

**AWARENESS AND BEHAVIOURAL OUTLOOK TOWARDS ONLINE PHARMACY SERVICES AMONG CONSUMERS IN DELHI, INDIA: A PILOT SURVEY****Ravinder K. Sah<sup>a</sup>, Rakhamaji D. Chandane<sup>\*a</sup>, Umesh Suranagi<sup>a</sup>, Sachin Manocha<sup>b</sup>, Ajita Kapur<sup>a</sup> and Priyanka Hotha<sup>a</sup>**<sup>a</sup>Department of Pharmacology, Lady Haddering Medical College, New Delhi, India- 110001.<sup>b</sup>Department of Pharmacology, School of Medical Sciences and Research, Sharda University, Greater Noida, UP, India- 201306.**\*Corresponding Author: Dr. Rakhamaji D. Chandane**

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**ABSTRACT**

**Background:** Online pharmacies providing an easy opportunity to purchase large variety of medicines. These offer various advantages like lower costs, easy accessibility, doorstep delivery etc. Online pharmacies also carry with them disadvantages like lack of interaction with physician, dispensing of drugs without prescriptions, selling of substandard medicines etc. There is lack of study about consumer's awareness regarding online pharmacy in India. Hence study was planned to assess consumer's awareness and behaviour towards the use of online pharmacy services in the Delhi, India. **Material and methods:** Cross sectional, questionnaire based study was conducted to assess consumer's awareness and behaviour towards the use of online pharmacy services. **Results:** In this study although 85.8% of respondents were aware about online pharmacy but only 6% of them purchased medicine through it. Uncertainty about timely delivery of medicines and supply of counterfeit medicines were the major apprehensions regarding online pharmacies among 85% and 75% of participants respectively. Factors like dispensing drugs without requirement of any prescription (91%) and illegal website (57%) were marked as a characteristic of doubtful online pharmacies. Features like doorstep delivery and reminder services were claimed as desirable features of online pharmacies by 68% and 60.8% of participants respectively. **Conclusion:** Purchasing medicines from online pharmacies was not a common practice among the respondents. Consumers need to be educated about the risks and benefits associated with buying drugs on the internet. Educational measures should be coupled with adequate monitoring of online pharmacies from regulatory authorities.

**KEYWORDS:** Online Pharmacy, Consumers, Awareness, Behaviour.**INTRODUCTION**

The technological revolution called 'internet' has apparently swept away every possible field of advancement in the world including business, communication and health care services. More so than ever, it has almost become a 'norm' for humans to utilise adapt and cherish the convenience of internet in daily lives. As we speak, the internet using population of India is third largest in the world following China and the US. About 190 million used internet actively in India in June 2014 and this number is pacing up rapidly. As per an estimation, the internet users in India is going to shoot up over 500 million by 2018 giving India the status of 2<sup>nd</sup> largest internet population of the world. On daily basis about 40 million Indians use internet with an average time expenditure of 40-45 hours over internet in a month.<sup>[1]</sup>

Internet technology has changed the patterns of buying/consuming behaviour of many daily utilities viz. grocery, furniture, wearable items, electronic stuffs and

books etc. Owing to the ease of these 'single-click' technologies consumers are switching to online mode from offline shops. One of the latest trends in Indian consumers in the arena of online shopping is purchase of medicines via online portals such as websites and smart phone apps.<sup>[2]</sup> These online portals establish internet-based pharmacies providing an easy opportunity to purchase large variety of medicines, such as generic over-the-counter medications (OTC), complementary medicines and prescription-only medicines. Internet-based pharmacies are also known as online pharmacies or e-pharmacies or cyber pharmacies.<sup>[3-4]</sup> Online subdivisions of conventional community pharmacies, independent internet-only websites/ smart phone apps and websites representing partnership among traditional pharmacy shops are considered under the purview of online pharmacies.<sup>[5]</sup>

