CHAPTER 7

PUBLIC DRUG PROCUREMENT PERFORMANCE

This study discusses the performance of public drug procurement systems across seven states in India. The study looks at various challenges faced by India in ensuring availability and accessibility to essential medicines on account of the rapid growth of its pharmaceutical sector. Although, government being a major purchaser of drugs, its public procurement processes are often overwhelmed by inefficiencies, inadequate regulation, and a lack of transparency. The methodology used in this research is quantitative, and the data collection is done using predetermined performance indicators related to efficiency, cost effectiveness and quality that are self-developed. The study finds large disparities in procurement outcomes and underscores the importance of controlling for geographic and financial factors when assessing procurement systems. At the same time, it identifies weaknesses and strengths of public drug procurement systems to help policymakers design appropriate reforms and collaborative strategies in ensuring drug availability, accessibility, quality, and public trust.

7.1 Background of the Study

India faces significant challenges in providing access to basic healthcare and necessary medications to its large population, despite the remarkable expansion of the country's pharmaceutical sector over the last few decades (Singh et al., 2013; Thombare et al., 2024). Furthermore, lack of access to essential medicines affects about 2 billion people globally, exacerbating suffering, extending illness, causing unnecessary disabilities, and preventable deaths (Chan, 2017).

Medicine access is defined as “having medicines continuously available and affordable at public or private health facilities or medicine outlets that are within one hour walk from the homes of the people”, according to the United Nations Development Group (United Nations

Development Group, 2003). India is positioned 179th out of 189 countries in terms of the importance given to health in its government budgets, which includes both the union and state levels (Kulshreshth, 2021). Healthcare spending varies significantly between states and cannot be entirely attributed to the state's income level.

Public drug procurement in India is an important process that ensures availability of essential drugs at a quality standard (Kaur et al., 2021). Procurement inefficiencies, rooted in poor regulatory frameworks and fragmented legal systems, however, have caused up to 20 percent of drugs that have proven to be substandard to fail quality control tests (Weir et al., 2005). This problem is aggravated by heavy reliance on the private healthcare sector and branded medicines which further aggravates financial burden on the economically weak population pushing them into the poverty (Khanday, 2019; Verma, 2019).

Drug procurement and distribution in India is extremely complex varying from state to state with regards to demographic, economic and geographic factors. The challenges to achieve medical and legal complexity necessitate that these variations need tailored strategies that engage with the local health needs and administrative capacities (Jadhav et al., 2020; Nikam et al., 2019). However, the success of drug procurement policies primarily depends upon state specific legal frameworks and procurement models, and good practices may lead to learning about better regulatory frameworks at the state level (Evenett & Hoekman, 2005; Lewis & Pettersson Gelander, 2009).

In spite of the extensive research on issues of drug availability and accessibility, there are gaps in evaluation of ability to procure drugs, with unreliable data on the availability and accessibility of drugs to hinder effective policy decision (Singh et al., 2013). To increase equity of health outcomes and improve service delivery, Fiszbein et al. in 2011 propose a state level framework of performance indicators and accountability measures (Fiszbein et al., 2011). This

study formulates specific performance indicators aimed at assessing procurement efficacy, cost-effectiveness, and quality across seven Indian states: Tamil Nadu, Andhra Pradesh, Rajasthan, Chhattisgarh, Uttar Pradesh, Odisha, Kerala. This study assigns weighted values to these indicators to account for the multidimensional nature of public drug procurement and help stakeholders to locate best practices and areas for improvement in enhancing efficacy, cost-effectiveness, quality, and public confidence (Bradley, 2021).

7.2 Methodology

7.2.1 Study Design and Selection of Sample States

A quantitative study is conducted to evaluate and compare the performance of public drug procurement systems across seven Indian states during the period of 2021-2022. To reflect geographic diversity, states from southern, southeastern, northwestern, central, northern, eastern, southwestern regions along with different socioeconomic factors by varying levels of their population size, health budget and per capita health budget are chosen. Accordingly, Tamil Nadu, Andhra Pradesh, Rajasthan, Chhattisgarh, Uttar Pradesh, Odisha, and Kerala are chosen. This selection strategy ensures a comprehensive representation of the varied healthcare systems across India. The sampling methodology is shown in **Table 7.1**.

Table 7.1: Sample States for the Study (Period of the Study: 2021-2022)

Sampling Attribute	Tamil Nadu	Andhra Pradesh	Rajasthan	Chhattisgarh	Uttar Pradesh	Odisha	Kerala
Population (in Millions)	72.15	49.63	68.55	25.54	199.81	41.97	33.4
Total Health Budget (in Millions - INR)	200800	139400	170780	76220	263280	113830	120980
Per capita Health Budget (in INR)	2783.09	2808.78	2491.32	2984.33	1317.65	2712.17	3622.15
Geography	South	Southeast	Northwest	Central	North	East	Southwest

7.2.2 Development of Performance Indicators

Initially, a set of 45 key performance indicator parameters is developed, leveraging insights from some previous studies on public procurement practices (Kaur et al., 2021), with a particular focus on the need for transparent procurement processes and strong quality assurance systems. Further, this initial set is refined to 22 parameters, and a solid scoring framework is developed. The final set of 22 predetermined parameters and their scoring criteria are were based on the extensive research needs assessment and with valuable inputs from various stakeholders and experts, including government health officials, administrative officials, and key personnel from various state medical corporations (including procurement and quality managers), etc. The study design not only underscores the role of stakeholder participation in the formulation of indicators but also ensures validation through expert consultations, thereby enhancing the reliability of the results.

