

# Problems of purchasing pharmacy products through online orders

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## ABSTRACT

Online pharmacy services and online ordering of pharmaceutical products are in demand, especially in the context of the COVID-19 pandemic. The problems of the purchase of pharmacy products through online orders in the Far Eastern Federal District were analyzed. Sociological survey of the population ( $n = 3789$ ) was carried out. Spearman's Rank correlation coefficient was used. Drugs, dietary supplements, hygiene, and care items are most often purchased in online pharmacies. There is a correlation with the female sex, which may be related to care about family/loved people. The purchase of prescription drugs through e-pharmacies is also more often in demand among women and older patients. Among prescription drugs, the order of drugs used in the treatment of coronavirus infection and its complications (antibiotics, nonsteroidal anti-inflammatory, gastroenterological, and hormonal) is widespread. The problems of e-pharmacies identified due to the study are the lack of proper control over prescription drugs, low role of the pharmaceutical worker in compliance of the patient, and frequent refusals of Internet orders. It is necessary clarify the regulatory status of e-pharmacies and the role of pharmaceutical specialists in it, to reduce the possibility of error in the preparation and/or assembly of orders, to reduce the risk of the presence of defective goods. These ways can increase customer loyalty to this service.

**Key words:** Assortment, online pharmacy, order, prescription medicine, problems

## INTRODUCTION

The most current trends in pharmaceutical retail are the takeover of independent pharmacies by chains and mergers, including virtual pharmacies and the sale of part of the assortment in stores.<sup>[1]</sup> Despite the presence of legitimate retail channels, one of the most important problems is the

illegal sale of prescription drugs. Hence, a study conducted in the United States (USA) demonstrated that illegal online pharmacies create an opportunity for unhindered access to controlled substances, such as opioids, and increase the risk of patient use of counterfeiting.<sup>[2]</sup> A significant problem is the lack of understanding of the differences between a legal and illegal online pharmacy even among specialists. Thus, according to a survey in the USA ( $n = 100$ ), most pharmaceutical students were unaware of how to accurately identify suspicious websites.<sup>[3]</sup>

A joint study conducted by Great Britain, Kenya, Nigeria, and India demonstrated the implementation of substandard and falsified drugs, consumer fraud, and violation of the privacy of personal data. There is insufficient regulation

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in the regulatory framework, lack of consensus on models and regulatory potential, violation of cross-border sales, and risks of excessive control.<sup>[4]</sup>

The problems of online pharmacies include the uncontrolled use of antibacterial drugs. Data from a study in China demonstrated that 79% of the online pharmacies sold antibiotics without a valid prescription.<sup>[5]</sup> Another experience showed the prospects of collaboration with closed platforms (WeChat) for planning, follow-up, and postprocedural monitoring of drugs, making payments, and processing prescriptions through an e-pharmacy.<sup>[6]</sup>

One of the options for solving the existing problems of e-pharmacies, according to a study in India, is the provision of on-call pharmacists. These requirements must be basic for obtaining an electronic pharmacy license.<sup>[7]</sup> On November 2016, the self-regulation code of conduct was released in India.<sup>[8-10]</sup>

In the Russian Federation, over the past 10–15 years, online pharmacies have also become widespread.<sup>[11]</sup> According to the requirements of regulatory acts, the retail trade in over-the-counter medicines is carried out remotely by pharmacy organizations that have a license and the corresponding permission of the Federal Service for Surveillance of Healthcare.<sup>[12]</sup>

According to a sociological survey, a third of respondents have a plan to purchase drugs remotely in e-pharmacies, about the same number do not deny such a possibility, but in the absence of a drug in a traditional pharmacy. The main reasons for the preference of offline pharmacies are the importance of pharmaceutical consultation and the risk of purchasing low-quality goods,<sup>[13]</sup> increase in the number of unscrupulous suppliers, unverified manufacturers, fraudulent sites, noncompliance with the cold chain during delivery, etc.<sup>[14-16]</sup>

According to the results of large studies, the choice of over-the-counter drugs for symptoms within the framework of responsible self-medication was available on 24% of online pharmacy sites; however, there were no indications of symptoms requiring immediate medical attention, and there were no maximum selling prices and information on the actual shelf life of marketed drugs.<sup>[17]</sup>

However, there is a lack of data on the attitude of potential and existing buyers to e-pharmacies and emerging problems, especially for regions with low population density and remoteness of large municipalities. The purpose of the study was to analyze the problems of purchases of pharmacy products through online orders in the Far Eastern Federal District.

