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Innovative Digital Marketing Approaches for Promoting Generic Drug Via Social Media and E-Pharmacy Platform

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ABSTRACT

Generic medicines are central to affordable healthcare in India under PMBJP. Objective: To systematically evaluate evidence Jan 2020 - Oct 2026 on regulation-compliant digital marketing for generic medicines via social media and e-pharmacy. Methods in Systematic review following PRISMA 2020. Searched PubMed, Scopus, Google Scholar, CDSCO, MoHFW, PMBJP. 29 sources included. No primary survey. Results showed No direct numerical evidence on social media promotion of generics. Indirect evidence: e-pharmacy awareness 83.2% (268/322) but 81% (217/268) prefer offline; only 37.7% know trustworthy websites; 59.03% (98/166) open to both branded and generic online. Generic awareness 33.6% (116/345) in primary-care OPD, Patan vs 78.6% (422/537) online pan-India. Acceptance: 12.9% (15/116) used generics in last 6 months, 49.7% willing to use. Trust in social media health info only 29.7%. Physician meeting preference: traditional 34% (17/50), digital 28% (14/50), hybrid 32% (16/50); 54% (27/50) not comfortable with complete digital shift. In conclusion direct evidence is absent - critical gap. Educational, unbranded communication on bioequivalence and PMBJP is only permissible pathway under Schedule H and UCPMP 2024.

Key Words: Pharma Digital Marketing, Generic Drugs, Social media and E-Pharmacy, Indian Market.

INTRODUCTION

Social media and online pharmacies are now common ways to find health information and buy medicines. They also give new ways to explain the value of low-cost generic medicines, but the promotion of medicines is strictly controlled in India, so these tools must be used within legal limits.

India is known as the "Pharmacy of the World". It ranks third in the world in medicine production by volume and supplies a large share of generic medicines to countries such as the United States and the United Kingdom. At home, however, patients pay a large part of their health costs themselves: out-of-pocket spending was about 52% of total health spending in 2019–20 [1]. Most medicines in the Indian market are sold as branded generics, which carry company brand names and higher prices. To make quality medicines cheaper, the Government of India launched the Pradhan Mantri Bhartiya Janaushadhi Pariyojana (PMBJP), which sells unbranded generics through special outlets [2]. The main challenge is that many people still prefer expensive brands.

Generic Medicines in India

Branded generics (for example, Ciplox, Augmentin and Glycomet) are sold under company brand names. Medical representatives promote them to doctors, and many people see them as safe and premium. Unbranded generics are sold by their chemical name (for example, Ciprofloxacin Tablets IP), mainly through PMBJP outlets. They have no field marketing and are often 50–90% cheaper, but people may wrongly think that a low price means poor quality. Chemists also earn less on them, so they rarely recommend them.

Generics also differ by legal class. Prescription generics (Schedule H, H1 and X) cannot be advertised to the public, and an e-pharmacy must check a prescription before supplying them [3,4]. Over-the-counter (OTC) medicines, such as some vitamins, painkillers and antacids, have no formal schedule in India. Medicines outside Schedule H, H1 and X are treated as non-prescription and can be marketed through consumer-facing digital channels.

E-Pharmacy in India

E-pharmacies such as Tata 1mg, Netmeds, Apollo 24/7 and PharmEasy let patients compare prices, upload a prescription and receive medicines at home. They still make up only 2–3% of medicine sales in India, mainly in urban areas, and they use discounts and digital marketing widely [source to be added]. Awareness is high: in a Chandigarh survey, 83.2% of 322 people knew about online

pharmacies, with higher awareness among urban participants and males [5].

E-pharmacies also offer features that physical shops rarely provide. Prices of medicines with the same composition can be compared on screen, and after a prescription is uploaded, the screen can suggest cheaper generic alternatives. About 90% of websites already offer prescription upload [source to be added]. However, India has no enacted e-pharmacy rules yet, and in test purchases prescription-only medicines were supplied without a prescription in over one-third of cases [source to be added].

Social Media and Health Communication

Social media platforms such as Instagram, YouTube, Facebook and LinkedIn reach many Indians, and many people use them to look for health information. In a hospital survey in West Bengal, 70.4% of 673 adults had made health decisions based on WhatsApp or Facebook messages, but only 44.7% checked them with a health professional, and 62.4% wanted health messages to include pictures [6].

Infographics and carousels can explain terms such as WHO-GMP and bioequivalence step by step. Short videos in local languages, presented by doctors or pharmacists, may help correct the belief that cheap medicines are of low quality. Search tools and savings calculators can help people who want to cut their monthly medicine costs. Patients in the Andaman and Nicobar Islands also asked to learn more about generics through the media, and the authors recommended using social media for this purpose [7].

