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Supply Chain Management for India's Health

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KEYWORDS

Hot Water Treatment, Rasthali Banana, Hard Lumps, Green Life

ABSTRACT:
Supply chain management is an integral part in the health care system in India. This research study is related to the discuss the heath care issues in India. It has discussed what issues heath care institutions face to provide health care services in the rural areas of that country. It has discussed several three major health care schemes, these are Pradhan Mantri Bhartiya Jan Aushadhi Yojana (PMBJP), AMRIT (Affordable Medicine and Reliable Implants for Treatment) and State-run E-Aushadhi Scheme. It has discussed benefits and operation details of all those healthcare schemes. It also discussed issues of health care institutions to provide quality services to people residing in rural areas. It also discussed how non-government organizations are playing important role to provide quality health care services to distant people in India.

1. Introduction

Ram Singh is presently afflicted with a protozoal illness and is engaged in a life-or-death struggle at the Primary Health Centre (PHC). He is eagerly anticipating the arrival of life-saving medication, which will enable him and his two fellow farmers to receive treatment at the health center. The probability of his survival is significantly diminished due to the village's abysmal history with people in his particular condition. Moreover, there is a scarcity of efficient health-care infrastructure to save the lives of these two individuals. Every year, Ram Singh and his two partner farmers in Mahidpur, a secluded district in Madhya Pradesh, suffer a loss of 2-3 lives due to a protozoal ailment. These tragedies do not occur due to insufficient medicine reaching the villages or inadequate involvement by the government and health departments in addressing these issues. The inaugural health clinic in this little settlement is presently encountering challenges stemming from a scarcity of medical provisions, so impeding the efforts of the medical and nursing personnel. Not surprisingly, this is a narrative that is shared by almost every community in this country (Chhetri, 2018).

Approximately 66% of India's population resides in rural areas. One could contend that healthcare and medical facilities have to be sufficient in order to offer healthcare advantages to the majority of individuals. Ensuring the preservation and enhancement of medical infrastructure in rural regions is crucial. This can be achieved by storing kits for protozoal illnesses, medications, vaccines, essential medical instruments, and alternative resources. As a result of substantial constraints in essential medical resources, a viable and efficient model has not yet been created. Currently, the Indian government dedicates approximately 26% of the total health budget, equivalent to nearly Rs. 8580 Cr, for the procurement of pharmaceuticals and medical supplies. Although the allocation above the required amount, it is unclear why India still has shortages. The answer can be succinctly expressed using three terms: convergence, cross-checking, and coordination. The system is plagued by a deficiency in intersectoral cooperation, significant gaps, and a total absence of monitoring procedures. This exemplifies a total absence of consensus or congruence among all government endeavours. India is a country comprising an estimated sixty-six 66% of the rural population. In this regard, this can be said that healthcare and medical facilities should be enough to provide healthcare benefits to the majority of the population. It is important that medical facilities at the rural level need to be updated and upgraded inventories that consist of protozoal infection kits, drugs, vaccines, essential medical instruments and alternative resources. A good practical model has not been developed because of acute shortages of important medical resources. The government of India is now allotting around 26% of the whole health budget for procurement of drugs and

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consumables which is around Rs. 8580 Cr, which is over the demand, however, this is an astonishing question that also stays before India is why will the shortage still exist? The answer is hidden in these 3 words Convergence, Cross checking and Co-ordination. There is lack of intersectoral coordination, major loopholes and an absence of monitoring mechanisms within the system. This reflects an absolute lack of convergence between all the govt schemes.

2. Objectives

Obtaining medical supplies at "Community Health Centers" (CHC) and "Primary Health Centers" (PHC) in rural areas of the country is difficult. Moreover, the rate at which life-saving drugs are unavailable in these rural health institutions is remarkably high, resulting in an increase in the death rate. Currently, there is a lack of sufficient capacity to guarantee the delivery of drugs to distant medical facilities. Moreover, it lacks the necessary resilience to effectively address health emergencies in remote areas of India.

The allocation of funds for medical facilities and healthcare benefits differs considerably throughout the several states of India. The expenditure patterns of state governments in India for pharmaceuticals vary significantly. The Punjab state government dedicates 2% of its overall net receipts to the healthcare budget. Conversely, the healthcare budget is around 17% of the entire net revenue expenditure of the state government of Kerala. The healthcare sector in India's southern states, including Tamil Nadu, Kerala, and Karnataka, contributes to about 15% of the overall net revenue. Bihar, Odisha, Assam, and Uttar Pradesh are states that lag behind in healthcare expenditure. These states allocate less than or around 5% of their net revenues to it. Approximately 12% of the Central Government's total health budget is allocated on medications. The health budget is expected to represent approximately 10% of the total expenses and has the main responsibility of purchasing pharmaceuticals. However, the availability of drugs continues to be a major concern, especially in rural healthcare settings. The scarcity of crucial drugs significantly undermines the credibility of the public healthcare system. The ample availability of essential drugs significantly influences the effectiveness and utilization of the healthcare system's resources. Despite substantial investment in the field of medicine, persistent challenges remain in terms of both accessibility and affordability. In addition to the problem of limited availability of essential medications in healthcare facilities, there are also concerns over the quality of medical services.

The delivery of primary healthcare in rural India raises concerns regarding the promotion of preventive and rehabilitative services to the people, as well as the presence of health issues in the community. Essential drugs are selected based on their significance to public health and are designed to address the most urgent healthcare requirements of the community. The primary obstacle to their utilization is the limited availability of essential medications in Indian healthcare facilities. Access to essential medications is a crucial factor in influencing healthcare outcomes. The lack of access to vital medicines in developing nations like India, where there is a high proportion of economically disadvantaged individuals, is primarily due to economic restraints related to the ability to afford these medications. Various variables can impact the accessibility of medications. Some of the issues raised encompass poor healthcare infrastructure, insufficient availability of medicine and personnel, a dearth of investment in healthcare, and the need for acceptable pricing.

