Part-I: Impact of Janani Shishu Suraksha Karyakram on the out-of-pocket expenditure in EAG states of India

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MBA- HM, BATCH- 2019-21 SECTION- C

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ACKNOWLDEGMENT

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LIST OF ABBREVIATIONS

ANM: AUXILLARY NURSING MIDWIFE

ASHA: ACCREDITED SOCIAL HEALTH ACTIVIST

CRM: COMMON REVIEW MISSION

DLHS: DISTRICT LEVEL HOUSEHOLD SURVEY

EAG: EMPOWERED ACTION GROUP

GDP: GROSS DOMESTIC PRODUCT

IEC: INFORMATION EDUCATION COMMUNICATION

JSSK: JANANI SHISHU SURAKSHA KARYAKARAM

JSY: JANANI SURAKSHA YOJNA

MMR: MATERNAL MORTALITY RATIO

NFHS: NATION FAMILY HEALTH SURVEY

NSSO: NATIONAL SAMPLE SURVEY ORGANISATION

OOPE:OUT OF POCKET EXPENDITURE

PHC: PRIMARY HEALTH CENTER

SDG: SUSTAINABLE DEVELOPMENT GOALS

SRS: SAMPLE REGISTRATION SURVEY

TSA: TECHNICAL SUPPORT

USG: ULTRA SONOGRAPHY

Impact of Janani Shishu Suraksha Karyakram on the out-of-pocket expenditure in EAG states of India

Introduction

Maternal mortality is a pressing issue of developing countries like India. India bears the burden of 20% of maternal mortality worldwide. The leading cause of maternal mortality is haemorrhage (27%) followed by eclampsia, obstructed labour, and sepsis. High risk pregnancies are very likely to have such complications. In India 20%-30% of pregnancies are high risk and these are the leading cause of perinatal morbidity and mortality (1). High risk pregnancies can be avoided primarily by delivering in a health institution. According to NFHS-4 the main reason for not delivering at a health institution is the out of pocket expenditure endured by families.

According to NFHS-3 (2005-06) the institutional deliveries in India were at 38.7% which gradually increased to 46.9% (DLHS-3 2007-08) and then to 78.9% (NFHS-4 2015-16) (2) (3). Also, the maternal mortality ratio in India has been decreasing gradually over the past two decades.

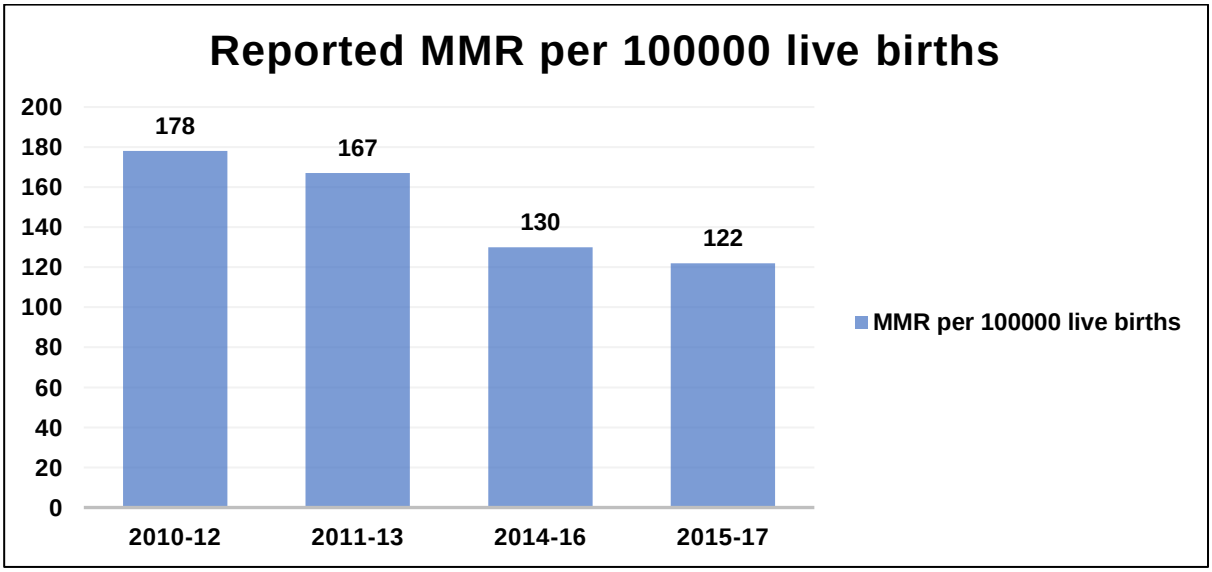

Figure.1 Source: NITI Aayog

Formerly known as the BIMARU states (Bihar, Madhya Pradesh, Rajasthan, and Uttar Pradesh), are now called as Empowered Action Group (EAG) states. Earlier 4 BIMARU states are now eight due to separation of state borders of Madhya Pradesh and Bihar, and addition of the states of Rajasthan, Odisha, and Uttarakhand. These eight states now account for 46% of the total population of India (4). These states are known for their conspicuous characteristics of high fertility,

high IMR, high MMR, high population growth rate and low literacy rate and high literacy gender differential.

To overcome the dire need to improve maternal health and reduce the out of pocket expenditure, government launched Janani Shishu Suraksha Karyakram (JSSK) on 1st June 2011. It is an initiative by the Ministry of Health and Family Welfare launched. All states implemented this initiative in 2011. The benefits entitled to the pregnant women were as follows:

- It entitles all pregnant women delivering in public health institutions to free and no expense delivery, including caesarean section.
- The entitlements include free drugs and consumables, free diagnostics, free blood wherever required, and free diet for three days during normal delivery and seven days for C-section. This initiative also provides for free transport from home to institution, between facilities in case of a referral and drop back home.
- In 2014 these entitlements extended to all antenatal &post-natal complications of pregnancy
- Similar entitlements have been put in place for all sick new-born and infants (up to one year of age) accessing public health institutions for treatment.

Out of pocket expenditure:

Out of Pocket Expenditure (OOPE) is the amount spent on health or health related expenditure by the patient. OOPE or health expenditure is the sum total of expenditure on doctor consultation, drugs both from the hospital as well as purchased from the market, diagnostic tests, bed charges, personal medical appliances, transport, food, and boarding expenses of escorts.

India has a healthcare system dominated by private health sector which is not regulated by the government. Hence, healthcare is majorly financed through Out of Pocket Expenditure. OOPE accounts for a majority of total health expenditure and it can be a serious constraint in utilising maternity care (5). World bank data states that in 2017 the Out-of-pocket expenditure was 62.4% of the total health expenditure in India (6) (7).

According to NFHS-4 the out of pocket expenditure incurred by women from urban area in a public health facility was Rs.3,913 and by women from rural area was Rs.2,946 (3). JSSK has been implemented to alleviate the burden of OOPE. The objective of this paper is to assess the impact that JSSK had on OOPE faced by families.

Objective:

The objective of this study is to assess the situation of benefits proffered under JSSK in the EAG states.

To assess which benefits were mainly responsible in adding to the OOPE during delivery.

To determine which EAG states are progressing in terms of maternal health.

Methodology:

This study is focused on the economically empowered group of states namely Bihar, Jharkhand, Uttarakhand, Madhya Pradesh, Chhattisgarh, Odisha, Uttarakhand, and Rajasthan.

Data was collected through secondary research from contemporary and relevant, peer-reviewed, published literature. Apart from the papers, reports by NITI Aayog like SDG India report 2019-20, Quarterly monitoring report of Janani Shishu Suraksha Karyakram, NFHS-4, SRS, and status reports from international health organisations were perused.

