

ORIGINAL RESEARCH

Awareness regarding E-pharmacy among Kashmiri population

Dr. Saima Bashir¹, Dr. Iram Kehkashan², Dr. Hibba Dar³, Dr. Zuryat⁴, Dr. Samina Farhat⁵

¹⁻⁵Department of Pharmacology, GMC, Srinagar, Jammu and Kashmir, India

Corresponding author

Dr. Hibba Dar

Department of Pharmacology, GMC, Srinagar, Jammu and Kashmir, India

Received: 23 October, 2023

Accepted: 27 November, 2023

ABSTRACT

Background: The rapid expansion of e-commerce has ushered in a new era of online drug retail, encompassing a wide spectrum of medications. While online pharmacies offer numerous benefits, concerns regarding safety persist. Notably, there is a lack of research on consumer attitudes toward online pharmacies in the Kashmir region of India. This study seeks to address this gap by investigating customer perceptions and awareness of online pharmacy services in the Kashmir region. **Objectives:** To assess the knowledge about e-pharmacy among educated Kashmiri population and to figure out the possible factors influencing the online purchase of drugs. **Methods:** A cross-sectional study was carried out using an online questionnaire forwarded to a random convenience sample of 428 participants through various social media platforms (whatsapp, facebook, etc). **Results:** A majority of the participants were females (62.6%) in the age group of 31-40 years (48.1%). Healthcare professionals constituted a substantial portion of the participants (23.5%). About two-thirds expressed a desire to purchase medicines online, with educational background influencing this choice. The safety of online pharmacies was viewed positively by more than half of the participants (53.7%). Furthermore, respondents were attracted to online pharmacies primarily by timely delivery (25.8%), reduced physical visits (24.4%), and discounts (21.7%). The availability of drugs not found in local pharmacies was particularly appealing to certain occupational groups, such as government employees (61.9%) and healthcare professionals (41.6%). Doubts about the quality of medicines (41.6%) and concerns about trustworthy websites (30.93%) were reasons that hindered online medicine purchases. **Conclusion:** Awareness towards online pharmacies was prevalent in a major portion of our participants, however, half of our respondents said that they had never purchased medicines online. Although online pharmacy can serve as a convenient tool of the modern era due to its considerable ease and accessibility, it should be approached with caution and regulations should be brought into effect that would safeguard the public from potential hazards associated with unregulated access, discounted offers and anonymity, which can be prevalent when utilizing online pharmacy services.

Keywords: e-pharmacy, online pharmacy, customer perception, awareness

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INTRODUCTION

E-commerce is growing rapidly in the present-day era of widespread internet use. There is an extensive availability of various commodities on different internet platforms. These commodities include prescription and over-the-counter medications for treating a wide range of diseases. Thus, an e-pharmacy is a web-based trader that sells medicines and includes both legal and illegal pharmacies. (1)

The online retailing of drugs began in the late 1990s and has expanded so much that the US Food and Drug Administration (FDA) has implemented an entire section on its website devoted to "BeSafeRx: Know Your Online Pharmacy". (2)

The Indian pharmaceutical market, estimated to be worth US\$ 41 billion in 2021, remains the third largest in terms of volume and quantity of products and the thirteenth largest in terms of value. It is

anticipated to increase to US\$ 65 billion by 2024 as it advances in uplifting population well-being and control of chronic diseases, raising awareness, expanding disposable income, and other factors. In terms of its goal to be a major player in the global pharmaceutical industry, India has a competitive advantage owing to the estimation of roughly 33% for the US and a sizeable chunk of that of Europe. (3). Considering medicine is a commodity with a unique status that represents both a product and it happens to come with the details as well, its distribution and commercialization are subject to stern equipment and personnel necessity. It has been highlighted that the therapeutic effects of medication, which differentiate them significantly from other commodities, have the outcome that, if they are consumed inaccurately or unnecessarily, they may cause severe damage to health without the patient being aware of it at the time

of consumption.(4)