3. Methods

The Methodology adopted for the research is secondary analysis of all the supply chain management system adopted under the government scheme for drug distribution in India. That Majorly included the NITI Aayog Report on Schemes, 'Ministry of Health and Family Welfare (MoHFW)' Reports and documents available in the public domain. The review of supply chains and the creation of a comparative analysis of these schemes revealed the gaps in supply- demand and failures in the distribution system.

4. Literature review

The literature majorly referred to prepare this secondary research were the government documents available in the public domain. This includes the output outcome framework designed and published by NITI Aayog and a detailed report on the Pradhanmantri Bhartiya Jan Aushadhi Yojana (PMBJP) scheme and state-run schemes for drug distribution. To fix these issues, the

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best thing to do is set up an internal system to monitor the supply chain.

E-Aushadhi, DVDMS, and HMIS (Health Management and Information System) are all ways the Indian government uses information technology for inventory management; however, they aren't nearly as efficient as other industries' implementations.

The primary cause is the lack of proper oversight and evaluation during the execution at the regional level. A month after the fact, the Management Information System (MIS) finds a shortfall at the Primary Health Care (PHC) level, and the monthly reports don't do a good job of reflecting the existing situation.

Even in the face of such terrible circumstances, there is a ray of hope. This is the implementation of e-Aushadhi, a highly effective method in India's healthcare system. This IT system is hosted on the cloud.

Various medications, surgical supplies, and sutures are efficiently procured, stocked, and distributed to government-operated district drug warehouses (DWH), district hospitals (DH), and their subsidiary stores, such as Primary Health Centers (PHC) and Community Health Centers (CHC), through the use of E-Aushadhi, a web-based application [1]. Patients are the end users of the supply chain, thus getting their prescriptions to them on time is its main objective.

Maintain control and oversight of data pertaining to pharmaceuticals. Assign medical identifiers to objects and sort them into subcategories.

Make sure an item lasts as long as possible and is still viable by keeping an eye on its expiration and shelf-life dates. Make it easier for medications to be transferred between various storage locations. Give patients their medication while also informing them about their drugs and conferring with doctors when necessary.

Set up and manage several levels of stores. In order to keep track of inventory and replenishment procedures, set up a hierarchical network of links between all medication warehouses. Place an order for goods at the District WH/CHC/PHC.

When moving items from one location to another, be sure to keep track of all of the associated transactions [2]. A dashboard is available to senior management of this organization. The Indian federal government has failed to acknowledge the importance of a unified system for controlling the supply chain and distributing medications, hence some states have chosen not to implement the system even though it is still under their purview to manage and maintain.

STUDY OF EXIXTING INITIATIVES

There are three major schemes that can be analysed to understand the supply chain of drug distribution in rural areas. The three schemes were as follows

1.Pradhanmantri Bhartiya Jan Aushadhi Yojana (PMBJP)

2.AMRIT (Affordable Medicine and Reliable Implants for Treatment)

3.State run E-Aushadhi Scheme

1. PRADHANMANTRI BHARTIYA JAN AUSHADI YOJONA (PMBJP)

a. Introduction of the scheme

- The primary goal of the Jan Anushadhi program is to ensure affordable access to generic pharmaceuticals for the general population. India has a variety of stores that have specialized sales facilities. Initiated in 2008, this program endeavors to offer affordable generic drugs that include life-saving capabilities. The Indian government has opened a large number of Jan Aushadhi stores around the country [3]. These establishments are ubiquitous in every neighborhood. The majority of Jana Aushadhi outlets in India are situated in close proximity to public hospitals.
- The following are the key objectives that this plan aims to accomplish: Exclamation mark
- Guaranteeing a substantial availability of high-quality pharmaceuticals
- It is necessary to have extensive coverage of high-quality generic medication in order to decrease and limit the cost of medical care for each individual patient.
- Promoting the significance of generic pharmaceuticals by conducting outreach and educational activities to ensure that perceptions of quality are not solely based on expensive prices [4].
- In order for the program to become a public initiative, it is necessary for Public Sector Undertakings (PSUs), governmental agencies, private sector organizations, non-governmental organizations,

societies, cooperative groups, and other institutions to be involved.

- One effective strategy for boosting the demand for generic drugs is to enhance the accessibility of superior healthcare facilities through the provision of inexpensive medications [5].
- There should be a decrease in treatment expenses and an improvement in accessibility for all therapy categories when necessary.

Financial Outlay (INR in Crore)	Outputs 2019-20			Outcomes 2019-20		
2019-20	**Output**	**Indicators**	**Target**	**Outcome**	**Indicator**	**Target**
42	Adequate market availability of affordable medicines and generic healthcare instruments	Number of JAKs operational in each State/UT.	6000 'PMBJP Kendra' will be functioning in 36 States and Union territories till the end of March 2020.	Adequate share of generic medicines at low prices in the domestic pharma market.	'Market share percentage' of generic drugs in volume terms	10%
	Comprehensive and complete basket of medicines and equipment.	Number of PMBJP Kendra owners have greater than or equal to 50% availability of the total number of medicines in the baskets.	100%	All generic medicines and therapeutic groups of the 'National List of Essential Medicines (NLEM)' were to be covered.	Healthcare service coverages and facilities as per the list of 'National Lists of Essential Medicines (NLEM)'.	90%
	Provision of financial incentives	Number of Kendra to whom sales incentive is being paid regularly through 'DBT (Direct benefit transfer)'	100%	Rs. 25.00 Crores will be distributed to provide healthcare facilities.	Distribution of incentives will be done through 'DBT (Direct benefit transfer)' and entry will be made in 'PFMS (Public financial management system)'.	100%
				Installation of 'POS (Point-of-sale)' software in stores.	Online placement of purchase orders through 'POS (Point-of-sale)'	90%

b. Details of the scheme

- A total of 112 "PMBJP (Pradhanmantri Bhartiya Jan Aushadhi Yojna) Kendra" had been established by the time March 2012 came to a close. A fresh version of the business plan was presented to the public in August of 2013, with the intention of accelerating the expansion of the campaign. By the end of the 2016–2017 fiscal year, the plan aimed to build 3,000 PMBJP Kendra, which was a tough goal to achieve

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[4]. Over the course of this system, this strategy has been subjected to a great deal of alteration. As an additional point of interest, it is possible that the total number of functioning branches for the Pradhanmantri Bhartiya Jan Aushadhi Yojna (PMBJP) Kendra had reached 269 by the time the prior fiscal year 2015-16 came to a close.