Results:

After extrapolating from various research papers and government reports and data, it is evident that institutional delivery rate has increased in EAG group of states in the past decade (8). Deliveries in public health facilities are on a steady rise. This has led to a rise in institutional delivery percentage over the years and maternal mortality ratio has declined. JSY along with JSSK has contributed to this endeavour, though disparate sources point to the evidence of lack of awareness regarding JSSK among women in these states. Also, three fourth of the inpatient in the five EAG states are dependent on private healthcare sources in both rural and urban areas except Odisha and Uttarakhand (29% and 39%). Poor quality of services in public health facilities remain one of the major challenges for EAG states

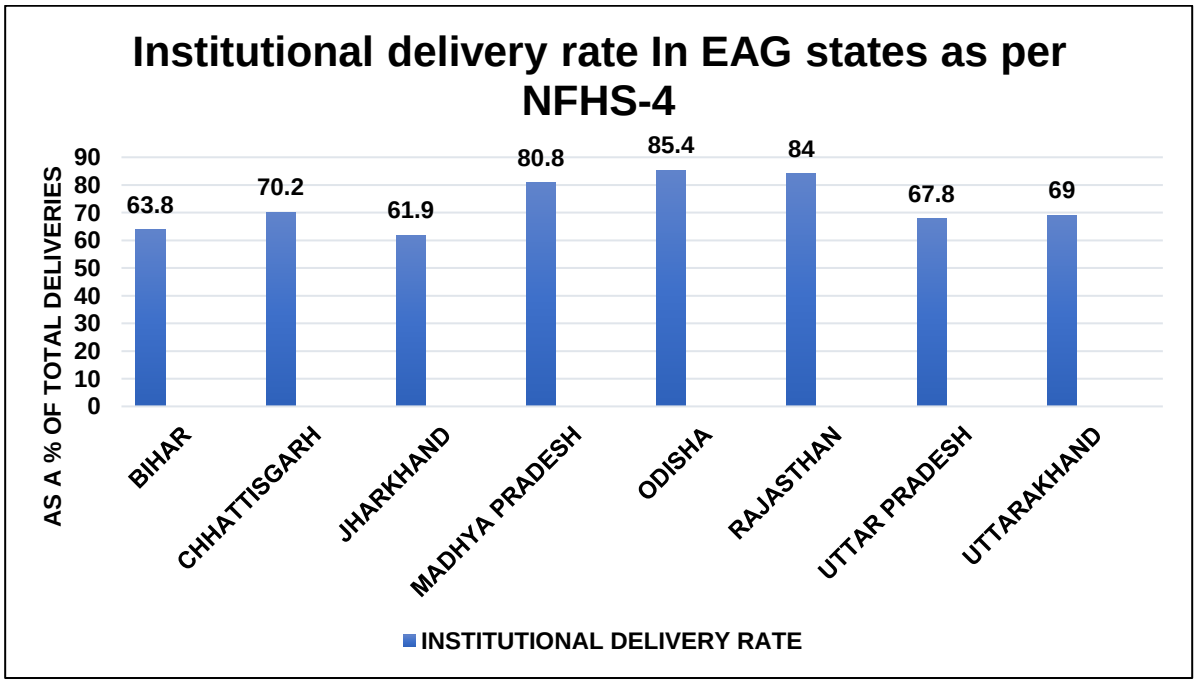

Figure. 2 Source: NFHS-4

After Janani Suraksha Yojana (JSY) there has been a steady increase in the institutional deliveries and JSSK has given it an extra push. JSSK was mainly implemented to mitigate the OOPE incurred by families utilizing public health institutions.

According to the SDG India Index performance of states on indicators of the goal 'Good Health and Well-being' was recorded (9). The proportion of population receiving maternity benefits in the EAG states was as follows:

- Bihar: 53.9%
- Jharkhand: 41.6%
- Madhya Pradesh: 61.1%
- Odisha: 72.6%
- Rajasthan: 56.1%
- Chhattisgarh: 66.2%
- Uttar Pradesh: 48.7%
- Uttarakhand: 52.5%

All the EAG states have fared well in maternity benefit coverage. Odisha is the only state to have 72.6% coverage of maternity benefits for the beneficiaries.

Evidence suggests that in all EAG states JSSK has been implemented but all the benefits could not be availed by the beneficiaries. All the states provided free of cost delivery in public health facilities. The major expenditure incurred by the beneficiaries were on drugs, diagnostic tests, and transport. According to the SDG Index and Dashboard report of NITI Aayog only 36.4% of women could avail the maternity benefits in India (9) (10). The following graphs show the benefits of JSSK availed by the beneficiaries from 2013-2020 (Till Feb 2020) in the EAG states (9). (Entitlements which contribute majorly to the out of pocket expenditure were taken into consideration)

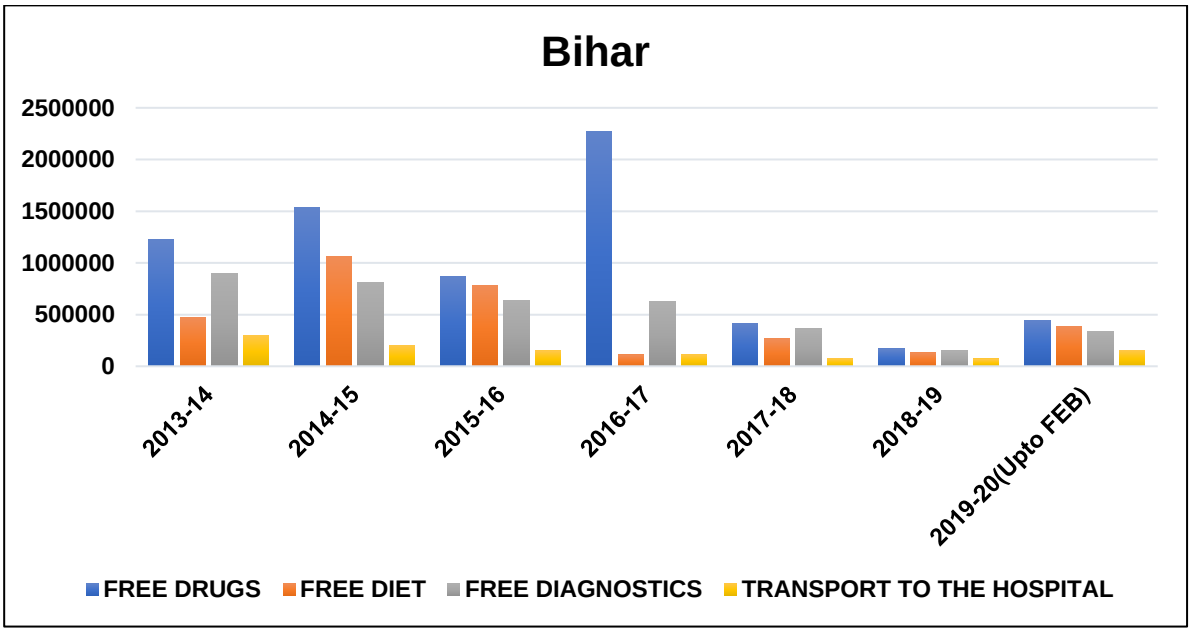

Figure.3 Distribution of JSSK in Bihar

Figure 3 shows the number of benefits contributed each year from 2013-14 to March 2020. It can be seen that the distribution was always disparate. There was an increase in the number of benefits availed from 2013-14 to 2014-15 but it gradually decreased thereafter, except for drugs in the year 2016-17. Bihar has fared poorly on this front.