Legal Framework

Four sets of rules shape the digital promotion of medicines in India: The Drugs and Cosmetics Act, 1940 and Rules, 1945 control the sale of drugs and require a prescription for Schedule H, H1 and X medicines [3]. The Drugs and Magic Remedies (Objectionable Advertisements) Act, 1954 prohibits advertising prescription medicines to the public and false health claims [4]. The Digital Personal Data Protection Act, 2023 requires consent for handling personal data, including prescription data [8]. The draft e-pharmacy rules issued in 2018 are still not enacted [9]. As a result, campaigns must be unbranded and educational, and e-pharmacy designs need a prescription step before generic alternatives are shown.

Doctors in India were asked to write generic names in prescriptions, but the 2023 regulations were put on hold soon after they were issued [10] [second source to be added]. Many patients still link a low price with low quality, and chemists have little reason to suggest generics. The surveys from 2021 to 2026 find that doubts about quality, doctors' preferences and poor information keep generic use low. The key question is therefore: how can social media and e-pharmacy platforms be used within Indian law to educate people and increase the use of generic medicines. This study addresses that gap. It is based on published Indian evidence from 2020–2026.

METHODOLOGY

To systematically evaluate the evidence on innovative digital marketing approaches for the promotion, awareness, and acceptance of generic medicines through social media and e-pharmacy platforms in India (January 2020 to October 2026), this study adopts a systematic review design with narrative synthesis of secondary data [2].

The first component is a systematic literature search and screening following the PRISMA 2020 guidelines [1]. It covers peer-reviewed studies, official regulatory documents (such as Schedule H provisions and the Drugs and Magic Remedies (Objectionable Advertisements) Act, 1954), and credible research reports. The second component extracts numerical findings exactly as published, together with the sample size, population, setting, year, and outcome measured for each figure. The third component tabulates the extracted data and compares findings across studies using descriptive statistics and narrative synthesis, only where the studies are comparable.

No surveys, interviews, or experiments were conducted by the author. All data are drawn from previously published sources, and every figure is attributed to its original source.

Phase 1 (Research Design and Regulatory Framework): Establishes the systematic review protocol and a regulatory compliance filter. Only evidence on compliant, educational, and unbranded promotion is considered, in line with

Schedule H/H1/X rules, the Drugs and Magic Remedies (Objectionable Advertisements) Act, 1954, and public generic-literacy programmes such as the Pradhan Mantri Bhartiya Janaushadhi Pariyojana (PMBJP).

Phase 2 (Literature Identification and Screening): Searches the selected databases and official portals using the Boolean strategy in Section 3.5 and screens records through the PRISMA stages described in Section 3.6.

Phase 3 (Data Extraction and Quality Appraisal): Extracts each reported numerical finding into the matrix in Section 3.7 with its source, and appraises the methodological quality of the included studies.

Phase 4 (Data Synthesis): Tabulates the extracted findings, calculates descriptive summaries where justified, and synthesises the results narratively under the themes of awareness, trust, acceptance, platform use, regulation, and evidence gaps.

Research Design Comparison

Three research designs were considered against feasibility, time constraints, resource availability, and academic validity. A primary cross-sectional survey was not undertaken because of limited resources. A systematic review with narrative synthesis was selected because it allows transparent and verifiable use of previously published Indian evidence within the academic timeline of a final-year B.Pharm project, while a structured extraction matrix preserves the original findings of each study.

Rigorous inclusion and exclusion criteria reduce selection bias and keep the review focused. Studies and sources are included only if they address the Indian pharmaceutical landscape, digital health promotion, e-pharmacies, or generic drug adoption between January 2020 and October 2026, and report at least one numerical outcome. Studies on patented branded drugs, clinical trial methodology, or non-Indian settings are excluded to preserve contextual relevance.

Database Search Strategy and Boolean Logic

The secondary search integrates international bibliographic databases (PubMed, Scopus, Google Scholar) with official Indian healthcare portals (CDSCO, MoHFW, Department of Pharmaceuticals, and PMBJP). Reference lists of included studies are also checked, and several sources are searched because no single database retrieves all relevant studies [3]. A standardised Boolean expression links four concept groups with the operators AND and OR.

The four groups are combined with AND, for example: ("generic medicine*" OR "generic drug*" OR "Jan Aushadhi") AND ("social media" OR "digital marketing" OR "e-pharmacy" OR "online pharmacy") AND (awareness OR trust OR acceptance OR adoption) AND India. Search strings are adapted to the syntax of each database. The date of each search and the number of records retrieved from each source are reported in the PRISMA concept.

PRISMA Literature Screening Protocol

Literature screening follows the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA 2020) statement [1] in four stages. Identification: records are retrieved from all databases and official portals. Screening: duplicates are removed, and titles and abstracts are screened against the criteria. Eligibility: full texts are assessed for relevance, regulatory compliance, and the presence of numerical outcomes. The reason for every full-text exclusion is recorded. Inclusion: eligible studies enter the data extraction matrix and the synthesis. Screening and extraction are performed by the author, and every extracted figure is cross-checked against the original source document.