- An extensive investigation into the successful implementation of PMBJP has been carried out by a variety of stakeholders through the use of brainstorming sessions and debates. After that, the BPPI has presented their Strategic Action Plan (SAP 2015) to the government in order to achieve the goals that were initially defined. The availability, acceptability, accessibility, cost, awareness, and effective implementation of the scheme are some of the primary aspects of significance that have been highlighted. In September of 2015, a new Strategic Action Plan was developed and given the blessing to be implemented.

c. Analysis of the supply chain in the scheme

To ensure that there is enough space to store pharmaceuticals, BPPI has established a central warehouse at the HAFED Complex, close to Anaz Mandi in Gurugram. After an open bidding process, the company has chosen C&F agents for 53 distributors in 8 states across the nation [5]. To maintain honesty and openness, e-tendering procedures were used. The management team at BPPI recently hired M/s. Ethics Infinity Pvt. Ltd. to set up an extensive system for managing their supply chain. The Central Warehouse (CWH) would be able to send goods directly to the Pradhan Mantri Bhartiya Janaushadhi Pariyojana (PMBJP) Kendra thanks to this method. The BPPI administration is doing everything in its power to ensure that no store in the nation runs out of goods.

2. AMRIT YOJONA

a. Introduction of the scheme

AMRIT is the name of a new program that was executed by the Ministry of Health and Family Welfare (MoHFW), which is part of the Government of India (GOI). A network of retail pharmacies around the country is going to be established as part of this project with the purpose of providing reasonably priced medications, implants, surgical equipment, and disposables [6]. It is the goal to lessen the amount of money that patients have to pay out of pocket, particularly at pharmacies. For the year 2019, HLL Lifecare Ltd.

Benefits for common man

Enhancement of the availability of generic and lifesaving branded drugs under one roof that assists in the reduction of pre-scription bouncing.

Reduction of dependencies on private chemists this who charge maximum retail price.

Different types of drugs and surgical disposals are highly economical and cost-efficient at more than 50 per cent [7].

The AMRIT scheme the government of India is related to is known for providing life-saving medicines and drugs medicines in at affordable costs. This scheme excludes the middleman from the supply chain and therefore can offer 15 per cent to 75 per cent of the cost reduction.

b. Operational details of the scheme

Amrit reach

- AMRIT was inaugurated on the 15th of November 2015 in New Delhi AIIMS.
- There are a total of 136 AMRIT outlets across 22 states in India and this was developed over the last three years.
- In December 2018, there were 155 AMRIT pharmacies across India [8].

C. Impact of amrit (as on 15th february 2019)

- The total MRP (Maximum Retail Price Value) was 1133.79 crores rupees as of the 15th February of the yeart 2019.
- This scheme saved a total of 598.75 crores rupees which is a huge benefit for them [9].
- About 118 lakhs or 1.18 crores of patients were served under this government scheme.

D. Amrit performance

- AMRIT scheme is available in 23 states of India.
- There are a total of 155 outlets of this scheme in those 23 states all over the country.

- A total of 29 central government institutions are working on this scheme to enhance its performance [10].
- There are a total of 106 outlet stores under the supervision and control of the state government.
- Teni is only a single stand-alone outlet in that year under this scheme,

e. Supply chain analysis of the scheme

Manufacturers, distributors and retailers are supply chain partners in this scheme. In scenarios such as to fulfil the immediate requirements, hospitals use to pay high prices. Medicine supply through the AMRIT scheme keeps the price limit low.

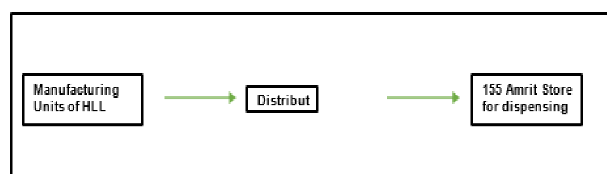

Figure 1: Supply chain analysis of AMRIT healthcare scheme

5. State Run Scheme

INTRODUCTION OF THE SCHEME

E-Aushadhi is a system for managing the inventory of various pharmaceuticals, sutures, and surgical supplies required by district pharmacy warehouses. The fundamental goal of 'e-Aushadhi' is to identify the needs of various district drug warehouses, guaranteeing a consistent and timely delivery of all necessary materials/drugs to the user district drug warehouses. This includes the process of classifying and categorizing items, codifying them, performing quality checks, and finally delivering medications to patients, the ultimate consumers in the chain [11].

The benefits of the E-Aushadhi are as follows:

- The effective implementation of a transparent system for acquiring, distributing, and storing high-quality medications would be a huge accomplishment.
- To ensure that pharmaceuticals are distributed efficiently and at reasonable, competitive costs.
- A system-based scientific forecasting approach is used to secure adequate savings in the drug budget. This strategy entails both the creation of effective and essential drug lists and the use of these drugs [12].
- I'm working on a budget analysis that includes monitoring drug usage patterns using the passbook system.
- Improvements are being made to the infrastructure of existing medication storage facilities in various parts of India.
- The process of streamlining quality management, drug warehouse management, equipment inventory management, equipment supply chain management, and inventory management equipment auction life cycles is currently underway.
- Process optimization in terms of human resource and financial management [13].
- To support the OSMC administration's transition to a new direction, it is critical to increase the use of technology as a cost-effective alternative.
- Supporting and ensuring operational processes and strategic information align with OSMC requirements.
- Providing infrastructure to share information and computer applications throughout the hierarchy of the OSMC.