Online trade of medications and trend of online pharmacies begun in the late 1990s and is in existence for almost two decades now.<sup>[6-7]</sup> Owing to the rapid

expansion and establishment of online pharmacies the US Food and Drug Administration (FDA) on its official website has incorporated a dedicated entire section to "Buying medicines over the Internet".<sup>[8-9]</sup> The Indian internet based market of online medications has seen a significant growth during the last five years. Currently e-pharmacy market is estimated to \$18 billion and as per industry expert opinions it is projected to reach the mark of \$55 billion by 2020.<sup>[10]</sup>

Numerous advantages offered by online pharmacies are easy accessibility, discounts and offers, doorstep timely delivery, convenience and ease of ordering, suitability to people with limited mobility/ elderly age groups and people residing in remote areas, information about alternative medications and adverse effects, personalized medicine reminders, anonymity for consumers etc. these multiple favourable factors have made the online pharmacies appealing to general population increasing their popularity.<sup>[7,11]</sup>

Internet pharmacy services offer various advantages to consumers, albeit they also pose a huge health care risk to consumers since these virtually represent an apparently unregulated market.<sup>[12]</sup> Various authors have reported that online pharmacy utility promotes self-medication, inappropriate/ indiscriminate/ irrational use of medicines, abuse/ misuse of prescription drugs, dispensing of medicines without prescription, diversion of prescription drugs. Online pharmacies are also noted to block the meaningful tri-lateral interaction of physician, pharmacists and patients thus increasing the likelihood of misdiagnoses, medication errors and adverse drug reactions.<sup>[11,7,13]</sup> The scenario is further worsened by operation of unlicensed and illegal websites hosting online pharmacy portals. There is a certain possibility that such illegal portals may sell substandard, spurious and counterfeit medications to the consumers.<sup>[14-15]</sup> The World Health Organization (WHO) has also emphasized that supply of counterfeit/spurious medicines through online pharmacies pose a significant public health risk.<sup>[16-18]</sup> The operation of these illegal and unlicensed online pharmacies is seemingly tracked to the developing countries which often lack the regulatory framework concerning internet-based trade and commerce.<sup>[19, 5]</sup>

Various studies conducted across the globe have advocated an international approach to establish a global legal framework encompassing adequate safety standards in order to regulate online medical services.<sup>[11]</sup> Moreover increase in consumer's awareness and shift towards safe online purchase behaviour is essential to restrain internet based fraudulent practices.<sup>[7]</sup> Literature shows scarcity of studies which beam light about the awareness and behavioural attitude of consumers who tend to purchase medications from online pharmacies.<sup>[6]</sup>

On review of literature, our efforts showed unavailability of any particular study focusing on consumer awareness and behavioural attitude towards online pharmacies in Indian context. Hence, we designed a questionnaire-based study in order to assess consumer's awareness and behavioural outlook towards the use of online pharmacy services in the Delhi, India.

## MATERIALS AND METHODS

A cross sectional, questionnaire based study was conducted to assess consumer's awareness and behavioural outlook towards the use of online pharmacy services in the Delhi, India from period between June 2017 and November 2017. Total 500 participants who regularly use internet services were included in to the study. Structured pre-tested questionnaire was used, the questionnaire consisted of 6 items to evaluate behavioural outlook and 7 items to evaluate knowledge and perception of consumers with regard to online pharmacies. Participants were explained the purpose of study and were provided questionnaire and requested to complete and return back the form within 30 minutes. Analysis was done for 460 completed forms. Remaining 40 forms were excluded from the study either due to incompleteness or non-return.

## RESULTS

In this study, 86% of participants were aged between 20 to 40 years. Educationally, two-third (67%) of participants had completed either diploma or degree after schooling (Table- 1).