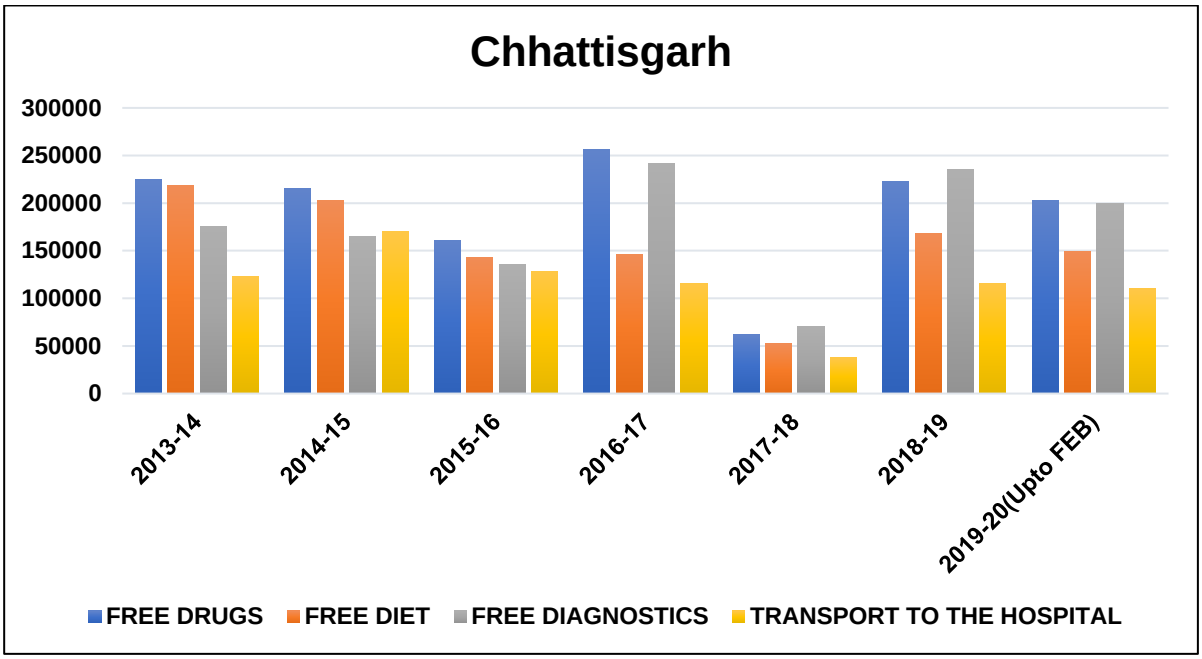

Figure.4 Distribution of JSSK in Chhattisgarh

Chhattisgarh has been quite consistent with its benefits since 2013 to the present year. The benefits have ranked as free drugs, free diet, free diagnostics followed by free transport to the hospital in a descending order till 2016. From 2016 the free diagnostics have been provided equally or more than the free drugs benefit.

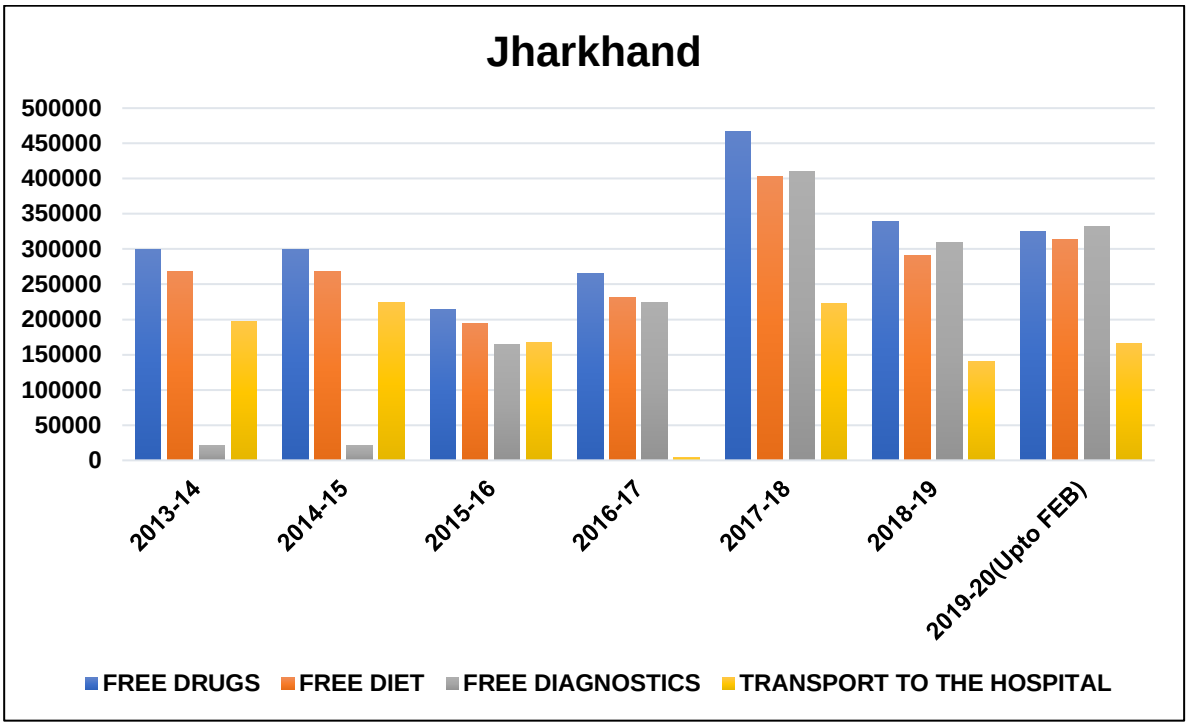

Figure.5 Distribution of JSSK benefits in Jharkhand

In Jharkhand, the free diagnostics benefit was almost non-existent till 2015 after which it picked up pace and has been going strong. Other benefits have increased gradually over the years but free transport to the hospital has not made any progress.

