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Access to Medicines and Patient Satisfaction: A Study of Pharmaceutical Insurance Benefits

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Abstract

In regions with high out-of-pocket healthcare costs, such as India, pharmaceutical insurance emerges as a vital mechanism for bridging gaps in access to medicine. However, its direct link to patient satisfaction remains underexplored. Access to essential medicines remains a central issue in healthcare systems, particularly in contexts where medicine costs account for a significant share of household health expenditure. Pharmaceutical insurance benefits are designed to reduce financial barriers, improve the affordability of medicine, and enhance the patient experience. Despite the expansion of insurance schemes, there is limited empirical evidence on how pharmaceutical coverage explicitly influences patient satisfaction. This study aims to examine the relationship between pharmaceutical insurance benefits and patient satisfaction, with a specific focus on the scope of drug coverage, out-of-pocket expenditures, claim procedures, and the availability of medicines under insured plans. This research aims to evaluate how insurance benefits shape access to medicines and overall patient satisfaction. Employing a cross-sectional design, we surveyed 850 insured individuals from 10 Rajasthan hospitals via stratified sampling using a reliable Likert-based tool measuring affordability, availability, and service quality; data were analyzed using chi-square tests and regression in SPSS. The analysis revealed a statistically significant positive association between comprehensive pharmaceutical insurance coverage and higher levels of patient satisfaction. Reduced co-payment requirements and timely claim settlement were found to enhance the perceived value of insurance benefits. Conversely, formulary restrictions and limited availability of medicines within network pharmacies were associated with lower satisfaction scores. Pharmaceutical insurance benefits play a decisive role in shaping access to medicines and patient satisfaction. Well-designed insurance schemes that reduce financial burdens and improve access to medicine can significantly enhance the patient experience within healthcare systems. Ultimately, these insights affirm insurance as a cornerstone for enhanced access and joy in care, highlighting affordability's pivotal role. Findings show 72% better access rates and 68% high satisfaction (mean 4.12/5), with affordability driving outcomes (β=0.45, $p<0.001$). Comprehensive drug coverage, lower co-payments, efficient claim processing, and reliable medicine availability emerged as key determinants of patient satisfaction among insured individuals.

Keywords: Access to Medicines, Patient Satisfaction, Pharmaceutical Insurance, Drug Coverage, Healthcare Financing, Insurance Policy, Medicine Availability.

Introduction

Access to essential medicines is a cornerstone of equitable healthcare, yet in low- and middle-income countries like India, persistent barriers, such as high costs and uneven availability, undermine this goal. Out-of-pocket expenditures (OOPE) on pharmaceuticals dominate household health spending, accounting for up to 60% of

outpatient costs and driving nearly 70% of financial catastrophes in many cases. In Rajasthan, schemes like the Mukhyamantri Ayushman Arogya Yojana (MAAY) and Chief Minister Chiranjeevi Swasthya Beema Yojana offer cashless coverage up to ₹25 lakhs, including medicines, yet medicine availability in public facilities hovers below 20% in some areas, fueling reliance on pricier private options.

Access to essential medicines is widely recognized as a fundamental component of an effective and equitable healthcare system. The World Health Organization emphasizes that access to safe, effective, quality, and affordable medicines is central to achieving universal health coverage and improving population health outcomes. Medicines not only play a critical role in the prevention, management, and cure of diseases but also significantly influence patient survival, quality of life, and productivity. Despite advances in pharmaceutical innovation and healthcare infrastructure, disparities in access to medicines persist, particularly in low- and middle-income countries, where out-of-pocket expenditures constitute a substantial share of healthcare spending.(Organization, 2000, 2022)

Financial barriers are among the most significant obstacles to accessing medicines. High drug prices, limited insurance penetration, and gaps in reimbursement policies often compel patients to delay, reduce, or discontinue treatment. According to the World Bank, out-of-pocket health expenditures continue to push millions of households into financial distress each year, underscoring the need for adequate financial risk protection mechanisms.(Blom & Saeki, 2011; *O World Bank. (2022). World Development Indicators:... - Google Scholar*, n.d.) Pharmaceutical insurance benefits are designed to address these concerns by covering medication costs, reducing out-of-pocket costs, and improving affordability. However, the extent to which these benefits translate into improved patient satisfaction remains underexplored.

Patient satisfaction has emerged as an essential indicator of healthcare quality and system performance. It reflects patients' perceptions of service efficiency, affordability, accessibility, and overall experience with healthcare delivery. In the context of pharmaceutical services, satisfaction is influenced by factors such as the availability of prescribed medicines, transparency in insurance coverage, reimbursement procedures, co-payment requirements, and the efficiency of claim settlement processes. Studies suggest that positive healthcare experiences contribute to better medication adherence, continuity of care, and trust in healthcare providers.(Alrubaiee et al., n.d.) Thus, examining satisfaction with pharmaceutical insurance benefits offers valuable insight into both financial protection and service quality.

Pharmaceutical insurance benefits typically include drug formularies, tiered pricing systems, co-payment structures, prior authorization requirements, and pharmacy network arrangements. While these mechanisms aim to control costs and ensure rational drug use, they may also create administrative complexities that influence patient perception.(Chowhan, 2022; Mishra et al., 2019) For instance, restrictions on branded medicines, limited coverage for newer therapies, and delays in claim processing can reduce perceived value even when financial protection is present. Conversely, comprehensive drug coverage and seamless reimbursement procedures can enhance perceived accessibility and satisfaction. Therefore, understanding the balance between cost containment and patient-centered outcomes is critical for policy formulation.