OPERATIONAL DETAILS OF THE SCHEME

The healthcare expenditure is a common cause of the indebtedness of the people living in the rural areas. Healthcare issues impact individuals financially psychologically and physically. This is not only about the individual health but also a complete responsibility towards improving the public health as a whole [14]. Reports related to insufficient supply of drugs and the shortages of medical staff and doctors negatively impact the healthcare services of healthcare institutions. The AMRIT and PMBJP generated ideas to provide healthcare benefits to people who can hardly afford quality healthcare services. In the current situation, drug prices are relatively high and not affordable to most of the people living in rural areas in India. According to the opinion of research scholars, this can be said that there are around more than 40 per cent of admitted patients have no idea about how to borrow money and sell their assets while undergoing treatment. Such situations a really tough but can be preventable [15]. This is an established truth that the lack of availability of life-saving drugs in the Indian public healthcare system is a concerning issue. There are many reasons behind these issues such as shortages of funds, poor inventory

management systems and inefficient indenting rules and procedures.

E-Aushadhi employs an all-encompassing web-based sustainable supply chain management system to manage district drug warehouses, community health centers, and primary health centers for the distribution of drugs (CDAC, 2019). Anyone wishing to utilize this web application can obtain the code for free. It shields data in the vast environment from different conditions. All interactions with the primary application servers are integrated through a layered architecture, which ultimately stores all of the data in a central database. There are plans to add more districts to the fifteen states that have already adopted E-Aushadhi [16]. Mostly, the focused load is managed by the 'central application layer,' which distributes drugs using a layered architecture. Multidimensional data operations are transformed into standard relational operations via the data processing and data transmission layers before being sent to the relational database system at the lowest tier. The analytical, reporting, and query capabilities are situated at these tiers, which comprise the client-side front end [17]. Every year, more than 2 lakh individuals obtain medication via the E-Ashudhi.

1.SUPPLY CHAIN ANALYSIS OF THE SCHEME

Modules covered in e-Aushadhi and their brief is explained below:

a. Demand Management

The figure below depicts the demand management approach to project planning and its several modules. Dems refer to the inclination and ability of customers to buy particular goods and services throughout a defined period of time. Researchers believe that increasing the supply of critical resources can be used as a method to control demand . Retailers can submit their drug needs on a yearly, semiannual, or quarterly basis. These needs are then met at several stages before being finalized at the headquarters. The actions and activities in demand management include indent production, demand compilation, demand freezing, and demand management.

b. The Procurement Authority

Procurement management is a strategic approach that a corporation uses to govern the acquisition of items and services. Multiple material suppliers are accessible, and you have the option to set their rates. You have the option to schedule the simultaneous delivery of various drugs. The covered processes include rate contract and approval, purchase order formulation and approval, local purchase order production, and replacement order administration. In addition, there are issues with the supplier interface as well as the reception processes for both patients and the sub-store in the warehouse [18]. The distinguishing feature of this application is the presence of a digital signature in Challan's Material Receipt Report. This management required numerous procedures before taking action. The four sorts of difficulties are Challan, Third Party, Patient, and Sub Store. Receiving both in-house and third-party shipments at the warehouse.

Supervision of High standard or level of excellence.

Medications that are delivered for quality control remain inactive until all operations are completed and approved. After completing many steps in this managerial activity, a sample is transferred from headquarters to the stores and then to the quality control cell for certification approval.

All of the samples arrived intact at the quality control facility. The transportation of the sample, the reception of the sample, the input of the results, and the acknowledgment of the results by the laboratory. Headquarters

Refund and Exchange Policy

If drug samples are found to be substandard, have manufacturing faults, or have expired, they must be returned appropriately. The processing of returns from vendors, merchants, and other parties is governed by the procedures specified in the return regulations.

Transfer Module

Transfer from one medicine store to another medicine store can be done by covering various processes. These processes are transfer excess request, transfer shortage request, transfer within stores and acknowledgement transfer. Additionally, financial management plays an important role in various business operational activities.

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Finance Management

Online payment to raw material suppliers and laboratories and verifications through digital signatures are available. Online payments to suppliers and laboratories with the integration with banking institutions through digital signature are available [19]. There are various processes that have covered supplier payment with bank integration and digital signature. Providing payments to banks and effective financial management withnthe effective budget management.

Enquiry Module

Drug Inventory processes for operational stores are readily available. Implementation of smart technology and the uses of an AI-based inventory management process can help to develop the enquiry module.

