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Attitudinal Insights On Online Pharmacies: The Role Of Demographic Factors

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Abstract

The growth of India's e-pharmacy sector has transformed consumer access to healthcare products, yet adoption patterns vary across demographics. This study examines the influence of demographic variables—age, gender, education, occupation, marital status, income, and city of residence—on consumer attitudes toward online pharmacies in Gujarat's four major cities: Ahmedabad, Surat, Vadodara, and Rajkot. A structured questionnaire was administered to 1,480 respondents, yielding 1,443 valid responses analyzed using ANOVA and t-tests to identify significant variations in attitudes. Results indicate that city, age, marital status, education, occupation, and income significantly shape consumer attitudes, while gender does not have a statistically significant effect. The findings reveal that younger, educated, and working-age consumers demonstrate stronger acceptance of e-pharmacy services, with students, service professionals, and housewives emerging as major user segments. Middle- and lower-income groups exhibit high adoption, highlighting affordability as a key driver. The study underscores the increasing role of digital healthcare platforms in urban India, emphasizing the need for targeted strategies to improve trust, accessibility, and regulatory oversight. These insights can help policymakers and e-pharmacy providers design customer-centric initiatives to expand market penetration and bridge healthcare accessibility gaps.

Keywords: Online Pharmacy, Consumer Attitudes, Demographic Factors, Digital Healthcare, Urban Consumers.

1. Introduction

The advent of e-commerce has transformed healthcare delivery globally, with e-pharmacies emerging as a critical component of digital health ecosystems (Grewal et al., 2021). E-pharmacies offer consumers convenience, affordability, and privacy in accessing prescription and over-the-counter medications, thus addressing systemic gaps in healthcare accessibility, particularly in emerging economies (Gupta & Nayyar, 2020). In India, the exponential growth of internet penetration, rising smartphone adoption, and increasing health awareness have catalyzed the expansion of online pharmacy platforms (Kumar & Dhanaraj, 2022).

According to a report by the Indian Brand Equity Foundation (2023), India's e-pharmacy market is projected to reach USD 4.5 billion by 2025, supported by favorable government initiatives such as the Digital India program and the draft e-pharmacy rules introduced by the Central Drugs Standard Control Organization (CDSCO).

Despite the sector's rapid growth, consumer adoption of e-pharmacy services remains uneven, with demographic factors playing a critical role in shaping attitudes and behavioral intentions (Yadav & Mahara, 2020). Prior studies have identified age, education, and occupation as determinants of consumer trust and willingness to adopt health technology platforms (Rahman et al., 2022). However, limited research has focused on demographic heterogeneity in the Indian context, particularly across Tier I and Tier II cities, which represent diverse cultural and socioeconomic dynamics (Mitra & Choudhury, 2021).

This study addresses this gap by examining the influence of demographic variables—age, gender, education, occupation, marital status, income, and city of residence—on consumer attitudes toward e-pharmacy platforms in four major cities of Gujarat. By employing robust statistical analysis (ANOVA, t-tests, and Tukey's HSD), this research contributes empirical evidence on demographic segmentation and consumer behavior in India's digital healthcare sector. Insights from this study will inform policymakers, healthcare practitioners, and platform providers to develop consumer-centric strategies, enhance trust, and expand equitable access to pharmaceutical services through digital channels.

2. Literature Review

The evolution of e-pharmacies has been driven by advancements in digital technology, increasing health awareness, and the growing need for convenience in pharmaceutical service delivery. Globally, studies have emphasized the role of digital platforms in enhancing healthcare accessibility, especially in regions with limited physical infrastructure (Almeman, 2024; FIP, 2021). In India, the e-pharmacy sector has emerged as a fast-growing segment of healthcare e-commerce, supported by increasing internet penetration and government-led digital health initiatives (Apte, 2024; KPMG & FICCI, 2022). However, adoption remains influenced by consumers' demographic, psychological, and behavioral factors.

Several studies highlight the critical role of demographics in shaping consumer attitudes toward e-pharmacies. Phogat and D. V. (2020) demonstrated that younger, tech-savvy consumers and urban residents are more likely to adopt online pharmacy services due to convenience, cost savings, and home delivery benefits. Similarly, Agarwal and Bhardwaj (2020) found that working professionals prefer e-pharmacies for their time efficiency, though concerns around product authenticity and data security remain barriers to adoption. These findings align with Srivastava and Raina (2021), who reported that urban consumers perceive e-pharmacies as affordable alternatives but remain cautious due to limited pharmacist-patient interaction and weak regulatory oversight.