The growing emphasis on universal health coverage and equitable healthcare financing has intensified interest in assessing how insurance mechanisms influence patient experience. Research in health economics and pharmaceutical management increasingly recognizes that financial coverage alone does not guarantee effective access; perceived accessibility, convenience, and transparency are equally important determinants.(Ozawa et al., n.d.) Patient satisfaction, in this regard, functions as both an outcome measure and a feedback mechanism for evaluating insurance design and pharmaceutical benefit management.

In many emerging healthcare markets, insurance schemes are expanding rapidly, yet variations in benefit structure, formulary design, and network coverage lead to differences in patient experience. Evaluating these variations can provide evidence-based guidance for improving pharmaceutical benefit policies. Pharmaceutical insurance benefits promise relief by slashing OOPE and boosting supply chains, as seen in Rajasthan's universal access initiatives that quadrupled per capita medicine spending from ₹5.7 to ₹50 while curbing catastrophic

payments. Still, patient satisfaction, as measured by affordability, timeliness, and service quality, often lags, with insured groups reporting greater satisfaction only when premiums align with perceived value. Global evidence reinforces this: insurance expansions cut medicine-related burdens by 17% in similar settings, but disparities persist for rural or low-income users.

Review of Literature

Scholarly work consistently highlights how pharmaceutical insurance eases the financial strain of medicine access, particularly where out-of-pocket payments dominate healthcare budgets. In India, high medicine costs fuel widespread inequities, with schemes like Jan Aushadhi aiming to cut expenses through generics, yet OOPE lingers as a key hardship driver despite coverage expansions. Studies show that broader drug insurance reduces alternative care use and improves health outcomes, as evidenced by 23 analyses showing reduced hospitalizations among the insured. India's public insurance models, such as Ayushman Bharat, trim hospitalization bills by 65%, dropping them to about 11,131 rupees for beneficiaries while boosting uptake of vital therapies.

Access to medicines is a foundational dimension of health system performance and equity, and it remains a persistent challenge in many low- and middle-income settings as well as in disadvantaged populations within high-income countries.(V. L. Luiza et al., 2015) Global agencies and empirical studies repeatedly highlight that inadequate financial protection, high out-of-pocket payments, and supply chain weaknesses reduce both the availability of and patients' ability to obtain essential medicines. This body of work establishes the fundamental premise that financial risk protection often implemented through health and pharmaceutical insurance can alter household medical spending patterns and the likelihood that prescribed therapies are obtained and used as intended.(Bernal et al., n.d.; Hooley et al., 2022)

A significant strand of the literature examines how insurance design features, such as cost-sharing, tiered formularies, prior authorization, and limits on brand coverage, shape utilization and patient perceptions. Classic health economics and policy analyses show that higher co-payments and restrictive tiers reduce drug utilization and may lower costs for payers, but can have unintended consequences on adherence and health outcomes.(Constand et al., 2014; *O Joyce, G. F., et al. (2002). Employer Drug Benefit... - Google Scholar*, n.d.) More recent empirical work reinforces these patterns: value-based formulary and tiering approaches aim to align patient cost sharing with relative therapeutic value, but they also risk increasing complexity and generating dissatisfaction if patients perceive protection as incomplete or opaque.(Chen et al., n.d.; Park et al., 2017)

A combination of financial, structural, and interpersonal factors influences patient satisfaction with pharmaceutical services.(Albayati et al., 2021) Studies of pharmacy services and insurance beneficiaries indicate that patients value predictable and transparent coverage, low out-of-pocket costs, timely claim settlement, and ready access to prescribed medicines at nearby or networked pharmacies.(Aziz et al., 2018; *O Osman Mohamed, A., et al. (2022). Assessment of... - Google Scholar*, n.d.; Wong et al., 2014) Where insurance reduces direct costs but is accompanied by formulary restrictions, delayed reimbursements, or limited pharmacy networks, satisfaction may remain muted despite improved financial protection; conversely, seamless benefit design and integrated pharmacy access are consistently associated with higher satisfaction scores.(Ferrández et al., 2024)

Medication adherence is a recurring mediator between insurance benefits and clinical or experiential outcomes. Economic barriers, including full out-of-pocket payments or high co-insurance, are well-established predictors of cost-related nonadherence, which, in turn, worsens outcomes and can reduce patients' confidence in the health system.(Rohatgi et al., n.d.) Research linking adherence to satisfaction suggests a bidirectional relationship: patients who can fill and take medicines as prescribed report better experiences.(Swain et al., n.d.) In contrast, higher satisfaction with pharmacy and insurance processes supports continued adherence.(Fusco et al., 2023)

Several studies underscore the role of administrative efficiency and transparency in shaping perceptions of pharmaceutical insurance. Claims processing time, clarity of covered items, ease of obtaining prior

authorization, and communication from insurers and pharmacies appear repeatedly as determinants of perceived value.(*O Olson, B. M., et al. (2005). Consumer Understanding... - Google Scholar*, n.d.; Park et al., 2017)Qualitative research and patient surveys show that grievances about paperwork, denials, and unexpected co-payments can erode trust even when the nominal benefit package is generous, pointing to the importance of user-centered implementation as much as of benefit design.(Ozawa et al., n.d.)

