



Review Article

Online Pharmacy in India Current Landscape, Opportunities, Challenges, and Future Perspectives

Sabir Ahmed¹, Sujai Sharma²

¹⁻² Anurag Pharmacy College, Kodad, TS

ABSTRACT:

The rapid digital transformation of India's healthcare system has significantly influenced pharmaceutical service delivery through online pharmacies (e-pharmacies). These platforms provide convenient access to medicines, healthcare products, teleconsultation services, prescription management, and home delivery. The COVID-19 pandemic accelerated the adoption of online pharmacies, making them an integral component of healthcare accessibility, particularly in urban and semi-urban regions. Despite their growing popularity, concerns regarding regulatory compliance, counterfeit medicines, prescription verification, patient privacy, and irrational drug use remain major challenges. The absence of a dedicated legal framework specifically governing e-pharmacies has further complicated their operation. This review discusses the evolution of online pharmacies in India, regulatory aspects, market trends, advantages, challenges, ethical considerations, technological innovations, and future prospects. The article also highlights policy recommendations necessary to ensure safe, affordable, and accessible pharmaceutical services in the digital era.

Keywords: Online pharmacy, E-pharmacy, Digital health, Telemedicine, Drug regulation, India, Pharmaceutical care, Healthcare technology

INTRODUCTION

Healthcare delivery is rapidly shifting from conventional hospital-based services toward digitally integrated healthcare systems. Among these advancements, online pharmacies have emerged as one of the most transformative innovations in pharmaceutical care.

An online pharmacy, commonly referred to as an e-pharmacy, enables patients to purchase prescription and non-prescription medicines through internet-based platforms. Customers can upload prescriptions electronically, receive pharmacist verification, make digital payments, and obtain medicines through home delivery.

India has witnessed remarkable growth in internet penetration, smartphone usage, digital payments, and telemedicine adoption. Government initiatives such as Digital India, Ayushman Bharat Digital Mission (ABDM), and increasing awareness regarding digital healthcare have accelerated the expansion of online pharmacy services.

The COVID-19 pandemic served as a catalyst for the online pharmacy industry by encouraging contactless healthcare delivery while maintaining

continuity of treatment for patients with chronic illnesses.

Although online pharmacies offer numerous benefits including improved accessibility, affordability, and convenience, several concerns continue to challenge policymakers and healthcare professionals. These include illegal sale of prescription medicines, counterfeit drugs, misuse of antibiotics, cybersecurity issues, and inadequate regulatory oversight.

This review provides a comprehensive overview of the online pharmacy ecosystem in India.

EVOLUTION OF ONLINE PHARMACY IN INDIA

The Indian online pharmacy market began expanding around 2015 with the emergence of technology-driven healthcare startups. Initially concentrated in metropolitan cities, these platforms gradually expanded nationwide.

Major factors contributing to market growth include:

- Increasing internet penetration
- Affordable smartphones

Corresponding author: Sabir Ahmed

Received: 15 April 2026; **Accepted:** 19 April 2026; **Published:** 24 April 2026

Copyright © 2026 The Author(s): This work is licensed under a Creative Commons Attribution- Non-Commercial-No Derivatives 4.0 (CC BY-NC-ND 4.0) International License

- Digital payment systems
- Growth of chronic diseases
- Busy urban lifestyles
- Home healthcare demand
- COVID-19 pandemic
- Telemedicine integration

Several organized e-pharmacy platforms now provide nationwide medicine delivery alongside laboratory booking, doctor consultations, wellness products, and health management services.

TYPES OF ONLINE PHARMACY SERVICES

Online pharmacies in India generally provide:

1. Prescription Medicine Delivery

Patients upload prescriptions, which are verified before dispensing medicines.

2. Over-the-Counter (OTC) Medicines

Consumers purchase commonly used medicines without prescriptions.

3. Healthcare Products

Including:

- Nutritional supplements
- Personal care products
- Medical devices
- Baby care products
- Diabetic supplies

4. Telemedicine Integration

Many platforms offer:

- Online doctor consultation
- Electronic prescriptions
- Follow-up care
- Health records

5. Diagnostic Services

Booking laboratory investigations with home sample collection.

Current Market Scenario in India

India has become one of the fastest-growing digital healthcare markets globally.

Factors driving market expansion include:

- Growing middle-class population
- Rising chronic disease burden
- Improved logistics
- Digital prescriptions
- Artificial intelligence integration
- Increased healthcare awareness

Major service providers have expanded operations to thousands of cities, improving access to medicines in underserved regions.

BENEFITS OF ONLINE PHARMACY

Improved Accessibility

Patients in remote locations gain access to essential medicines without traveling long distances.

Convenience

Medicines can be ordered anytime using smartphones or computers.

Better Medication Adherence

Automatic refill reminders improve compliance among patients with chronic diseases.

Cost Savings

Online pharmacies frequently offer:

- Discounts
- Promotional offers
- Generic medicine alternatives

Reduced Healthcare Burden

Home delivery decreases hospital crowding and minimizes unnecessary pharmacy visits.

Digital Prescription Management

Electronic prescription storage improves continuity of care.

CHALLENGES AND LIMITATIONS

Regulatory Uncertainty

India currently lacks exclusive legislation dedicated to online pharmacies.

Counterfeit Medicines

Illegal websites may distribute:

- Fake medicines
- Substandard products
- Expired medicines

Prescription Misuse

Some platforms inadequately verify prescriptions before dispensing medicines.

Antibiotic Misuse

Easy online availability may contribute to antimicrobial resistance.

Data Privacy

Patient information stored online remains vulnerable to cybersecurity threats.

Rural Connectivity

Limited internet access continues to restrict rural adoption.

Delivery Constraints

Cold-chain medicines require specialized transportation.