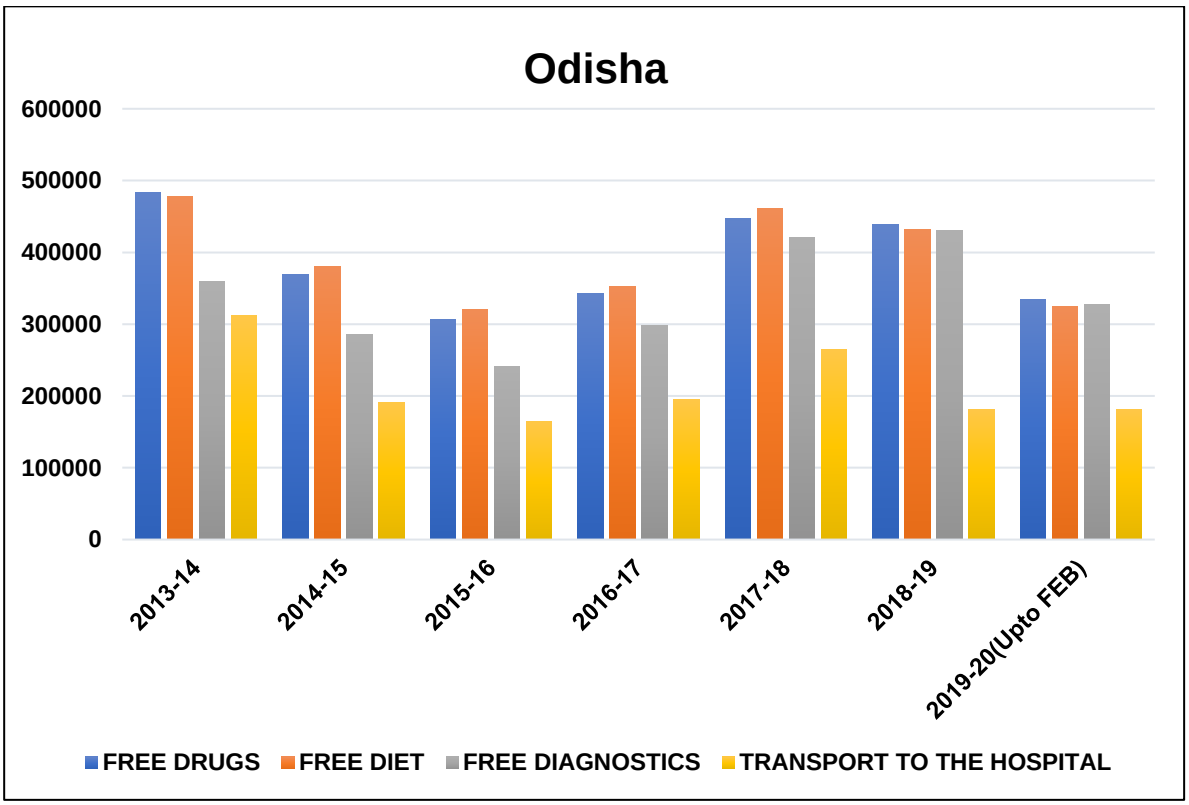

Figure.6 Distribution of JSSK benefits in Odisha

Odisha is a state with a healthcare system dominated with public sector. Odisha has worked rigorously to improve its existent health care sector. Free drugs and free diet benefits have been strong since initial years. Free diagnostics had a dip in the year 2015-16 after which it gradually ascended. Transport has been an issue in Odisha due to the inaccessible and remote areas where infrastructure has not been developed yet.

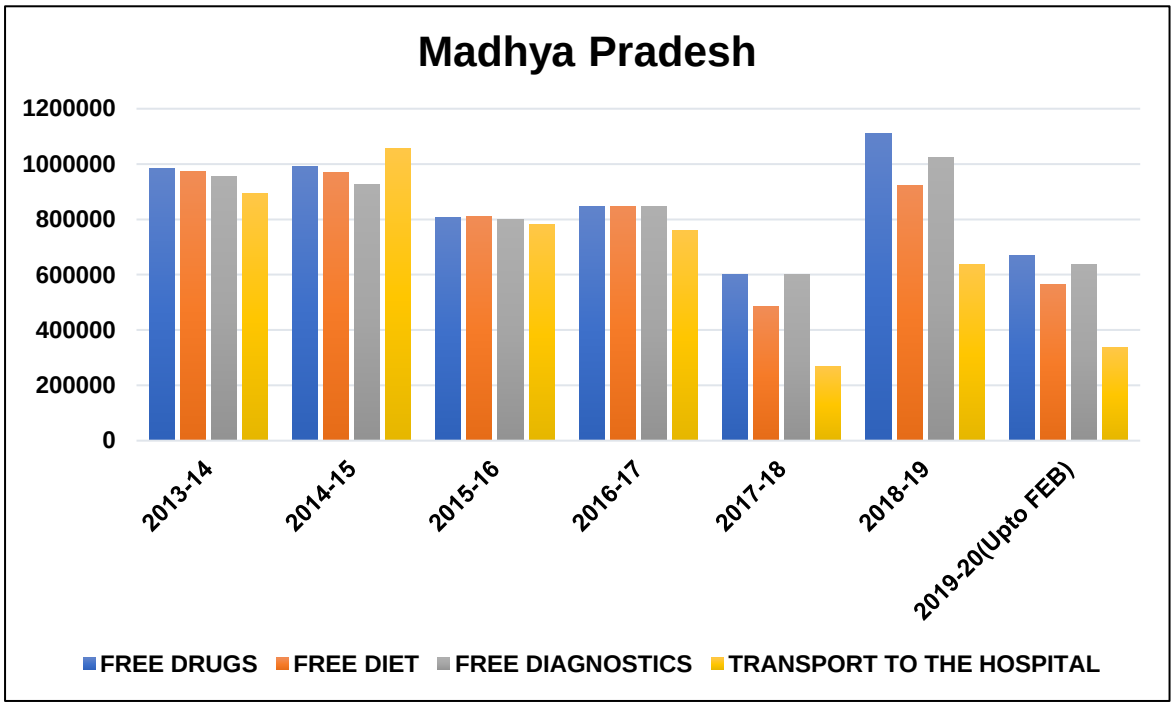

Figure.7 Distribution of JSSK benefits in Madhya Pradesh

Madhya Pradesh has shown a strong and consistent benefit distribution from 2013 except for a dip in the year 2017-18. The free transport benefit is the only one which has shown a significant fluctuation.

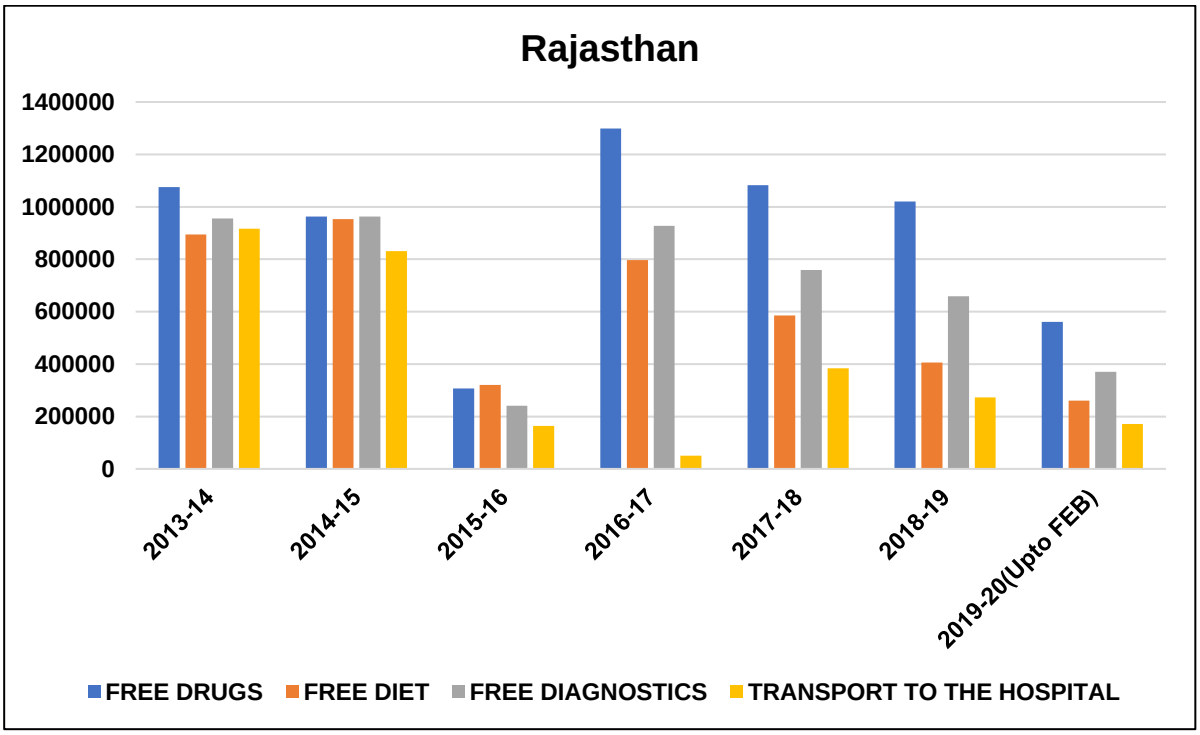

Figure.8 Distribution of JSSK benefits in Rajasthan

JSSK benefits in Rajasthan shows abrupt changes. After being consistent for two years Rajasthan shows a sudden dip in the benefits in the year 2015-16 and the benefits shoot up in the following year, but the distribution is not uniform. Free drugs lead the ranks followed by diagnostic, diet, and transport. It can also be appreciated that the benefits have been decreasing consistently from 2016-17.

