

# YOJANA - UNIVERSAL HEALTH

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## Benchmarking Health Care

The right to health has so far not been accorded the status of a Fundamental Right to the Indian Citizens. It is not even a statutory right, unlike education. Moreover, health is a subject which is assigned to State governments as per our Constitution. Hence, about two-third of the expenditure on health comes from state governments.

Despite notable gains in improving life expectancy, reducing maternal and child mortality, and addressing other health priorities, our health system needs a lot of improvement judged by the rather modest benchmark of countries with similar levels of economic development.

### Health Index -

- To standardise healthcare, a Health Index was launched by NITI Aayog in 2017 in collaboration with the Ministry of Health and Family Welfare and the World Bank. It is the first-ever systematic exercise for tracking the progress on health outcomes and health systems' performance across all the States and Union Territories in India on an annual basis.
- The Health Index is a weighted-composite index on select indicators in three domains - Health outcomes; Governance and Information; and Key Inputs and Processes, with the health outcomes carrying the most weight across the different categories of States/UTs.
- For generation of ranks, the States are classified into three categories (Larger States, Smaller States and UTs) to ensure comparability among similar entities.
- A range of indicators such as the neonatal mortality rate (deaths occurring in the first 28 days of life), full immunisation coverage, treatment success rate of confirmed tuberculosis cases, stability of tenure of key administrators, vacancy of doctors and specialists in health facilities, and functionality of primary health centres, first referral units and cardiac care units, are included in the index.

### Objectives and significance -

- The vision behind establishing the annual systematic tool is to propel States towards undertaking multi-pronged interventions and drive efforts towards achievement of SDG Goal 3.
- It can be viewed as being akin to an annual health checkup diagnostic report, providing the State governments to identify parameters in which States have improved, stagnated or declined.
- An analysis of this can help States in focusing attention on better targeting of interventions and improving the delivery of health services and also an opportunity of sharing best practices.

- The Index is an innovative tool as it not only fosters competition among states by comparing similar states to each other but also nudges them to better their own performance in the previous year.
- As it tracks progress on incremental performance, it helps shake complacency among “Healthiest Large States” such as Kerala, Tamil Nadu and Punjab that have historically done well. At the same time, it is expected that it will nurture hope and optimism among large states such as Haryana, historically lagged in performance but are demonstrating greater improvements in health outcomes.
- The Health Index has the potential to be a game changer as it can shift the focus from budget spends, inputs and outputs to outcomes by shining the light on States that have shown most improvement. The MoHFW’s decision to link the Index to incentives under the National Health Mission sends a strong signal to States in the shift towards outcome based monitoring and performance linked incentives.

### **Conclusion -**

The Health Index is a useful tool to measure and compare the overall performance and incremental performance across States and UTs over time. It is an important instrument in understanding the variations and complexity of the nation’s performance in health.

## **Strengthening Health Systems**

India has successfully eliminated diseases like smallpox, guinea worm, neonatal tetanus and polio, and effectively controlled many communicable diseases like leprosy, malaria, filariasis, kala azar and progressing well towards ending tuberculosis by 2025.

The challenge is to overcome the growing incidence of non-communicable and lifestyle diseases like cancer, diabetes, chronic kidney diseases, cardiovascular diseases, chronic lung diseases and mental health disorders etc., as well as to achieve the universal health coverage with indigenous, affordable and cost-effective innovations.

### **What is the objective?**

India has largely achieved Millennium Development Goals (MDGs) and is committed to Universal Health Coverage (UHC) which is one of the targets of Sustainable Development Goals (SDG) by 2030. The SDG 3 target to achieve UHC, including financial risk protection, access to quality essential health care services, and access to safe, effective, quality and affordable essential medicines and vaccines for all.

### **Health Financing in India -**

- The public expenditure on health accounts for nearly one-third of the total expenditure at 1.2% of the GDP and remaining is met by Out-of-Pocket expenditure (OOPE) by the

households which is exorbitant and puts extra pressure on low socio-economic population as almost 10 crore population goes below poverty line due to high OOPE.