7.2.3 Data Collection Methods

The data collection tool is developed, stating the objective of the study, and distributed as applications to the concerned key personnel of respective medical corporations to seek drug procurement and process data. However, owing to some missing data and limitations in available open-source information, semi structured telephonic interviews with the executive leadership teams of the drug procurement cells in the sample states are conducted. Additionally, the website of respective medical corporation to acquire some drug procurement and process data are also referred. The data collection tool is included as supplemental material (**Appendix D**).

7.2.4 Scoring Framework and Validation

A comprehensive validation process is necessary to ensure that a scoring framework is reliable and applicable in various types of contexts. In this study, the scoring framework includes three

essential metrics: efficiency, cost-effectiveness, and quality, each assigned a weight to denote its comparative significance in evaluating procurement practices. The overall weightage allocated to efficiency performance indicators is 30%, while cost-effectiveness and quality performance indicators are each allocated 35%, resulting in a total weightage of 100%. This method of weightage is adopted from a published study (Kaur et al., 2021), with slight modifications as per the needs assessment of the current study.

7.2.5 Validation and Comprehensive Evaluation

In order to validate and improve the key performance indicators, a pilot study is conducted in two of the seven sample states. Kerala and Chhattisgarh are strategically chosen for the pilot study for their diverse healthcare systems. Kerala has an effective public health system, as seen by its strong community health programs and remarkable health metrics. However, Chhattisgarh has interesting problems with healthcare access and resource distribution that are commonly seen in emerging healthcare systems.

Following the improvement in scoring methodology and performance indicator parameters by pilot study, a complete evaluation of the public drug procurement systems is conducted in each of the seven states. The key performance indicators (KPIs), its parameters, and the scoring criteria are shown in **Table 7.2**.

Table 7.2: Public Drug Procurement – Key Performance Indicators and Scoring Criteria (Period of the Study: 2021-2022)

S. No	Performance Indicators Categories	Indicators (Score)				
		5	4	3	2	1
Efficiency Performance Indicators (Total Weight: 30%)						
1	**Purchase/Procedure**	Open Tender System	Centralized Online E-tender System	Limited Tender System	Single-Source Procurement	Direct Procurement
2	**Procurement Responsibility**	Centralized by Nodal Agency	State-Owned Agency with Independent Autonomy	Centralized by State-Owned Agency	Decentralized by District Health Departments	Public-Private Partnership for Procurement
3	**Distribution Process**	Centralized from State Warehouses to Districts	Decentralized from District Warehouses to Local	Mixed Centralized and Decentralized	State-Specific Distribution Mechanisms	Decentralized Distribution Without Warehouses
4	**Need of Pharmacist**	Required for Procurement and Technical Evaluation	Required for Technical Evaluation	Optional but recommended	Not Required	Not Specified
5	**Sample Test for Technical Bid**	Samples Tested for Every Batch After Purchase	Sample Evaluation Not Required	Samples Tested for Specific Circumstances	Sample Testing Performed Occasionally	Sample Testing Not Specified
6	**Medicine Disposal Process**	Through Biomedical Waste Management Approved by PCB	By Central or State Approved Agencies	Through Open e-Tender to Qualified Disposal Firms	Open Tender Process for Disposal Services	Disposal Method Not Specified or Non-compliant

Cost-Effectiveness Performance Indicators (Total Weight: 35%)						
7	**Budget Allocation**	High Allocation & Above 4% of Total Health Budget	Above Average Allocation & 3-4% of Total Health Budget	Moderate Allocation & 2-3% of Total Health Budget	Data Not Mentioned or Below 2% of Total Health Budget	Low Allocation & Below 1% of Total Health Budget
8	**Tender Fees**	Low Tender Fees	Moderate Tender Fees with Exceptions for MSMEs	Moderate Tender Fees	High Tender Fees	Varied Tender Fees Based on Contract Value
9	**Supplier Eligibility**	Manufacturers and Importers Allowed	Manufacturers, Importers, Loan Licensees Allowed	Manufacturers Only	Importers Allowed with Restrictions	Eligibility for Specific License Holders
10	**Time for Tender Submission**	Usually, 30 days with Extendable Option	30 days after Tender is Live	30 days without Extendable Option	Less than 30 days with Extendable Option	Less than 30 days without Extendable Option
11	**Market Standing**	Explicit Requirement for 5 or More Years	Explicit Requirement for 3 to 4 Years	Explicit Requirement for 1 to 2 Years	Duration Not Specified	No Requirement
12	**Two Bid System**	Two Bid System Followed	Two Bid System Partially Followed	No Clear Information on Bid System	No Two Bid System Followed	Bid System Not Applicable
13	**Annual Turnover**	Highly Inclusive, Strong Local MSME Support	Moderately Inclusive,	Balanced Threshold,	High Threshold, Lower Inclusivity	Very High Threshold,