In spite of the fact that there are numerous advantages of buying medicines from e-pharmacies, WHO data still raised a question upon its safety concerns, The gravity of this situation intensified when the WHO assessed that about half, or 50%, of the pharmaceuticals marketed online are from spurious websites. Due to the illicit sale of counterfeit medications by online pharmacies, there is a significant hazard to the public's health, which has catastrophic implications for potential consumers. (5)Worldwide, the estimated quantity of counterfeit medicine is about 10% ranging from less than 1% in the developed countries to over 30% in developing countries such as India, Asia, Africa and Latin America. (6)

There are many evident threats for buying medication over the Internet. These include easy access to illegal or unapproved drugs, medication offered without a prescription, and drugs marketed with fake health claims. Obtaining medication over the internet has several benefits despite the associated dangers. Convenience and the ability to order at any time are among the advantages, as well as quicker delivery and more privacy compared to visiting a doctor or pharmacy in person. The biggest risk of buying medication online is the possibility of receiving counterfeit or spurious medications, which could be harmful to one's health. Direct interaction with healthcare professionals, a safeguard offered by traditional methods, is lacking in online purchases, making consumers vulnerable to exposure to illegal or unlicensed drugs, as well as false health claims offered without a prescription. This can be particularly appealing for people with medical conditions they prefer to keep confidential.

There has not been any research reported on consumer attitudes regarding online pharmacies in Kashmir. As a result, we designed a study to evaluate customer perceptions and understanding on the use of online pharmacy services in the Kashmir region of India.

AIMS and OBJECTIVES

To assess the knowledge about e pharmacy among educated Kashmiri population and to figure out the possible factors influencing the online purchase of drugs.

MATERIALS and METHODS

Study Design, Population and Data Collection

This was a descriptive cross-sectional study. Participants enrolled in this study belonged to different areas of Kashmir, India. The study was conducted during the time period from November 2022 to January 2023. All the participants (n = 428) were required to respond to an online questionnaire

that was hosted by Google forms. The participants received a link to the questionnaire via various social media platforms (whatsapp, facebook, etc). The initial part of the questionnaire provided information on the background of the study, its objectives, voluntary nature of participation, declarations of anonymity and the confidentiality of all data. The participants were then required to provide informed consent before proceeding further. The study was approved by the Institutional Ethics Committee of Government Medical College, Srinagar. It was not possible to evaluate the response rate since the Google Forms survey link was circulated freely among the participants and no personal identifiers were collected.

Questionnaire Design and Validation

To assess user awareness of internet drug purchases, a KAP survey was devised. The questionnaire was divided into four sections. The first section centred on demographic information, i.e., age, gender, educational qualification, occupational status and income. This was followed by questions related to knowledge, attitude and practices towards online pharmacy. After researching past studies and performing a literature review, the survey's questions were devised. Experts from our department tested the questionnaire's validity and reliability on 30 randomly chosen participants. On the basis of the Pretest results, a validated structured questionnaire was finalised. The questionnaire had a total of 18 questions in the English language

Statistical Analysis

The evaluation was performed by employing the SPSS version 25.0. To illustrate demographic characteristics of participants, descriptive statistics were used. Continuous variables were expressed as mean \pm standard deviation (SD) while categorical variables were measured as percentages.

RESULTS

Socio-demographic information

Table 1 provides information about the respondents' demographics. More than half of the respondents (62.6%) were female and majorly from the age group of 31-40 years (48.1%) followed by 18-30 years (34.0%). In terms of educational level, greater than half of the respondents were postgraduates (57.3%) while 29.8% had a graduate level of education. In terms of monthly income, around one-third (30.0%) of the individuals had an income of between Rs 50,000 – 1 lakh, while around one-fifth of individuals reported an income above Rs 1 lakh. A major portion (23.5%) of the study participants were healthcare professionals, while students and government employees had an equal representation (22.6% each).