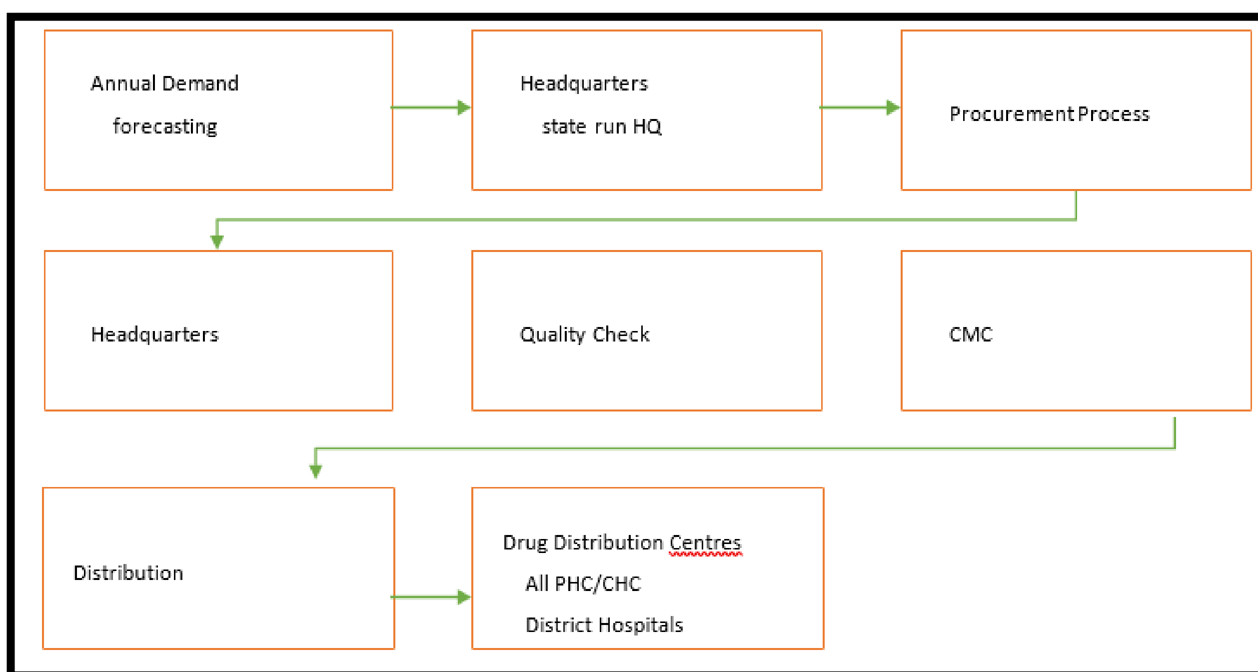

Figure 2: Supply chain analysis of the scheme

6. Comparative Analysis Skill

The detailed analysis of all government run schemes for supplying drugs at rural healthcare centres indicates that the some of the features of these schemes are unique and very fruitful but on the other hand there is a major gap in the supply chain management as well.

Features	Jan Aushadhi (PMBJP)	AMRIT	State run E-Aushadhi
Forecasting	The supply is not based on forecasting	The supply is not based on forecasting	The annual forecasting of the demand is calculated
Number of Stores	3041	149	Total 17 state have more than 50000/- Drug Distribution centres
Drug/Medical Device/Consumables	600+ medicines and 154 surgical and consumables	Medicines Implants Surgical Ophthalmic products	NLEM Drugs and state specific drugs also covered
Stock Outs	High stock out reported	High stock out reported	Low stock out reported
Technology (IT Software)	NIC designed Software	HLL owned software	C-DAC designed software

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7. Reasons Behind Failure of Existing Skims

1. The quantity of prescriptions for generic medications is decreasing.

Morgan, Dana, Loewenstein, Zinberg, and Schulkin (2006) assert that pharmaceutical firms often have significant influence over the prescribing practices of most medical practitioners through the provision of personal gifts, sponsorship of conferences and symposia, medical education, and financial support. Doctors perceive minimal advantages in prescribing generic medicine when compared to branded medicines that yield enticing profits, as discussed before. Prescribing medications using brand names is a common practice.

Thawani, Mani, and Upmanyu (2017) have highlighted another problem: most medical workers are only acquainted with the brand names of pharmacological combinations, not the generic ingredients.

The pharmacy suffers from a scarcity of generic drugs.

Thawani, Mani, and Upmanyu (2017) assert that pharmaceutical brands enjoy substantial profit margins in the market. Singhal, Nanda, and Kotwani (2011) found that the retailer margins for five branded pharmaceuticals varied between 25% and 30%. The margin for the branded-generic equivalent, produced by the same business, was found to range from 201% to 1016% [20].

Consequently, a study determined that pharmaceutical businesses solely substitute expired branded medications, whereas pharmacies do not replace generic meds. The reason for this is that providing generic drugs raises the risk of financial loss. Each of these criteria affects the decision to stock branded drugs instead of generic alternatives.

2. Inadequate promotion of the 'Janaushadhi' initiative.

The objective of the Jan Aushadhi Scheme (JAS) is to ensure universal availability of superior quality generic medications at reasonable prices by establishing JAS stores in every district of each state. Presently, the objective seems to be unattainable. It is not unexpected that those who are concerned do not appear to be willing to introduce the era of generics. Currently, it appears that there is a prevalence of insincere expressions of support, with few substantial steps being performed. Regarding implementation, those in positions of authority negligently disregard the situation. To promote the widespread use of generics in our country, it is imperative that those responsible for the matter exhibit a strong dedication to the cause. During the preparation process for the Jan Aushadhi campaign 2015-2016, the organizers conducted brainstorming sessions and engaged in discussions with different stakeholders. As a result, they developed a strategic action [21]. This is in spite of the fact that the JAS has not been addressed in the media or in political declarations. The program's lack of productivity can be attributed to insufficient campaigning and awareness about the plan. To achieve success, greater focus is needed to improve the program's outcomes (Thawani, Mani, and Upmanyu, 2017). However, the Pharmacy Council of India has made efforts to adopt the JAS.

3. Disengaged stakeholders: 5 reasons for concern.

As per the guidelines provided on the BPPI website, a Jan Aushadhi Kendra (JAK) is commonly established by non-governmental organizations (NGOs), charity institutions, private hospitals, trusts, societies, self-help groups, and other organizations. The procedure is transparent and susceptible to criticism. PMBJK operators are authorized to provide linked medicinal items, typically available in pharmacies, in compliance with BPPI regulations. NGOs, charitable institutions, and reputable professional groups and organizations are allowed to sell generic pharmaceuticals that are not included in BPPI's list of medications, provided that they have obtained prior knowledge and consent from BPPI.