## SUBJECTS AND METHODS

The survey of the population was carried out based on the Far Eastern State Medical University from March to

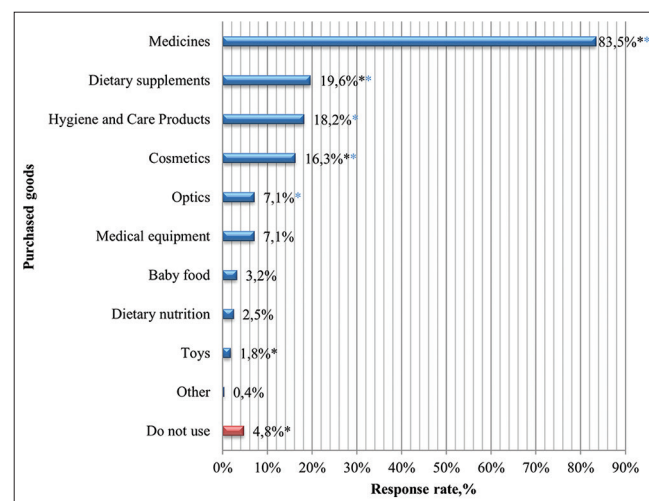
April 2022 and approved by the ethical committee dated July 5, 2018 (protocol no. 3). The survey was conducted online using Google Forms service (<https://docs.google.com/forms/>). Mathematical data calculation was carried out using Microsoft Excel 365 software package “Data Analysis.” Statistical analyses were performed using the program IBM SPSS Statistics 25 (IBM, New Orchard Road Armonk, New York, United States). Paired correlations of respondents’ responses were calculated using Spearman’s rank correlation coefficient. A significant correlation was considered at a two-sided significance of  $P < 0.05$ . To check the reliability of the questionnaire, Cronbach’s alpha coefficient was used. The value was 0.7, which is sufficient for a sociological study. Sampling error with 95% confidence and 50% trait share was 1.6%. Characteristics of respondents surveyed ( $n = 3789$ ) by gender: women –72%, men –28%. Characteristics of respondents surveyed by age: over 65 years –1.3%; 51–65 years –5.7%; 26–35 years –18.1%; 18–25 years –61.3%.

Aspects investigated during the survey: the structure of the online order in the e-pharmacy; reasons for selecting a product; purchase of prescription drugs, and controlled by a pharmaceutical specialist; online order buyback failures and their causes.

## RESULTS

We can conclude that e-pharmacies are used to purchase drugs by 84% of respondents [Figure 1]. The correlation of respondents’ characteristics is presented in Table 1.

Drugs are more often purchased by women and older respondents. Other popular products are dietary supplements, cosmetics, and hygiene products. There was a significant correlation between the female gender and



**Figure 1:** Structure of purchasing goods in e-pharmacies. \* $P \leq 0.05$  correlation with gender is significant, \*\* $P \leq 0.05$  correlation with age is significant

younger age. The toys in an e-pharmacy are more often purchased by men.

The most common reason for choosing a product in an online pharmacy is the prescription of a doctor, own experience and preferences, and previous experience of use [Figure 2 and Table 1].

The most common responses correlate with the female gender and young age [Table 1]. Men are more often guided by information on the Internet and directly to the e-pharmacy. The availability of discounts and bonuses is significant only for 15% of respondents.

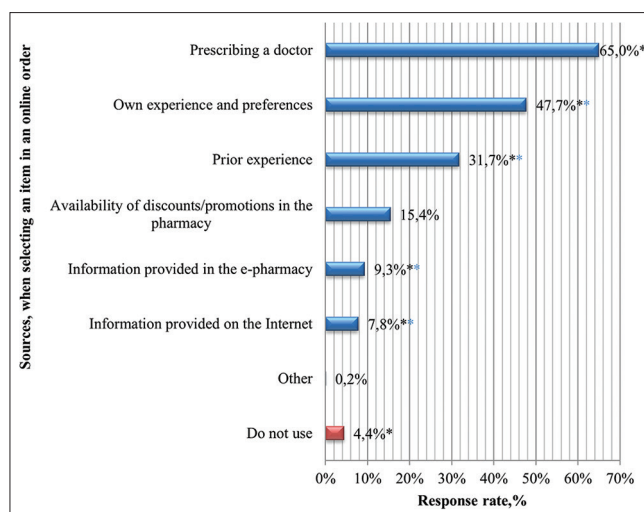
Prescription drugs are a significant part of the range of e-pharmacies. Nevertheless, the legislation provides for their purchase/redemption of orders only in a pharmacy organization. Therefore, only 37% of respondents answered the question about the purchase of prescription drugs through online pharmacies in the affirmative. Significant correlation was between female gender and older age. The structure of the acquisition of prescription drugs through online pharmacies is presented in Figure 3, and the correlation between age and gender is in Table 1.