DEMOGRAPHIC CHARACTERISTICS

Age (years)	No. of Respondents N (%)
18 – 30	146 (34.0)
31 – 40	207 (48.1)
41 – 50	47 (10.9)
51 – 60	20 (4.7)
Above 60	10 (2.3)
Gender	No. of Respondents N (%)
Female	269 (62.6)
Male	161 (37.4)
Educational Qualification	No. of Respondents N (%)
Secondary School	26 (6.0)
High School	27 (6.3)
Graduate	128 (29.8)
Postgraduate	249 (57.9)
Occupational Status	No. of Respondents N (%)
Contractual Assistant professor	2 (0.5)
Govt. Employee	97 (22.6)
Healthcare professional	101 (23.5)
Home-maker	23 (5.3)
Private employee	58 (13.5)
Retired	2 (0.5)
Self employed	40 (9.3)
Student	97 (22.6)
Unemployed	10 (2.3)
Monthly Income (Rupees)	No. of Respondents N (%)
< 10,000	70 (16.3)
10000 - 25000	48 (11.2)
25000 - 50000	74 (17.2)
50000 – 1 lakh	129 (30.0)
>1 lakh	91 (21.2)
None of the above	18 (4.2)

A substantial portion (95.1%) of study participants reported a daily usage of the internet.

Among the study participants, 331 (77%) were healthcare professionals while the remaining were not [i.e., 99 (23%)]. Majority of both healthcare and non-healthcare professionals (103 and 69 respectively) reported that they occasionally (few times a month) visit websites containing information specifically about drugs or medicinal products. Around half of the respondents (48.4%) expressed a neutral opinion with regards to satisfaction with their ongoing community pharmacy facility. While 35.8% of participants expressed no difficulty in buying medicines from the medical stores, around one-third (34.2%) felt that unavailability of medicines in the pharmacy was a hindrance to purchasing medicines from the medical store and one-sixth (16.7%) felt that delay in receiving medication was a difficulty they faced when it came to purchasing medicines from the pharmacy.

A series of questions were made of respondents to gauge their general awareness of, perception of, and attitude toward internet pharmacies.

The vast majority of those surveyed (85.85%) had heard of online pharmacies and about two-third of respondents expressed a desire to buy medicines

through online pharmacies (68.10%). Among the respondents, 74.3% of postgraduates and 66.4% of graduates were willing to buy medicines through online pharmacies, 46.2% of participants with a secondary school level of educational qualification did not know whether they would like to buy medicines through an online pharmacy. (Table 2) While fraction of respondents who were not willing to buy medicines through online pharmacies was one-fifth or less, it was highest amongst high school (22.22%) and postgraduates (20.1%), and the least among individuals with a secondary school level of education (15.4%). This was statistically significant with a p-value of 0.000. (Table 2)

Further, more than half of respondents (53.7%) were of the opinion that purchasing medicines through online pharmacies would be safe. While 50.9% of females and 58.4% of males felt that online pharmacies were safe, 38.7% females and 24.2% males responded with don't know, 10.4% females and 17.4% males felt that online pharmacies were not safe, and this result was statistically significant (p-value 0.003). (Table 2)

More than three-fourth (84.14%) of respondents said they would recommend online pharmacy services in

Kashmir. While 7.6% of postgraduates and 7.8% of graduates said they would not recommend this service (online pharmacy) in Kashmir, 22.2% of high school pass-outs and 30.8% of secondary school pass-outs responded that they would not recommend online pharmacy services in Kashmir, and this result was statistically significant, with a p-value of 0.003. (Table 2)

However, while asked regarding difficulty respondents face while buying medicines from medical stores, the majority [154 (35.8%)] responded that they had no difficulty in purchasing medicines from stores. 147 (34.2%) of respondents felt unavailability of medicine in pharmacy was a difficulty they faced and 72 (16.7%) said that delay in receiving medication was a difficulty they faced while buying medicines from medical stores. On further analysing this response across income categories, majority of respondents i.e., 36 (39.6%) in the > 1 lakh income group said they faced no difficulty in

buying medicines from medical stores, while greater number of respondents in the 25000 – 50000 group [29 (39.2%)] and in the 50000 – 1lakh income group [49 (38.0%)] felt unavailability of medicine in the pharmacy was a difficulty in purchasing drugs from stores, and this was found to be statistically significant (p-value of 0.001). (Table 2)