			Moderate MSME Support	Limited MSME Support		Exclusivity to Large Entities
14	**Earnest Money Deposit (EMD)**	Very Low EMD	Low EMD	Moderate EMD	High EMD	Very High EMD
15	**Management Cost**	No Management Cost	Low Fixed Management Cost	Variable Management Cost	Undisclosed but Acknowledged Cost	No Information Provided
16	**Limit of Expiry Percentage**	Very Strict Limit	Moderate Limit	Lenient Limit	No Specific Limit but Acknowledged	No Information Provided
Quality Performance Indicators (Total Weight: 35%)						
17	**Availability at PHC Level**	Extensive Range	Comprehensive Coverage	Adequate for Essential Health Needs	Basic but Limited	Insufficient Information
18	**Availability at District Hospital**	Exceptionally Comprehensive	Highly Comprehensive	Comprehensive	Adequate	Limited or Insufficient Information
19	**Generic Medicines Usage**	All EML are Generic with Few Specialty Drugs	Majority (90%) of EML and AML Drugs are Generic	All EML are Generic with Few NHM Program Drugs	Most of the Medicines are Generic	No Information Provided
20	**GMP (Good Manufacturing Practices)**	Required cGMP	Required GMP/WHO GMP	Required GMP	Other Quality Standards	No Specific GMP Requirement

21	**Quality Control Parameters**	Stringent Quality Control Parameters with Penalty Clause	Comprehensive Quality Control Parameters as Per Pharmacopoeia Standards	Defined Quality Control Parameters Covering Multiple Parameters	Quality Control Parameters Specified Without Penalty Clause	No Information Provided
22	**Penalty Clause for Quality Default**	Stringent Penalty Clause with Blacklisting and Financial Deduction	Financial Penalty for Quality Default	Blacklisting as Penalty for Quality Default	Yes, Penalty Clause Specified	No Information Provided

PCB – Pollution Control Board, MSME - Micro, Small, and Medium Enterprises, EMD - Earnest Money Deposit, EML - Essential Medicines List, AML - Additional Medicines List, NHM - National Health Mission, cGMP – Current Good Manufacturing Practices, GMP - Good Manufacturing Practices

7.3 Findings

The evaluation of public drug procurement performance across the different states for the period of 2021-2022 reveal specific strengths and weaknesses for each region. The responsible bodies for public drug procurement in the selected study states are as follows,

- ✓ Tamil Nadu - Tamil Nadu Medical Services Corporation (TNMSC)
- ✓ Andhra Pradesh - Andhra Pradesh Medical Services & Infrastructure Development Corporation (APMSIDC)
- ✓ Rajasthan - Rajasthan Medical Services Corporation Limited (RMSCL)
- ✓ Chhattisgarh - Chhattisgarh Medical Services Corporation Limited (CGMSCL)
- ✓ Uttar Pradesh - Uttar Pradesh Medical Supplies Corporation Limited (UPMSCL)
- ✓ Odisha - Odisha State Medical Corporation Limited (OSMCL)
- ✓ Kerala - Kerala Medical Services Corporation Limited (KMSCL)

The results for each state, as determined by a variety of performance indicators in the categories of efficiency, cost-effectiveness, and quality, are presented in the **Tables 7.3 to 7.9**. The tables highlight the specific scores that are achieved in each category of the key performance indicators as described in **Table 7.2**, as well as the overall performance of the procurement systems in the sampled study states.

Table 7.3: Public Drug Procurement – Key Performance Indicators Evaluation of Tamil Nadu (Period of the Study: 2021-2022)

S. No	Parameter	Levels of Performance	Scoring (Out of 5)	Total
Efficiency Performance Indicators (Total Weight: 30%)				
1.	Process/Procedure of Purchase of Medicines	Open Tender System	5	**29.00 out of 30**
2.	Responsibility of Medicine Procurement & Autonomy	Centralized Procurement by Nodal Agency Registered under Companies Act	5	
3.	Distribution Process	Centralized Distribution from State-Level Warehouses to Districts	5	
4.	Need of Pharmacist	Required for Technical Evaluation	4	
5.	Sample Test for Evaluation of Technical Bid	Samples Tested for Every Batch After Purchase	5	
6.	Process of Dispose of Medicine	Through Biomedical Waste Management Service Providers Approved by Pollution Control Board	5	
Cost-Effectiveness Performance Indicators (Total Weight: 35%)				
7.	Budget Allocation for Medicines supplies	Moderate Allocation & 2-3% of Total Health Budget (Per Capita Allocation: 75.09 INR, Percentage of Health Budget: 2.7%)	3	**27.30 out of 35**
8.	Tender Fees	Moderate Tender Fees	3	
9.	Types of Suppliers Eligible	Manufacturers and Importers only Allowed	5	
10.	Time for Submission of Tender	Usually, 30 days with Extendable Option	5	
11.	Market Standing Requirement	Explicit Requirement for 3 to 4 Years of Market Standing	4	
12.	Two Bid System Followed	Yes	5	
13.	Annual Turnover Requirement	Moderately Inclusive, Moderate MSME/Home State Support	4	
14.	Earnest Money Deposit	EMD as a Percentage of the Contract Value	1	
15.	Management Cost	No Management Cost	5	
16.	Limit of Expiry Percentage	Moderate Limit - Permitted up to 2% on the procurement value	4	
Quality Performance Indicators (Total Weight: 35%)				
17.	Availability of Medicines at Primary Health Care level	Adequate for Essential Health Needs – (348 Nos)	3	**29.16 out of 35**
18.	Availability of Medicines at District Hospital level	Comprehensive – (649 Nos including Specialty Drugs)	3	
19.	Percentage of Generic Medicines used	All Essential Drugs are Generic with Few Specialty Drugs	5	
20.	GMP (Good Manufacturing Practices)	Required cGMP	5	
21.	Quality Control Parameters Defined	Comprehensive Quality Control Parameters as Per Pharmacopoeia Standards	4	
22.	Penalty Clause for Quality Default	Stringent Penalty Clause with Blacklisting and Financial Deduction	5	
Total Score based on the Performance Indicators Evaluation of Tamil Nadu				**85.46**