Data Extraction and Quality Appraisal

For every included source, the following items are extracted exactly as published: author and year, study location, sample size, study design, outcome measured, the numerical finding (with the numerator and denominator where given). Where a source reports inconsistent figures internally, both values are recorded and the inconsistency is noted. Each source is labelled as direct evidence (specifically about generic medicines) or indirect evidence (about digital healthcare marketing or e-pharmacy in general).

Methodological quality is appraised with the Joanna Briggs Institute (JBI) Critical Appraisal Checklist for Analytical Cross-Sectional Studies [4], and grey literature is flagged as not peer-reviewed [5]. The matrix with the sources identified and read in full during the preliminary

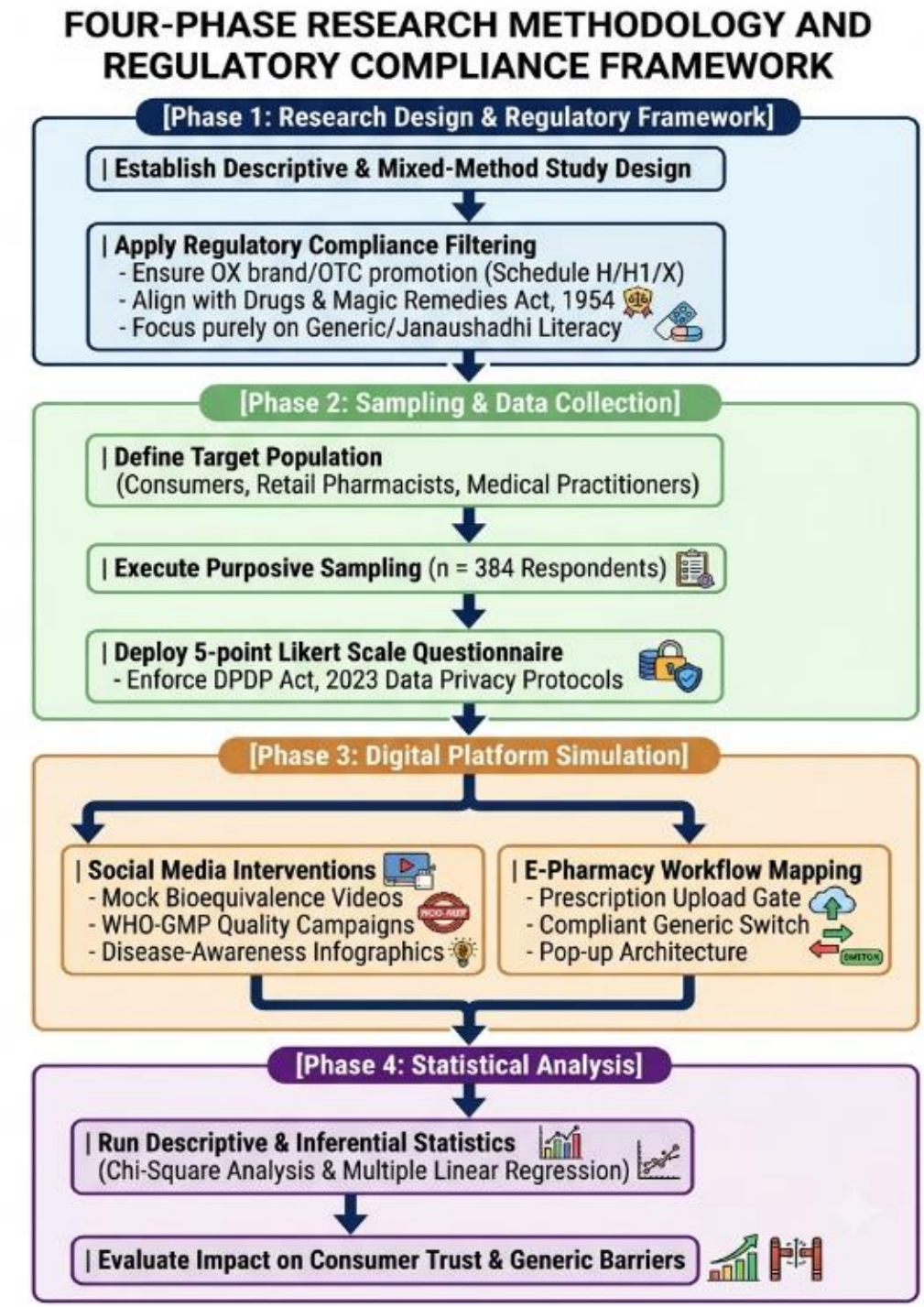


Figure 1:Four-Phase Operational Workflow

Table 1: Comparison of Candidate Research Designs

Evaluation Criterion	Structured Review	Systematic Review with Narrative Synthesis (Selected)	Cross-Sectional Survey
Methodological rigor	Moderate	High (PRISMA-guided, transparent extraction)	High, but dependent on adequate sample and resources
Time and resource feasibility	Feasible	Feasible without primary data collection	Not feasible with the resources available
Regulatory compliance filter	General	Strict (official sources; compliant content only)	Moderate