- According to the latest National Health Accounts Estimates (2016-17), the total spending on health in India is 3.8% of the GDP which has reduced from 4.2% in 2004-05. The Government health spending has remained almost static around an average of 1% of GDP and the State health spending is around 2% of SGDP on average with variations across the States.
- A sum of 45% of the total current health expenditure is spent on primary health care followed by 36% for secondary care, and 13.9% for tertiary care. 52% primary health care is supported by the government as compared to the primary sector (41%). The government share of secondary tertiary (10.8%) is lower than the private sector (42.4% and 15.6%, respectively).
- Among the providers of health care, the Government hospitals contribute to 14% of the current health expenditures, whereas the contribution of the private sector is significantly higher at 26%.
- There is an indication of reduction of hardship financing over the 10 years as household's reliance on borrowing from money lenders, friends etc., to finance health care has declined steadily in both rural and urban areas.

### **Government policies -**

- The National Health Policy (NHP), 2017 aims to double the government healthcare spending from the existing 1.2% of the GDP to 2.5% by 2025.
- It would mean increasing the current budgetary allocation of Rs 69,000 crores in 2020-21 to about 4.6 times, meaning Rs 3.71 lakh crores by 2025. However, to achieve the goal of Universal Health Coverage, the Government should aim to raise healthcare spending to the level of 4-5% of the GDP over a period of 7 to 8 years from 2019.
- The second commitment of NHP is to ensure an increase of state health spending to more than 8% of their budget by 2020. However, none of the state has achieved this feat yet.
- The third commitment is to ensure primary health expenditure to 2/3rd of the total Health expenditure. National Health Account (NHA) 2016-17 shows that the share is only 45%.

### **International Comparisons -**

- India ranks low on life expectancy (125/183). In 2014, India had the highest OOPE (62.4%), almost double that of China and 4.5 times of Japan.
- A study by the Public Health Foundation of India (PHFI) has estimated that about 55 million Indians are pushed into poverty in a single year because of catastrophic health expenditure.
- Government health spending in India was 30% in 2014 which is 2.8 times and 1.9 times lower than Japan and China.

- In 2014, India spent 5% of total government expenditure on health which is less than half of China, less than one-third of UK and Denmark.

### **What needs to be done?**

- Public health care system in India needs to address the issue of critical regulation systems on food, drugs and diagnostic etc; life saving vaccines and drugs like TB; preventive, promotive, palliative and rehabilitative health care; implementation of clinical establishment rules, gaps in medical, dental, nursing and pharmacy institutions which will not be addressed by market forces requires government interventions.
- Primary health care can potentially deal with 90% of healthcare demands. Investment in primary healthcare including prevention and health promotion proves better health and developmental outcomes at a much lower cost - it helps to reduce the need for more costs, complex care by preventing illness and promoting general health.
- Raising taxes on harmful commodities may not only improve health but can generate more fiscal space for health. In the case of India, taxes on alcohol, tobacco, salt and sugar will not only generate additional resources but would be preventing non-communicable diseases and contributing to easing the burden on health systems.
- Subsidies on commodities such as sugar, diesel, kerosene and coal should be reviewed and savings diverted to nutritious food and clean renewable energy resources.
- Taxes should be imposed on specific industrial commodities causing air, water and soil pollution other than the taxes on tobacco, alcohol and foods having negative impact on health and taxes on polluting industries.
- Like health and education cess, where 1% is exclusively for health, pollution cess should also be levied as it has a direct negative impact on health.
- The Indian health care systems has a huge growth potential; initiations such as liability gap funding for setting up hospitals under PPP mode in aspirational districts offer an opportunity to innovate limited health allocation; will push the sector “to do more with less” adopting innovations and replicating existing best practices.
- Health insurance to finance hospitalisation to reduce OOPE and catastrophic health expenditure can also be introduced. The coverage of Ayushman Bharat should be extended to the whole population.
- Removing bottlenecks in allocation, disbursement and timely flow of funds would also enhance utilisation of allocated funds.

