www.oecd-ilibrary.org/docserver/5kg83k687ng7-en.pdf?expires=1648721076&id=id&accname=guest&checksum=F9029D801B06EB9CF1A3E125DF577F66>
- https://www.researchgate.net/publication/323700593_Problems_in_the_Indian_Education_System
- https://www.researchgate.net/publication/351600216_A_Review_on_Indian_Education_System_with_Issues_and_Challenges
- https://www.researchgate.net/publication/293452542_Challenges_in_Indian_Education_System or
- <https://www.gapinterdisciplinaries.org/res/articles/Paper%2027.pdf>
- <https://iosrjournals.org/iosr-jbm/papers/Conf.ADMIFMS1808-2018/Volume-1/13.%2086-91.pdf>
- https://www.researchgate.net/publication/325086709_Impact_of_modern_technology_in_education#:~:text=The%20importance%20of%20technology%20in,learning%20all%20the%20more%20enjoyable.
- <https://files.eric.ed.gov/fulltext/EJ1117604.pdf>
- https://www.researchgate.net/publication/283251548_A_Student-Centered_Learning_Model
- https://www.researchgate.net/publication/235779409_Developing_a_Model_of_Student-Centred_Teaching_which_Enhances_Active_Engagement
- [Budget Expenditure 2018-2020](#)
- https://www.education.gov.in/sites/upload_files/mhrd/files/statistics-new/Result_Secondary_Higher_Secondary_Examination_2020.pdf
- https://www.education.gov.in/sites/upload_files/mhrd/files/statistics-new/PopulationProjection2016.pdf
- https://www.education.gov.in/sites/upload_files/mhrd/files/statistics-new/SES-school-2011-12.pdf
- https://www.education.gov.in/sites/upload_files/mhrd/files/statistics-new/StateProfile-2005-06.pdf
- https://www.education.gov.in/sites/upload_files/mhrd/files/statistics-new/Selected%20Information%20on%20School%20Education%20282%29.pdf
- <https://www.education.gov.in/en/statistics-new>

- <https://hdr.undp.org/en/countries/profiles/IND>