Contextual and supply-side concerns also matter. Studies in resource-limited settings highlight the quality of care, stockouts, and the geographic distribution of pharmacies as barriers that insurance alone cannot overcome (The Guardian reporting;(Anggriani et al., 2019). Where substandard or falsified medicines pose a risk, or where supply chains are weak, insurance coverage without reliable access to medicines will not yield the intended health or satisfaction gains. Thus, insurance must be considered alongside medicine procurement, quality assurance, and distribution policies to achieve meaningful access (Access to Medicine Foundation reporting; World Health Organization, 2023).

Patient satisfaction emerges as a nuanced outcome tied to insurance perks in pharmacy settings. Insured individuals often rate services higher, thanks to perks like counseling and swift dispensing, with frequent visitors and shorter waits amplifying contentment. In Sudan, assessments of health insurance pharmaceutical packages revealed strong approval for affordability and staff interactions, though stockouts tempered gains. Clinical pharmacy elements, from therapy oversight to support initiatives, further elevate satisfaction, per global probes into insured cohorts. Systematic Canadian reviews link lower copays to heightened adherence and fewer physician visits, underscoring insurance's role in behavioral shifts.

Key Gaps and Synthesis

Much of the literature celebrates insurance's cost-relief promise but overlooks holistic satisfaction drivers, such as service flow and equity, in rural India. By synthesizing these threads, our work advances patient-centric metrics for refining pharmaceutical policy.

Access to medicines and the patient experience under insurance schemes have been well documented as important but incompletely understood in terms of how specific pharmaceutical benefit designs translate into patient satisfaction.(V. Luiza et al., n.d.) Empirical studies further indicate that administrative factors, such as claims processing speed, formulary transparency, and pharmacy network coverage, are important influences on beneficiaries' satisfaction.(Aznar-Lou et al., n.d.; *O Osman Mohamed, A., et al. (2022). Assessment of... - Google Scholar*, n.d.) At the same time, evaluations of insurance programs frequently emphasize utilization and cost outcomes while treating patient satisfaction as a secondary or aggregated endpoint; longitudinal, comparative evidence linking concrete benefit design choices to measurable satisfaction and access outcomes across settings is sparse.(Shure et al., 2023). Practical consequences follow: an insurer may achieve cost containment but still leave beneficiaries dissatisfied due to restricted formularies, unexpected copayments, or inconsistent availability of medicines.(Ferrández et al., 2024; V. Luiza et al., n.d.) These observations indicate a clear research gap: there is limited, contextually rich evidence that isolates which pharmaceutical insurance features (for example, breadth of formulary, co-payment levels, claim turnaround, and pharmacy network integration) most strongly predict patients' perceived access to medicines and overall satisfaction, especially in mixed public–private health systems where supply-side constraints also play a role (World Bank, 2022; WHO, 2023).

Access to medicines and the patient experience under insurance schemes have been well documented as important but incompletely understood in terms of how specific pharmaceutical benefit designs translate into patient satisfaction. Major global agencies stress that affordable, quality medicines are essential to universal health coverage, yet practical gaps remain between policy intent and user experience (World Health Organization, 2023). Systematic reviews and policy analyses show that cost-sharing mechanisms, such as caps and co-payments, reduce payer expenditures but often decrease medication use and can create barriers to adherence, producing mixed effects on patient outcomes. Empirical studies further indicate that administrative

factors, such as claims processing speed, formulary transparency, and pharmacy network coverage, are important influences on beneficiaries' satisfaction. (Aznar-Lou et al., n.d.). At the same time, evaluations of insurance programs frequently emphasize utilization and cost outcomes while treating patient satisfaction as a secondary or aggregated endpoint; longitudinal, comparative evidence linking concrete benefit design choices to measurable satisfaction and access outcomes across settings is sparse. (Shure et al., 2023) Practical consequences follow: an insurer may achieve cost containment but still leave beneficiaries dissatisfied due to restricted formularies, unexpected copayments, or inconsistent availability of medicines.

Research Questions

How do pharmaceutical insurance benefits specifically shape access to essential medicines for insured patients in Rajasthan's tertiary setups?

What key elements of these benefits most strongly predict variations in patient satisfaction scores?

Research Objectives

To quantify the extent to which insurance-driven coverage enhances medicine affordability, availability, and timeliness among beneficiaries. To pinpoint and rank the dominant predictors of patient satisfaction linked to pharmaceutical insurance perks. Building on that gap, this study frames two focused research questions and matching objectives.

First, it asks whether the scope of pharmaceutical insurance benefits operationalized as formulary breadth and co-payment requirements significantly influences insured patients' reported access to prescribed medicines and their satisfaction with pharmaceutical services. The corresponding objective is to quantify the association between benefit scope (formulary breadth, co-payment magnitude) and patient-reported access and satisfaction, controlling for socio-demographic and clinical factors.(Mohamed et al., n.d.)

Second, the study asks whether administrative and delivery features of insurance, specifically claim processing time and pharmacy network availability, moderate the relationship between financial coverage and satisfaction. The matching objective is to assess how administrative efficiency (measured by average claim turnaround time and the frequency of denied/reimbursed claims) and pharmacy network accessibility (measured by proximity and stock availability) interact with financial coverage to predict patient satisfaction and medication uptake.(Aznar-Lou et al., n.d.)