## **Artificial Intelligence in Healthcare**

The modern era of global connectivity and high levels of mobile usage in India present significant opportunities for access to AI technology focused healthcare within the following areas -

1. **AI in assistance to Physicians** - AI can relieve highly-skilled medical professionals from routine activities, freeing up doctors to concentrate on the higher-value cognitive application of medical practice, truly connect with patients and positively impact cases of medical errors and misdiagnosis.
2. **AI in Diagnostics** - One of the key healthcare challenges in India is acute shortage of radiologists. AI based diagnosis can be especially helpful for radiology, pathology, skin diseases, and ophthalmology.
3. **AI for Optimising Treatment Plans** - AI can also be used for assisting doctors and patients to choose an optimal treatment protocol. Machine Learning can be used to mine not only doctor's notes and patient's lab reports, but also link to the extant medical literature to provide optimal treatment options.
4. **AI for Monitoring/Ensuring Compliance** - The potential for AI application in remote monitoring has enhanced manifolds via the use of wearables. These can be used for monitoring various aspects such as movements, physiological parameters, temperature and alerts that can be communicated to healthcare professionals.
5. **AI in the COVID-19 Epidemic** - The COVID-19 epidemic highlights the need for an AI based epidemic monitoring system that can model and predict outbreaks and help optimise scarce resources. AI can help fight the virus via Machine Learning-based applications including population screening, notifications of when to seek medical help and tracking how infection spreads across swathes of the population.

### **Challenges and Controversies -**

- **Healthcare industry issues** - The challenges of migrating to an AI-technology based healthcare infrastructure are numerous as medical professionals attempt to transition to new ways of working and adopt new systems and processes. Traditional healthcare personnel may resist new innovations, doctors may not trust AI systems, patients may question AI-based decision making and medical staff could view the changes as disenfranchising them from their key roles and decision-making powers.
- **Technology-related issues** - AI systems and the underlying algorithms are reliant on the quality of data to enable the Machine Learning elements to perform the necessary processing and decision making. Each state has its own system and working process. Initiatives are needed at the state and national government levels to ensure shared data standards, data security and exchange processes.
- **Socio-cultural issues in technology implementation** - Studies indicate that decisions with respect to technological development and adoption are made to take account of cultural context and existing social conditions. Solutions need to take account of the Indian context where pockets of the population are socially and educationally challenged, culturally marginalised and economically disadvantaged. Decision makers need to ensure that public sector healthcare organisations benefit from AI technology rather than default to the private sector reaping the rewards for investment.

- **Regulatory and ethical issues** - There are several ethical and regulatory challenges in implementation of AI in healthcare in India. Data security and privacy is especially important with increasing use of wearables which can potentially cause identity theft through hacking of devices and data. The regulators need to provide clear and concise agreement and privacy policies to enhance widespread and safe adoption of these devices.

### What should be done?

- To enhance the adoption of technology by healthcare providers, AI and its application should be incorporated within the curriculum for medical and paramedical training.
- Technology should be recognised as socio-culturally embedded; hence, the technology design and implementation should take into account cultural practices and address the gender divide in India.
- Ethical guidelines regarding security and privacy of data should be protected. The data should be strictly used for clinical purposes only.
- The AI system must be explainable and auditable. All decisions made in the context of diagnosis or recommendations can impact on human lives. The underlying algorithms must be transparent and explainable to ensure ease of audit.
- AI systems should not exhibit bias. The algorithms developed for the AI system must not exhibit racial, gender or Pincode-based decision making.
- AI healthcare systems must conform to human values and ethics.
- Adoption of AI based healthcare must be benefits-driven. The migration towards greater levels of technology must ensure that changes are geared to the benefits of patients and the overall healthcare of Indian people.
- Pilot initiatives should be developed within key states to trial the impact that AI systems could have on existing healthcare systems and infrastructure. Lessons should be learned from these initiatives before, wider rollout at a national level.

## IoT in Healthcare

The Internet of Things consists of several functional components - data collection, transfer, analytics, and storage. Data is collected by sensors installed on mobile, end-user hardware like phones, robots, or health monitors. Then, the mobile data is sent to the central cloud server for analytics and decision making, such as if a machine requires proactive maintenance to prevent unexpected breakdown or if a patient needs to come in for a check-up.