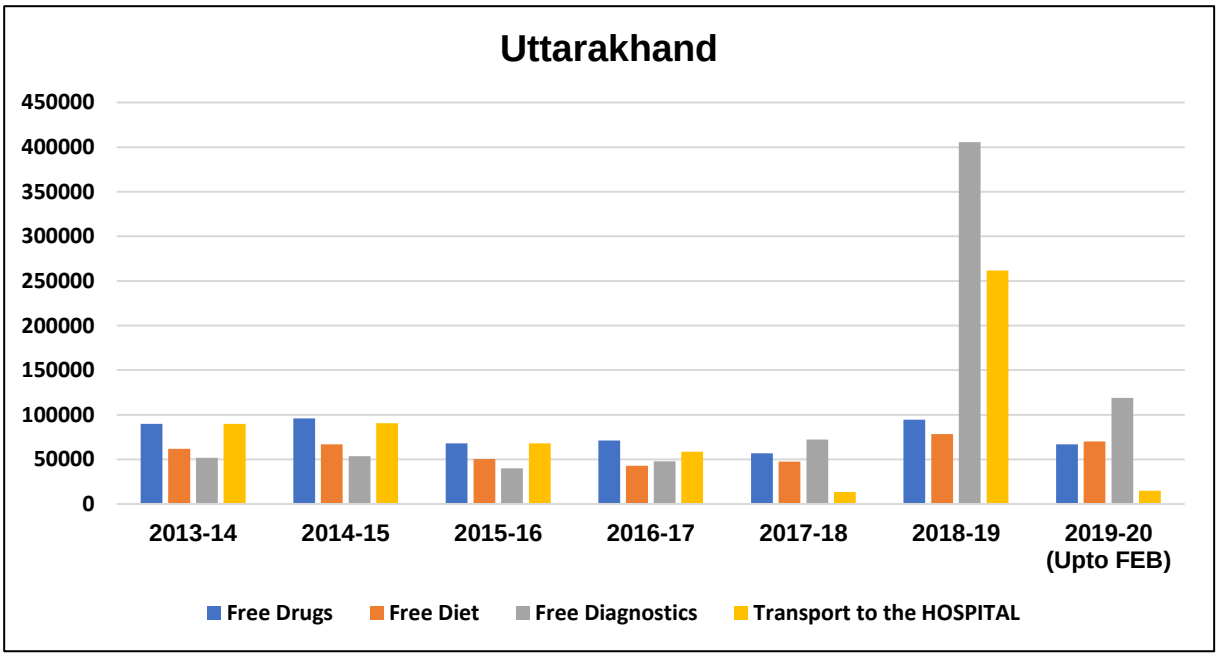

Figure.9 Distribution of JSSK benefits in Uttarakhand

In Uttarakhand the benefits have been more or less steady over the years, except the ginormous spike in free diagnostics and transport to the hospital in 2018-19.

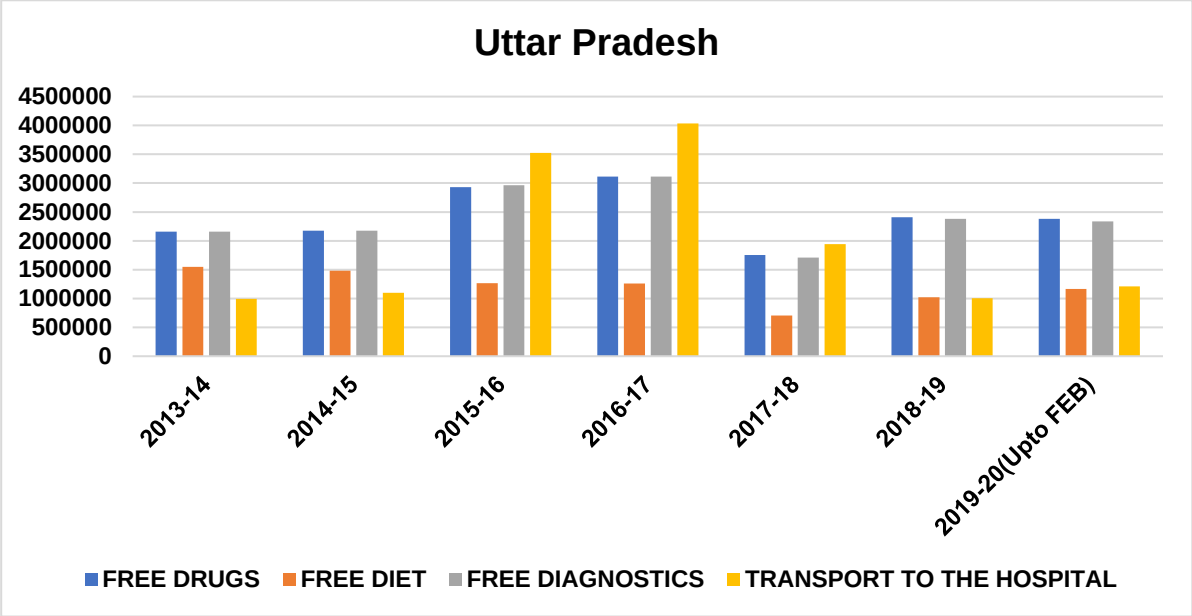

Figure.10 Distribution of JSSK benefits in Uttar Pradesh

Benefits in Uttar Pradesh have been rather inconsistent. Free drugs and diet increased progressively till 2017 after which it dips. Free transport shot up for 2 years consecutively (2015-17) but decreased after that.

It is evident from the data (fig.3 to fig.10) that there are variations in the benefits availed across states. But it is also noticeable that since 2013 there has been no progress in the benefits issued. The numbers have remained stagnant over the years. Collectively in all the states it can be noted that free diagnostics and transport to the hospital are two benefits of JSSK which have been underutilised consistently. It was found that beneficiaries had to pay half their mandated cash incentive to obtain delivery care services (11). Odisha and Madhya Pradesh have been reasonably steady in proffering benefits. Both the states have improved both in terms of institutional deliveries and maternity benefits received.

Figure.11 shows collective data of different surveys conducted over almost a decade was compiled and a report was published by the Ministry of Health Family and Welfare in March 2020. Various committees, offices and organisations like Common Review Mission (CRM) , National Sample Survey Organisation (NSSO), Deloitte Touché Tohmatsu India Private Ltd. (Deloitte) as the Technical Support Agency (TSA) to the National Health Mission (NHM) after data collection evaluated and published a report. The following graph shows trends of JSSK benefits entitlements in EAG states in comparison with India from 2013-2019 portraying the major JSSK entitlements namely Free drugs, free diet, free diagnostics, and transport to the hospital. Benefits entitled only for the mothers were taken into consideration. Transport from the hospital to home were exempted as it requires a compulsory 48hours stay at the health facility to avail that benefit.