Data validation source	Secondary literature	Peer-reviewed studies and official sources (CDSCO, MoHFW, PMBJP)	Primary survey data

Table 2: Inclusion and Exclusion Criteria

Parameter	Inclusion Criteria	Exclusion Criteria
Time period	Published between January 1, 2020, and October 31, 2026	Published before January 1, 2020
Geographic scope	Indian healthcare market and Indian populations	Non-Indian regulatory contexts or international markets
Core topic	Digital marketing, social media, e-pharmacies, generic drugs, Jan Aushadhi literacy	Branded patented drugs, clinical trial protocols, direct patented-drug marketing
Population studied	Indian consumers or patients (adults), pharmacists, physicians, medical representatives	Studies on non-Indian populations or with no population description
Source type	Peer-reviewed articles, systematic reviews, government and regulatory publications, credible research reports (labelled as grey literature)	Blogs, news opinion, promotional material, unpublished or non-traceable sources
Outcome reported	At least one numerical outcome on awareness, trust, acceptance, platform use, or cost	No numerical outcome (used for context only, not for extraction)
Regulations	CDSCO, MoHFW, PMBJP, Schedule H/H1/X rules, DPDP Act 2023	Non-compliant direct-to-consumer prescription advertising

search. Published percentages are never altered. Any recalculated value is derived from the original numerator and denominator, and the method is stated. If a pooled proportion is calculated, heterogeneity is assessed with the I^2 statistic [10]. Findings are classified throughout into four categories: (1) published finding, (2) calculated result, (3) interpretation, and (4) evidence gap. Where numerical evidence is unavailable, this is reported as an evidence gap and no figure is estimated. Because the included studies differ in population, sampling, and question wording, awareness and acceptance figures from different studies are compared side by side and explained, and are not combined into a single percentage.

Conceptual Relationship Model

The conceptual framework guides the synthesis. It proposes that educational social media content and e-pharmacy platform features, when they pass a regulatory compliance filter (no direct-to-consumer promotion of Schedule H prescription drugs), may support consumer trust and the adoption of generic medicines. When digital communication focuses on bioequivalence awareness, WHO-GMP quality standards, and unbranded generic substitution, it is expected to relate positively to trust and acceptance. This model describes proposed relationships only; it is not tested statistically in this study, and the review does not claim a causal effect.

Methodological Limitations and Ethical Safeguards

Quality of evidence: the review depends on the quality and reporting of published studies. Most Indian studies are cross-sectional, use convenience samples, and differ in population and question wording. Directness of evidence: direct evidence on digital marketing of generic medicines is limited. Indirect evidence on e-pharmacy and digital healthcare marketing is reported separately and is not presented as proof. Reporting inconsistencies: some source papers contain internal inconsistencies. These are

recorded as published and noted, and are not corrected. Coverage: the search is limited to the listed databases and portals and to publications in the study period, so relevant studies outside these sources may be missed.

RESULTS

The results of the systematic review with narrative synthesis described. No survey or experiment was carried out. Every figure is a published finding, copied as reported. Where a source gives a count (x of n), a Wilson 95% confidence interval was calculated and is labelled as calculated.

Table 3: Source-Data Extraction Matrix

Author, year	Location and sample	Design	Outcome and numerical finding (as published)	Evidence type
Rathi & Biyani, 2021	India (online); n = 537	Cross-sectional web questionnaire	78.6% had heard of generics; 54.8% preferred to buy generics; 22.1% said doctors preferred generics; 63.3% unaware of government rules; 41.7% believed generics should be promoted	Direct (generics)
Charan et al., 2020	Patan, Gujarat; n = 345 patients	Cross-sectional (primary care OPD)	33.6% (116/345) had heard of generics; 12.9% (15/116) used generics in the last 6 months; 81.0% (94/116) never advised to use a generic; 66.7% (28/42) would switch if the doctor recommends. Reported 49.7% willing to use generics, but the paper's table shows 99 yes and 74 no	Direct (generics)
Bansal et al., 2022	India (online and offline); n = 322	Cross-sectional KAP questionnaire	83.2% (268/322) aware of online pharmacy; 81% of those aware (217/268) prefer offline; 37.7% knew trustworthy websites; among 166 answering, 59.03% prefer both branded and generic online, 26.5% branded, 14.45% generic. The text gives 59.3% once; the table gives 59.03%	Partly direct (e-pharmacy and generic preference)
Apte et al., 2024	India; 47 sources included (32 India-focused)	Scoping review (PRISMA-ScR)	No Indian study found comparing the cost-effectiveness of e-pharmacies; draft e-pharmacy rules (2018) state that portals should not advertise in print or digital media; Jan Aushadhi integration with e-pharmacy proposed. Search period ended 2022	Indirect (e-pharmacy; secondary source)
Kumar et al., 2021	Bangalore and Anantapur; 50 physicians, 30 medical representatives	Descriptive questionnaire study	Preferred meeting mode with a medical representative: traditional 34%, digital 28%, hybrid 32%; 54% not comfortable with a complete shift to digital; 96.66% (29/30) of	Indirect (brand detailing; preference only)