As to the regulations set by the Bureau of Pharma Public Sector Units of India (BPPI), which has been responsible for implementing JAKs since 2008, the operational agency earns a 20% margin on the manufacturer's suggested retail price (MRP) of each medicine. Moreover, according to the legislation, JAKs that establish an internet connection with the BPPI's main office using software provided by BPPI are eligible for incentives of up to Rs 2.5 lakhs. The commission rate is fixed at 15% of monthly sales, with a maximum limit of 10,000 rupees per month, and a maximum cap of 250,000 rupees [22]. A 15% discount and incentives would be offered in the northeastern states of Assam, Mizoram, Manipur, Tripura, and Meghalaya. They are expected to face difficulties. Within the framework of PMBJP activities, the primary factors that significantly contribute to the demotivation of store owners include

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supply challenges, insufficient guidance, and meager profit margins. Store owners' demotivation can be attributed to two factors: low profit margins and the risk of financial loss. Improper distribution of budget and mismanagement of inventory are among the factors of unsuccessful operations in PMBJP shops.

There is a lack of tracking mechanisms.

Providing the patient with the opportunity to view the available and unavailable pharmaceuticals in the store is not feasible. Nevertheless, patient testimonials suggest that the pharmacy refused to sell the medication to the patient, alleging its unavailability or being out of stock. However, the system indicates that the drugs are present at the storage facility.

4. Applied forces exerted by the act of rising

The PMBJP initiative is an ambitious effort that, if executed with precision, has the capacity to significantly influence a range of matters. The PMBJP's explicit and commendable objective is to ensure that individuals have cheap access to top-notch medications. Nevertheless, to address the deficiencies that pose a risk to the whole project, it is imperative to promptly implement and execute enhanced planning and methodologies.

8. Supply Chain Management in the Future

An all-encompassing overhaul is necessary for the pharmaceutical supply chain management system. Furthermore, the following are three major developments that are expected to occur in the next decades, as stated by PricewaterhouseCoopers International Limited (2010):

Improving supply chain management with the application of AI and machine learning is critical. Furthermore, distinct patient demographics and product types must be considered in order to differentiate the market and provide economic value.

Upstream data will soon influence downstream data as supply chain management becomes a two-way highway for the exchange of products and services. -! Improving the management of the supply chain to reduce the impact of emergency citations is going to be vitally required soon.

Doing this is essential if you wish for a functional supply chain by 2025. Leaders of supply chains must be able to foresee the impact of future changes in key variables. This means they'll have to revamp how they handle supply chain management to accommodate the changes happening in their supply chains. A pressing requirement in procurement is the immediate implementation of measures to strengthen supply chain management and make it more robust and future-proof. Also anticipated is the promotion of the government's goal of sustainable business practices.

Although the specific characteristics and course of these change agents are very uncertain, supply chain leaders can start making plans for a range of potential future outcomes by acting now.

There are five main change agents that are influencing supply chains, as stated by BSR (2018). To help businesses adapt to these changes and seize the opportunities they bring, we have compiled a list of five suggestions.

Implementing a strategy to appreciate the ramifications of migration and automation will help one obtain a better understanding of supply chain management.

Efforts are being made to establish responsible regional sourcing centers.

Among these measures are the digitization of supplier and engagement evaluations, the improvement of supply chain transparency, honesty, and disclosure, and the incorporation of climate-smart supply chain management into the planning process.

9. Challenges

Currently, efforts are being made in India to establish connections across the information networks of different stakeholders using various methods such as text messaging, mobile phones, Internet kiosks, and other similar techniques. Nevertheless, these endeavors mostly focus on disseminating information rather than efficiently overseeing the supply chain or aligning supply with demand. It is customary to attribute difficulties such as insufficient road infrastructure, absence of proper cold chain facilities, human mishandling, and delays in transportation to the logistics network. The objective of the rural supply chain in India, through the utilization of the Internet and other technologies, is to achieve the aforementioned goal of enhancing network agility. Stakeholders and scholars involved in the rural supply

chain can gain valuable insights from highly developed industrial product supply networks. The concept is to completely transform the functioning of the health-care supply chain.

Supply issues

The supply chain management for medicines encounters two primary supply issues:

1. Inventory management

At the Kendra, a patient visits a pharmacy with the expectation of being able to obtain all of the prescribed medications recommended by the doctor. Nevertheless, this is not always accurate. Munshi (2019) argues that the current method of acquiring and distributing resources to JAKs leads to an inventory that consists mostly of unfinished goods.

2. Maintaining and upholding quality standards

The Bureau of Pharma Public Sector Units (BPPI), responsible for procuring and distributing pharmaceuticals to the JAKs, has implemented strict measures against 18 companies for supplying medicines of inferior quality. Although the action showcases the government's resolve to highlight a significant problem, the BPPI needs to actively establish a reliable pool of suppliers and implement a quality check process before accepting each batch for distribution (Munshi, 2019).

Challenges related to demand

Research has revealed that the average attendance in JAKs located far from government hospitals is significantly low or non-existent. Through my observations and interactions with several of these establishments, I have determined that the primary obstacle to attaining the objective of boosting demand lies in guaranteeing that the intended patient demographic perceives the high standard of the product or service. No one, particularly the most disadvantaged individuals, is interested in taking a medication that is not deemed to meet the standard quality. Munshi (2019) found that patients often express apprehensions regarding the quality of generic medications due to their significantly reduced cost.

It is imperative that the government streamlines the entire procurement and supply chain, rather than merely expanding the number of shops. This would enhance patients' confidence in the PMBJP. The Prime Minister of India and the Bharatiya Janata Party (BJP) will only achieve their goal of "reducing every citizen's healthcare budget by providing quality generic medicines at affordable prices" under these circumstances.

Actions Implemented

Regarding the delivery of medicine, the current number of centers is insufficient to meet the demands of the country's vast population. Due to the constant influx of patients seeking to purchase prescriptions from the distribution centers, the foot traffic at each location remains excessively high and unmanageable.