When asked about features of online pharmacy that attract participants the most, timely delivery of items (25.8%), reduced visits to the pharmacy (24.4%) and availability of discounts (21.7%) were the top reasons that participants opted for. With respect to occupational status, majority of government employees (61.9%), healthcare professionals (41.6%), homemakers (87.0%), self-employed individuals (50.0%) and students (52.6%) said that availability of drugs that might not be available in local pharmacies was a feature of online pharmacy that attracts them the most, which was statistically significant (p-value of 0.000). (Table 2)

TABLE 2

Educational Qualification	Would you like to buy medicines through online pharmacy? N (% within Educational Qualification)			p – value			
	Don't know	No	Yes				
Sec. School	12 (46.2%)	4 (15.4%)	10 (38.5%)	0.000			
High School	5 (18.5%)	6 (22.2%)	16 (59.3%)				
Graduate	22 (17.2%)	21 (16.4%)	85 (66.4%)				
Postgraduate	14 (5.6%)	50 (20.1%)	185 (74.3%)				
Gender	Would you like to buy medicines through online pharmacy? N (% within Gender)			p – value			
	Don't know	No	Yes				
Female	41 (15.2%)	52 (19.3%)	176 (65.4%)	0.040			
Male	12 (7.5%)	29 (18.0%)	120 (74.5%)				
Gender	Do you think purchasing medicines through online pharmacy would be safe? N (% within Gender)			p – value			
	Don't know	No	Yes				
Female	104 (38.7%)	28 (10.4%)	137 (50.9%)	0.003			
Male	39 (24.2%)	28 (17.4%)	94 (58.4%)				
Educational Qualification	Do you recommend this service (online pharmacy) in Kashmir? N (% within Educational Qualification)			p – value			
	Don't know	No	Yes				
Sec. School	2 (7.7%)	8 (30.8%)	16 (61.5%)	0.003			
High School	0 (0.0%)	6 (22.2%)	21 (77.8%)				
Graduate	6 (4.7%)	10 (7.8%)	112 (87.5%)				
Postgraduate	20 (8.0%)	19 (7.6%)	210 (84.3%)				
Monthly Income	What kind of difficulty do you face in buying medicines from the medical stores? N (% within Monthly Income)						p – value
	Delay in receiving medication	Unavailability of medicine in pharmacy	Wrong medication delivered	Not able to go to the pharmacy	No difficulty	Others	
< 10000	13 (18.6%)	23 (32.9%)	3 (4.3%)	6 (8.6%)	25 (35.7%)	0 (0.0%)	0.001
10000 - 25000	4 (8.3%)	10 (20.8%)	2 (4.2%)	4 (8.3%)	26 (54.2%)	2(4.2%)	
25000 - 50000	22 (29.7%)	29 (39.2%)	6 (8.1%)	0 (0.0%)	17 (23.0%)	0(0.0%)	
50000 – 1 lakh	14 (10.9%)	49 (38.0%)	10 (7.8%)	10 (7.8%)	42 (32.6%)	4(3.1%)	