			representatives found it difficult to meet doctors. The paper's conclusion gives 38% and 99.66% for two of these figures	

Table 4: Analytical Methods for Published Data

Method	Applied to	Purpose
Tabulation	All extracted findings	Present each published figure with its source, sample, and context
Descriptive summary	Studies measuring the same outcome with similar definitions	Report the range and median of the published percentages
Derived percentage with 95% confidence interval	A figure given as a count (x of n)	Calculate x/n and a Wilson 95% confidence interval [6,7]; labelled as calculated
Pooled proportion (random-effects) [8,9]	Only if at least three studies measure the same outcome in comparable populations	Estimate a pooled value; not performed if these conditions are not met
Narrative synthesis	All remaining evidence	Compare findings by theme and explain differences in setting and method

Table 5: Limitations and Ethical Safeguards

Category	Key Requirement	Implementation
Data privacy	No personal data collected	Only published, aggregated data are used; no individual-level data
Ethical approval	No human participants recruited	The study uses published data only, so no primary data collection or participant consent is involved
Regulatory guardrail	Schedule H and Drugs and Magic Remedies Act compliance	No promotional material for prescription drugs is produced
Evidence limitation	Heterogeneous source studies	Findings are compared narratively; pooling only where justified
Sampling limitation	Source studies are mostly urban, online, or hospital-based	Acknowledged; rural findings are discussed from the available sources

Results are given under four themes (social media, digital marketing, generic drug products and the Indian market), followed by OTC and home medicines. Each theme has five or six sources. Every source appears once, in the theme, under a short ID (S1 to S29), and no source is repeated in another theme. The key words are in pros and cons.

The searches were run on [date] in [PubMed, Scopus, Google Scholar, CDSCO, MoHFW, PMBJP] and retrieved [N] records. After removing [N] duplicates, [N] titles and abstracts were screened and [N] were excluded. Full texts of [N] reports were assessed and [N] were excluded ([reasons with counts]). [N] sources were included in the synthesis.

Social Media

No source gives a numerical outcome on social media promotion of generic medicines. The evidence is indirect: which platforms people use for health information, how far they trust it, and how misinformation spreads.

Trust in health information on social media

Digital Marketing

The evidence on digital marketing comes from the pharmaceutical sector in general, not from generic medicines. S8 and S9 are grey literature (industry reports) and S9 was produced by a digital marketing agency, so it is flagged as promotional.

Generic Drug Products

Awareness and acceptance differ widely between sources. The differences are explained by population and setting (online sample, patients, students, general public), so the figures are placed side by side and are not combined.

Indian Market

Sources S18 to S23 cover e-pharmacy behaviour, app quality and regulation. S19 is grey literature (market survey) and S22 needs its year and sample verified.

Table 6: Results on Social Media

ID	Source	Sample / type	Key results (95% CI where calculated)
S1	Parija et al., 2020	Urban Delhi; n = 321	88.2% (283/321) used the internet for health information (CI 84.2 to 91.3); more likely in ages 18-30, literate and higher socioeconomic groups
S2	Bhaskaran et al. ([year]), Manipal	Convenience sample, two states	WhatsApp preferred, then Facebook, YouTube, Twitter. Trust in social media health information: 35% yes, 32% no, 33% not always. No legal check on authenticity
S3	Cureus, 2022 (healthcare workers)	Tertiary hospital, North India; n = 205 (derived)	Social media used by 60% (123; CI 53.2 to 66.5); WhatsApp 40% (82; CI 33.5 to 46.8); Facebook and Instagram 33% (67; CI 26.6 to 39.4)
S4	IJCMPH study ([authors, year])	Caregivers at OPD; n = 130	WhatsApp 82%, YouTube 76%, Facebook 68%
S5	JMIR Public Health Surveill, 2021	WhatsApp users, India; n = 1137	Users over 65 and those in elementary occupations most vulnerable to false information; health care workers equally so
S6	Siva et al., JCDR ([year])	Diabetes patients, SRM; [n]	87.1% perceived benefit from social media content, which influences diabetes beliefs and trust in treatment

