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Assessment of Availability & Stockout of Essential Drugs at Primary Health Care (PHC) in Bengaluru Urban District

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Abstract— **Delivering high quality Primary Health Care, achieving the Sustainable Development Goals and the smooth functioning of any Health Centres, drugs are essential elements. To manage it the right drugs and supplies at the right quantity and at right time should be made available, so that the patients can access affordable products when needed. This can be achieved only when proper management of Inventory is planned, as a research scholar to begin with the Assessment of Inventory Management strategy for Essential drugs at Primary Health Care level in Bengaluru Urban District is taken up to emphasis on availability and stockout facility at Primary Health Care level. Thus the study helps to identify the issues and challenges in supply chain management faced by Primary Health Care and Identify the various ways to tackle the issues.**

Keywords- Essential Drugs; Primary Health Care; Availability; Stockout; Inventory Management;

I. INTRODUCTION

In health care system the essential drugs delivery plays a vital role for quality service**.** Proper inventory management of essential drugs in the health facilities is critical in ensuring availability of Essential Drugs (ED). Despite the importance of the required essential drugs at various user points, about one third of the world's population does not have access to ED. This is a serious problem considering that drugs take up a significant portion of the healthcare budget and availability of ED is critical in quality healthcare provision which is a priority of the Health Systems[1]. As Medicine encompasses a variety of health care practices evolved to maintain and restore health by the prevention and treatment of illness.

According to World Health Organization (WHO), "Essential medicines are those that satisfy the priority health care needs of the population. They are selected with due satisfy the priority health care needs of the population. They are selected with due regard to public health relevance, evidence on efficacy and safety and comparative cost effectiveness.

The concept of Essential medicines is intended to be flexible and adaptable to many different situations and it is national responsibility to provide at affordable price to individual and to community in all times, in adequate amounts at all Public Health care level[2].

The first WHO list of essential drugs was published in 1977 with 205 items. At present there are over 300 items in the list. The criteria for Essential medicines should include the factors like efficacy, safety, quality, availability, storage, trained personnel, financial resources, cost benefit ratio, and the changing priorities of essential medicine based on prevalent pattern of disease. This study is assessed to know the availability and stock out at Primary Health Care (PHC) level.

Objectives: To assess the availability and stock out of essential drugs at Primary Health Care and to identify the factors that drive both the availability and consumption pattern of essential drugs in Bengaluru Urban District.

II. LITERATURE REVIEW

McKinsey & Company, (2013), observes that Shortcomings of the healthcare supply chain have severe impact on human health. Drug shortages are due to supply chain problems as an example are constantly increasing, leading to additional costs for hospitals worldwide and creating opportunities for counterfeiters threatening patient safety. This paper concludes that Even in US, which is not facing developing world challenges, drug shortages have nearly tripled in the last decade[3].

Amarendranath Mohanty, Nayan Chakravarty (2013) conducts an epidemiological study of common drugs in the health supply chain: Where does the compass point? Results show that the month of September represents the highest morbidity (caseloads of all three diseases taken together). Acute respiratory infection is most prevalent among the three diseases, with total caseloads of 1,539 cases during the month of September (during 2009-2012). However, the Vital and Essential drugs availability for acute respiratory infection was found to be 7 per cent, 57 per cent for malaria and 98 per cent for diarrhea. Drug supply was not only inadequate but also uneven and erratic, having weak correlation with the pattern of disease morbidity[4].

This paper was prepared by Andrew Brown1 (2014) Human resources health supply chains and access to essential medicines, inefficient and irrational use of medicines is a widespread problem at all levels of health care. Lack of discretely documented policies and procedures in respect of medicines management in hospitals is unnecessarily straining the meagre resources resulting into poor inflow of benefits to the patients. Per capita wastage from inefficient and irrational use of medicines tends to be greatest in hospitals. The findings from the paper suggest that many of these sources of wastage could be reduced if some basic principles of medicine management are followed and comprehensive medicines management policy framework is developed [5].