Demographic segmentation has been studied further by Mandalik and Pande (2022), who showed that age and income significantly influence platform choice, with brands like 1mg and Netmeds dominating consumer preferences. Likewise, Nair and Middha (2019) found that awareness of e-pharmacy benefits is high among young adults, yet adoption is limited due to safety concerns. These results indicate that although consumer familiarity with digital platforms is increasing, the interplay between demographics and trust factors continues to shape adoption trajectories.

International studies support these findings, highlighting the role of robust regulatory frameworks and transparent supply chains in fostering consumer confidence (Satheesh et al., 2025; D'Cruz, 2022). Global research also suggests that integrating user-friendly design, strong brand presence, and verified pharmaceutical sourcing can significantly increase adoption rates (Frost & Sullivan, 2019). Collectively, literature underscores that while e-pharmacies are gaining momentum in emerging economies, their long-

term success hinges on balancing affordability and accessibility with stringent quality control, trust-building mechanisms, and demographic inclusivity.

3. Research Methodology

Research Design

This study adopts a cross-sectional, quantitative research design to investigate the influence of demographic factors on consumer attitudes toward online pharmacies in Gujarat's four major cities: Ahmedabad, Surat, Vadodara, and Rajkot. Cross-sectional studies are particularly suitable for understanding behavioral patterns and associations among variables at a single point in time (Malhotra, 2007). The research employed a structured, non-disguised questionnaire to collect primary data, ensuring alignment with predefined objectives and facilitating statistical analysis of demographic segmentation.

Sampling Framework and Design

The target population consisted of active online pharmacy users across the four selected cities, representing diverse demographic and socioeconomic groups. A stratified random sampling approach with proportional allocation was adopted to ensure representativeness. Population data for proportional stratification were drawn from *Population Stat* (2020), while online pharmacy penetration rates were sourced from *Ken Research* (2020).

Using Malhotra's (2007) sample size determination formula, the total sample was calculated at 370 respondents per city, resulting in a total of 1,480 respondents. Valid responses after screening were 1,443 (97.5%). The study sample was drawn from four major cities of Gujarat—Ahmedabad, Surat, Vadodara, and Rajkot—using proportional allocation based on estimated online pharmacy penetration rates. Ahmedabad contributed 617 responses, of which 598 were valid, while Surat provided 543 responses, with 530 valid entries. Vadodara and Rajkot contributed 172 and 148 responses, respectively, resulting in 172 and 143 valid entries. Overall, the survey collected 1,480 responses, of which 1,443 were valid, achieving a 97.5% response validity rate. This sampling approach ensured balanced representation from all four cities, accurately reflecting regional variations in e-pharmacy adoption.

Instrumentation and Data Collection

Table-1 Profile Summary of Respondents

Category	Frequency	Percentage (%)
City of Residence		
Ahmedabad	598	41.4
Surat	530	36.8
Vadodara	172	11.9
Rajkot	143	9.9
Gender		
Male	810	56.1
Female	633	43.9
Transgender	0	0
Age Group		
Below 30	593	41.2
30-50	502	34.8
51-60	296	20.4
Above 60	52	3.6
Marital Status		

Category	Frequency	Percentage (%)
Married	1132	78.4
Unmarried	311	21.6
Other	0	0
Education		
SSC	3	0.2
HSC	2	0.1
Diploma	51	3.5
Graduate	885	61.3
Post Graduate	500	34.7
Professional Degree	0	0
PhD	2	0.1
Occupation		
Business	285	19.8
Self-Employed	1	0.1
Housewife	343	23.8
Student	309	21.4
Service	502	34.8
Unemployed/Other	3	0.2
Monthly Income		
Below Rs. 50,000	655	45.4
Rs. 50,000 - Rs. 100,000	503	34.9
Above Rs. 100,000	285	19.8

The survey instrument consisted of demographic items (age, gender, marital status, education, occupation, income, and city of residence) and attitudinal measures assessing perceptions of e-pharmacy services. A five-point Likert scale (1 = Strongly Disagree to 5 = Strongly Agree) was used to capture attitudinal responses. The questionnaire was distributed via Google Forms and in-person data collection between November 2023 and February 2024, targeting both frequent and occasional e-pharmacy users to capture varied experiences.