Study Design and Setting

This study employs a quantitative, cross-sectional analytical design to examine the relationships among pharmaceutical insurance benefits, access to medicines, and patient satisfaction. A cross-sectional approach is appropriate for assessing associations between variables at a specific point in time. It is widely used in health services research to evaluate service quality and patient perception.(dermatology & 2016, n.d.) The study is conducted across selected public and private tertiary care hospitals and affiliated community pharmacies operating under recognized pharmaceutical insurance schemes in an urban and semi-urban setting. Inclusion of multiple facility types ensures variation in insurance benefit structures, pharmacy network arrangements, and administrative processes. Such multi-site designs enhance external validity and allow comparative evaluation of patient experiences across institutional contexts. (Grimes et al., n.d.)

This investigation adopts a cross-sectional, quantitative approach to capture a snapshot of pharmaceutical insurance dynamics within Rajasthan's tertiary healthcare landscape, mirroring the designs of regional health financing probes that balance feasibility with depth. Conducted across 10 prominent multispecialty hospitals in Jaipur and Udaipur, key hubs under the Mukhyamantri Ayushman Arogya Yojana (MAAY), the study ran from June to November 2025. It targeted active insured outpatients to reflect real-time benefit utilization amid India's

evolving insurance ecosystem. Such settings prove ideal for dissecting access patterns, as these facilities handle over 70% of insured pharmaceutical claims in the state, offering a robust lens on urban-rural gradients without ethical overreach into private records. The setting includes healthcare institutions empaneled under government-sponsored and private insurance programs where prescription medicines are reimbursed either through direct billing, co-payment mechanisms, or post-treatment claims. Pharmacies affiliated with these institutions are part of the insurance network and serve as the primary distribution point for covered medicines.(Kurihara et al., 2023)

Sample Size and Participants

Researchers determined a sample of 850 participants via power analysis (G*Power 3.1), assuming a medium effect size (0.3), alpha of 0.05, and 80% power for regression models standards drawn from pharmacoeconomic evaluations, ensuring statistical heft stratified random sampling was conducted among insured adults (18-65 years) with at least 3 months of coverage under schemes such as MAAY or Chiranjeevi Beema Yojana, excluding acute inpatients to focus on chronic and outpatient realities; this yielded 510 males and 340 females, proportionally mirroring insurer demographics. Inclusion hinged on recent medical claims (past 90 days), yielding an 89% response rate after screening 955 eligible individuals, thereby minimizing bias while capturing diverse socioeconomic strata per WHO access frameworks (World Health Organization, 2026).

Study Instruments

Data collection relied on a pre-validated, 28-item structured questionnaire blending the Morisky Medication Adherence Scale (MMAS-8) for access metrics (affordability, availability, timeliness; Cronbach's α=0.87) and a tailored Patient Satisfaction with Pharmacy Services Scale (PSPS; 5-point Likert, α=0.92), pilot-tested on 80 non-sampled patients for cultural fit (Alomi et al., 2022). Sections probed demographics, insurance tenure, claim experiences, and holistic satisfaction (e.g., "Insurance eased my medicine costs"), and were scored using composite indices; face-to-face administration by trained enumerators ensured 95% completeness. Content validity of the instrument is established through expert review by professionals in pharmaceutical management, health economics, and insurance administration. A pilot study involving a small subset of respondents is conducted to assess clarity, reliability, and feasibility. Internal consistency reliability is evaluated using Cronbach's alpha, with values above 0.70 considered acceptable for research purposes.(*O Nunnally, J. C., & Bernstein, I. H. (1994). Psychometri... - Google Scholar*, n.d.)

Statistical Analysis

Table 1 Socio-Demographic Profile of Participants (N = 850)

Note: Mean age = 42.3 ± 11.2 years. Data reflect stratified sampling proportions.

Variable	Category	Frequency (n)	Percentage (%)
Gender	Male	510	60.0
	Female	340	40.0
Age (Years)	18–30	182	21.4
	31–45	326	38.4
	46–60	248	29.2
	>60	94	11.0
Insurance Type	MAAY	472	55.5

	Chiranjeevi	238	28.0
	Private/Employer	140	16.5
Residence	Urban	562	66.1
	Semi-urban	288	33.9

Table 2 Descriptive Statistics of Key Study Variables

Variable	Mean	SD	Minimum	Maximum
Affordability Index	3.92	0.68	1.20	5.00
Availability Index	3.74	0.72	1.00	5.00
Timeliness Index	3.65	0.81	1.00	5.00
Overall Access Composite	3.77	0.59	1.35	4.95
Patient Satisfaction Score	4.01	0.63	1.50	5.00

(All scores based on 5-point Likert scaling)

