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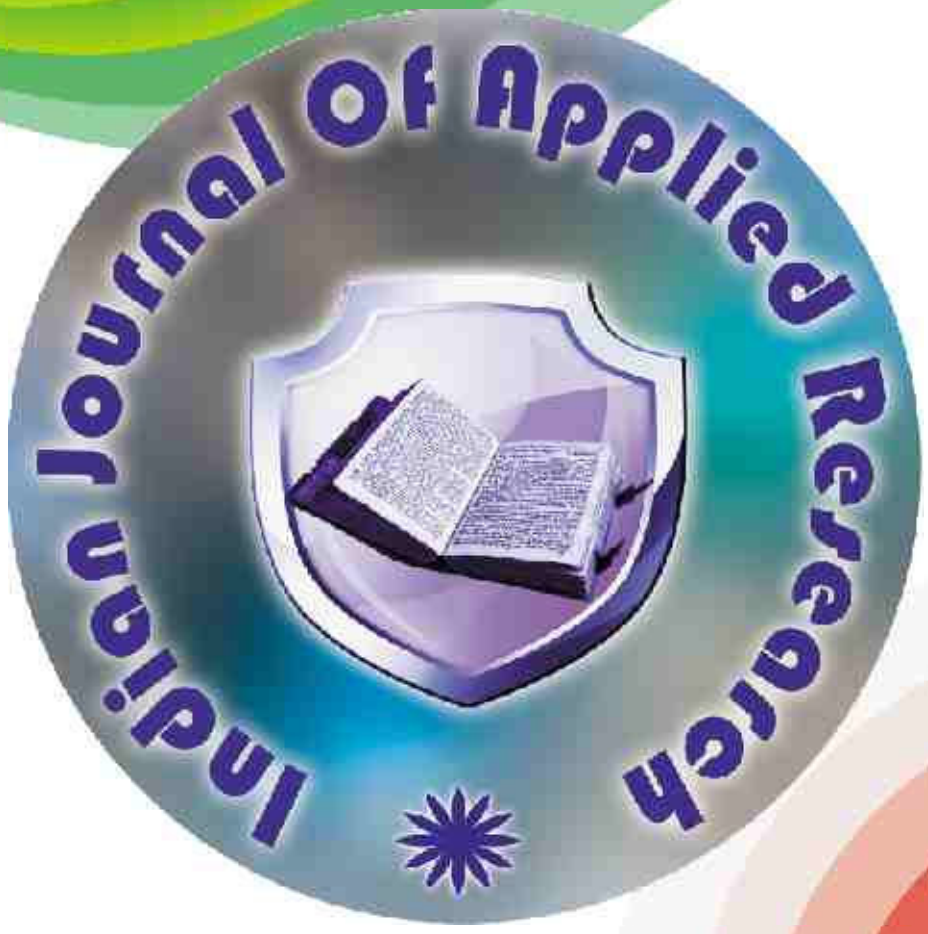

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E-Pharmacy In India For Reducing Inter-State Accessibility Dispersion

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ABSTRACT

E-pharmacy is presently more prominent in developed countries which have put in place a comprehensive regulatory framework and an enabling environment including provision for necessary financial incentives. The goal of e-pharmacy, other than to improve patient care and safety, has also been to reduce racial and ethnic disparities. Developing countries, though, have to work even on improving accessibility of pharmacies for their citizens. A focus on e-pharmacy can provide the answer if necessary prior conditions are complied with.

