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DECREASE HEALTH ISSUES BY BIG DATA ANALYSIS

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Abstract

The goal of "Swastha Bharat," or a healthy India, is to help every Indian realise his or her dream of living in an incredible India. Article 21 of the Constitution of India guarantees every citizen the right to health care. Health, as defined by the World Health Organisation (WHO), is not only the absence of disease but rather the whole mental, physical, and social flourishing of a person. New computer technologies have had a profound impact on the health industry, driving the generation of more medical data and spawning new subdisciplines of study. In order to make Swastha Bharat (Healthy India) a reality, this article discusses the crucial computing and analytical capabilities of Big Data in handling massive amounts of transactional information in real time. A universally applicable system is proposed.
Keywords : Big Data Analytics, Swastha Bharat , Big Data Challenges, e-Health Care, Health Predictive Analysis, Health care in India.

1. Introduction

The more physically fit you are, the more robust, clear, and effective your mental capabilities will be. Consequently, stress the need of physical fitness as the primary responsibility of every person. If we tend to remain healthy, we'll spend far less on medical care, freeing up resources for more important endeavours. The healthcare system in India is straining under the weight of the country's rapidly growing population. India has a government-supported public health care system. However, getting basic medical treatment remains difficult for certain people in rural areas of the country. Increased access to healthcare for valuable people resources will ultimately improve health in India, which is one of the world's largest and fastest-growing democracies. The healthcare industry has historically and presently produced vast amounts of data due to record-keeping, compliance and restriction requirements, patient care, and other services. The internet, IT, and digitalization are all powerful instruments of digital transformation. The volume, diversity, and velocity of this data, however, are becoming increasingly challenging to manage. In order to expand health care, health insurance issues, save lives, and reduce costs, the industry has been boosted by the deep analysis utilised in big data applications of health care systems.
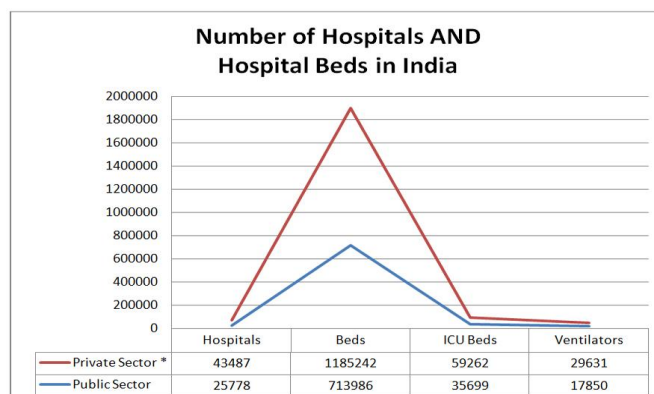
2. Indian Healthcare System and its Challenges

India's healthcare infrastructure is in shambles. The costs seem to be increasing every day, making it unaffordable for a growing percentage of the population. Recently, the Indian Health Progress (IHP) organisation has been emphasising the critical needs of the Indian healthcare system and measures to enhance it. India, the world's second-most populous country, has numerous challenges as a result of its strained infrastructure and rapidly expanding population. India's new public health agenda aims to address the country's growing problem with chronic, non-communicable diseases as well as the effects of demographic shifts and environmental modifications. Maternal and infant mortality, HIV/AIDS, and other infectious diseases remain unaddressed, putting further strain on already-overworked health care systems.

2.1 Limited resources & infrastructure:

It is unknown how many private hospital beds are actually available. There were 1,185,242 beds and 43,487 hospitals, according to a study by the Centre for Disease Dynamics, Economics & Policy (CDDEP) published in April 2020. This may be too low, considering the widespread presence of assisted living facilities and small and medium-sized hospitals across the country.

Number of Hospitals AND Hospital Beds in India

	Hospitals	Beds	ICU Beds	Ventilators
Private Sector *	43487	1185242	59262	29631
Public Sector	25778	713986	35699	17850

* Estimates of CDDEP-Princeton University
Source: MoHFW, CDDEP-Princeton University

However, according to the health ministry's and CDDEP-Princeton University's calculations, India only possessed roughly 13.76 beds for every 10,000 people. There were only about 5.2 beds per 10,000 individuals in the public and government sector. According to the report, there are 69,265 hospitals with 1,899,228 beds altogether across the nation.

According to the health ministry, there were 17,850 ventilator beds among the approximately 35,700 ICU beds at government-run public hospitals.