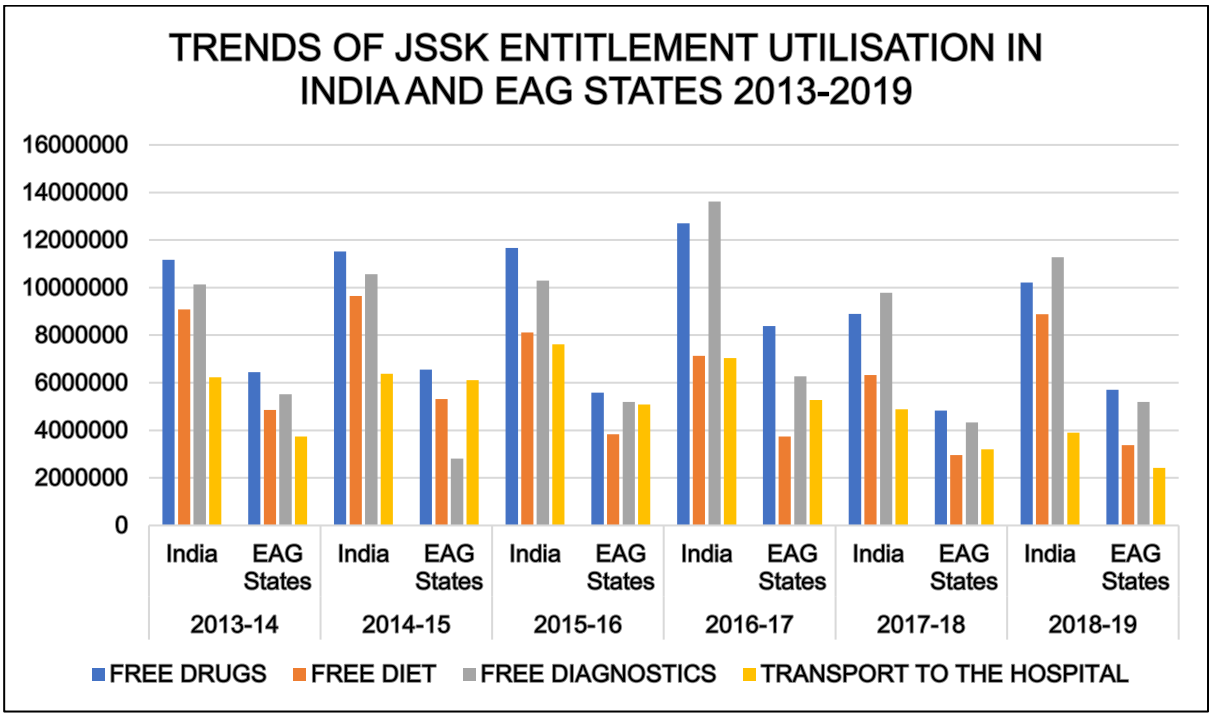

Figure.11 Source: Press Information Bureau, Ministry of Family Health and Welfare Government of India

As illustrated in the graph (fig.11) it can be inferred that the number of entitlements show a rise and fall pattern without any significant increase in the beneficiaries collectively over the years. JSSK has made a difference in the OOPE faced by families on maternal health but much remains to be done in terms of awareness, coverage, and quality. The benefits haven't been rising progressively as they should have. There appears to be an erratic trend

Discussion:

India has been trying to curb maternal mortality since the pre-independence period. We have achieved great success on the same front, from an MMR of 2000 in 1940 to the current 122 but, the journey was not easy. Post-independence, earliest attempts to improve the maternal mortality was recognized by the Bhore Committee, followed by the Mudaliar committee. Following recommendations of the Bhore Committee, the government set up a three-tier healthcare system to facilitate access in remote areas. Maternal health was improving over the years but at a dawdling pace. To bring about a significant change in the situation, the government implemented Janani Suraksha Yojana (JSY) in 2005. The scheme focused on poor women majorly in the EAG states. The main feature of this scheme was cash dispensation to pregnant women to meet the cost of delivery. Even after implementing schemes to aid in mitigating the progress of maternal mortality, outcomes were regrettable. After thorough research and evaluation of problems, many issues were pointed out. The problems ranged from lack of awareness about the schemes, lack of healthcare

personnel, poor infrastructure, and quality of services at public health facilities, lack of equipment, and so on.

In developing countries globally, maternal mortality is a massive burden and it affects the gross domestic product (GDP) of the country. In India, the EAG states have not coped well and special focus has been given to these states. Out of pocket expenditure and catastrophic health spending was found to be one of the major reasons for not seeking institutional delivery. Out of pocket expenditure includes expenditure on doctor consultation, drugs both from the hospital as well as purchased from the market, diagnostic tests, bed charges, personal medical appliances, transport, food, and boarding expenses of escorts. So, even after initiating free of cost deliveries, families were hesitant to utilize the benefit due to the extra costs incurred. To overcome this obstacle, the government of India implemented the Janani Shishu Suraksha Karyakram (JSSK). It rendered free ancillary services incurred apart from the hospital costs during delivery. In the initial years after implementation, there was no awareness among women about this scheme. In 2013, two years after the implementation of JSSK, fourteen states were monitored and evaluated. In these states, five out of eight were EAG states namely Bihar, Chhattisgarh, Jharkhand, Rajasthan, and Odisha. The reason for this monitoring was to determine the problems faced by the high performing districts in those states and resolve them. In doing so, the obstacles encountered by low performing districts could be predicted and rectified beforehand. ASHAs or ANMs were the primary sources of information about JSSK.

After the evaluation, it was found that there was a complete lack or very limited awareness about the JSSK scheme, and even if the scheme was known the benefits were confused with that of JSY (12). In many public health centers (PHCs) there was no IEC (Information Education and Communication) material displayed in the clinics. It was found that all the public health institutions were lacking diagnostic machines like USG and trained personnel to operate it. Despite the free services provided under JSSK, there was not suboptimal utilization of these services.

Free services at the health institution like delivery charges, free drugs, and free diet were optimally provided to the beneficiaries. In Chhattisgarh, after availing JSSK benefits an OOPE of Rs.1220 was incurred by the families (13). In Madhya Pradesh and Uttar Pradesh medical tests like USG were not available at the health institutions due to lack of resources. Data also revealed that there is inequality in terms of maternal mortality rate and uptake of ANC services or institutional deliveries in states of Bihar and Uttar Pradesh. Less than 10% of women received IFA tablets in these two states (14). The benefit of free blood transfusion was non-existent in all the EAG states. In public health facilities, the maternal benefits are available only partially or sometimes were absent. In many facilities, it was found that the beneficiary was charged for some service instead of the free services promised. (11)

Recommendations and Conclusion:

Monthly or quarterly audits of the health institutions would be able to solve the problems faced due to inefficiency. Along with audits and periodic meetings actual implementation should be the focus to improve the benefit utilisation. As seen earlier there are variations in benefit entitlement of the EAG states, strategies according to the progress should be revised for each state and executed. The inconsistencies should be taken into consideration and modifications to improve or efficient running of the existing schemes should be undertaken.

The government has been making efforts and introducing schemes for maternal wellbeing for over a decade now. The design of the programs is always skilfully devised. The lack of a skilled workforce to implement these programs has been an obstacle to progress. The lack of diagnostic equipment at many facilities is a major hindrance. Inefficiently trained personnel hamper the effective functioning of these programs. JSSK has mitigated the burden of out of expenditure, but there are still many gaps in the healthcare rendered. The government has succeeded in planning appropriate measures, but implementation is still below average. Lack of awareness was one of the primary challenges faced, followed by dearth resources, lack of workforce, and poor access to healthcare facilities. Benefits provided under JSSK are very appealing and strategically planned. It can further help reduce the OOPE faced by people if the scheme is executed more aggressively. JSSK has the potential to transform the maternal health situation in India, given it circumvents the obstacles it comes across in each state individually.