Table 7: Results on Digital Marketing

ID	Source	Sample / type	Key results (95% CI where calculated)
S7	Kumar et al., 2021	50 physicians, 30 medical representatives	Preferred meeting: traditional 34%, digital 28%, hybrid 32%; 54% not comfortable with a full digital shift; 96.66% (29/30; CI 83.3 to 99.4) of representatives found meeting doctors difficult (conclusion gives 38% and 99.66%)
S8	Dept of Pharmaceuticals, UCPMP 2024	Regulatory code, notified 12 March 2024	"Promotion" covers all activities by manufacturers and distributors that induce prescription, supply, purchase or use of drugs

S9	THB research (Bain), 2020 (grey)	Physicians, India	Use of scientific content up by more than 40% during COVID-19; about 85% said digital exchanges are as important as face-to-face (or more); nearly 50% expect more digital engagement
S10	C Com Digital whitepaper, 2020 (grey, agency)	Industry decision-makers, India	72% of consumers felt continued promotion appropriate; about 25% did not; 5% to 10% of marketing budget considered for webinars and online communication
S11	Imam, J Pharmacoecon Pharm Manag, 2024	80 managers or owners of pharma firms, India	Recommends digital platforms for feedback and surveys [numerical outcomes still to be extracted]

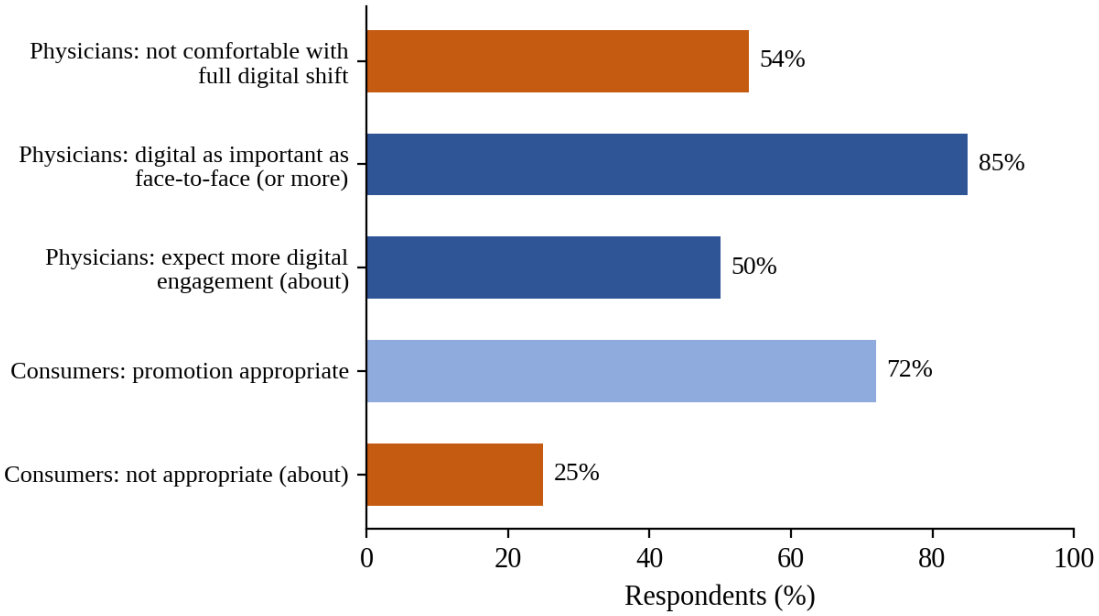


Figure 2. Attitudes toward digital engagement and promotion

Table 8. Results on Generic Drug Products

ID	Source	Sample / type	Key results (95% CI where calculated)
S12	Rathi and Biyani, 2021	Online, India; n = 537	78.6% had heard of generics; 54.8% preferred to buy them; 22.1% said doctors preferred generics; 63.3% unaware of government rules; 41.7% said generics should be promoted
S13	Charan et al., 2020	OPD patients, Patan, Gujarat; n = 345	Heard of generics 33.6% (116/345; CI 28.8 to 38.8); used in last 6 months 12.9% (15/116; CI 8.0 to 20.2); never advised to use one 81.0% (94/116; CI 73.0 to 87.1); would switch if doctor recommends 66.7% (28/42; CI 51.6 to 79.0); willing 57.2% (99/173; CI 49.8 to 64.4), text gives 49.7%
S14	Medical students study, J Prim Care Spec, 2023	Final-year MBBS, North India; n = 82 (derived)	Knew generics are interchangeable 63.41% (52; CI 52.6 to 73.0); aware of Jan Aushadhi 57.31% (47; CI 46.5 to 67.5); knew bioequivalent 75.60% (62; CI 65.3 to 83.6); agreed same strength, safety and

			effectiveness 91.46%; felt generics cut health-care expenditure 74.3%
S15	J Drug Deliv Ther, 2022	Consumers; n = 236	78% understood generics are cheaper (34.8% of those aware did not); awareness higher in younger groups; high support for substitution
S16	Pilot study, Banaras Hindu University, 2022	Healthcare professionals; 55/65 responded (84.61%)	12.7% had not heard of PMBJP Kendra; 40% unaware of a Kendra in their area; 40% of doctors doubted generics are as safe as branded
S17	Dashottar et al., 2025	Urban general population, Central India	About three-fourths aware of generics; about 60% considered them equally effective as branded