**Table 1: Demographics of respondents.**

S. N.	Demographic parameters		% (n <sup>#</sup> )
1	Age	20-40 yrs	86% (396)
		41-60 yrs	14% (64)
		61 onwards	0
2	Gender	Male	69.1% (318)
		Female	30.9% (142)
3	Qualifications	10 <sup>th</sup> pass	12% (55)
		12 <sup>th</sup> pass	21% (97)
		Diploma	34% (156)
		Graduate	33% (152)

<sup>#</sup> n- Number of respondents

Majority of consumers claimed that they used to buy things online once in a month (45%) or once in a week (31.1%) in contrast to 3.7% of participants who had never purchased anything through online shopping (Table-2). Travel ticket booking (46.3%) for airlines, railway, and entertainment-ticket booking (movies) etc. was the most preferred purchase-transaction by consumers on internet followed by purchase of apparels & cosmetics items (13.5%) and electronic items (13%) (Table-2). On seeking the answer for why they preferred online shopping, majority of consumers opined that it is convenient (80%) to shop online and it offers huge discount on products (77.8%) and searching for particular product is very easy (70%) (Table-3).

**Table 2: Buying Behaviour of Internet Shoppers.**

S.N.	Questions		% (n)
1	How often do you shop online?	(a)Frequently (once a week)	31.1% (143)
		(b)Regularly (at least once a month)	45% (207)
		(c)Occasionally (once in 2-4 months)	13% (60)
		(d)Rarely (Once in a year)	7.2% (33)
		(e) Never	3.7% (17)
2	What do you buy/would prefer to buy on Internet?	(a)Books, Magazines & Entertainment etc.	9.8%, (45)
		(b)Tickets (Airlines, rail, movies etc.)	46.3% (213)
		(c)Electronic items	13% (60)
		(d)Food items	10.2% (47)
		(e) Medicines	7.2% (33)
		(f)Apparels, Cosmetics, Gifts, Greetings, Flowers	13.5% (62)

**Table 3: Buying Behaviour of Internet Shoppers (Continued).**

S.N.	Question	Particulars	Agree	Neither Agree nor Disagree	Disagree
1	Why do you like online shopping?	(a)Convenience	80% (368)	5% (23)	15% (69)
		(b)Ease of finding products	70% (322)	5% (23)	25% (115)
		(c)Inclination towards trying something new	21% (97)	34% (156)	45% (207)
		(d)Ease of comparison	65% (299)	17% (78)	18%, (83)
		(e)Offers/discounted prices	77.8% (358)	12% (55)	10.2% (47)
		(f) Can find products that are not available in the stores	34% (156)	34% (156)	32% (148)
		(g) No need to deal with sales people	55% (253)	15% (69)	30% (138)
		(h)Only Known or famous brands are available online	12% (55)	23% (106)	65% (299)
		(i)Assurance of on-time delivery	37% (170)	40% (184)	23% (106)
		(j)Ease of product return and money refund	20% (92)	40% (184)	40% (184)

Result has shown that 85.8% of participants were familiar with online pharmacy but only 6% (Table-4) had purchased medicine through it. In fact medicines (7.2%) were the least preferred item to purchase through online shopping (Table-2). Although 69% of participants were satisfied with the community pharmacy services but

issues like- unavailability of open community pharmacy shops round-the clock, expensive medications and unavailability of medications were the major concerns among 80%, 67.2%, and 66.8% of participants respectively (Table-5).

**Table 4: Medicine Purchase experiences of participants.**

S.N.	Questions		% (n)
1	Do you know/hear about online pharmacy?	(a)Yes	85.8% (395)
		(b)No	14.2% (65)
2	Where do you purchase medicines from?	(a)community pharmacy services	91% (419)
		(b)online pharmacy	6% (41)
3	How satisfied are you with the current community pharmacy services?	(a)Satisfied	68.9%, 317
		(b)Neither satisfied Nor dissatisfied	14.2%, 65
		(c)Dissatisfied	16.9%, 78

**Table 5: Difficulties with community pharmacy shop purchase.**

S.N.	Particulars	Agree % (n)	Neither Agree nor Disagree, % (n)	Disagree % (n)
1	Unavailability of medicine	66.8% (307)	10.2% (47)	23% (106)
2	Long queue or rush	33% (152)	34% (156)	33% (152)
3	Dispensing of wrong medicines	13% (60)	17% (78)	70% (322)
4	Non availability of pharmacy shops	13.5% (62)	6.5% (30)	80% (368)
5	Costly medicines	67.2% (309)	25% (115)	7.8% (36)
6	Not open round the clock (24 hrs)	80% (368)	10% (46)	10% (46)