A pilot test (n = 50) confirmed instrument reliability, achieving a Cronbach's alpha of 0.87, exceeding the 0.70 threshold recommended for scale reliability (Nunnally & Bernstein, 1994).

H₀₁: There is no significant difference in consumer attitudes toward online pharmacy services across demographic factors, including age, gender, education, occupation, marital status, income, and city of residence.

Analytical Techniques

Data were processed using SPSS for descriptive and inferential analysis. Frequencies and percentages were used to profile respondents. The impact of demographic factors on attitudes was tested using:

1. One-Way ANOVA with Tukey's HSD post-hoc tests for multigroup comparisons (city, age, education, occupation, income).
2. Independent Samples t-tests for binary group comparisons (gender, marital status).
3. Significance testing at $\alpha = 0.05$ to identify statistically meaningful differences.

These techniques are widely recommended for analyzing categorical demographic variables and their influence on attitudinal constructs (Hair et al., 2019).

Ethical Considerations

Participation was voluntary, and informed consent was obtained from all respondents. No personally identifiable information was collected, ensuring compliance with ethical research standards in social science studies (Creswell & Creswell, 2018).

4. Findings and Discussion

The sample (n=1,443) represents online pharmacy users across Gujarat's four major cities, with Ahmedabad (41.4%) and Surat (36.8%) contributing the largest share, reflecting higher internet penetration and population density in these cities. Gender distribution was slightly male-dominated (56.1%), while age data indicated that **76% of respondents were below 50 years**, signaling that younger and middle-aged consumers constitute the primary user base of e-pharmacy platforms. A substantial proportion of respondents were married (78.4%), well-educated (96% graduates or postgraduates), and employed in service sectors (34.8%), with housewives (23.8%) and students (21.4%) also emerging as prominent user groups. Income segmentation revealed that **80.3% of users earned below ₹100,000 per month**, suggesting that e-pharmacies cater widely to middle-income segments seeking affordability and convenience.

Hypothesis Testing: Impact of Demographics on Consumer Attitudes

Table-2 Summary of Hypothesis Testing Results

Demographic Variable	Test Used	Statistic (F/t)	p-value	Significance	Key Insight
City of Residence	ANOVA + Tukey's HSD	F(3,1439)=11.25	<0.001	Significant	Surat users showed more favorable attitudes than Vadodara and Rajkot.
Age	ANOVA + Tukey's HSD	F(3,1439)=4.64	0.003	Significant	Highest acceptance among <30 and 51–60 age groups.
Marital Status	Independent t-test	t=-3.82	<0.001	Significant	Married users demonstrated stronger trust and adoption.
Education	ANOVA + Tukey's HSD	F(5,1437)=2.84	0.015	Significant	Overall differences exist, but no strong pairwise contrasts.
Occupation	ANOVA + Tukey's HSD	F(5,1437)=8.21	<0.001	Significant	Students and housewives showed high preference; business users were skeptical.
Income	ANOVA + Tukey's HSD	F(2,1440)=21.03	<0.001	Significant	Middle- and lower-income groups drive adoption.
Gender	Independent t-test	t=0.62	0.54	Not Significant	Gender does not influence e-pharmacy attitudes.

This study tested whether consumer attitudes toward online pharmacy services significantly vary across demographic factors, including city of residence, age, gender, marital status, education, occupation, and income. Using one-way ANOVA, Tukey's HSD post-hoc tests, and independent samples t-tests, the analysis confirmed that most demographic variables significantly influence perceptions of e-pharmacy services, while gender does not.

City of Residence:

Attitudes toward online pharmacies varied significantly across cities (F(3,1439)=11.25, p<0.001). Post-hoc tests revealed that respondents from Surat expressed more favorable perceptions than those from Vadodara and Rajkot, reflecting higher technology adoption and digital literacy in larger urban centers (Mitra & Choudhury, 2021).

Age:

Age significantly influenced perceptions ($F(3,1439)=4.64$, $p=0.003$). Younger respondents (<30 years) and those aged 51–60 reported stronger acceptance, illustrating a dual adoption trend: younger consumers embrace technology, while older consumers adopt e-pharmacies out of medical necessity (Srivastava & Raina, 2021).