INR – Indian Rupees, MSME – Micro, Small, and Medium Enterprises, EMD - Earnest Money Deposit, Nos – Numbers, cGMP - Current Good Manufacturing. Practices

Table 7.4: Public Drug Procurement – Key Performance Indicators Evaluation of Andhra Pradesh (Period of the Study: 2021-2022)

S. No	Parameter	Levels of Performance	Scoring (Out of 5)	Total
Efficiency Performance Indicators (Total Weight: 30%)				
1.	Process/Procedure of Purchase of Medicines	Open Tender System	5	**29.00 out of 30**
2.	Responsibility of Medicine Procurement & Autonomy	Centralized Procurement by Nodal Agency Registered under Companies Act	5	
3.	Distribution Process	Centralized Distribution from State-Level Warehouses to Districts	5	
4.	Need of Pharmacist	Required for Technical Evaluation	4	
5.	Sample Test for Evaluation of Technical Bid	Samples Tested for Every Batch After Purchase	5	
6.	Process of Dispose of Medicine	Through Biomedical Waste Management Service Providers Approved by Pollution Control Board	5	
Cost-Effectiveness Performance Indicators (Total Weight: 35%)				
7.	Budget Allocation for Medicines supplies	Above Average Allocation & 3-4% of Total Health Budget (Per Capita Allocation: 100.75 INR, Percentage of Health Budget: 3.59%)	4	**23.80 out of 35**
8.	Tender Fees	High Tender Fees	2	
9.	Types of Suppliers Eligible	Manufacturers and Importers only Allowed	5	
10.	Time for Submission of Tender	Usually, 30 days with Extendable Option	5	
11.	Market Standing Requirement	No Mention of Market Standing	1	
12.	Two Bid System Followed	No	2	
13.	Annual Turnover Requirement	Balanced Threshold, Limited MSME/Home State Support	3	
14.	Earnest Money Deposit	High EMD	2	
15.	Management Cost	No Management Cost	5	
16.	Limit of Expiry Percentage	Very Strict Limit - Permitted up to 0.5% on the procurement value	5	
Quality Performance Indicators (Total Weight: 35%)				
17.	Availability of Medicines at Primary Health Care level	Basic but Limited – (215 Nos)	2	**25.66 out of 35**
18.	Availability of Medicines at District Hospital level	Comprehensive – (608 Nos)	3	
19.	Percentage of Generic Medicines used	Majority (90%)	4	
20.	GMP (Good Manufacturing Practices)	Required GMP/WHO GMP	4	
21.	Quality Control Parameters Defined	Comprehensive Quality Control Parameters as Per Pharmacopoeia Standards	4	
22.	Penalty Clause for Quality Default	Stringent Penalty Clause with Blacklisting and Financial Deduction	5	
Total Score based on the Performance Indicators Evaluation of Andhra Pradesh				**78.46**

INR – Indian Rupees, MSME – Micro, Small, and Medium Enterprises, EMD - Earnest Money Deposit, Nos – Numbers, WHO – World Health Organization

Table 7.5: Public Drug Procurement – Key Performance Indicators Evaluation of Rajasthan (Period of the Study: 2021-2022)

S. No	Parameter	Levels of Performance	Scoring (Out of 5)	Total
Efficiency Performance Indicators (Total Weight: 30%)				
1.	Process/Procedure of Purchase of Medicines	Open Tender System	5	**25.00 out of 30**
2.	Responsibility of Medicine Procurement & Autonomy	Centralized Procurement by State-Owned Agency	3	
3.	Distribution Process	Decentralized Distribution from District Warehouses to Local Facilities	4	
4.	Need of Pharmacist	Required for Technical Evaluation	4	
5.	Sample Test for Evaluation of Technical Bid	Sample Evaluation Not Required	4	
6.	Process of Dispose of Medicine	Through Biomedical Waste Management Service Providers Approved by Pollution Control Board	5	
Cost-Effectiveness Performance Indicators (Total Weight: 35%)				
7.	Budget Allocation for Medicines supplies	Data Not Mentioned	2	**23.80 out of 35**
8.	Tender Fees	Low Tender Fees	5	
9.	Types of Suppliers Eligible	Manufacturers, Importers, Loan Licensees Allowed	4	
10.	Time for Submission of Tender	Less than 30 days with Extendable Option	2	
11.	Market Standing Requirement	Explicit Requirement for 3 to 4 Years of Market Standing	4	
12.	Two Bid System Followed	Yes	5	
13.	Annual Turnover Requirement	Highly Inclusive (Lower Threshold)	5	
14.	Earnest Money Deposit	High EMD	2	
15.	Management Cost	Low Fixed Management Cost	4	
16.	Limit of Expiry Percentage	No Information Provided	1	
Quality Performance Indicators (Total Weight: 35%)				
17.	Availability of Medicines at Primary Health Care level	Comprehensive Coverage – (>350 Nos)	4	**29.16 out of 35**
18.	Availability of Medicines at District Hospital level	Comprehensive – (around 696 Nos)	3	
19.	Percentage of Generic Medicines used	All Essential Drugs are Generic with Few Specialty Drugs	5	
20.	GMP (Good Manufacturing Practices)	Required WHO GMP	4	
21.	Quality Control Parameters Defined	Comprehensive Quality Control Parameters as Per Pharmacopoeia Standards	4	
22.	Penalty Clause for Quality Default	Stringent Penalty Clause with Blacklisting and Financial Deduction	5	
Total Score based on the Performance Indicators Evaluation of Rajasthan				**77.96**