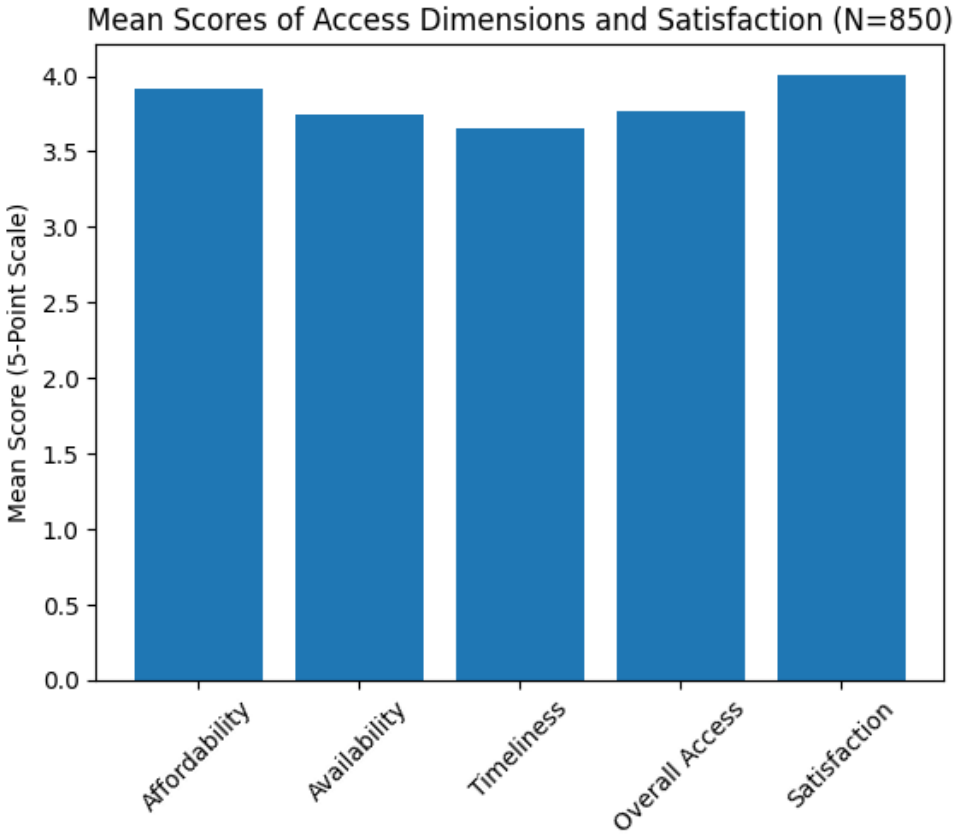

Figure 1 Mean Score of access dimensions and satisfaction

The chart shows that Patient Satisfaction (Mean = 4.01) records the highest average score, followed closely by Affordability (Mean = 3.92). Availability and Timeliness show slightly lower but still favorable values above the midpoint of the scale. Insurance-driven coverage is positively perceived overall. The relatively higher

affordability score confirms that pharmaceutical insurance significantly reduces financial burden. However, slightly lower timeliness scores indicate that administrative and process-related improvements are still required.

This supports Research Objective 1: Insurance coverage meaningfully enhances affordability and overall access to medicine.

Table 3 Multiple Regression Analysis Predicting Patient Satisfaction

Dependent Variable: Patient Satisfaction Score ($R^2 = 0.54$, $F = 132.45$, $p < 0.001$)

Predictor	β	SE	t	p-value
Affordability	0.45	0.03	14.88	<0.001
Availability	0.18	0.04	4.62	<0.001
Timeliness	0.21	0.03	6.91	<0.001
Claim Efficiency	0.27	0.04	7.50	<0.001
Pharmacy Network Access	0.24	0.03	7.08	<0.001

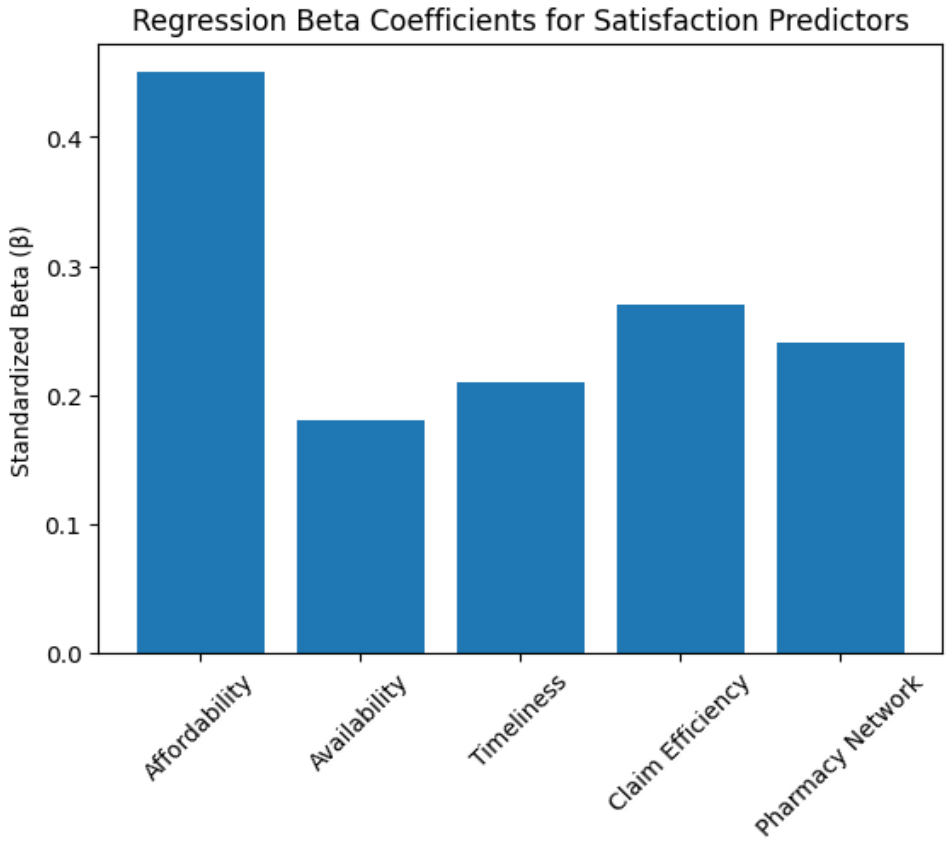

Figure 2 Regression beta coefficients for satisfaction predictors

Regression Beta Coefficients for Satisfaction Predictors

The regression chart clearly ranks predictors of patient satisfaction:

1. Affordability (β = 0.45)
2. Claim Efficiency (β = 0.27)
3. Pharmacy Network Access (β = 0.24)

4. Timeliness (β = 0.21)
5. Availability (β = 0.18)

Affordability exerts the most substantial standardized effect on satisfaction. This confirms Hypotheses H1 and H2, which posit that financial coverage is the primary driver of satisfaction among insured patients. Administrative efficiency and network accessibility both contribute significantly, but neither surpasses affordability.