Acquiring and procuring

Although centralized procurement with established rules and standards is considered optimal and advantageous, there is still the possibility of procuring goods and services locally inside these programs. Due to the substantial profit margins and widespread corruption, local purchases are consistently regarded with mistrust. There are three pharmacy stores in the same district hospital: one is owned by the state-run e aushadhi, another is held by the PMBJP scheme, and a third one is neighbouring and managed by AMRIT. Not every store can ensure profitability for its owners. There is insufficient synchronization between state and federal initiatives.

10. Analysis of the Available Resources

DVDMS

To optimize program performance, governments would receive funding to enhance the supply chain and logistics management of drugs and vaccines. Utilizing IT-enabled technologies to oversee the procurement and dissemination of vaccinations and drugs results in a significant enhancement compared to the manual technique. An IT-enabled Drugs and Vaccinations Distribution Management System (DVDMS) can provide real-time information on the status of vaccinations and medications at various healthcare institutions, enabling more effective planning, execution, and monitoring of demand and supply at all levels. Additionally, it is feasible to closely monitor the utilization of different funding sources. The Ministry of Health and Family Welfare (MoHFW) plans to support the nationwide implementation of an IT-enabled

DVDMS, recognizing its potential benefits. States are allowed to preserve and improve their current software-based inventory management systems. States that have not yet adopted automated inventory and storage management systems will receive support in shifting from manual methods to automated ones.

This Supply Chain application, facilitated by IT, consolidates several organizations at varying tiers. Here are a few instances, although they are not comprehensive: The Drug Storage Facility of the Quality, Logistics, Procurement, and State/UT Head Quarters departments (CMSS, etc.) Sub-Stores, also known as Regional or District stores, are branches of the main Drug Warehouse or the District Drug Distribution Counter. These sub-stores are established to closely monitor the use of drugs at a fundamental level. Certification testing laboratories have the ability to adopt innovative technologies that optimize and improve the process of distributing medications to DDCs, Sub Stores, and Regional/District Warehouses. Hence, the application must integrate the state's requirements for medications, vaccinations, sutures, and surgical supplies into its procurement, quality assurance, and finance procedures. DVDMS offers promising prospects for improved accessibility, reduced costs, efficient inventory management, accurate planning and forecasting, expiration control, epidemic management, and resource allocation, both presently and in the future.

Standard of Procurement Process

Implementing national standard procurement protocols not only enhances system homogeneity and efficiency, but also facilitates interstate collaboration and cooperation. Ensuring the prompt distribution of superior pharmaceuticals is a crucial aspect of any healthcare system, requiring oversight of both the procurement and logistical procedures. The National Rural Health Corporation (NRHM) prioritized the improvement of the State Procurement Systems and Distribution Networks to enhance supply and distribution. This would lead to the decentralization of procurement activities and a corresponding rise in their capability. The Ministry of the Environment has created a thorough document that details the most efficient buying procedures. The codification of the acquisition technique proved beneficial to Orissa, Gujarat, and Uttarakhand, providing advantages to all three states. Orissa's documentation of the "Drug Management Policy 2003" prompted the other two states to implement a procurement guide. It is imperative for any organization to create codified buy guides to guarantee a systematic and uniform decision-making process for procurement. These guides should contain comprehensive purchasing procedures, guidelines, and the proper assignment of authorities. There were 47 SHSs within the United States and its territories that lacked codified procurement policies and procedures. Within the Department of Homeland Security, there was a lack of uniformity and documentation in the procurement policy, leading to an improvised system and inconsistent procedures throughout several procurement divisions.

Standard Drug List and Classification

When modifying the roster of essential pharmaceuticals, it is crucial to consider the geographical location of each state. This guarantees that the medications used in basic, secondary, and tertiary healthcare adequately address the state's burden of illness. All drugs listed on the National List of Essential Medicines (NLEM) must be easily accessible, affordable, and of superior quality. The list should encompass both newly identified and well-established medical conditions, together with the corresponding therapeutic approaches employed in different national healthcare systems. The Ministry of Health and Family Welfare (MOHFW) is tasked with the responsibility of ensuring that all people are able to obtain efficient and secure medications.

In 1977, the World Health Organization (WHO) established the concept of essential pharmaceuticals, solidifying its position as the leading organization in this domain. This strategy has been endorsed by other countries, non-governmental organizations (NGOs), and international non-profit supply agencies. On this platform, you can access a list of pharmaceuticals that are deemed to be the most economically efficient for a specific medical condition. The development approach strictly adheres to stringent quality standards while also considering the healthcare demands of the majority of individuals. Through the meticulous selection of a limited number of crucial medications, healthcare resources can be utilized more efficiently, enhancing the quality of therapy and optimizing medication management. The compilation of necessary prescription pharmaceuticals has an impact on various aspects,

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including hospital drug policies, procurement and provision of medicine in the public sector, reimbursement of medicine expenses, and medical donations. Monitoring the prices of different drugs is advantageous. The list functions as a reference tool to guarantee the accurate administration of the appropriate dosage form and potency. The pharmaceutical business places a higher importance on developing individual medications rather than creating fixed dose combinations, whenever feasible. Upon implementation, the National List of Essential Medicines (NLEM) is anticipated to enhance prescribing practices and yield favourable health results. The appropriate utilization of a medication is associated with rational use if it is included in the National List of Essential Medications (NLEM). Prudent utilization of medication, especially antimicrobials, might effectively mitigate the dissemination of resistance. Additionally, the list might serve as a standard by which one can assess the overall population's ability to purchase healthcare. The educational and training possibilities offered by NEML are advantageous for both the general public and healthcare providers.