Uncertainty about timely delivery of medicines and supply of substandard or counterfeit medicines were the major apprehensions regarding online pharmacies among 85% and 75% of participants respectively. 78% of participants opined that easy accessibility of community pharmacy shops in neighbourhood deter them from using online pharmacies services (Table-7). Dispensing just by online orders without requirement of any prescription and external websites operating from abroad were marked as risk characteristics of fraud or illegal online

pharmacies by 91% and 63% of participants respectively (Table-8). Features like choices of delivery time and address, delivery at door step in less than 24 hrs and personalised medicine reminder services were claimed as most desirable features of online pharmacies by 72%, 68% and 60.8% of participants respectively (table-6). Almost all of the participants (95%) were in favour of facility like online medical advices or suggestions through online pharmacies services (Table-9).

**Table 6: Attractive features of online pharmacy.**

S.N.	Particulars	Agree	Neither Agree nor Disagree	Disagree
1	Better price (Discount on the medicines)	65% (299)	25% (115)	10% (46)
2	Greater anonymity for consumers	47.8% (220)	42.2% (194)	10% (46)
3	Door step delivery in less than 24 hr	68% (313)	22% (101)	10% (46)
4	Choices of delivery times and address (remote areas, older people)	72% (331)	20% (92)	8% (37)
5	Easy access to the drug information	82% (377)	12% 55	6%, 28
6	Personalize medicine reminder services	60.8% (280)	24.2% (111)	15% (69)

**Table 7: Concerns regarding online pharmacy.**

S.N.	Particulars	Agree, % (n)	Neither Agree nor Disagree, % (n)	Disagree, % (n)
1	Substandard or counterfeit or illegal medicines	75% (345)	10% (46)	15% (69)
2	Illegal website or internet securities	57% (262)	23% (106)	20% (92)
3	Non-availability of particular brand of drug specially prescribed by doctor	45% (207)	33% (152)	22% (101)
4	Easy availability of Community pharmacy shops	77.8% (358)	12% (55)	10.2% (47)
5	Chance of ordering wrong medicines	48% (221)	34% (156)	18% (83)
6	Uncertainty about timely delivery of the medicine	85% (391)	8% (37)	7% (32)

**Table -8: Risk Characteristics of an Online Pharmacy**

S.N.	Particulars	Agree, % (n)	Neither Agree nor Disagree, % (n)	Disagree, % (n)
1	The website does not ask for upload of prescription	91% (419)	3% (14)	6% (27)
2	Website operates from abroad (outside India)	63% (290)	22% (101)	15% (69)
3	Website offers medicines at prices much lower than market value	42% (193)	22% (101)	36% (166)
4	Website that provides medicines that are not easily available	20% (92)	23% (106)	57% (262)

**Table -9: What is your opinion about the following?**

S.N.	Particulars	Yes, % (n)	No, % (n)
1	Would you like to buy medicines through online pharmacy in future	70% (322)	30% (138)
2	Is it safe to buy medicine through online pharmacy?	47.8% (220)	52.2% (240)
3	Are you in favour of uploading prescription on website of online pharmacy?	91% (419)	9% (41)
4	Are you in favour of filling of medical questionnaire form?	30% (138)	70% (322)
5	Do you want medical advice/ online doctor for suggesting drugs?	95% (437)	5% (23)
6	Do you know about regulations regarding online pharmacies in India?	23% (106)	77% (354)

## DISCUSSION

The latest online trend in India among consumers is topurchase medicines through e-pharmacies. In order to match-up the trend, number of online pharmacies is increasing rapidly. But unfortunately there is dearth of studies conducted to assess and analyse consumer's knowledge and behaviour towards online pharmacies. With regard to such lack of literature in Indian context, the present study is particularly evaluates the consumer's knowledge and behaviour towards online pharmacies.