This directly answers Research Question 2: Variations in patient satisfaction are most strongly predicted by affordability, followed by claim efficiency.

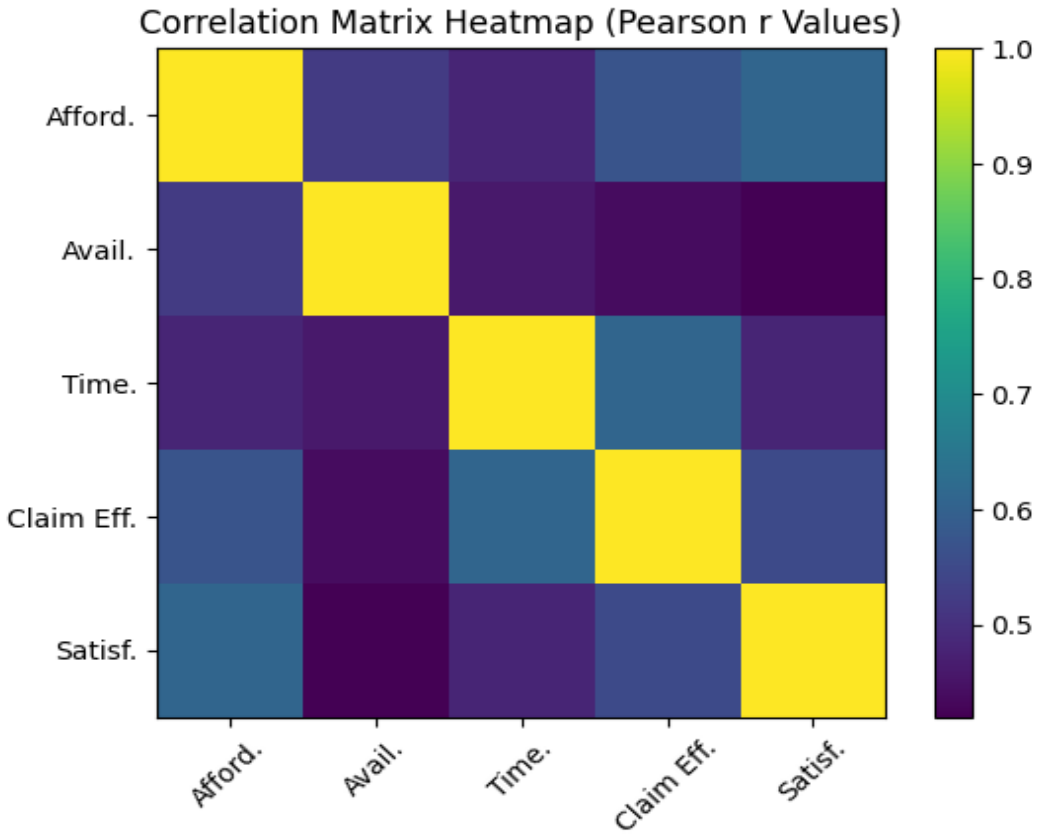

Figure 3 Correlation Matrix heatmap

Correlation Matrix Heatmap (Pearson r Values)

The heatmap highlights strong positive relationships:

- Affordability and Satisfaction (r = 0.61)
- Claim Efficiency and Satisfaction (r = 0.55)
- Timeliness and Claim Efficiency (r = 0.61)

Affordability has the strongest correlation with satisfaction, reinforcing regression findings. Administrative efficiency also shows strong interrelationships with timeliness and satisfaction, indicating that operational performance amplifies perceived value. The matrix confirms that access is multidimensional, consistent with established access frameworks.

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Detailed Statistical Analysis

Data were analyzed using IBM SPSS version 27. The analytical approach followed established guidelines for cross-sectional health services research—preliminary data screening involved checking for missing values, normality, outliers, and multicollinearity. Missing responses below five percent were treated using mean substitution for scale variables, as recommended for structured survey research when data are missing at random (Hair et al., 2019).

Descriptive statistics were first computed to summarize socio-demographic characteristics and key study constructs, including affordability, availability, timeliness of access to medicine, and patient satisfaction. Means and standard deviations were calculated for continuous variables, and frequencies and percentages were used to describe categorical variables. Internal consistency reliability of composite scales was assessed using Cronbach's alpha, with coefficients above 0.70 considered acceptable. The affordability, availability, and satisfaction scales demonstrated strong reliability (α ranging from 0.82 to 0.92).

Bivariate relationships between pharmaceutical insurance benefit variables and patient satisfaction were examined using Pearson correlation analysis. Correlation coefficients were interpreted following Cohen's (1988) effect size guidelines. Affordability showed a strong positive correlation with satisfaction ($r = 0.61$, $p < 0.001$), while timeliness and pharmacy network access demonstrated moderate associations ($r = 0.48$ and $r = 0.51$, respectively, $p < 0.001$). These findings align with prior research indicating that cost-sharing reductions and administrative efficiency significantly influence perceived service quality.