The most popular prescription drugs when ordering online are antibiotics, analgesics, gastrointestinal, hormonal, and cardiovascular drugs. A significant correlation in the leading groups was observed between the female sex and older age.

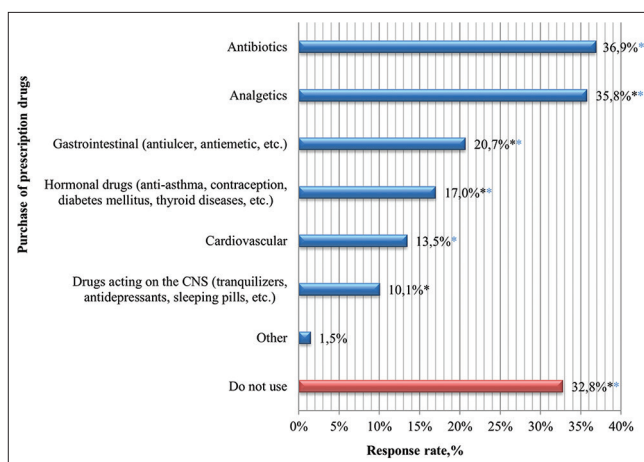
More than half of the respondents (52.7%) noted that when receiving an order, the pharmaceutical worker did not request a prescription. More often, the prescription was asked for older patients, which correlates with their more frequent purchase of prescription drugs. The situation is complicated by the fact that only 33.5% of respondents noted the pharmaceutical workers talked about the need for a visit to a medical specialist in case of maintaining symptoms and/or worsening health. When delivering the goods of the pharmacy assortment by courier, only 9.2% of respondents indicated a reminder of the need to visit a doctor. Valid correlation was between gender (female) and age (older) of respondents.

Another common problem when purchasing an e-pharmacy is the refusal of an online order. About 12.8% of respondents indicated the presence of such precedents. There was a correlation with gender (men). The structure of the distribution of respondents' answers on the reasons for abandoning online orders is given in Figure 4. The correlation between age and gender is presented in Table 1.

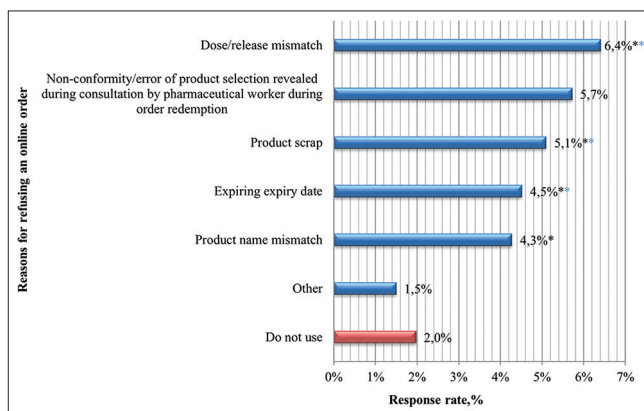
The most common reasons for refusal to online order were dose/release form discrepancy, product defect,



**Figure 2:** The structure of the grounds for choosing goods in an e-pharmacy. \* $P \leq 0.05$  correlation with gender is significant, \*\* $P \leq 0.05$  correlation with age is significant



**Figure 3:** The structure of prescription drugs through e-pharmacies. \* $P \leq 0.05$  correlation with gender is significant, \*\* $P \leq 0.05$  correlation with age is significant



**Figure 4:** The structure of reasons for refusal of the e-orders. \* $P \leq 0.05$  correlation with gender is significant, \*\* $P \leq 0.05$  correlation with age is significant