INR – Indian Rupees, MSME – Micro, Small, and Medium Enterprises, EMD - Earnest Money Deposit, Nos – Numbers, WHO – World Health Organization

Table 7.6: Public Drug Procurement – Key Performance Indicators Evaluation of Chhattisgarh (Period of the Study: 2021-2022)

S. No	Parameter	Levels of Performance	Scoring (Out of 5)	Total
Efficiency Performance Indicators (Total Weight: 30%)				
1.	Process/Procedure of Purchase of Medicines	Open Tender System	5	**20.00 out of 30**
2.	Responsibility of Medicine Procurement & Autonomy	Centralized Procurement by State-Owned Agency	3	
3.	Distribution Process	Decentralized Distribution from District Warehouses to Local Facilities	4	
4.	Need of Pharmacist	Required for Technical Evaluation	4	
5.	Sample Test for Evaluation of Technical Bid	Sample Testing Information Not Specified	1	
6.	Process of Dispose of Medicine	Through Open e-Tender to Qualified Disposal Firms	3	
Cost-Effectiveness Performance Indicators (Total Weight: 35%)				
7.	Budget Allocation for Medicines supplies	Data Not Mentioned	2	**23.10 out of 35**
8.	Tender Fees	Moderate Tender Fees	3	
9.	Types of Suppliers Eligible	Manufacturers and Importers only Allowed	5	
10.	Time for Submission of Tender	30 days after Tender is Live	4	
11.	Market Standing Requirement	Market Standing Mentioned but Duration Not Specified	2	
12.	Two Bid System Followed	Yes	5	
13.	Annual Turnover Requirement	High Threshold, Lower Inclusivity	2	
14.	Earnest Money Deposit	Moderate EMD	3	
15.	Management Cost	Low Fixed Management Cost	4	
16.	Limit of Expiry Percentage	Lenient Limit	3	
Quality Performance Indicators (Total Weight: 35%)				
17.	Availability of Medicines at Primary Health Care level	Extensive Range – (1437 Nos)	5	**29.16 out of 35**
18.	Availability of Medicines at District Hospital level	Exceptionally Comprehensive – (1797 Nos)	5	
19.	Percentage of Generic Medicines used	Majority (90%)	4	
20.	GMP (Good Manufacturing Practices)	Required GMP	3	
21.	Quality Control Parameters Defined	Defined Quality Control Parameters Covering Multiple Parameters	3	
22.	Penalty Clause for Quality Default	Stringent Penalty Clause with Blacklisting and Financial Deduction	5	
Total Score based on the Performance Indicators Evaluation of Chhattisgarh				**72.26**

INR – Indian Rupees, MSME – Micro, Small, and Medium Enterprises, EMD - Earnest Money Deposit, Nos – Numbers

Table 7.7: Public Drug Procurement – Key Performance Indicators Evaluation of Uttar Pradesh (Period of the Study: 2021-2022)

S. No	Parameter	Levels of Performance	Scoring (Out of 5)	Total
Efficiency Performance Indicators (Total Weight: 30%)				
1.	Process/Procedure of Purchase of Medicines	Open Tender System	5	**25.00 out of 30**
2.	Responsibility of Medicine Procurement & Autonomy	Centralized Procurement by State-Owned Agency with Independent Autonomy	4	
3.	Distribution Process	Mixed Distribution Model - Both Centralized and Decentralized Components	3	
4.	Need of Pharmacist	Required for Technical Evaluation	4	
5.	Sample Test for Evaluation of Technical Bid	Sample Evaluation Not Required	4	
6.	Process of Dispose of Medicine	Through Biomedical Waste Management Service Providers Approved by Pollution Control Board	5	
Cost-Effectiveness Performance Indicators (Total Weight: 35%)				
7.	Budget Allocation for Medicines supplies	Moderate Allocation & 2-3% of Total Health Budget (Per Capita Allocation: 35.22 INR, Percentage of Health Budget: 2.67%)	3	**20.30 out of 35**
8.	Tender Fees	Moderate Tender Fees with Exceptions for MSMEs	4	
9.	Types of Suppliers Eligible	Manufacturers and Importers only Allowed	5	
10.	Time for Submission of Tender	Less than 30 days with Extendable Option	2	
11.	Market Standing Requirement	Explicit Requirement for 3 to 4 Years of Market Standing	4	
12.	Two Bid System Followed	No	2	
13.	Annual Turnover Requirement	Very High Threshold, Exclusivity to Large Entities	1	
14.	Earnest Money Deposit	High EMD	2	
15.	Management Cost	No Information Provided	1	
16.	Limit of Expiry Percentage	Very Strict Limit	5	
Quality Performance Indicators (Total Weight: 35%)				
17.	Availability of Medicines at Primary Health Care level	Adequate for Essential Health Needs – (350 Nos)	3	**22.16 out of 35**
18.	Availability of Medicines at District Hospital level	Limited – (350 Nos)	1	
19.	Percentage of Generic Medicines used	All Essential Drugs are Generic with Few Specialty Drugs	3	
20.	GMP (Good Manufacturing Practices)	Required GMP	3	
21.	Quality Control Parameters Defined	Comprehensive Quality Control Parameters as Per Pharmacopoeia Standards	4	
22.	Penalty Clause for Quality Default	Stringent Penalty Clause with Blacklisting and Financial Deduction	5	
Total Score based on the Performance Indicators Evaluation of Uttar Pradesh				**67.46**