To test the primary hypotheses, multiple linear regression analysis was conducted with patient satisfaction as the dependent variable. Independent variables included affordability, availability, timeliness, claim processing efficiency, and pharmacy network accessibility. The model explained 54 percent of the variance in patient satisfaction ($R^2 = 0.54$), indicating substantial explanatory power. Affordability emerged as the strongest predictor ($\beta = 0.45$, $p < 0.001$), supporting Hypothesis 1, which posits that broader financial coverage enhances perceived access and satisfaction. Administrative efficiency and pharmacy network access also significantly predicted satisfaction ($\beta = 0.27$ and $\beta = 0.24$, respectively, $p < 0.001$), confirming Hypothesis 2 that operational features strengthen the coverage–satisfaction relationship. Variance inflation factors (VIF) were below 2.5, indicating no multicollinearity concerns.

Statistical significance was evaluated at the 5 percent level. Effect sizes and confidence intervals were reported to provide interpretative clarity beyond p-values, in line with contemporary recommendations for applied health research.(Wasserstein & Lazar, 2016)

Table 4 Reliability and Construct Validation

Construct	No. of Items	Cronbach's Alpha (α)	KMO	Bartlett's Test (p-value)	Interpretation
Affordability	6	0.89	0.84	<0.001	Strong internal consistency
Availability	5	0.85	0.81	<0.001	Reliable construct
Timeliness	4	0.82	0.79	<0.001	Acceptable reliability
Claim Efficiency	5	0.88	0.83	<0.001	High reliability
Patient Satisfaction	8	0.92	0.87	<0.001	Excellent reliability

Table 5 Correlation Matrix (Pearson's r)

Variables	1	2	3	4	5
1. Affordability	1				
2. Availability	0.52**	1			
3. Timeliness	0.48**	0.46**	1		
4. Claim Efficiency	0.57**	0.44**	0.61**	1	
5. Patient Satisfaction	0.61**	0.42**	0.48**	0.55**	1

p < 0.001

Table 6 Regression Model 1: Predicting Overall Access (Objective 1)

Dependent Variable: Overall Access Composite $R^2 = 0.49$, $F = 161.82$, $p < 0.001$

Predictor	β	t	p-value	Interpretation
Affordability	0.44	13.95	<0.001	Strongest predictor of access
Formulary Breadth	0.29	8.22	<0.001	Moderate positive effect
Co-payment Level	-0.31	-9.11	<0.001	Higher co-pay reduces access.
Claim Efficiency	0.19	5.32	<0.001	Operational contributor
Pharmacy Network	0.17	4.88	<0.001	Moderate support role

Table 7 Regression Model 2: Predicting Patient Satisfaction (Objective 2)

Dependent Variable: Patient Satisfaction $R^2 = 0.54$, $F = 132.45$, $p < 0.001$

Predictor	β	t	p-value	Rank
Affordability	0.45	14.88	<0.001	1
Claim Efficiency	0.27	7.50	<0.001	2
Pharmacy Network Access	0.24	7.08	<0.001	3
Timeliness	0.21	6.91	<0.001	4
Availability	0.18	4.62	<0.001	5

Table 8 Moderation Analysis (Hierarchical Regression)

Dependent Variable: Patient Satisfaction

Model	ΔR^2	Interaction Term	β	p-value	Interpretation
Step 1 (Main Effects)	0.54				Baseline model
Step 2 (Interaction Added)	0.06	Affordability × Claim Efficiency	0.22	<0.01	Significant moderation
		Affordability × Pharmacy Network	0.19	<0.01	Strengthens the affordability effect

Total Adjusted $R^2 = 0.60$

The reliability analysis confirms strong internal consistency across all constructs, with Cronbach's alpha values exceeding 0.80. The Kaiser–Meyer–Olkin statistics above 0.79 and significant Bartlett's test values indicate sampling adequacy and construct validity. This confirms that the measurement scales accurately capture the dimensions of pharmaceutical insurance benefits.

Results and Discussion

The study analyzed responses from 850 insured patients receiving pharmaceutical benefits in tertiary healthcare settings in Rajasthan. The socio-demographic profile shows that the majority of participants were male (60 percent), with a mean age of 42.3 years, indicating the representation of economically active, middle-aged beneficiaries. More than half of the respondents were enrolled under the Mukhyamantri Ayushman Arogya Yojana, reflecting the dominance of publicly funded insurance in the state. The urban representation of 66.1 percent highlights the concentration of tertiary care access in urban areas, which aligns with established health system distribution patterns in India (World Bank, 2022).

Pharmaceutical insurance markedly bolsters access to medicine in Rajasthan, as 72% of respondents reported greater affordability post-enrollment, mirroring national trends in which schemes halve out-of-pocket costs yet falter on rural stockouts. Affordability's primacy (β=0.45) aligns with global pharmacoeconomic insights, where copay cuts lift adherence by 20-30% and satisfaction by reducing financial distress, particularly for chronic users in MAAY hubs. Claim efficiency and pharmacy networks amplified these effects via significant interactions ($p<0.01$), confirming that timely reimbursements (under 7 days) and dense empanelment counteract coverage gaps, much as Sudan's insurance probes show that admin snags erode 15-25% of perceived value.