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Part-II: Online Course on Social and Technical Context of Health Informatics

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ROLL NUMBER- 1002

TABLE OF CONTENT

LIST OF ABBREVIATIONS

DIKW: DATA INFORMATION KNOWLEDGE WISDOM

EHR: ELECTRONIC HEALTH RECORD

EMR: ELECTRONIC MEDICAL RECORD

IS: INFORMATION SYSTEM

IIS: IMMUNIZATION INFORMATION SYSTEM

IT: INFORMATION TECHNOLOGY

LMS: LEARNING MANAGEMENT SYSTEM

SDLC: SOFTWARE DEVELOPMENT CYCLE

NAME OF THE COURSE: Social and Technical Context of Health Informatics

PLATFORM: Coursera

DESCRIPTION OF THE COURSE: The course starts with an overview of health informatics. The overview includes fundamental concept of health informatics from a patient's, provider's, and population's perspective. Furthermore, it describes in detail the Stack which forms the backbone of this course. In the rest of the course the stack is explored in detail.

OBJECTIVE OF THE COURSE: To understand data and creation of interventions at many levels at which health IT interact and affect the heath institution. To understand each level at which an institution operates.

LEARNING METHODOLOGY: The course was delivered with total of 34 online lectures which were distributed over 4 weeks. Each week's lectures were followed by a quiz. At the end of 4 weeks, an assignment was to be submitted with a report. The report consisted of a detailed break-down of a health institution according to the Stack. As a part of the final assignment, 3 assignments were to be peer reviewed too.

DURATION OF THE COURSE: 16 hours

COURSE CONTENT:

THE STACK: The Stack is a tool in informatics which helps in learning about the role of informatics from the health IT perspective. The Stack consists of nine components as shown in the figure below.

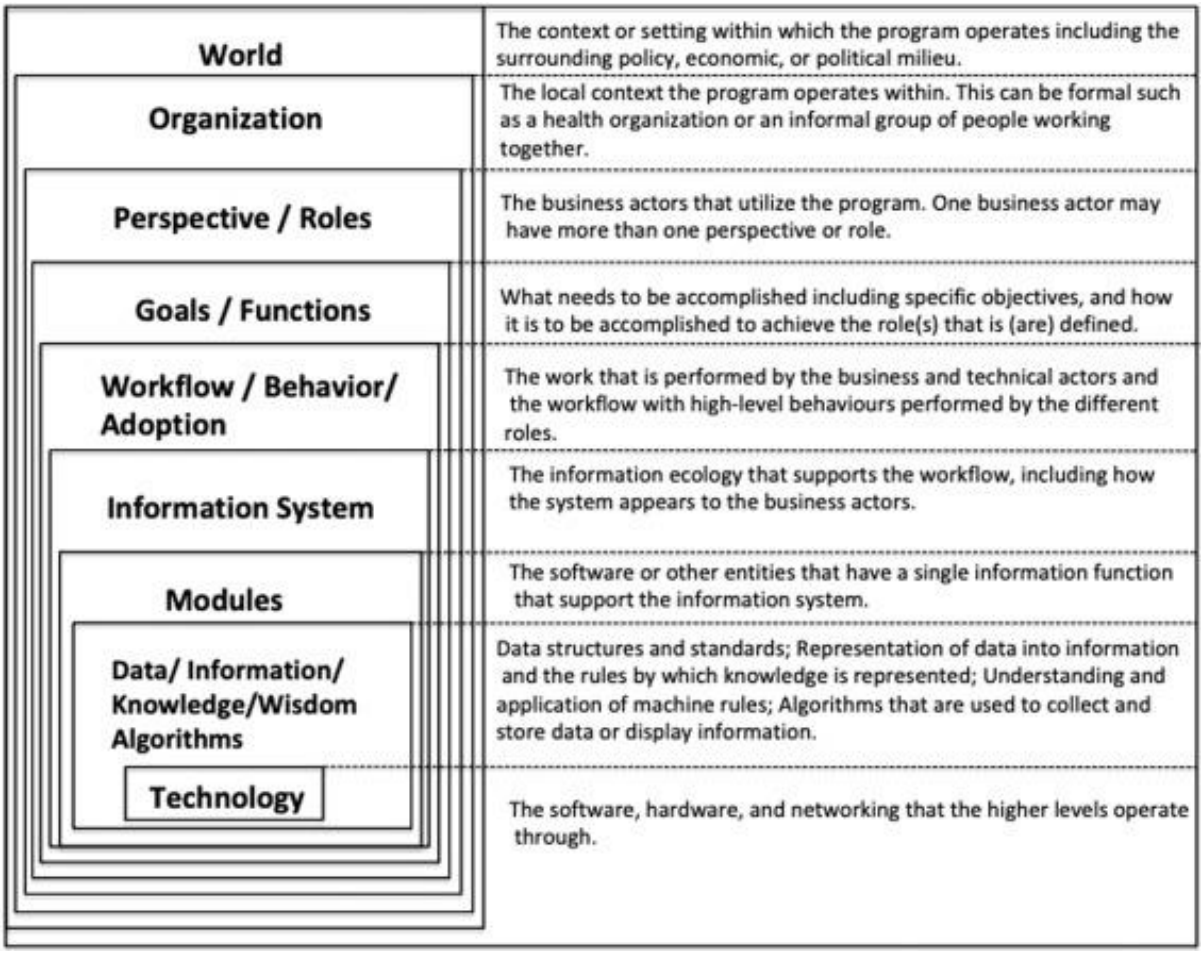

Fig.1 The Stack

WORLD

The context (political, economic, policy) within which the organization operates. Eg. healthcare industry

ORGANIZATION

The local context. It could be a formal organization (e.g.health system) or informal. An Organization is a sub-group of the World

PERSPECTIVE/ROLE

A role may be filled by many kinds of people (e.g., doctors and nurses) while a single person may have multiple roles (e.g., the medical director can be a doctor, a teacher, a learner, an administrator, and a researcher.

GOALS/FUNCTIONS

The goal is what needs to be accomplished. The functions are how the goal will be achieved. There may be many functions for a single goal.

WORKFLOW/BEHAVIOUR/ADOPTION

This level encompasses the work and behaviour performed by a role, and includes concerns like human-computer interaction, and adoption of technologies and new workflows.

INFORMATION SYSTEM

An information system (IS) is a formal, sociotechnical, organizational system designed to collect, process, store, and distribute information. In a sociotechnical perspective, information systems are composed by four components: task, people, structure (or roles), and technology. Electronic Medical Record (EMR) Systems constitute the classic information system in clinical care, but so might a personal, wearable network, for consumer informatics, whose boundary may end at the smart phone or may extend into the patient portal, on the health system's side.

MODULES

Modules are components of a system which perform self-contained functions. Modules may be information systems of their own. For instance, to the pediatrician, an Immunization Information System (IIS) is a module, supporting the doctor's need for information about a child's vaccine status; the IIS itself has multiple components. To the public health agency tasked with maximizing immunization rates, the IIS may be the Information System. Thus, an Information System (higher level) is and acts as a system of systems.

DIKW

Data, Information, Knowledge, Wisdom (DIKW), Algorithms

Data is raw numbers, text, and figures. Clinical data can be of 2 types:

- Structured
- Unstructured

Information is processed, aggregated, and organised data.

The rules by which that information is used for action constitutes knowledge.

The understanding of when and when not to follow the machine's rules is wisdom.

The algorithms the machine uses to collect and store data, to create or display information from data, or to learn or apply knowledge to the information comprise the Algorithms.

TECHNOLOGY

Comprises the hardware, software, networking, and the like, through which the higher levels of the Stack are implemented. (E.g., the laptops, smartphones, used by students, and the servers used by the LMS.)

<u>INTEROPERABILITY</u>

Interoperability means the ability of health information systems to work together within and across organizational boundaries in order to provide the effective delivery of healthcare

<u>HL7</u>

Also called as Health Level 7 are a set of international standards used to transfer and share data between healthcare providers. More specifically, HL7 helps bridge the gap between health IT applications and makes sharing healthcare data easier and more efficient when compared to older methods.