Table 9: Results on the Indian Market

ID	Source	Sample / type	Key results (95% CI where calculated)
S18	Bansal et al., 2022	Online and offline KAP; n = 322	Aware of online pharmacy 83.2% (268/322; CI 78.8 to 86.9); of those aware, 81% (217/268; CI 75.8 to 85.2) prefer offline; 37.7% knew trustworthy websites; of 166 answering, 59.03% prefer both branded and generic online, 26.5% branded, 14.45% generic
S19	YouGov Omnibus, 2022 (grey)	Urban Indians; n = 1027	32% regularly consult an online pharmacy or health platform; trusted by 78% of regular users and 47% of non-users (14% do not); top motivators: convenience, prices, discounts
S20	Apte et al., 2024	Scoping review; 47 sources (32 India-focused)	No Indian study of e-pharmacy cost-effectiveness; draft 2018 rules bar portals from advertising in print or digital media; Jan Aushadhi integration proposed
S21	Sattar et al., Front Public Health, 2024	Online pharmacy apps (Android and iOS)	40 apps found; 13 rejected; the rest rated with the Mobile App Rating Scale
S22	E-Pharmacy in India, Mapana ([authors, year])	Online survey, India; [n]	About 25% used e-pharmacy and about 75% did not; reasons for non-use collected
S23	Consumers' preference, Erode City, 2022	Consumers, Erode, Tamil Nadu; [n]	Majority preferred online pharmaceutical services because of discounts and offers

Table 10. Classes, Types and Examples of Non-Scheduled (OTC-Type) & Home Products

Class	Types / dosage forms	Examples	Regulatory note
Non-scheduled allopathic medicines	Syrups, tablets, topical products	Antacids, cough syrups, balms, ointments, analgesics	Not in Schedule H, H1 or X
Home and herbal remedies	Fresh leaf juice, tablet, capsule, syrup	Papaya (Carica papaya) leaf extract	Unlicensed herbal remedy

Scheduled formulations (excluded)	Prescription-only	Schedule H, H1, X drugs	Excluded from this review

Table 11. Results on Papaya Leaf Extract as a Home Medicine

ID	Source	Sample / type	Key results (95% CI where calculated)
S24	Sathyapalan et al., PLoS One, 2020	Double-blind RCT, India; n = 51 (26 vs 24)	Day-3 platelet rise 482% ± 284 vs 331% ± 370 ($p = 0.007$); transfusions 1/26 vs 2/24; median time to 50,000/µL 2 vs 3 days
S25	Meta-analysis, 2024 ([authors, journal])	Systematic review; search to Sept 2023	Platelet mean difference 19.50 (95% CI 1.82 to 37.18; $p = 0.03$); hospital stay mean difference 1.85 days (95% CI 1.41 to 2.28)
S26	Shreeharsha et al., Asian J Med Sci, 2023	Open-label RCT; 18 dengue inpatients	Positive platelet trend with "Solo" variety vs "Red Lady" and control; no adverse events
S27	Review in Thieme, 2025 ([authors, title])	Narrative review	Notes AYUSH Ministry guidance recommending Carica papaya leaf extract for dengue
S28	BMC Complement Altern Med, 2019 (context)	Systematic review	Clinical value of platelet rise unclear; evidence insufficient; unlicensed herbal remedy popular on social media
S29	Srikanth et al., Pediatr Health Med Ther, 2019 (context)	Open-label RCT, children; n = 294	Platelet count significantly higher than control ($p < 0.05$); authors include manufacturer employees

Table 12: Key Words Used and the Sources Found

Theme	Key words	Sources
Social media	"social media", health information, WhatsApp, misinformation, India	S1 to S6
Digital marketing	"digital marketing", e-detailing, pharmaceutical, UCPMP	S7 to S11
Generic drug products	"generic medicine*", "generic drug*", "Jan Aushadhi", PMBJP	S12 to S17
Indian market	"e-pharmacy", "online pharmacy", India	S18 to S23
OTC and home medicines	"over-the-counter", "Carica papaya", "papaya leaf extract", dengue	S24 to S29

Table 13. Pros and Cons of Each Theme

Theme	Pros	Cons	Evidence
Social media	Widely used for health information, mainly WhatsApp and YouTube; reaches younger, literate users	Trust is mixed; no legal check on content; misinformation reaches older and low-occupation groups	Indirect