### Uses -

- **Factories and Transportation** - IoT helps factories operate more efficiently and keep costs down. IoT sensors can be used to ensure that the vehicle was driven in a safe

manner without breaking key vials and that the correct temperature/humidity range was adhered to at all times, ensuring the safety of a vaccine or medicine.

- **Artificial Intelligence in Operations and Services** - The AI-powered robots can learn and understand customer's needs, while analysing the enquiries based on available data to accurately answer and streamline transactions with ease.
- **Digital and Remote Technologies** - In places like Singapore, temperature measurement at the entrances of almost all public buildings has been carried out since weeks. The connecting apps report their data into a central instance for real time analysis. The COVID-19 outbreak has shown the new emerging benefits of smart manufacturing, saying Industry 4.0 drives capabilities for remote operations, monitoring and maintenance of production lines and manufacturing plants.
- **IoT in Hospitals** - Connecting health systems together can reduce a huge amount of manual admin tasks by consolidating EMRs (Electronic Medical Records), scheduling systems, and patient monitoring into one place. Devices for patients at home can also connect to EMRs so that chronically ill patients do not necessarily have to visit the hospital or medical centre while still being attended by medical staff.
- **Connected Medication and Home Care** - Medical IoT devices for patients staying at home are already being used to improve out-patient care and reduce recurring appointments and these devices are beneficial even during a crisis. Glucose and blood pressure monitoring devices can be used by patients at home to make sure their care goes uninterrupted. Connected medication can help by giving patients regular alerts to take their medication and encouraging them to stick to the full course, doctors and caregivers have a real-time record of patients taking medication and can track the patient's progress by connecting with other medical records.
- **Maximising Output and Minimising Stress** - Simply by maximising the number of patients that can be attended to by the doctors in the hospitals, and reducing the number of people that need to come into the hospital for regular appointments, IoT could take a huge weight off the shoulders of medical staff.
- **IoT to Manage Patient Care** - The scalability of IoT also comes in handy for monitoring all the patients who are high-risk of disease. With IoT, the patients can have their temperatures taken and upload the data with their mobile devices to the cloud for analysis. This way, healthcare workers can not only collect more data using less time but also reduce the chance for cross-infection with the patients.

### **Conclusion -**

It is now the moment for countries to fast-track the construction of new digital infrastructure, such as IoT along with AI, in addition to the hastening of vital projects and major infrastructure construction that's already included in countries' financial stimulus plan.

## Redesigning Public Health

The public healthcare system is not equipped with intensive care units and ventilators, pathology and clinical laboratories, surgical instruments with sufficient medical and paramedical forces. It resulted in hard healthcare and soft healthcare supply constraints.

Now, it is time to think of building a healthcare network with a national buffer and global pump house for public health services.

### **National Buffer -**

The trained medical and paramedical forces pooled for public healthcare service using a network is called a national buffer and the healthcare service is provided by operating this buffer as a pump house during the time of health emergency.

### **Global trade in health services -**

- The World Health Organisation with the World Trade Organisation is drawing the attention of its members towards the global public healthcare system and promoting global trade in health services.
- In this direction, the investment in medical education and research in member countries should be encouraged through the public private participation.
- The World Bank can promote private investment to create a healthcare force in its member countries. The International Monetary Fund can think of diverting its annual subscription of funds to special schemes to deal with poverty to combat the health hazards of coronavirus.
- The World Trade Organisation has made provision for trade in services under general agreement on trade in services (GATS). Serious discussions are going on at international level to bring healthcare under its ambit and promote global trade in health services.
- The economics of public healthcare with an opportunity of global trade in health services has become an academic interest. The consolidation and deployment of medical and paramedical forces including nurses at national and global levels needs attention to promote trade in health services.

### **Conclusion -**

Ensuring public healthcare security through the national buffer by pooling medical and paramedical force and operating it as a global pump for deployment<sup>1</sup> of medical force during health emergencies should be the goal of global health policy. A global strategy for national buffer and global pump house for health service with a network could be worked out for the

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benefit of the global community. The proposed health buffer could be operated as a pump house under the norms of the World Trade Organisation to conduct inter-regional and global trade in health services.