**Table 1: Correlation of respondents' responses with their gender and age**

Characteristic	Correlation with gender (Pearson's Spearman)	Correlation with age (Pearson's Spearman)
Products purchased in online pharmacies		
Medicines	0.000 (female)	0.001 (elderly)
Dietary supplements	0.000 (female)	0.004 (young)
Cosmetics	0.000 (female)	0.000 (young)
Hygiene and care items	0.894	0.000 (young)
Optics	0.436	0.000 (young)
Toys	0.000 (men)	0.057
Do not use e-pharmacies	0.014 (men)	0.715
Reasons for choosing a product in an online pharmacy		
Prescribing a doctor	0.000 (female)	0.286
Own experience and preferences	0.000 (female)	0.001 (young)
Prior experience	0.000 (female)	0.003 (young)
Information provided in the online pharmacy	0.000 (men)	0.000 (young)
Information provided on the Internet	0.018 (men)	0.000 (young)
Do not use e-pharmacies	0.013 (men)	0.891
Purchase of prescription drugs from an online pharmacy	0.000 (female)	0.000 (elderly)
Antibiotics	0.953	0.002 (elderly)
Cardiovascular	0.336	0.000 (elderly)
Drugs acting on the central nervous system	0.042 (female)	0.740
Hormonal drugs	0.000 (female)	0.003 (elderly)
Anesthetics	0.000 (female)	0.006 (elderly)
Gastrointestinal	0.007 (female)	0.000 (elderly)
Do not use e-pharmacies	0.010 (men)	0.000 (young)
Prescription requirement at pharmacy prescription purchase	0.356	0.000 (elderly)
Indication of the pharmaceutical worker to visit the doctor if the treatment is ineffective	0.000 (men)	0.000 (elderly)
Courier's indication of the need for a visit to the doctor if the treatment is ineffective	0.000 (female)	0.001 (elderly)
Refusal when receiving an internet order in a pharmacy organization	0.013 (men)	0.455
Dose/release mismatch	0.000 (men)	0.001 (young)
Product name mismatch	0.000 (men)	0.371
Product scrap	0.000 (men)	0.000 (young)
Expiring expiry date	0.000 (men)	0.005 (young)
There were no online order refusals	0.000 (female)	0.721

expiring expiration date for younger respondents, and nonconformity/error of the product, which was indicated during pharmaceutical consultation. These problems must be solved both at the level of the pharmaceutical organization, where the order will be bought and of the booking system.

## DISCUSSION

The structure of purchasing goods in an online pharmacy is naturally based on the assortment of a traditional organization. The purchase of drugs by older respondents is common, probably due to the presence of chronic diseases. Dietary supplements, cosmetics, and hygiene products are more in demand among younger respondents, which may be associated with an active lifestyle, with care for elderly relatives/loved ones.

The most common reasons for purchasing goods in an e-pharmacy are the appointment of a doctor, which is primarily due to the specifics of the assortment. We can conclude that women are more often guided by their own experience and knowledge, and men with information obtained directly when choosing and buying goods.

For the purchase of prescription drugs, the presentation of a properly executed prescription is required, and its examination, in turn, must be carried out by a pharmaceutical specialist. In addition, when purchasing these drugs, there is a high probability of a need for pharmaceutical consultation. Another reason for the low share of purchases of prescription drugs through the Internet may be the need for their urgent/immediate use, but online orders are often accompanied by long delivery or waiting.

The distribution of answers of respondents regarding the most purchased prescription drugs through the Internet can be explained by the coronavirus pandemic (COVID-19). Antibiotics were a means of treating complications (bronchitis, pneumonia, etc.). Nonsteroidal anti-inflammatory drugs were actively used for symptomatic therapy. Gastroenterological drugs were actively used due to the spread of the delta strain, with the development of gastrointestinal syndromes. Hormonal drugs have also become widespread due to the high incidence of inflammation in the respiratory system. Correlation with older age is also natural due to the high risk of complications in this age category and the presence of chronic nosologies in history. Based on the data obtained, it can be concluded that women are more responsible for therapy and/or ordering drugs for the whole family/loved ones.

The problem of improper control over the distribution of prescription drugs and the insufficient participation of pharmaceutical specialists in the sale of medicines through e-pharmacies can be explained not only by the imperfection of the regulatory framework and the status of the Internet pharmacy itself but also by the twofold attitude of the specialists themselves toward selling/issuing online orders. Many pharmaceutical workers perceive the issuance of an order as an additional unmotivated load, as well as a pharmacy, in this case, as a simple point of issue.

The reasons for refusing Internet orders are also significant problems. If it is difficult to influence the patient's errors, except for the confirmation system, then the delivery of the defective product should be stopped during the verification of the order. The problem of expiring shelf life can also be solved at the stage of assembling the order and notifying/warning the buyer about it (automation is possible by reading the QR code when ordering a drug product).

## CONCLUSION

The results of a sociological study demonstrate the demand for e-pharmacies in the Russian Federation. They are most often used to purchase specific products of the pharmacy range, especially medicines, including prescription ones. The most popular drugs were antibiotics, nonsteroidal anti-inflammatory, gastroenterological, and hormonal, which can probably be associated with approaches to COVID-19 therapy. The most common reason when ordering drugs online is a prescription from a doctor, own experience, and preferences. The main problems with the functioning e-pharmacies are insufficient control over the prescription and the participation of a pharmaceutical specialist in compliance. The most common reasons for refusing an online order are nonconformity of the product, expired product, and defect of the product. The elimination of these shortcomings should be a priority for improving the existing organization of the work of pharmacies. In

addition, a promising area of further activity is full-fledged regulatory and legal regulation of these services.

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## Conflicts of interest

There are no conflicts of interest.

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