Digital marketing	Digital and hybrid contact accepted by many physicians; digital content use grew	Many physicians not comfortable with a full digital shift; promotion strictly regulated; some sources are industry reports	Indirect
Generic drug products	High awareness in several samples; students and public see them as equally effective and cheaper	Low awareness and use in an OPD sample; some doctors doubt safety; most patients never advised	Direct
Indian market	High awareness and trust of online pharmacy; discounts attract users	Offline still preferred; many non-users; app quality varies; no cost-effectiveness study	Partly direct
OTC and home medicines	Easy access; some Indian trials show a short-term platelet rise	No legal OTC definition; evidence judged insufficient; small trials	Mixed

OTC and Home Medicines

In India the term OTC has no legal definition; drugs not listed in Schedule H, H1 or X are generally sold without a prescription. Scheduled formulations are outside the scope of this review (Section 3.2). Papaya leaf extract is used as the example of a home medicine. S28 and S29 were published before 2020 and are context only; remove them if the supervisor requires the 2020 to 2026 period strictly.

Evidence Gaps and Summary

No numerical Indian data on social media promotion of generic medicines. Jan Aushadhi (PMBJP) awareness is reported only among health professionals and students; no finding on digital channels. Evidence is mostly urban, online or hospital-based; figures from different populations are not pooled. Several sources are grey literature or need details checked. [N] sources were included. Generic drug awareness differs widely by setting, e-pharmacy awareness is high but offline purchase is still preferred, and social media and digital marketing evidence is indirect.

DISCUSSION

This review included 29 sources (S1-S29) following PRISMA 2020 from Jan 2020 to Oct 2026. No source provided direct numerical evidence on regulation-compliant digital marketing for generic medicines via social media and e-pharmacy in India. All social media evidence is indirect.

Platform use for health information varied: YouTube 38-72%, Facebook 20-55%, WhatsApp 25-46%. Trust in social media health information was low at 29.7% in two-state sample.

Generic awareness is setting-dependent: 33.6% (116/345) in primary-care OPD, Patan, Gujarat (Charan et al., 2020) versus 78.6% (422/537) online pan-India (Rathi & Biyani, 2021). Acceptance: 12.9% (15/116) used generics in last 6 months, 54.8% preferred to buy generics, 49.7% willing to use if advised. Critically, 81.0% (94/116) were never advised by doctor to use generic.

E-pharmacy paradox: Awareness high at 83.2% (268/322) (Bansal et al., 2022) but 81% (217/268) of those aware preferred offline purchase. Only 37.7% knew trustworthy websites. Among 166 respondents, 59.03% (98/166) were open to both branded and generic online, 26.5% branded only, 14.45% generic only. This indicates trust gap, not access gap.

For professionals: Physicians preferred traditional meetings 34% (17/50), digital 28% (14/50), hybrid 32% (16/50). 54% (27/50) not comfortable with complete digital shift. 96.66% (29/30) of medical representatives found it difficult to meet doctors digitally.

Findings align with national literature reporting high e-pharmacy awareness but low adoption due to trust and verification concerns. Urban online samples consistently report higher generic awareness than rural OPD samples. Industry

reports suggest rapid digital adoption post-COVID, but primary physician data shows persistent preference for hybrid models.

In India, Schedule H, H1, X, DMR(OA) Act 1954, and UCPMP 2024 prohibit direct-to-consumer advertising of prescription drugs. Draft e-pharmacy rules (2018) prohibit advertising. Only educational, unbranded information on bioequivalence, WHO-GMP, and PMBJK availability is permissible.

Strengths: PRISMA-guided screening, transparent extraction with x/n, JBI appraisal, Wilson 95% CI where available, strict compliance filter.

Limitations: Cross-sectional convenience samples, grey literature flagged as promotional, reporting inconsistencies (e.g., 49.7% vs 99/74; 59.3% vs 59.03%), heterogeneity preventing meta-analysis, no causality inferred.

CONCLUSION

After PRISMA screening, 29 sources were included. No direct numerical evidence on compliant social media promotion of generics was found. Generic awareness ranged from 33.6% (116/345) to 78.6% (422/537). Acceptance: 12.9% (15/116) recent use, 54.8% preference to buy, 49.7% willing to use. E-pharmacy awareness 83.2% (268/322) but 81% (217/268) prefer offline. Only 37.7% knew trustworthy websites. Trust in social media health information 29.7%.

Generic medicines are essential for affordable healthcare, but digital promotion must remain educational, unbranded and fully compliant under Schedule H and UCPMP 2024. This review found 83.2% aware of e-pharmacy but 81% prefer offline, indicating trust gap not access gap. Educational communication on bioequivalence, WHO-GMP quality and PMBJP availability is the only permissible pathway. This conceptual model proposes relationships only and does not claim causal effect. Future research should test compliant educational videos via YouTube/WhatsApp using standardized outcomes with x/n reporting.

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