Another issue that people face is the unequal distribution of hospitals and beds. Even though there are more government hospitals in rural regions, there are more beds there. The average number of beds in rural government hospitals is 12.4, which is lower than to 102.6 beds in the hospitals in urban areas.

TABLE 134: STATE-WISE NUMBER OF GOVERNMENT HOSPITALS IN RURAL & URBAN AREAS (INCLUDING CHCs)

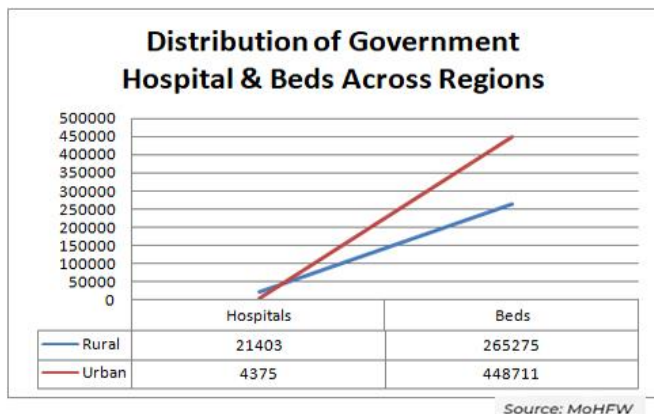| States	Government Hospitals			Beds in Government Hospitals			Avg. No. of Beds per Government Hospital		
	Calendar Year 2019								
	Total	Rural	Urban	Total	Rural	Urban	Total	Rural	Urban
Andhra Pradesh	6,234	791	5,443	86,721	9,687	77,034	14	12	14
Bihar	2,132	1,946	186	29,339	11,747	17,592	14	6	95
Chandigarh	49	0	49	3,758	0	3,758	77	-	77
Chhattisgarh	247	198	49	9,610	9,200	410	39	46	8
Goa	43	18	25	3,086	1,485	1,601	72	83	64
Gujarat	2,245	1,825	420	29,402	19,917	9,485	13	11	23
Haryana	678	592	86	12,590	7,015	5,575	19	12	65
Himachal Pradesh	822	727	95	14,782	7,114	7,668	18	10	81
Jharkhand	4,463	4,371	92	14,891	9,197	5,694	3	2	62
Karnataka	2,842	2,467	375	70,474	21,146	49,328	25	9	132
Kerala	1,284	1,075	209	38,097	16,123	21,974	30	15	105
Madhya Pradesh	465	330	135	31,106	9,900	21,206	67	30	157
Maharashtra	514	365	149	33,028	10,950	22,078	64	30	148
Meghalaya	154	140	14	4,467	2,000	2,467	29	14	176
NCT of Delhi	107	0	107	27,154	0	27,154	254	-	254
Odisha	1,806	1,655	151	18,519	6,339	12,180	10	4	81
Puducherry	44	21	23	4,768	94	4,674	108	4	203
Punjab	816	511	305	21,241	5,801	15,440	26	11	51
Rajasthan	2,849	2,094	755	46,778	12,564	34,214	16	6	45
Tamil Nadu	2,507	1,880	627	99,435	28,460	70,975	40	15	113
Telangana	677	677	-	5,094	5,094	-	-	-	-
Tripura	155	132	23	4,343	1,946	2,397	28	15	104
Uttar Pradesh	4,683	4,475	208	66,700	40,130	26,570	14	9	128
Uttarakhand	618	502	116	8,106	2,972	5,134	13	6	44
Andaman & Nicobar	30	27	3	1,202	617	585	40	23	195
Arunachal Pradesh	218	208	10	2,404	2,136	268	11	10	27
Lakshadweep	12	12	-	250	250	-	21	21	-
Mizoram	99	56	43	2,022	574	1,448	20	10	34
Sikkim	33	24	9	2,260	260	2,000	68	11	222

CHCs: Community Health Centres.　-: Not Available.

Note: Data for Chhattisgarh, Haryana, Jharkhand, Madhya Pradesh, Maharashtra, Punjab, Tamil Nadu, Telangana, Uttar Pradesh, Sikkim, and Lakshadweep pertains to year 2020.

Source: National Health Profile released by the Central Bureau of Health Intelligence, Ministry of Health & Family Welfare, Government of India.