The data transfer has 7 levels

1. Application
2. Presentation
3. Session
4. Transport
5. Network
6. Data link
7. Physical

The first 3 levels are the Host layers and the remaining are Media layers.

It defines and provides formats for messaging and data exchange, decision support, rules syntax and common health data definitions in clinical documents and EHR and personal health record (PHR) claims attachments, quality reporting, product labels for prescription medications and clinical genomics.

HYPE CYCLE

The hype cycle is a graphical representation of the life cycle stages a technology goes through from conception to maturity and widespread adoption.

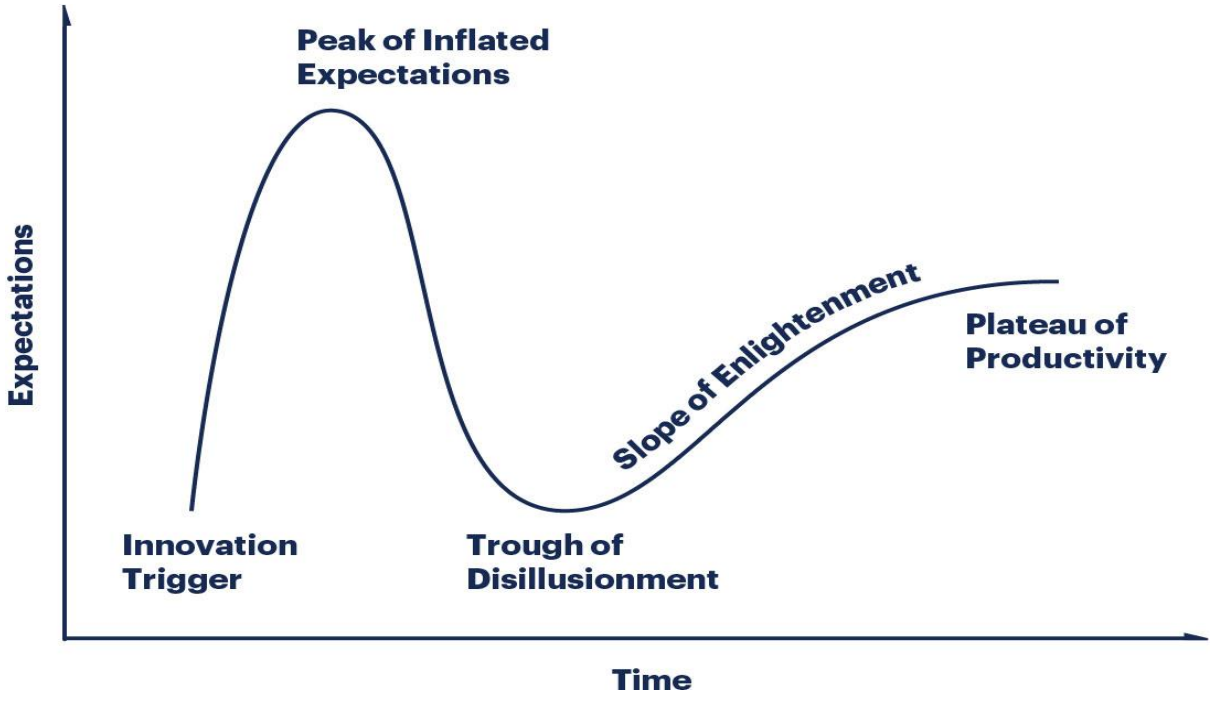

Fig.2 The Hype cycle

SOFTWARE DEVELOPMENT

Software is the base of the whole information system nowadays, hence it is paramount to understand the basic process of software development. Software Development Life Cycle (SDLC) is a framework that defines the steps involved in the development of software at each phase. It covers the detailed plan for building, deploying and maintaining the software.

SDLC defines the complete cycle of development i.e. all the tasks involved in planning, creating, testing, and deploying a Software Product.

Development cycle has the following steps:

- Business Modelling
- Requirements
- Analysis and Design
- Implementation
- Test
- Deployment

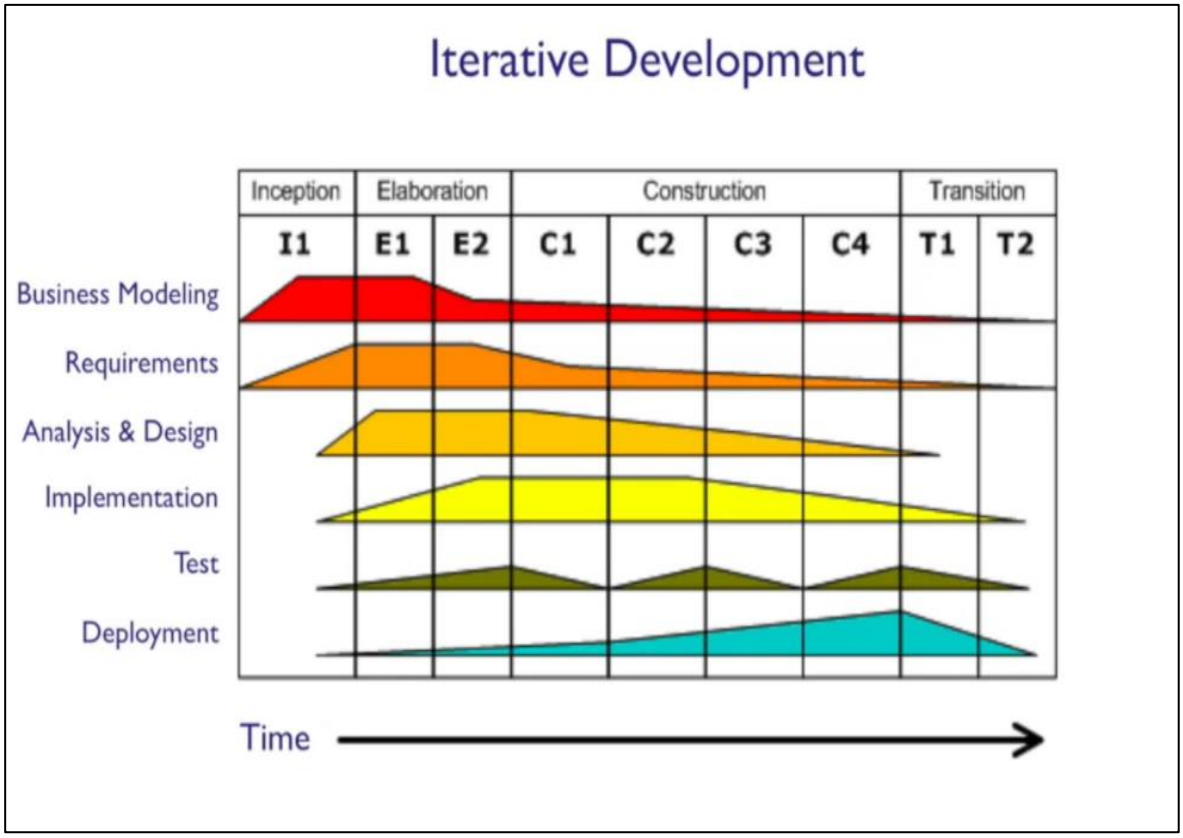

Fig.3 Development Cycle

Waterfall model:

- Requirement
- Design
- Code
- Integration
- Acceptance
- Release

Agile model: Many of the processes are similar to Waterfall model but the main difference in Agile is it is a continuous process.

KEY LEARNINGS: Improving health and healthcare institutions requires understanding of data and creation of interventions at the many levels at which health IT interact and affect the institution. This course deconstructed the whole process to the fundamental level and gave a better idea of informatics used in healthcare.