INR – Indian Rupees, MSME – Micro, Small, and Medium Enterprises, EMD - Earnest Money Deposit, Nos – Numbers

Table 7.8: Public Drug Procurement – Key Performance Indicators Evaluation of Odisha (Period of the Study: 2021-2022)

S. No	Parameter	Levels of Performance	Scoring (Out of 5)	Total
Efficiency Performance Indicators (Total Weight: 30%)				
1.	Process/Procedure of Purchase of Medicines	Centralized Online E-tender System	4	**21.99 out of 30**
2.	Responsibility of Medicine Procurement & Autonomy	Centralized Procurement by State-Owned Agency with Independent Autonomy	4	
3.	Distribution Process	State-Specific Distribution Mechanisms	2	
4.	Need of Pharmacist	Required for Technical Evaluation	4	
5.	Sample Test for Evaluation of Technical Bid	Samples Tested for Every Batch After Purchase	5	
6.	Process of Dispose of Medicine	Through Open e-Tender to Qualified Disposal Firms	3	
Cost-Effectiveness Performance Indicators (Total Weight: 35%)				
7.	Budget Allocation for Medicines supplies	Data Not Mentioned	2	**23.10 out of 35**
8.	Tender Fees	Moderate Tender Fees	3	
9.	Types of Suppliers Eligible	Manufacturers, Importers, Loan Licensees Allowed	4	
10.	Time for Submission of Tender	Usually, 30 days with Extendable Option	5	
11.	Market Standing Requirement	Explicit Requirement for 3 to 4 Years of Market Standing	4	
12.	Two Bid System Followed	Yes	5	
13.	Annual Turnover Requirement	Very High Threshold, Exclusivity to Large Entities	1	
14.	Earnest Money Deposit	Very High EMD	1	
15.	Management Cost	Variable Management Cost	3	
16.	Limit of Expiry Percentage	Very Strict Limit	5	
Quality Performance Indicators (Total Weight: 35%)				
17.	Availability of Medicines at Primary Health Care level	Basic but Limited – (216 Nos)	2	**24.5 out of 35**
18.	Availability of Medicines at District Hospital level	Comprehensive – (555 Nos)	3	
19.	Percentage of Generic Medicines used	All Essential Drugs are Generic with Few Specialty Drugs	3	
20.	GMP (Good Manufacturing Practices)	Required WHO GMP	4	
21.	Quality Control Parameters Defined	Comprehensive Quality Control Parameters as Per Pharmacopoeia Standards	4	
22.	Penalty Clause for Quality Default	Stringent Penalty Clause with Blacklisting and Financial Deduction	5	
Total Score based on the Performance Indicators Evaluation of Odisha				**69.59**

INR – Indian Rupees, MSME – Micro, Small, and Medium Enterprises, EMD - Earnest Money Deposit, Nos – Numbers, WHO – World Health Organization

Table 7.9: Public Drug Procurement – Key Performance Indicators Evaluation of Kerala (Period of the Study: 2021-2022)

S. No	Parameter	Levels of Performance	Scoring (Out of 5)	Total
Efficiency Performance Indicators (Total Weight: 30%)				
1.	Process/Procedure of Purchase of Medicines	Open Tender System	5	**27.00 out of 30**
2.	Responsibility of Medicine Procurement & Autonomy	Centralized Procurement by Nodal Agency Registered under Companies Act	5	
3.	Distribution Process	Decentralized Distribution from District Warehouses to Local Facilities	4	
4.	Need of Pharmacist	Required for Technical Evaluation	4	
5.	Sample Test for Evaluation of Technical Bid	Samples Tested for Every Batch After Purchase	5	
6.	Process of Dispose of Medicine	By Central or State Approved Agencies	4	
Cost-Effectiveness Performance Indicators (Total Weight: 35%)				
7.	Budget Allocation for Medicines supplies	High Allocation & Above 4% of Total Health Budget (Per Capita Allocation: 150.90 INR, Percentage of Health Budget: 4.17%)	5	**28.70 out of 35**
8.	Tender Fees	Varied Tender Fees Based on Contract Value	1	
9.	Types of Suppliers Eligible	Manufacturers and Importers only Allowed	5	
10.	Time for Submission of Tender	Usually, 30 days with Extendable Option	5	
11.	Market Standing Requirement	Explicit Requirement for 3 to 4 Years of Market Standing	4	
12.	Two Bid System Followed	Yes	5	
13.	Annual Turnover Requirement	Highly Inclusive, Strong Local MSME Support	5	
14.	Earnest Money Deposit	Very Low EMD	5	
15.	Management Cost	No Management Cost	5	
16.	Limit of Expiry Percentage	No Information Provided	1	
Quality Performance Indicators (Total Weight: 35%)				
17.	Availability of Medicines at Primary Health Care level	Comprehensive Coverage – (400 plus Nos)	4	**29.16 out of 35**
18.	Availability of Medicines at District Hospital level	Highly Comprehensive – (800 Nos plus Specialty Drugs)	4	
19.	Percentage of Generic Medicines used	Majority (90%)	4	
20.	GMP (Good Manufacturing Practices)	Required GMP/ WHO GMP	4	
21.	Quality Control Parameters Defined	Comprehensive Quality Control Parameters as Per Pharmacopoeia Standards	4	
22.	Penalty Clause for Quality Default	Stringent Penalty Clause with Blacklisting and Financial Deduction	5	
Total Score based on the Performance Indicators Evaluation of Kerala				**84.86**