Regulatory Framework in India

Several existing legislations indirectly regulate online pharmacy operations.

Drugs and Cosmetics Act, 1940

Regulates manufacture, sale, and distribution of medicines.

Drugs and Cosmetics Rules, 1945

Provide licensing requirements for pharmacies.

Pharmacy Act, 1948

Ensures dispensing by registered pharmacists.

Information Technology Act, 2000

Addresses electronic transactions and cybersecurity.

Telemedicine Practice Guidelines (2020)

Permit registered medical practitioners to provide teleconsultations.

Consumer Protection Act, 2019

Protects consumers against unfair trade practices.

Although draft e-pharmacy regulations have been proposed, comprehensive implementation remains pending.

Role During Covid-19 Pandemic

During the COVID-19 pandemic, online pharmacies played a critical role by:

- Ensuring uninterrupted medicine supply
- Supporting home isolation
- Reducing hospital visits
- Providing teleconsultation
- Delivering essential healthcare products
- Facilitating chronic disease management

The pandemic significantly increased public trust in digital healthcare services.

Technological Innovations

Emerging technologies are transforming online pharmacy operations.

Artificial Intelligence

Used for:

- Personalized recommendations
- Inventory prediction

Ethical standards should prioritize patient safety over commercial interests.

- Prescription validation
- Customer support

Big Data Analytics

Improves:

- Demand forecasting
- Pharmacovigilance
- Patient behavior analysis

Blockchain

Potential applications include:

- Drug traceability
- Anti-counterfeiting
- Supply chain transparency

Internet of Things (IoT)

Supports:

- Cold-chain monitoring
- Smart medicine storage
- Real-time logistics

Ethical Issues

Major ethical concerns include:

- Sale without valid prescriptions
- Self-medication
- Inappropriate medicine advertising
- Privacy breaches
- Lack of pharmacist counseling
- Promotion of irrational drug use

SWOT Analysis

Strengths	Weaknesses
Convenience	Regulatory gaps
Cost savings	Counterfeit risk
Home delivery	Limited pharmacist interaction
Better accessibility	Prescription misuse
Opportunities	Threats
AI integration	Cybersecurity attacks
Rural expansion	Illegal websites
Digital health ecosystem	Antibiotic resistance
Electronic health records	Regulatory uncertainty

FUTURE PERSPECTIVES

The future of online pharmacies in India appears promising.

Expected developments include:

- National e-pharmacy regulations
- Integration with Ayushman Bharat Digital Mission
- Artificial intelligence-based prescription review
- Blockchain-enabled medicine tracking

- Electronic health records integration
- Drone medicine delivery
- Personalized pharmaceutical care
- Expansion into rural healthcare

Government support combined with technological innovation can establish online pharmacies as an essential component of India's healthcare system.

RECOMMENDATIONS

1. Establish dedicated e-pharmacy legislation.
2. Strengthen prescription verification systems.
3. Improve pharmacist involvement in patient counseling.
4. Implement robust cybersecurity measures.
5. Enhance public awareness regarding safe online medicine purchasing.
6. Encourage adoption of authenticated digital prescriptions.
7. Strengthen pharmacovigilance reporting.
8. Promote rational use of medicines through digital education.

CONCLUSION

Online pharmacies have transformed medicine accessibility in India by combining healthcare delivery with digital technology. Their role has become increasingly significant in improving convenience, reducing healthcare costs, and enhancing access to medicines, particularly following the COVID-19 pandemic. However,

regulatory ambiguities, counterfeit medicines, cybersecurity concerns, and irrational medicine use continue to pose substantial challenges. Establishing a comprehensive regulatory framework, strengthening prescription verification mechanisms, and integrating emerging technologies such as artificial intelligence and blockchain can enhance the safety and efficiency of e-pharmacy services. With appropriate governance and stakeholder collaboration, online pharmacies are expected to become a cornerstone of India's evolving digital healthcare ecosystem.

Conflict of Interest: The authors declare no conflict of interest.

Funding: No external funding was received for this study.

Author Contributions: All authors contributed equally to the conception, literature review, drafting, and final approval of the manuscript.

Ethical Approval: Not applicable.

REFERENCES:

1. Ministry of Health and Family Welfare. Drugs and Cosmetics Act, 1940. Government of India.
2. Ministry of Health and Family Welfare. Drugs and Cosmetics Rules, 1945. Government of India.
3. Pharmacy Council of India. Pharmacy Act, 1948.
4. Ministry of Electronics and Information Technology. Information Technology Act, 2000.
5. Board of Governors in supersession of Medical Council of India. Telemedicine Practice Guidelines. New Delhi; 2020.
6. Central Drugs Standard Control Organization. Guidance Documents for Online Sale of Medicines. New Delhi.
7. NITI Aayog. Strategy for New India @75. Government of India.
8. World Health Organization. WHO guideline on the quality, safety and efficacy of digital health interventions. Geneva: WHO; 2021.
9. World Health Organization. Global Strategy on Digital Health 2020–2025. Geneva: WHO; 2021.
10. International Pharmaceutical Federation (FIP). Digital Health in Pharmacy Education. The Hague: FIP; 2022.
11. OECD. Health at a Glance 2023: OECD Indicators. Paris: OECD Publishing; 2023.
12. Kesharwani P, et al. E-pharmacy in India: A review of opportunities and challenges. *Int J Pharm Pract.* 2022;30(5):425–433.
13. Gupta R, Sharma A. Online pharmacy services in India: Regulatory and ethical perspectives. *J Pharm Policy Pract.* 2023;16:45.
14. Singh H, Kumar P. Digital transformation of pharmaceutical services in India. *Indian J Public Health.* 2022;66(4):421–428.
15. World Health Organization. Antimicrobial resistance: Global action plan. Geneva: WHO; 2015.