>1 lakh	15 (16.5%)	32 (35.2%)	0 (0.0%)	6 (6.6%)	36 (39.6%)	2(2.2%)	
Not Selected	4 (22.2%)	4 (22.2%)	0 (0.0%)	0 (0.0%)	8 (44.4%)	2(11.1%)	
Occupational Status	Which features about online pharmacy attracts you the most? N (% within Occupational Status)						p – value
	Majority times items are delivered on time	Choices of delivery times and addresses	Reduced visits to the pharmacy	Discounts are available	Availability of drugs that might not be available in local pharmacy	Others	
Contractual Asst. Professor	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	2 (100.0%)	0 (0.0%)	0.000
Govt. Employee	6 (6.2%)	8 (8.2%)	11 (11.3%)	4 (4.1%)	60 (61.9%)	8 (8.2%)	
Healthcare Professional	23 (22.8%)	10 (9.9%)	24 (23.8%)	0 (0.0%)	42 (41.6%)	2 (2.0%)	
Homemaker	3 (13.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	20 (87.0%)	0 (0.0%)	
Private Employee	16 (27.6%)	10 (17.2%)	8 (13.8%)	0 (0.0%)	18 (31.0%)	6 (10.3%)	
Retired	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	2 (100.0%)	0 (0.0%)	
Self employed	8 (20.0%)	4 (10.0%)	8 (20.0%)	0 (0.0%)	20 (50.0%)	0 (0.0%)	
Student	2 (2.1%)	12 (12.4%)	18 (18.6%)	8 (8.2%)	51 (52.6%)	6 (6.2%)	
Unemployed	4 (40.0%)	2 (20.0%)	0 (0.0%)	2 (20.0%)	2 (20.0%)	0 (0.0%)	
Gender	How often do you purchase medicines online? N (% within Gender)					p – value	
	Never	Occasionally	Frequently	Always			
Female	140 (52.0%)	96 (35.7%)	25 (9.3%)	8 (3.0%)		0.695	
Male	78 (48.4%)	57 (35.4%)	20 (12.4%)	6 (3.7%)			

Doubt about the quality of medicines (41.6%) and lack of knowledge about trustworthy websites (30.93%) were among the most selected beliefs that prevent respondents from buying medicines online. Regarding their last experience on online pharmacy, although 56.5% of participants found the question not applicable to them, 39.8% had a good experience of online pharmacy. Participants were asked how often they purchase medicines online, while 50.7% replied that they had never purchased online medicines, 35.6% said they occasionally purchased online medicines, in which 96 were females while 57 were males. (Table 2)

Respondents were asked how long they had been purchasing online medicines, 16% of respondents reported that they had been utilising this service for more than a year, while 11.2% reported purchase of online medicines for a period of 1 to 6 months. When asked whether respondents consult their doctor before purchasing drugs online, 26.3% responded in the negative and 21.9% responded in the affirmative. Participants were asked about the category of drugs they buy online. 20% of participants answered that they buy both prescription and non-prescription drugs, 17.2% buy prescription drugs online and 11.2% buy cosmetics through online portals. (Table 2)

DISCUSSION

Due to the limited research available on customer attitudes towards online pharmacies, there is a

significant need to conduct a comprehensive investigation into various aspects of consumer behaviour and their perceptions of online purchasing. Our study aims to bridge this gap by examining consumer views specifically regarding online pharmacy services in the Kashmir region. This study will be the first of its kind in this region, providing novel insights into the topic and filling a crucial research void.

Our study indicated that a significant number of study participants (95.1%) reported utilizing the internet on a daily basis. A study conducted by AlFahad et al., also reported that a majority of their respondents were frequent users of the internet (97.6%).(2) On the contrary, in their study, had only 27.61% of participants who used the internet on a daily basis.(5) Citrin et al., conducted a study revealing that individuals who engage in higher levels of internet usage are more inclined to adopt online shopping as a preferred method.(7)

According to our survey findings, an overwhelming majority of the participants (85.85%) were familiar with the concept of online pharmacies. Yadav et al., reported in their study that 91.76% of interviewees had heard of e-pharmacy.(1) Their study participants were, however, all physicians, whereas in our study, 77% of the study population were healthcare professionals. Fittler et al., in their survey, had 82.65% of respondents being aware of the concept on online pharmacies.(6) On the contrary, AlFahad et al.,

in their study, reported that majority of their participants (82.6%) were not aware of the existence of online pharmacies.(2)