Successful initiatives

E-Aushadhi has been honoured with seven notable awards from different states, including the State e-Governance Award in 2013 for Rajasthan Medical Corporation Limited and the PC Quest Best IT Implementations Award of the Year 2014 for the e-Aushadhi application, Public Health Department, Maharashtra. This project stands out as one of the rare endeavours that successfully accomplished its goals while providing advantages to all parties involved. Due to its deployment strategy, the application possesses the qualities of scalability and sustainability, enabling the state to effectively manage it in the long run. After each state encounter, the application has advanced to a completed product. It possesses a competitive edge because to its comprehensive array of features and functionalities. Essential medicines are those that satisfy the priority healthcare needs of majority of the population

Cloud of hopes

Implementing an internal mechanism to oversee the supply chain would be the optimal option to address these deficiencies in the system.

Despite the Indian government's utilization of IT for inventory management through e-Aushadhi, DVDMS, and HMIS (Health Management and Information System), their implementation is comparatively less efficient than that of other industries.

The fundamental reason is that the execution was inadequately supervised and evaluated at the regional level. The monthly reports fail to accurately represent the current status, and the Management Information System (MIS) identifies a deficiency at the Primary Health Care (PHC) level one month later.

Fortunately, there is a glimmer of optimism even amidst these dire conditions. This is the deployment of e-Aushadhi, which is considered one of the most effective methods in the Indian healthcare system. It is a cloud-based information technology system.

E-Aushadhi is a web-based application that efficiently manages the procurement, stock, and distribution of different medicines, surgical supplies, and sutures to government-operated district drug warehouses (DWH), district hospitals (DH), and their subsidiary stores like Primary Health Centers (PHC) and Community Health Centers (CHC). Its primary goal is to ensure the timely delivery of medications to patients, who are the ultimate consumers of the supply chain.

Supervise and oversee information linked to drugs. Classify things into subgroups, categories, and medicine codes.

● Ensure the longevity and validity of an item by monitoring its shelf life and expiration dates.

● Facilitate the movement of drugs between different storage facilities

● Dispense medications to patients, providing relevant drug information and consulting with physicians as needed.

Establish and oversee different tiers of shops. Establish a hierarchical system of connections between all drug warehouses in order to monitor stock levels and methods of replenishment. Make a reservation for items at District WH/CHC/PHC.

Maintain a record of transactions during the process of transferring objects from one place to another.

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Senior management can access a dashboard. Despite the fact that state governments are still in charge of managing and upkeeping the system, certain states have not yet adopted it due to the Indian government's lack of recognition for the necessity of a centralized supply chain management and medicine distribution system.

A Win Win solution

Public-private partnerships (PPPs) are among the most effective business strategies for mixed-to-capitalistic economies, including India's. It is also one of the most critical corporate strategies. Based on the knowledge acquired from other successful public-private partnership (PPP) models in the Indian healthcare system, the government can establish a centralized drug distribution system through collaboration with private enterprises. The state authorities will be considered partner stakeholders in this system and will possess the necessary jurisdiction. One of the most significant lessons learned is the successful implementation of the PMJAY information technology infrastructure to provide insurance to beneficiaries living in remote rural communities in a centralized scheme. State authorities are partner agencies in this scheme. Ultimately, this will be advantageous to the Indian government and will result in the most efficient utilization of the nation's financial resources. This will be a one-time investment that has the potential to generate profits in the years ahead. Furthermore, opportunities will be made available to information technology companies. The term "Corporate Social Responsibility" (CSR) is frequently used in a manner that is more advantageous and could potentially serve as a mutually beneficial solution to a long-standing issue. The public healthcare system and the private sector, which includes pharmaceutical companies as partner organizations, may both benefit from this strategy. In the past, governments have employed public-private partnerships (PPPs) to acquire services from the private sector in order to accomplish one or more of the following six tasks:

The project is referred to as "finance" during the funding or co-financing procedure. The term "design" denotes the comprehensive design of the endeavor, which encompasses the infrastructure and the healthcare delivery model. The term "build" refers to the construction or renovation of project-related facilities. The definition of "maintain" encompasses the maintenance of tangible infrastructure, including the preservation of machinery and buildings. "Operate" denotes the provision of suitable technology, nonclinical service management, and apparatus. Supervise the provision of clinical and clinical support services, as well as specific medical services.

The majority of facility-based PPPs consolidate these functions into three distinct models:

Public healthcare infrastructure can be developed or renovated by employing the infrastructure-based paradigm. The discrete clinical services approach is also employed to enhance or emphasize the service delivery capacity. Finally, the integrated public-private partnership approach provides a comprehensive array of infrastructure and maintenance delivery and service options.

It is anticipated that healthcare systems will continue to be under pressure to improve the quality and efficacy of care, as well as to devise innovative strategies to utilize data, technologies, and dispersed networks of providers to promote wellness and prevent disease, rather than exclusively treating acute patients. It is anticipated that health systems will become more interconnected in order to more effectively address the demands for care across the continuum and to enhance delivery by leveraging technology. These modifications are being incorporated into the PPP models. Integrated public-private partnerships (PPPs) are a progression from public-private partnerships (PPPs) that incorporated clinical service delivery and personal sector management strategies to improve the quality of care and facilitate access to specialized treatment programs. The primary objective of previous public-private partnerships (PPPs) was to construct and sustain the urgently required hospital infrastructure. Because of their limited coverage and lack of convergence with state-run schemes, the PMBJP (Bhartiya Jan Aushadhi Pariyojna) and AMRIT (Affordable Medicines and Reliable Implants for Treatment) are models that are relatively analogous. Nevertheless, they are unable to deliver the necessary level of efficacy to the typical supply chain management system.

11. Conclusion

Inventory management system of the public healthcare sector needs to be revamped and is in urgent need of

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reforms.There are Successful Models available of Drug Distribution system which are very well implemented with help of IT Systems which are mostly in association with Private partners

Therefore, it can be said that there is a path for improving the supply chain management in the Indian Healthcare system by involving the private players and design a centralized drug distribution and inventory management solution by taking the learnings from successful Drug distribution model.

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