2.2 Rural Versus Urban Facilities

India spends less than 2% of its national GDP on healthcare services, compared to the US's 18%, despite the market being quite ripe for entry. Furthermore, the healthcare system has significant disparities between the urban and rural populations. Unreasonably, 70% of the population still resides in rural areas with little access to medical facilities.

Distribution of Government Hospital & Beds Across Regions

	Hospitals	Beds
Rural	21403	265275
Urban	4375	448711

Source: MoHFW

2.3 Lack of access to healthcare services or the cost

Finding any meaningful close medical treatment is really difficult. Numerous Indians in the hundreds of millions just do not have easy access to diagnosis and treatment. The referrals or cut practices are one of the main issues in Indian healthcare, particularly in diagnostics. Sharing compensation with peers in a professional field, such as doctors or laboratories, in exchange for referrals is unethical. This issue is particularly prominent in diagnostics, where some doctors demand referral fees that can amount to up to 70% of the pathology/radiology expenditures. Not only detrimental to the patient, but they also make healthcare costly for many more.

2.4 Need for Effective Payment Mechanisms:

Along with the rural-urban divide, significant out-of-pocket spending (about 70%) is a major element influencing India's healthcare system landscape. This suggests that the vast majority of Indian patients pay their medical expenses in full, immediately upon treatment, with no interest or payment plans involved. According to the macroeconomic analysis conducted by the World Bank and the National Commission, only 5% of Indians are covered by health insurance. This small pool of potential buyers means that the new health insurance market is open mostly to urbanites, middle-class, and high-income individuals.

2.5 Unnecessary diagnostic tests:

Additionally, it appears that doctors seek unnecessary or perhaps unneeded diagnostic testing. The availability and affordability of high-quality healthcare services and medications for a significant portion of our population are some of the major issues the Indian healthcare system is now dealing with. Other significant issues include a lack of transparency and information.