Keywords : Electronic Health Records, Patient Safety, Improved Healthcare Administration

Introduction

E-pharmacy has enabled supply of medicines online through creation of electronic health records (EHRs) or electronic patient records (EPRs) in digital format that is capable of being shared across different health care settings. The information is embedded in network-connected enterprise-wide information systems. Such records may include a whole range of data in comprehensive or summary form, including demographics, medical history, medication and allergies, immunization status, laboratory test results, radiology images, vital signs, personal stats like age and weight, and billing information. Its purpose can be understood as a complete record of patient encounters that allows the automation and streamlining of the workflow in health care settings and increases safety through evidence-based decision support, quality management, and outcomes reporting, but has expanded swiftly in both Europe and the Americas [1,2]. There are several advantages that e-pharmacy strives to offer to its customers: cheaper drugs, quick delivery and more importantly good pharmaceutical care [3]. Some sites clearly flag out the advice column on not only the appropriate medication but also the appropriate care required. The popularity and the dependability of such columns rests on the credentials of the website and the regulatory framework in place. Both USA and Scotland have well-conceived regulations on checking cases of fraud through e-pharmacy. For example, sale of prescription drugs through e-pharmacy is not permitted without the prescription being sent to the pharmacist [4,5]. E-pharmacy is generally preferred for over-the-counter drugs for providing relief for minor ailments in these countries. In China's case, the B2B e-pharmacy commerce has grown by 300 percent yearly. In 2003, the trade volume of internet pharmacy sales was estimated to be 10 percent of the total [6].

Motives For E-pharmacy

Governments have initiated ambitious e-health projects, such as the NHS National Programme for IT in the United Kingdom, e-health card in Germany, and e-health strategy in Sweden. Governments across the world have encouraged e-pharmacy as it has potential for ushering in advantages for consumers, pharmacists and the governments too. Consumers obviously aim for convenience and price discounts and the pharmacists look for volumes through the e-portals [7,8]. And governments what are they looking for? Often, their role has been to put in place a sound regulatory framework to ensure that the intended advantages flow to consumers and the pharmacists. A sound regulatory framework would be one that ensures that consumers are not duped through sale of medicines which have passed their expiration period or those which have already been banned. Regulation is key to the success of e-pharmacy for protecting patient information as well [9,10]. In Scotland, for example , all electronic data flowing between the National Services Scotland Practitioner Services Division (PSD) and GP Practice (GP) and Community Pharmacy (CP) computer systems containing confidential patient information is protected from unauthorised interception and viewing by a process of authentication [11]. The information source and the receiving system are thoroughly checked for identity before any information is transmitted. In addition, digital signing of information is used to check that information has not been altered in transit. In many developing countries, e-pharmacy has not taken place owing to the absence of a good regulatory framework. Good regulation is evident in New Zealand too in the Draft Health Information Strategy for New Zealand which defines e-pharmacy as electronic transactions between prescribers and pharmacies [12]. Further, the strategy refers to e-pharmacy as including and improving coding, tracking the dispensing of prescribed pharmaceuticals, the use of computer decision support tools, and providing a better basis for monitoring compliance. The definition has since been expanded to include transactions between claimers and payments providers, between pharmacies and other service health providers and prescribers, or between pharmacies and regulatory, funding and payment agencies [13]. NHS Scotland has established a team of community pharmacy Information Management & Technology facilitators across each of the Boards to help support pharmacists and their staff in the use of eMAS (electronic minor ailment scheme). NSS has set up an ePharmacy helpdesk and registrations team to support eMAS. The core components of the technology platform, jointly developed and managed by Atos Origin and NSS, include an N3 network connection to every pharmacy in Scotland, a central ePharmacy Message Store, a central Patient Registration System, system applications for the new contract (GP and Pharmacy) and an ePay functionality within NSS [5].

Irish legislation [14] places medical preparations into three broad categories :

- medicines which must be prescribed and must be supplied by pharmacies only on prescription.
- medicines exempt from prescription control but which may be only supplied under the supervision of a pharmacist (referred to as pharmacist supervised sale "PSS"); and
- substances which are exempt from the PSS requirement such as certain painkillers, vitamin and mineral supplements. These products may be supplied in non-pharmacy outlets such as supermarkets.

On-line pharmacies are prevented from operating in Ireland on two fronts. The first is that in order to sell prescription or PSS medicine, a person would have to show that it has an establishment open to the public. And secondly, Regulation 13 of the Medicinal Products (Prescription and Control of Supply) Regulations, 1996 prohibits the supply by mail order of any medicinal product.