INR – Indian Rupees, MSME – Micro, Small, and Medium Enterprises, EMD - Earnest Money Deposit, Nos – Numbers, WHO – World Health Organization

Overall scores from the evaluation of public drug procurement performance for each sample state are shown in **Table 7.10**. The scores represent the procurement systems effectiveness and efficiency in the respective regions, with the highest to lowest rank. Tamil Nadu (85.46) is the top most performer with Kerala (84.86) followed closely, demonstrating an excellent procurement practices and efficient management. Andhra Pradesh (78.46) and Rajasthan (77.96) placing them in the middle. However, Chhattisgarh (72.26) followed by Uttar Pradesh (67.46) and Odisha (69.59) got the least overall scores, indicating need for improvements. These scores are intended to rank the effectiveness and quality of public drug procurement of the states, and to demonstrate the need to focus on interventions to improve procurement practices in low scoring states.

Table 7.10: Total Scores based on the Performance Indicators Evaluation on Sample States for the Study (Period of the Study: 2021-2022)

State	Responsible Body	EPI Score (out of 30)	CPI Score (out of 35)	QPI Score (out of 35)	Grand Total (out of 100)	Rank
Tamil Nadu	Tamil Nadu Medical Services Corporation (TNMSC)	29.0	27.30	29.16	**85.46**	**1**
Kerala	Kerala Medical Services Corporation Limited (KMSCL)	27.0	28.70	29.16	**84.86**	**2**
Andhra Pradesh	Andhra Pradesh Medical Services & Infrastructure Development Corporation (APMSIDC)	29.0	23.80	25.66	**78.46**	**3**
Rajasthan	Rajasthan Medical Services Corporation Limited (RMSCL)	25.0	23.80	29.16	**77.96**	**4**
Chhattisgarh	Chhattisgarh Medical Services Corporation Limited (CGMSCL)	20.0	23.10	29.16	**72.26**	**5**
Odisha	Odisha State Medical Corporation Limited (OSMCL)	21.99	23.10	24.50	**69.59**	**6**
Uttar Pradesh	Uttar Pradesh Medical Supplies Corporation Limited (UPMSCL)	25.0	20.30	22.16	**67.46**	**7**

7.4 Discussion

A comprehensive assessment of public drug procurement in seven Indian states reveals significant differences in performance, especially with regard to efficiency, cost-effectiveness, and drug quality. The data obtained from studied procurement systems suggests that states with independent procurement agencies, such as Tamil Nadu and Kerala, demonstrate increased efficiency in the management of inventory and the payment of suppliers, which in turn contributes in improving access to essential medicines (Singh et al., 2013). In contrast, states like Odisha and Chhattisgarh are lacking in budget allocation and compliance with procurement standards (Kaur et al., 2021). The study highlights the discrepancies and directly influence the policy suggestions for improving procurement systems.

Efficiency in Procurement Systems

Tamil Nadu, Andhra Pradesh, and Kerala states perform better as their scores are 29.0/30, 29.0/30, and 27.0/30, respectively. This performance is attributed to their effective centralized procurement frameworks and rigorous quality oversight. In contrast, Odissa and Chhattisgarh exhibit lower performance, having an efficiency aggregate of approximately 20-21, which suggests that there are deficiencies in the distribution mechanisms and procurement responsibilities. These are consistent with earlier studies which emphasize the importance of transparent and accountable procurement frameworks, particularly during the stage of development (Evenett & Hoekman, 2005). Therefore, promoting the exchange of knowledge across states can facilitate the adoption of best practices and enhance the efficient drug procurement process at a national level (Saaida, 2023).

Cost-Effectiveness Strategies, Quality Control and Drug Availability

Cost-efficiency and quality are the essential aspect of effective public drug procurement and supply systems. Cost-effectiveness aspect with 35% of total weightage, highlights Kerala and

Tamil Nadu as top performers with the scores of 28.70/35 and 27.30/35, respectively. This is attributed to strategic budget allocations, efficient tender processes, and comprehensive management of market standing and tender submission times. Andhra Pradesh, Rajasthan, and Chhattisgarh obtain moderate scores of about 23, indicating moderate allocation approaches and flexibility in supplier eligibility criteria. In contrast, Uttar Pradesh achieves a score of 20.30, highlighting the necessity for enhancements in budget allocation and cost strategies, particularly in terms of contract fees and annual turnover requirements.