3. Healthcare and Big data

Currently, the healthcare industry produces enormous amounts of data, along with data linked to patients, record keeping, compliance and regulatory needs, and other factors. Electronic health records are a highly vast and complicated data collection in the healthcare industry that cannot be simply maintained by conventional software or hardware or by conventional or common data management tools and methodologies. Data on patient care, such as doctor reports, lab results, X-ray reports, case histories, social media, sensor data, diet, a list of the doctors and nurses in a specific hospital who will be caring for the patient, and the use of RFID data to determine the expiration date of medical and surgical instruments are all examples of important health care data. Important data about healthcare is challenging to keep due to its volume, diversity of data kinds, and required speed of management, among other factors. All information about patient health and wellbeing is considered "valuable data" in the healthcare industry. The difficulty of big data for the healthcare sector is more about quality than quantity [6].
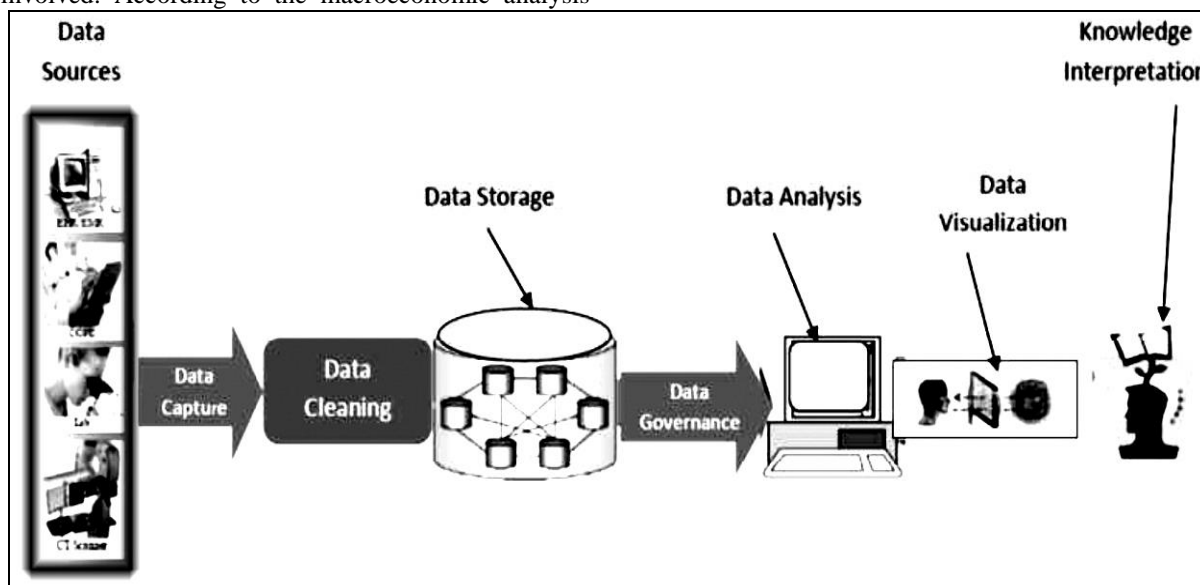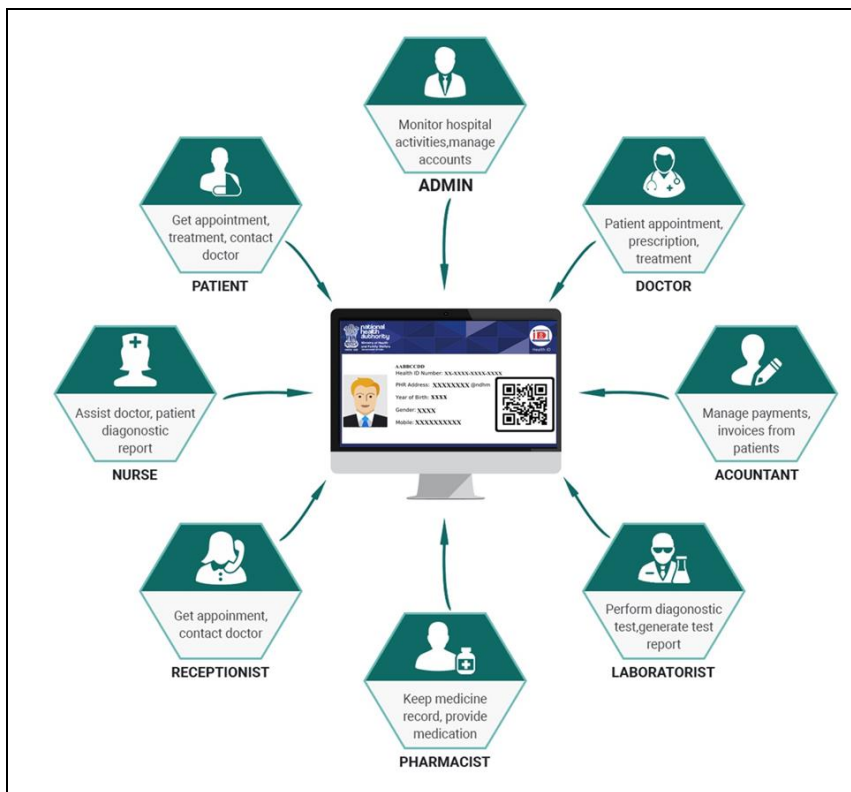

4. Proposed Solution- A Unique Health Card:

Big Data's analytical computing power and its capacity to analyse massive amounts of transactional data in real time are essential to making the Swastha Bharat (Healthy India) vision a reality. Every patient should have a health card attached with his Aadhar Card, This card will have a unique Id, This unique Id will be associated with Doctor Appointment, all laboratories checkups, all pathology and radiology reports, medicine intakes, Nursing system and Hospital In-Out System. All the data should be managed over cloud and so that predictive analysis can be done on this big data. The electronic health record data set is extremely vast and difficult to manage with conventional software or hardware, let alone with conventional data management tools and procedures. Data on patient care is crucial, and it can come from a variety of sources, including but not limited to doctors' notes, lab results, X-ray images, patient histories,

social media, sensor data, dietary habits, a list of doctors and nurses at a specific hospital who will be caring for the patient, and RFID data indicating when specific surgical instruments will expire. With the help of this data government of India can monitor the exact issues of population; He can target the areas where major health issues are coming. A lots of analysis can be done by with this big data like which disease is increasing on which area, where we have to plan for health camps, quantity and specialist appointment according the patients etc.

Conclusion

For positive results in public health, a strong regulatory framework is essential. Big Data's analytical computing power and its capacity to analyse massive amounts of transactional data in real time are essential to making the Swastha Bharat (Healthy India) vision a reality. A Unique Health Card will have a unique Id, This unique Id will be associated with Doctor Appointment, all laboratories checkups, all pathology and radiology reports, medicine intakes, Nursing system and Hospital In-Out System. All the data should be managed over cloud and so that predictive analysis can be done on this big data.

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