This article was prepared by Nikhat Afshan* and P.N. Sindhuja (2015) Supply chain integration in healthcare industry in India: challenges and opportunities conducted a study in India, With up to a third of the world's population with limited access to essential medicines, it is clear that by 2015 many countries will not be able to achieve their health-related Millennium Development Goals (MDGs). Of the eight MDGs, four explicitly discusses the availability of medicines at the primary care or service delivery point level. It is pertinent because without access to and appropriate use of quality medicines, health systems would lose their ability to meet healthcare needs. The reality of how to overcome the issues of affordability of medicines and high prices are frequently highlighting challenges to access to essential medicines, the weakness of health supply chains has remained a consistent barrier across a range of low and middle -income countries. Despite major investment over the past decades, national supply chains are often unable to respond effectively to existing demands, putting health outcomes at risk[6].

This paper was prepared by Umang Gupta and A. Ramesh (2017) conducted a study in Uttarakhand by analyzing the barriers of health care supply chain in India, Healthcare supply chain has been a subject of interest for many years. The pressure of changes in environment lead to changes in guiding principles which produce solid problems viewed as problems with no feasible solutions. Healthcare supply chain demands effort on part of researchers to not view the problems as static. This could be achieved only by viewing the different factors as dynamic. The attempt to highlight the benefits of adopting a factor interaction approach to hospital protocol. The interpretative system modelling (ISM) approach is utilized for interaction of variables affecting healthcare supply chain. This can provide healthcare sector professionals with programme guidelines where they can investigate their dynamic effects. It aims to build a new frame of reference for studying and measuring the performance of Healthcare supply chain operations[7].

This article was prepared by Michael Pisa and Denise McCurdy (2019) Supply Chains through Traceability**,** conducted a study in Washington, the greatest area of uncertainty is the extent to which all countries will participate in economic growth. How the trends will converge in each country is unpredictable. The dilemma of uncertain growth underscores the need to invest in more agile and flexible supply chains. Innovation will only create opportunities for fast and flexible decision-making. Organizations need to reorganize to act upon those opportunities. In some cases, this will come at an additional cost. Donors, country governments, and private companies will need to pay these upfront costs to enable greater savings. That is the only way to ensure increased, equitable access to high-quality health products in the future. We do know for certain that the future will not be evenly distributed. This makes it imperative that supply chain actors transform ahead of 2030[8].

III. METHODS

An Assessment using cross-sectional study design was conducted in selected Primary Health Care by Cluster sampling techniques in four different regions of Bengaluru urban district, which can cover the urban area of North, East, West and South regions of the district. A sample of 10 PHC's are focused in the study, the PHC Pharmacists were included in the study for data collection by both Quantitative and Qualitative characteristics using Google form and Phone call interaction with semi-structured questionnaires and data was analyzed using MS Excel and SPSS v23.

IV. FINDINGS

The demographic information obtained from 10 PHC's, among them 60% from south region PHC's and 70% PHC's completed more than 10 years and distance from the drug source covering with minimum 14 km & Maximum 60 kms. The number of Sub centres which comes under each PHC is 2 to 3, for each PHC's from the essential drug list 83% of the drugs are available and they are classified based on standard guidelines and utilization.

The availability and stock of essential drugs at primary health care level is matter of concern. The Preventive and Curative aspects of the patients regarding to NCD, Hypertension and Mental Health etc., as to be addressed by proper storage facility. The Basic Infrastructure to protect the drugs to be provided, the supply of drugs should be timely managed by providing good transportation service and advanced Information Technology.

Frequency of indenting in PHC's monthly is 90% and supply of drugs with exact amount is found in 80% PHC's, only 50% of storage facility and 20% of consumption pattern of drugs in PHC found to be Excellent and Annual requirement of drugs estimated to 7 to 8 lakhs, forecasting the quantity 70% of drugs is done based on previous year consumption pattern. 50% of the drugs are supplied by other vehicle, which in turn delays in arrival of drugs to PHC after 10 days, meanwhile 20% of the buffer stock reserved will be used which can come for 1month easily. The Source of fund available from NHM, In case of sudden variation in demand essential medicine are indent from nearby Jan Aushadhi. First Expiry First Out is followed by all PHC's, 3 months shortlisted Expiry will be utilized on priority, Innovative method of lock and utilized system is adopted in software were the expiry drugs will not be

shown. The maximum drugs utilization can be done by lateral transfer of drugs through voucher to nearby sub Centres.

The above information obtained is summarized in Table I and Table II.