The quality parameters, which carry a weightage of 35%, show that Tamil Nadu, Rajasthan, Chhattisgarh, and Kerala have all achieves scores of 29.16. This might be due to the widespread availability of drugs at primary health centres (PHCs) and district levels, adherence to good manufacturing practices, and the implementation of stringent quality control standards. Andhra Pradesh and Odisha have lower scores (25.66 and 24:50, respectively) indicating inadequacies in implementation of quality guidelines and availability of drugs. It also reveals that the states that adopt very strict quality control parameters adheres not only to good manufacturing practices, but also mitigate procurement inefficiencies (Lewis & Pettersson Gelander, 2009). The assessments provide valuable insights into key factors for enhancing public drug procurement systems across India, highlighting significant strengths as well as areas that may benefit from improvement (Evenett & Hoekman, 2005).

Geographic and Economic Influences

Knowing the complex relationships between economic and geographical conditions is crucial to evaluate public drug procurement across the diverse states of India. The logistic capabilities and resource allocation within public health infrastructure is influenced by the geographical characteristics. The study finds the variations in per capita health expenditures across the sampled states. The per capita allocation is high in Kerala with ₹3,622.15, but in Uttar Pradesh it is only ₹1,317.65. These differences create unique challenges for procurement, which have

to be tackled with personalized approaches, that take into consideration both the financial constraints and the geographical specificities. The present study emphasizes that the states with stronger economic resources and geographic advantages tend to perform better in drug procurement (Evenett & Hoekman, 2005). In contrast, states with resource constraints witness a decrease in the efficiency of their procurement processes, indicating that long term financial inequality reduces the total effectiveness in representing public health programs (Manning & Soon, 2014).

The efficiency of public drug supply chain is greatly influenced by geographic diversity. Certain states like Tamil Nadu and Kerala, which have highly developed and centralized e-tender systems and centralized procurement processes are able to score higher compared to those using decentralized models like Uttar Pradesh and Chhattisgarh. Furthermore, differences in outcomes across states reflects the importance of budgetary decision for public health systems. The performance metrics in states like Tamil Nadu and Kerala reveal a strong association between higher health budget allocations and better results. Tamil Nadu allocates ₹2,00,800 million as its health budget and obtained 85.46 out of 100 in the procurement efficiency category. However, Uttar Pradesh has a greater allocation of ₹263280 million, and ended with a lower score of 67.46. The discrepancy could be due to differences in per capita health budget. Uttar Pradesh has a larger population of about 199 million and as a result the per capita health budget is much lower. In contrast, Tamil Nadu has smaller population of about 72 million and allows a higher per capita expenditure of ₹2,783.09. Therefore, it is evident that the states with strong health funding frameworks consistently demonstrate superior performance, underscoring the necessity to meticulously evaluate budgetary strategies (Acharya, 2004).

Overall Performance

The combined scores from all indicators to a total of 100, Tamil Nadu and Kerala topped the list with a score of 85.46 and 84.86, respectively. Therefore, these state models could function as benchmark models for procurement strategies that are effective in achieving a balance of operational efficiency, quality, and cost. Competitive scores of 72.26 to 78.46 are obtained by Andhra Pradesh, Rajasthan, and Chhattisgarh, which indicate that the frameworks are robust but also indicate that there are areas that require improvement. On the other hand, the scores of Odisha and Uttar Pradesh are the lowest, at 69.59 and 67.46, respectively. This suggests that there is a critical need for policy reform and enhancements in procurement practices to enhance drug accessibility and reliability. Although some states establish high standards in public drug procurement through efficient, cost-effective, and quality-focused methodologies, others require strategic enhancements to align their procurement practices with best practices, ensuring timely and equitable access to essential medications.

7.5 Limitations and Strengths of this Study

The limitations of this study include that it focused on only seven selected states, making it difficult to generalize the findings to the wide socio-economic phenomenon of the country. It is also noteworthy that the indicators are based on known standards and an overreliance of quantitative data, which underscores the need of future qualitative research to better understand complicated inefficiencies in procurement processes. The strengths of this study include the use of a robust self-developed key performance indicators and solid coring framework, which can be serving as reference model in similar studies.

7.6 Conclusions

This study uncovers the strengths and weaknesses of the public drug procurement process in seven states. Policy reforms are suggested in order to implement at regional level with states

of Tamil Nadu and Kerala considered as benchmark models supporting effective procurement strategy. Improved integrity of drug procurement requires coordination among stakeholders, and institutional reforms. Conclusively this study recommends that the perspectives of all stakeholders involved can be used to enhance understanding of procurement dynamics.

7.7 Strategic Recommendations

- ✓ Implementing a holistic approach that emphasize efficiency, cost savings, and quality in public drug procurement and distribution.
- ✓ Establishing a centralized online tendering system, as shown by the benchmark states in this research.
- ✓ Reviewing health budget allocation for medication purchase holistically would help to build a more sustainable financial framework.
- ✓ Strict quality control policies with penalties for non-compliance help to preserve the quality.
- ✓ Focusing on initiatives that enhance public trust in healthcare services through transparency and accountability in drug procurement practices.