Government Objectives Of E-pharmacy

So, is the role of governments limited to regulation? Several examples show us that governments actively encourage e-pharmacy and aim at achieving other well-defined objectives.

The New Zealand Health IT Cluster (NZHITC) conducted a survey in 2006 seeking responses from NZHITC Clinical and Technical Working Groups [12]. As per the survey findings, the objectives of e-pharmacy specified by these groups were as follows:

- Improved patient safety / better patient health outcomes;
- Standardisation of data, information exchange and business processes;
- Improved and timely monitoring, tracking and reporting; and
- Improved healthcare administration and cost effectiveness.

These seem to be the key objectives in other developed countries as well. Thus, along with patient safety and better health outcomes, there is emphasis on improved healthcare administration and cost effectiveness also. NHS Scotland has had a lot of emphasis on cutting down paper cost through e-pharmacy [5]. Similarly, the aim of Son Llàtzer Hospital in Spain has been explicitly stated to be paperless, filmless and, to some extent, wireless in order to provide better quality of care to patients in a more cost-effective and efficient manner [15]. The US government's top two objectives of e-pharmacy are improved care coordination and reduced healthcare disparities [4].

The sharing of patient information between health care organizations and IT systems is changing from a "point to point" model to a "many to many" one [16,17]. The European Commission is supporting moves to facilitate cross-border interoperability of e-health systems and to remove potential legal hurdles, as in the European E-Health Project [18]. To allow for global shared workflow, studies will be locked when they are being read and then unlocked and updated once reading is complete. Radiologists will be able to serve multiple health care facilities and read and report across large geographical areas, thus balancing workloads.

Reducing Geographical Disparities Through E-pharmacy

More than balancing workloads, at some places, it may be more a matter of expanding accessibility of such facilities to hinterlands. And places where disparity is large, the scope for such initiatives is also large as are the challenges. The tables below [using latest available data of 2004] give an insight into the kind of disparities prevailing in India. The picture of huge disparities is reinforced in each of the tables; hence, although the average pharmacist to population ratio at 1:1840 is as per the recommendations of the World Bank (1:2000), there are states that are far off the mark. These are the states that have very few educational institutions offering studies in pharmacy [19].

Can e-pharmacy bring down the disparities between Indian states? As noted earlier, the key to the success of e-pharmacy is cooperation from physicians in creating electronic health records of patients and the IT hardware and software support system for making it possible to share information. Without such a system in place, e-pharmacy will only perpetrate fraudulent sale of medicines. Since the situation is more critical in the eastern states of Bihar, Chhatisgarh, Madhya Pradesh and the north-eastern states, some collaborative effort on the part of all these states is required to encourage e-pharmacy and augment the supply of health care services offered by pharmacists [20]. As seen in developed countries, some kind of financial incentives may have to be given to physicians for both the necessary IT hardware and software required. Moreover, health insurance will have to spread and make deeper inroads into rural areas so that the number of stakeholders interested in the success of the e-pharmacy plan increases to the critical level. The alternative for these states does exist to set up pharmacy shops run by qualified pharmacists. But as Table 2 shows, the number of degree and diploma pharmacy institutions in these states is not commendable and hence, there is a severe shortage of pharmacists even for the most basic services [21].

Concluding Remarks

While developed countries may be aiming at reducing racial and ethnic disparities through e-pharmacy, many developing countries have a loftier goal of reducing geographical disparities in accessibility to services provided by pharmacists. But attention will be required on multiple fronts - regulatory, institution-building and increasing awareness of the benefits and the special precautions needed to be taken by users of e-pharmacy. Health for all will not be achieved by simply keeping the focus on additional doctors and hospitals. The difference between life and death may as well be the availability of a pharmacy.