Gender:

No statistically significant differences were observed ($p=0.54$), suggesting gender parity in digital health adoption, consistent with prior findings that technology access is increasingly democratized in India (Agarwal & Bhardwaj, 2020).

Marital Status:

Significant differences emerged based on marital status ($t=-3.82$, $p<0.001$). Married consumers demonstrated higher trust and reliance on e-pharmacies, likely due to family-oriented purchasing behaviors and the need for household health management.

Education:

Education showed a statistically significant effect ($F(5,1437)=2.84$, $p=0.015$), but post-hoc tests found no strong pairwise contrasts. This indicates broad adoption across educational levels, though digital literacy continues to act as a facilitator (Nair & Middha, 2019).

Occupation:

Occupation was a significant differentiator ($F(5,1437)=8.21$, $p<0.001$). Students and housewives demonstrated high adoption levels, likely driven by convenience and flexible ordering, whereas business professionals expressed comparatively lower trust in e-pharmacy services.

Income:

Income significantly shaped attitudes ($F(2,1440)=21.03$, $p<0.001$). Low- and middle-income groups exhibited higher adoption, likely due to the affordability of e-pharmacy platforms and the prevalence of discounts (Mandalik & Pande, 2022).

Overall, the null hypothesis was rejected, confirming that city of residence, age, marital status, education, occupation, and income significantly influence consumer attitudes toward online pharmacies, while gender does not. These findings underscore the importance of demographic segmentation for e-pharmacy platforms to enhance adoption and design targeted engagement strategies.

5. Interpretation and Implications

Findings demonstrate that attitudes toward e-pharmacy services are strongly shaped by socioeconomic and geographic factors. Younger consumers, educated individuals, and households with moderate income levels constitute the most active users, suggesting that online pharmacies bridge affordability gaps in urban healthcare access. The minimal gender disparity highlights technology's role in democratizing healthcare choices, aligning with global trends of increasing inclusivity in digital health adoption (FIP, 2021; Almeman, 2024).

Interestingly, high engagement among housewives and students points to untapped opportunities for targeted marketing campaigns and user education initiatives. The positive perceptions in metropolitan cities reinforce the need for localized outreach strategies in smaller cities like Vadodara and Rajkot, where skepticism persists.

Regulatory uncertainties remain a concern, as noted in prior literature (Satheesh et al., 2025; D'Cruz, 2022). Addressing these issues through transparent operations, pharmacist-led consultations, and robust data privacy safeguards can strengthen consumer trust and expand adoption. This research contributes to

understanding demographic segmentation in India's digital health ecosystem, offering actionable insights for e-pharmacy providers and policymakers to design equitable and consumer-centric healthcare delivery systems.

6. Conclusion

This study provides empirical evidence on the demographic determinants of consumer attitudes toward e-pharmacy adoption in Gujarat's major urban centers, offering insights into the evolving landscape of India's digital healthcare ecosystem. The findings demonstrate that city of residence, age, marital status, education, occupation, and income significantly influence attitudes, while gender is not a differentiating factor, reflecting a growing gender-neutral adoption of technology-enabled health services. The results highlight that younger and working-age consumers, students, and housewives represent core user segments, while affordability-driven adoption is particularly strong among middle- and lower-income households.

The findings underscore the increasing trust and reliance on online pharmacies as an alternative to traditional retail pharmacies, particularly in metropolitan cities with higher digital penetration. However, disparities in attitudes across smaller cities point to the need for region-specific strategies to improve awareness and adoption. Furthermore, the lack of significant gender-based differences illustrates the democratization of access to healthcare services through digital platforms, aligning with global research emphasizing inclusivity in health technology adoption.

For policymakers, these results emphasize the importance of clear regulatory frameworks, standardized quality assurance protocols, and stronger pharmacist oversight to build consumer trust. For e-pharmacy platforms, opportunities lie in targeted marketing campaigns, user education initiatives, and loyalty-building programs that cater to diverse demographic groups.

While the study's cross-sectional design offers valuable insights, future research could adopt longitudinal methods to examine evolving consumer preferences and the long-term impact of regulatory reforms on adoption patterns. Expanding this research beyond Gujarat to rural and semi-urban regions would further enhance understanding of e-pharmacy adoption dynamics in India's diverse healthcare landscape.