In our study, we had around two-thirds of users (68.10%) who expressed a willingness to purchase medicines via an online platform. AlFahad et al., also had a similar percentage of respondents who said they would like to buy medicines through online pharmacy (66.4%).(2) On the other hand, Bansal et al., reported that the majority of their users said that they would prefer to buy medicines through offline channels.(5) In their separate studies, Bansal et al. and Pal et al. discovered that factors such as age, gender, and educational qualification did not exert a notable influence on individuals' purchasing behaviour regarding online pharmacies.(5)(4) In our study, we observed a statistically significant variation in the inclination to purchase medicines from online pharmacies based on gender and educational qualification. The p-values were 0.040 and 0.000, respectively, indicating a noteworthy difference.

Although the majority of our participants showed an awareness towards online pharmacies, half of them had never used an online pharmacy and one-third had done so only occasionally. This was in accordance with findings of Bansal et al., and AlFahad et al., who also reported a smaller number of participants actually purchasing medicines via online pharmacies.

Our participants were of the opinion that timely delivery of items (25.8%), reduced visits to the pharmacy (24.4%) and availability of discounts (21.7%) were features that would attract them towards using online pharmacies. When asked about features of online pharmacy that attract participants the most, timely delivery of items (25.8%), reduced visits to the pharmacy (24.4%) and availability of discounts (21.7%) were the top reasons that respondents opted for. These findings align with other similar studies where price differences, nonavailability of medications in the market, easy availability and reduced trips to pharmacies were the most frequent reasons quoted by study participants.(5)(2)

A significant proportion of respondents (53.7%) expressed confidence in the safety of purchasing medicines through online pharmacies. Majority of participants (61.8%) in AlFahad et al.'s study were also of a similar opinion with regards to safety.(2) Wickware performed an analysis of inspection reports of pharmacies regulated by the General Pharmaceutical Council (GPhC) and found that online pharmacies were more likely than traditional pharmacies to fail meeting regulatory standards.(8) This implies that although the public may regard online pharmacies to be safe, however, education with regards to safety concerns of these pharmacies is a topic that needs to be addressed. At present, there is a lack of specific and comprehensive legislation specifically tailored for online pharmacies. In India, pharmacies are regulated by the Drug and Cosmetics Act of 1940, Drugs and Cosmetic Rules of 1945,

Pharmacy Act of 1948, and Indian Medical Act of 1956.(3) It is crucial for the government to develop a strong policy framework and establish clear and unambiguous laws that create a favourable environment for online pharmacy operators, while simultaneously ensuring the safety and welfare of the general public.

A major portion of our respondents were of the opinion that a prescription is required for online purchase of selected items (49.1%). Around two-third of respondents in Pal et al.'s study considered information from physicians an important factor prior to starting a new medication.(4) These findings indicate that participants are aware of the potential risks associated with self-medication and recognize the importance of professional guidance vis-a-vis healthcare decisions.

LIMITATIONS

As the study findings were based on responses to an online questionnaire, hence this study is not representative of those individuals who do not use the internet. The sample size is small and a wider investigation is warranted to gauge the extent of online pharmacy awareness. As a greater portion of our participants were healthcare professionals, this could be a potential survey bias.

CONCLUSION

Awareness towards online pharmacies was prevalent in a major portion of our participants, however, half of our respondents said that they had never purchased medicines online. This indicates that despite having a know-how with regards to the existence of e-pharmacies, participants were still more comfortable with approaching traditional brick-and-mortar pharmacies for their medication needs. Despite half of our study population never having utilised online pharmacies, our study found that the same proportion of respondents felt that procurement of medicines through online pharmacies was a safe practice and a majority of respondents said they would recommend online pharmacy service in Kashmir. Although online pharmacy can serve as a convenient tool of the modern era due to its considerable ease and accessibility, it should be approached with caution and regulations should be brought into effect that would safeguard the public from potential hazards associated with unregulated access, discounted offers and anonymity, which can be prevalent when utilizing online pharmacy services.

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