Table 1 : Spread Of Registered Pharmacists And Their Proportion To Population In India [21]

S. No.	State/union territory	No. of regd. pharmacists	Population	Pharmacist to population ratio
1	Andhra Pradesh	33,928	7,57,27,941	1 : 2231
2	Arunachal Pradesh	147	10,91,117	1 : 3144
3	Assam	2,429	2,66,38,407	1 : 10968
4	Andaman & Nicobar Islands	NA	356,265	NA
5	Bihar	4,163	8,28,78,796	1 : 19908
6	Chandigarh	NA	9,00,914	NA
7	Chattisgarh	NA	2,07,95,956	NA
8	Dadra & Nagar Haveli	NA	2,20,451	NA
9	Daman & Diu	NA	1,58,059	NA
10	Delhi	20,978	1,37,82,976	1 : 657
11	Goa	255	13,43,998	1 : 5270
12	Gujarat	20,948	5,05,96,082	1 : 2415
13	Haryana	874	2,10,82,989	1 : 24122
14	Himachal Pradesh	3,818	60,77,248	1 : 1592
15	Jammu & Kashmir	NA	1,00,69,917	NA
16	Jharkand	NA	2,69,99,428	NA
17	Karnataka	71,736	5,27,33,958	1 : 735
18	Kerala	7,531	3,18,38,619	1 : 4227
19	Lakshdeep	3,082	60,595	1 : 19
20	Madhya Pradesh	1,381	6,03,85,118	1 : 43725
21	Maharashtra	90,614	9,67,52,247	1 : 971
22	Manipur	NA	23,88,634	NA
23	Meghalaya	150	23,06,069	1 : 15373
24	Nagaland	NA	19,88,636	NA
25	Mizoram	382	8,91,058	1 : 2332
26	Orissa	12,159	3,67,06,830	1 : 3019
27	Pondicherry	1,716	9,73,829	1 : 567
28	Punjab	15,290	2,42,89,296	1 : 588
29	Rajasthan	19,214	5,64,73,122	1 : 2180
30	Sikkim	NA	5,40,493	NA
31	Tamil Nadu	1,01,240	6,21,10,839	1 : 613
32	Tripura	257	31,91,168	1 : 12417
33	Uttar Pradesh	30,276	16,6,0,52,859	1 : 5484
34	Uttaranchal	NA	8,4,79,562	NA
35	West Bengal	89,630	8,02,21,171	1 : 895
	Total =	5,59,408	102,70,15,247	1 : 1840

Table2 :Spread Of Pharmacy Institutions In India [21]

S. No.	State	No. of Diploma institutions	Diploma intake per year	No. of Degree institutions	Degree intake per year
1	Andhra Pradesh	20	1020	23	1,280
2	Arunachal Pradesh	NA	NA	NA	NA
3	Assam	3	185	1	20
4	Andaman & Nicobar Islands	NA	NA	NA	NA
5	Bihar	2	120	NA	NA
6	Chandigarh	2	100	1	50
7	Chattisgarh	1	30	1	60
8	Dadra & Nagar Haveli	NA	NA	NA	NA
9	Daman & Diu	NA	NA	NA	NA
10	Delhi	7	420	3	150
11	Goa	1	60	1	60
12	Gujarat	9	640	8	520
13	Haryana	11	645	3	180
14	Himachal Pradesh	2	60	NA	NA
15	Jharkand	1	60	1	60
16	Jammu & Kashmir	1	40	NA	NA
17	Karnataka	87	5,280	47	2,360
18	Kerala	19	1,130	2	90
19	Lakshdeep	NA	NA	NA	NA
20	Madhya Pradesh	6	375	8	440
21	Maharashtra	68	4,130	44	2,400
22	Manipur	1	30	NA	NA
23	Meghalaya	NA	NA	NA	NA
24	Nagaland	NA	NA	NA	NA
25	Mizoram	1	30	NA	NA
26	Orissa	23	1,260	8	480
27	Pondicherry	NA	NA	1	30
28	Punjab	10	710	2	90
29	Rajasthan	10	600	4	200
30	Sikkim	1	40	1	60
31	Tamil Nadu	42	2,900	26	2,070
32	Tripura	1	60	NA	NA
33	Uttar Pradesh	12	620	11	610
34	Uttaranchal	8	250	3	180
35	West Bengal	4	380	2	120
	Total =	358	21,200	212	11,670

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