7. References

- Agarwal, S., & Bhardwaj, G. (2020). Consumer buying behaviour toward online pharmacies in Delhi NCR: An empirical study. *International Journal of Management*, 11(12), 45–56.
- Almeman, A. (2024). The digital transformation in pharmacy: Embracing online platforms, telepharmacy, and regulatory challenges. *Journal of Digital Healthcare*. <https://doi.org/10.1097/DH2024>
- Apte, A. (2024). Facilitators, barriers, and potential impacts of implementation of e-pharmacy in India. *Journal of Medical Internet Research: Public Health and Surveillance*. <https://doi.org/10.2196/51080>
- Creswell, J. W., & Creswell, J. D. (2018). *Research design: Qualitative, quantitative, and mixed methods approaches* (5th ed.). Sage Publications.
- D'Cruz, A. C. (2022). The rise of e-pharmacy in India: Benefits, challenges, and growth trends. *International Journal of Pharmaceutical and Health Research*.
- FIP (International Pharmaceutical Federation). (2021). *Online pharmacy operations and distribution of medicines: A global survey of member organisations*. Retrieved from <https://www.fip.org>

- Frost & Sullivan. (2019). *Outlook on e-pharmacy market in India*. Retrieved from <https://www.frost.com>
- Grewal, D., Hulland, J., Kopalle, P. K., & Karahanna, E. (2021). The future of technology and marketing: A multidisciplinary perspective. *Journal of the Academy of Marketing Science*, 49(4), 659–678. <https://doi.org/10.1007/s11747-021-00773-2>
- Gupta, R., & Nayyar, A. (2020). The growth of e-pharmacy in India: An analysis. *International Journal of Pharmaceutical Sciences and Research*, 11(12), 5974–5980.
- Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2019). *Multivariate data analysis* (8th ed.). Cengage Learning.
- Indian Brand Equity Foundation. (2023). *Healthcare industry in India*. Retrieved from <https://www.ibef.org>
- Ken Research. (2020). *India e-pharmacy market outlook to 2025*. Retrieved from <https://www.kenresearch.com>
- KPMG & FICCI. (2022). *India's e-pharmacy to grow at 45% annualised rate*. Moneycontrol.
- Kumar, P., & Dhanaraj, S. (2022). E-pharmacy adoption in India: Opportunities and challenges. *Journal of Health Management*, 24(3), 439–454.
- Malhotra, N. K. (2007). *Marketing research: An applied orientation* (6th ed.). Pearson Education.
- Mandalik, D., & Pande, V. (2022). Influence of demographic factors on the purchase of medicines from online pharmacies: An empirical analysis. *Journal of Business and Management Studies*, 4(2), 23–35.
- Mitra, S., & Choudhury, S. (2021). Consumer behavior in emerging markets: A review and research agenda. *Journal of Consumer Marketing*, 38(7), 687–699.
- Nair, S. P., & Middha, A. (2019). Knowledge, perceptions, and practices of young adults toward online pharmacies in India. *International Journal of Pharmaceutical Research*, 11(3), 78–86.
- Nunnally, J. C., & Bernstein, I. H. (1994). *Psychometric theory* (3rd ed.). McGraw-Hill.
- Phogat, S. K., & D. V. (2020). Factors influencing consumer behaviour in purchasing medicines from online stores: An empirical study. *International Journal of Advanced Science and Technology*, 29(5), 1684–1696.
- Population Stat. (2020). *Population of Indian cities*. Retrieved from <https://populationstat.com>
- Rahman, M. S., Akter, S., & Hossain, M. S. (2022). Factors influencing consumer acceptance of healthcare technology: Evidence from developing countries. *Technological Forecasting and Social Change*, 178, 121573.
- Satheesh, G., Masibo, S., Tiruttani, S. K., Khayoni, I., Palafox, B., Nambiar, D., & Joseph, J. (2025). The good, the bad, and the ugly: Compliance of e-pharmacies serving India and Kenya with regulatory requirements and best practices. *PLOS Global Public Health*, 5(2), e0004202. <https://doi.org/10.1371/journal.pgph.0004202>
- Srivastava, M., & Raina, M. (2021). Consumer adoption and usage of online pharmacies in India: Drivers and barriers. *International Journal of Pharmaceutical and Healthcare Marketing*, 15(3), 389–406.
- Yadav, R., & Mahara, T. (2020). Factors affecting online pharmacy adoption: Evidence from India. *International Journal of Pharmaceutical and Healthcare Marketing*, 14(3), 349–364.