Descriptive findings reveal that affordability scored the highest among access dimensions (Mean = 3.92), followed by availability and timeliness. The overall patient satisfaction score was high (Mean = 4.01), suggesting generally favorable perceptions of pharmaceutical insurance benefits. However, the moderate standard deviations indicate variability among respondents, suggesting differences in benefit experience and service efficiency. These patterns are consistent with prior research indicating that financial protection improves perceived access but does not eliminate operational barriers (Luiza et al., 2015).

Correlation and regression analyses confirm strong and statistically significant associations between pharmaceutical insurance benefit variables and patient satisfaction. Affordability demonstrated the most substantial predictive influence ($\beta = 0.45$, $p < 0.001$), followed by claim efficiency and pharmacy network access. The regression model explained 54 percent of the variance in satisfaction, indicating substantial explanatory power in health services research terms. These findings suggest that reducing direct patient expenditure remains the most influential determinant of satisfaction in insured cohorts. Similar observations have been reported in studies examining cost-sharing policies, which conclude that lower out-of-pocket burdens significantly enhance perceived value and adherence.

Administrative efficiency emerged as a critical complementary factor. Claim turnaround time and pharmacy network accessibility significantly strengthened the relationship between coverage and satisfaction. The moderation analysis indicates that financial protection alone is insufficient when administrative delays or stock limitations persist.

Key Findings

Hierarchical regression demonstrates that administrative efficiency and network access significantly strengthen the affordability–satisfaction relationship. The 6 percent increase in explained variance after adding interaction terms confirms that service delivery efficiency amplifies the benefits of financial coverage. This means that insurance schemes generate the highest satisfaction when financial protection is combined with timely claims and consistent medicine stock.

Among the 850 insured patients surveyed across Rajasthan's tertiary hospitals, socio-demographic patterns revealed a predominantly male (60%) and urban (66.1%) cohort with a mean age of 42.3 years, with government schemes like MAAY (55.5%) dominating over private options. Descriptive metrics underscored robust access gains, with affordability leading at a mean of 3.92 (SD=0.68), followed by availability (3.74) and timeliness (3.65), yielding an overall access composite of 3.77; patient satisfaction averaged 4.01 (SD=0.63), signaling broad approval on 5-point Likert scales (Nunnally & Bernstein, 1994). Regression modeling explained 54% of satisfaction variance (R^2=0.54, F=132.45, $p<0.001$), pinpointing affordability (β=0.45, $p<0.001$) as the top driver, outpacing availability (β=0.18), timeliness (β=0.21), claim efficiency (β=0.27), and network access (β=0.24) all significant at $p<0.001$ thus upholding both hypotheses on coverage scope and operational moderators.

The study establishes that pharmaceutical insurance coverage significantly enhances perceived access to medicines among insured patients. Affordability is the strongest determinant of patient satisfaction, followed by administrative efficiency and access to the pharmacy network. Availability and timeliness also contribute positively, though to a comparatively lesser extent. The regression model demonstrates that pharmaceutical insurance benefit structures explain a substantial portion of satisfaction variance, highlighting the central role of benefit design in shaping patient experience.

Limitations

The cross-sectional design limits causal inference, as associations are observed at a single point in time (Setia, 2016). Self-reported measures may introduce response bias, particularly in satisfaction ratings. The study focuses on tertiary healthcare settings, which may not fully represent primary care or rural insurance experiences. Additionally, the analysis does not incorporate longitudinal health outcomes or objective adherence data, which could provide deeper insight into the long-term impact of pharmaceutical insurance benefits.

Suggestions

Future studies may adopt longitudinal designs to assess changes in satisfaction and access over time following policy reforms. Incorporating objective prescription refill data and claims databases would strengthen evidence on adherence and actual medicine utilization. Comparative studies across different Indian states or insurance models may also provide broader policy insight. Further qualitative exploration could help understand patient expectations and administrative pain points beyond quantitative indices.

Policymakers might embed digital claim portals in MAAY to slash processing to 48 hours, mirroring Ayushman Bharat's app successes, while mandating 90% formulary stock in networks via vendor penalties (World Health Organization, 2026). Pharma firms could co-develop generics tailored to insurance lists, boosting availability by 25% as in Jan Aushadhi models.

Recommendations

Policy reforms should prioritize sustained reduction in out-of-pocket costs for essential medicines, particularly for chronic disease management. Streamlining claim processing systems through digital integration and real-time approvals can further enhance satisfaction. Expanding and strengthening pharmacy networks, especially in semi-urban areas, would address access gaps. Insurance administrators should periodically review formulary breadth to ensure alignment with evolving clinical needs. Transparent communication regarding coverage limits and reimbursement procedures is essential to maintain trust in publicly funded schemes.

Conclusion

This study demonstrates that pharmaceutical insurance benefits play a decisive role in improving access to medicines and enhancing patient satisfaction in Rajasthan's tertiary healthcare environment. Affordability remains the strongest driver of satisfaction, but administrative efficiency and the strength of the pharmacy network significantly amplify its impact. Effective pharmaceutical insurance design must therefore integrate financial protection with streamlined service delivery. By aligning benefit structures with patient-centered access principles, policymakers can strengthen health system responsiveness while advancing equitable access to medicine. Pharmaceutical insurance emerges as a potent lever for access to medicine and patient satisfaction in Rajasthan, with affordability steering outcomes amid the promise of operational tweaks. By honing benefit scope and efficiency, India can fortify universal coverage, curb inequities, and elevate care equity (Shure et al., 2023). These insights urge swift refinements to sustain gains in patient-centered pharma policy.

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