In our study nearly two-third of respondents was male which is in contrast to findings of study conducted by Afahad et al.<sup>[6]</sup> In terms of education level Afahad et al. reported that nearly two-third of respondents were done either diploma or graduation holders which is similar finding of our study. Burke et. Al (2002) also observed that highly educated consumers were comfortable in using internet to find about new products, search of products information and purchase of products.<sup>[20]</sup>

Our study included only those respondents who regularly use internet and found that almost all of them (96.3%) had purchased something through online. Similarly Afahad et al.<sup>[6]</sup> found that about 70% of respondents in their study used online shopping. These results were in accordance with the findings of Citrin et al. and Liu & Forsythe in which they indicated that individuals with more exposure of internet usage are more likely to do online shopping.<sup>[21-22]</sup>

In 2003 Baker et al.<sup>[23]</sup> and in 2004 Fox<sup>[24]</sup> found that only 4% to 6% of people were buying medicines through online pharmacies. Similarly we too found that only 6% of respondents of our study have experience of purchasing medicinal products over online pharmacies. Perhaps, despite of window of 15 years between the previous study findings and current study- the percentage purchase of online medicines is similar; this can correlated with to delayed technological advent and late 'catch-up' of this online trend by Indian internet using population. Further 68.9% of respondents of our study were satisfied with current conventional community pharmacy shops; which was in agreement with finding (54.4%) of Afahad et al.<sup>[6]</sup>

In this study mostly respondents opined that features like discounts on medicine, choices of delivery time and address, delivery at door step in less than 24 hrs and offers on medicines would attract them towards online pharmacy. These finding are consistent with other studies in which convenience related factors were mentioned by consumers as drawing-factor toward online pharmacy. Almost (95%) all of the respondents stated that they would like to have added feature like online medical advice and information regarding drugs on online pharmacy websites. Providing drug information through online pharmacy websites was supported by other studies.<sup>[6]</sup> But online medical advices miss the clinical bedside scenario of detailed patient

general-physical evaluation which is often necessary before providing treatment. Online consultations may lead to drug-drug interactions and adverse effects, about which patients may have no or inadequate warning. Online medical advices also promote self medication which further complicates the situation.<sup>[7]</sup>

Afahad et al. observed that 66.4% of respondents were in favour of buying medicines through online pharmacies in future; which is similar to the finding (70%) of our study. Further Afahad et al. reported that 61.8% of respondents opined that purchasing medicine through online pharmacies is safe. Contrastingly, results of our study have shown that 75% of respondents concerned about substandard or counterfeit medicines.<sup>[6]</sup> Many studies also pointed out that as a result of unregulated online pharmacies the spread of substandard or counterfeit medicines has become a serious public health risk.<sup>[11, 25-26]</sup>

Presence of illegal websites was mentioned as one of the deterring factor in using online pharmacy services by 57% of respondents in this study. Numerous studies have been also raised the concerned about illegitimate on unlicensed online pharmacies in past.<sup>[14, 27, 19]</sup> In fact, it is probably impossible to keep the Internet free from illegal sites.<sup>[28-29]</sup> Illegitimate websites often operate from developing countries with lack of regulatory oversight and enforcement regarding Internet-based commercial operations.<sup>[19]</sup>

In India online pharmacies come under the purview of the Drugs and Cosmetics Act- 1940 and the Information Technology Act- 2000. But Drugs and Cosmetics Act-1940 doesn't distinguish between online pharmacies and traditional community pharmacies. Online pharmacy players make interpretation of laws and rules as per their convenience for taking advantage for their business when there is uncertainty on the applicability of these laws. In absence of clear laws and guidelines it is difficult for regulatory authorities to control, monitor and track sell of medicines through internet in India.<sup>[2]</sup>

## CONCLUSION

The results of current study indicated that respondents were aware about the advantages of online pharmacies and were keen to pursue this channel of commerce. But the willingness of purchase of medicine online seems to be hindered by factors such as lack of rules and regulations against the online pharmacies, supply of substandard/counterfeit medicines and availability of satisfactory services of traditional community pharmacies. Moreover, purchasing medicines from internet vendors was not a common practice amongst the current sample size. In the backdrop of rapidly increasing number of internet users every day, mutual partnership among online pharmacies, regulatory authorities and physicians in consumer's interest seems like the need of the hour.

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