Table. 1: Demographic and Storage details of PHC's

Sl.No.	Factors affecting both availability and consumption of essential drugs at health facilities	Factors	Number	%
I	**Demographic Details**			
1	Region	North	1	10%
		East	2	20%
		West	1	10%
		South	6	60%
2	Number of Years complete by PHC	5 to 10 Years	3	30%
		More than 10 Years	7	70%
3	Distance	Min to Max	14 to 60 km	
II	**Inventory Management Details**			
4	Number of Sub centre under PHC	Min to Max	2 to 3	
5	Number of drugs available as per the Standard Essential Drugs List	114	95	83%
6	Essential drugs classified based on	Standard Guidelines and Utilization		
III	**Storage Details**			
7	Storage Facility	Yes	8	80%
		No	2	20%
8	Expansion and up gradation of Storage facility	Previous Year	1	10%
		2 Years Back	5	50%
		Long Back	4	40%

Table. 2: Indenting, Annual Estimation, Transportation and Inventory management of PHC

IV	Indenting System of Facility			
Sl.No.	**Factors affecting both availability and consumption of essential drugs at health facilities**	**Factors**	**Number**	**%**
9	Frequency of Indent	Bi Monthly	1	10%
		Monthly	9	90%
10	Supply of Drugs	Exact Amount	8	80%
		Less than	2	20%
11	Computer and Internet Facility	Yes	10	100%
12	Training to Operate and Indent is given	Yes	10	100%
13	Person responsible for indenting	Both Medical Officer and Pharmacist	10	100%
14	Storage condition of Pharmacy at PHC	Excellent	5	50%
		Good	4	40%
		Satisfactory	1	10%
15	Consumption Pattern of drugs at PHC Level	Excellent	2	20%
		Good	8	80%
VI	**Supply of Drugs based on Indenting**			
16	**Annual Requirement Estimation**	7 to 8 Lakhs		
17	Forecasting the quantity of drugs for a year	Based on previous	7	70%
		Standard Calculation	1	10%
		Based on experience	1	10%
		Centrally Assigned	1	10%
VII	**Transportation**			
18	Transportation of drugs	Private Vehicles	2	20%
		Own Vehicles	3	30%
		Others	5	50%
VIII	**Inventory Management**			
19	FEFO	Yes	10	100%
20	Followed Knowledge on Batch recall mechanism	Yes	10	100%
21	Requesting new stock of drugs is placed once the Buffer Level is reached	Yes	10	100%
22	Local Procurement in emergency is done	Yes	10	100%
23	Source of Fund Obtained	NHM	10	100%

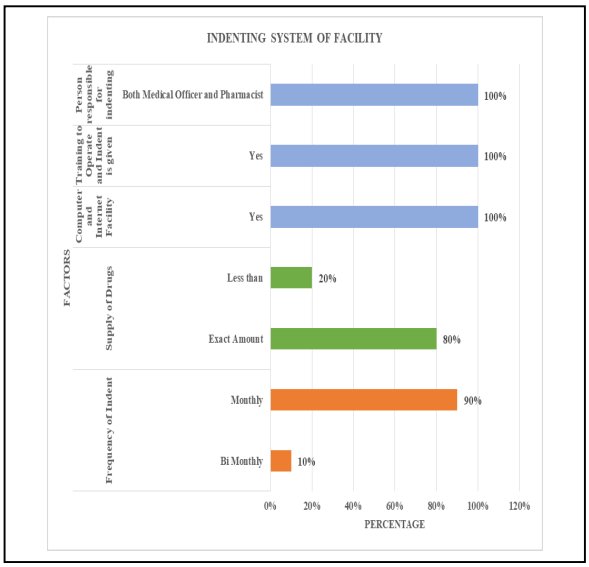

Figure. 1

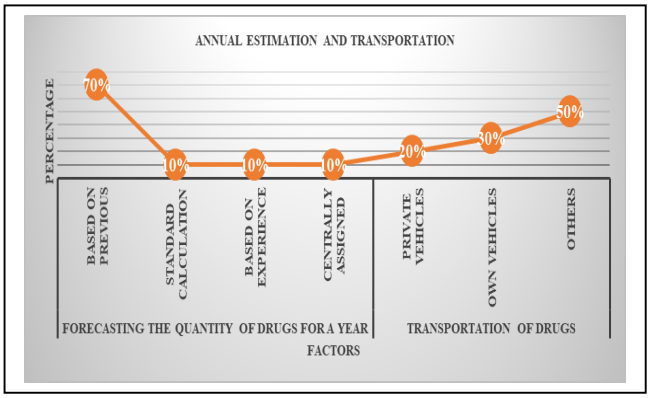

Figure. 2

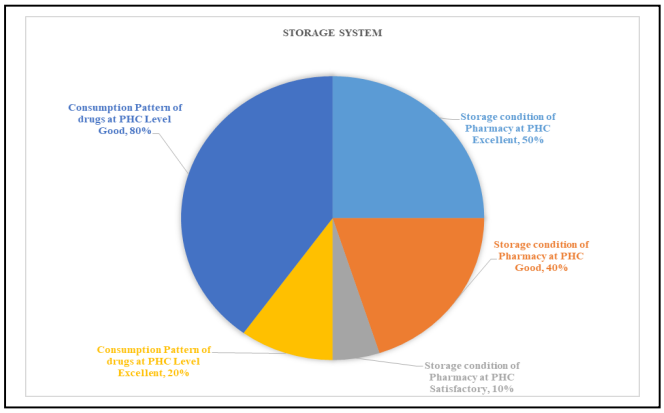

Figure. 3

V. CONCLUSION

The paper gives an overview of the availability and stock of essential drugs at primary health care level , essential drugs listed are 481 as per Karnataka State Medical Supplies Corporation Limited (KSMSCL), they are classified as Essential, Very essential, Most essential and Desirable. It is important for all healthcare institutions to have a successful storage of Essential drugs. The Essential drug List is 114 which is compulsorily supplied to all PHC's as per the guidelines, but the desirable drugs are indented as per the requirement, in each PHC we can find the Protocol drugs regularly and compulsorily maintained relating to NCD like Diabetic, Hypertension and Mental Health. From 2017 improved the Aushadha Software now which is used for indenting the medicine on monthly basis, due to poor Internet facility it makes repeated logging in to indent into a software, which is an issue, the work of doing indent of medicine along with dispensary of medicine is difficult. On 5th of every month Indent as to be placed, by 15th or 20th of a month drugs will be supplied. Minimum it requires a time gap of 10 days to fulfil the medicine requirement, There are only few vehicles used to supply the medicine for almost 200 Institutions, PHC which comes under BBMP runs in single bed room house, the storage of drugs should be maintained below 30^{o}C and above 30^{o}C decreases potency by 25 to 75 percentage of drugs, The vaccines are stored in ILR / deep freezer, the drugs maintaining in AC can protect, therefore the basic Infrastructure relating to drugs maintenance need to be done. Even many improvements and innovations has been made in the field of healthcare supply chain, especially in information sharing, inventory control, process of procurement, communication etc. and all these improvements were made possible with the help of information technology and also cooperation of stakeholders. However more work can be done by investing in inputs of Primary Health care such as facility, Infrastructure, Information system, Workforce and funding. In adequate availability of and access to essential drugs are some of the major barriers to delivery of essential health care in developing countries. In order to overcome the barriers in healthcare supply chain, the healthcare sector has to prepare collaborations from the very beginning to stack the odds in their favour.

REFERENCES

[1] Shadrack M.et al (2015), "Inventory management practices for essential drugs at Public and Mission Hospitals in Meru county, Kenya", International Journal of Current Business and Social Sciences | IJCBSS Vol.1, Issue 4, 2015.

[2] Sitanshu Sekhar Kar et al (2010) "Concept of Essential Medicines and Rational use in public health", Indian J Community Med. 2010 Jan; 35(1): 10–13.

[3] McKinsey & Company, (2013)

[4] Amarendranath Mohanty, Nayan Chakravarty (2013) "An epidemiological study of common drugs in the health supply chain: Where does the compass point?" Journal of Humanitarian Logistics and Supply Chain Management, Vol-3, No-1(2013).

[5] Andrew Brown1 (2014) "Human resources health supply chains and access to essential medicines" Journal of Pharmaceutical Policy and Practice 2014.

[6] Nikhat Afshan* and P.N. Sindhuja (2015) "Supply chain integration in healthcare industry in India: challenges and opportunities". J. Global Business Advancement, Vol. 8, No. 4, 2015

[7] Umang Gupta and A. Ramesh (2017) conducted a study in Uttarakhand by "Analyzing the barriers of health care supply chain in India" Procedia - Social and Behavioral Sciences 189 (2015) 217 – 228.

[8] Michael Pisa and Denise McCurdy (2019) "Supply Chains through Traceability". CGD Policy Paper. Washington, DC: Centre for Global Development.