

Telepharmacy and opportunities for its application in Bulgaria

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Abstract

The application of telepharmacy opens new perspectives in the provision of health services and contributes to limiting the problem of reduced availability of pharmacists. The aim of the present study is to examine the attitudes towards offering and using telepharmaceutical services in Bulgaria. The study included 379 people, mostly health professionals. The mean age of respondents was 44.38 ± 12.39 . Statistical analyses were performed using IBM SPSS Statistics v.23. Over 90% of the respondents use the Internet to search for health information. Many of them read the package leaflet before use. For the most part, respondents are distrustful of food supplements sold on the Internet. More than 56% claim they would not buy prescription medicines online or via a mobile app, even if it was allowed by law. Quite a few would consult a pharmacist for a therapy prescribed at a distance as well as use a mobile application to monitor drug therapy. The spread and acceptance of telepharmacy is a challenge involving cooperation between the public and private sectors, as well as scientific institutions and academia, which is essential for achieving appropriate results and effectively improving health services.

Keywords

telepharmacy, pharmacists, information and communication technologies, online pharmacies

Introduction

The application of information and communication technologies (ICT) in pharmacy and healthcare opens new perspectives in the provision of health services and contributes to limiting the problem of reduced availability of health professionals.

The term “telepharmacy” means a form of pharmaceutical care in which pharmacists and patients are not in the same place and can interact using information and communication technology tools. Telepharmacy has been adopted to provide pharmaceutical services to remote areas and to address the shortage of pharmacists (Baldoni et al. 2019).

The National Association of Boards of Pharmacy defines telepharmacy as the provision of pharmaceutical care through the use of information and communication technologies to patients at a distance (Casey et al. 2010). This is actually the application of telemedicine in the field of pharmacy.

Telepharmacy is defined as “the provision of pharmaceutical assistance through the use of telecommunications by registered pharmacists and pharmacies to patients located at a distance” (Win 2017). Telepharmaceutical services include drug selection, review and distribution of orders, consultation and monitoring of patients, and provision of clinical service (Win 2017; Le et al. 2020). A characteristic feature of the telepharmacy service is that the pharmacist

is not physically present at the site of the pharmacy operations or patient care. The advantage of telepharmaceutical services is the wide scope of the pharmaceutical service in areas that are insufficiently accessible due to economic or geographical problems (Baldoni et al. 2019).

Telepharmaceutical services include drug therapy monitoring, patient counseling, pre-send prescription, and formulation monitoring by teleconferencing or videoconferencing (Keeys et al 2014). Under the conditions of COVID-19 its application increased (Kitova 2020). Therefore, telepharmacy uses modern technology that allows a qualified pharmacist located at the headquarters to control another pharmacist or assistant pharmacist at a pharmacy located at a remote site in the dosing of drugs via audio and video connections (Kimber and Peterson 2006; Poudel and Nissen 2016).

Remote distribution of medicines through automated packaging and labeling systems can also be considered as a case of telepharmacy. Telepharmaceutical services can be provided in retail pharmacies or through hospitals, nursing homes and other medical facilities (Angaran 1999).

Telepharmacy is an alternative strategy to expand the range of pharmacies in areas where 24-hour pharmacy services are not available⁷. Emerging electronic health information systems and related technologies such as electronic health records provide more easily accessible information to the pharmacist about an examination and a prescribed drug therapy. These technologies contribute to the advancement of telepharmaceutical services and allow the pharmacist to contribute effectively to the improvement of drug use (Pedersen et al. 2016).

The main task of telepharmacy is to provide access to professional pharmaceutical care in smaller areas that cannot support a pharmacist or a pharmacy. This can reduce costs and improve patient safety through better patient counseling, monitoring of drug administration, and monitoring compliance with the correct dosage regimen (O'Neal et al. 2009).

The aim of the present study is to examine the attitudes towards offering and using telepharmaceutical services in Bulgaria.

Materials and methods

A representative, anonymous and voluntary online survey was conducted in the period December 2019–February 2020. It involved 379 people, mostly health professionals. The mean age was 44.38 ± 12.39 (Mean \pm SD). The online survey form was created using Google forms. Our own tools – a questionnaire consisting of two panels, were used. The first panel had questions related to the demographic characteristics of the respondents – gender, age, education, place of residence, medical specialty. The second panel consisted of 14 questions (for 11 of them the 5-point Likert scale was used, 3 have more than one answer), related to the offer and use of telepharmaceutical services.

Statistical analysis was performed using IBM SPSS Statistics 23.0. Descriptive statistics were used to analyze the frequency, mean and standard deviation for the demographic characteristics and for the variables related to the use of telepharmaceutical services. Continuous variables were tested for normality with Kolmogorov-Smirnov and Shapiro-Wilk test. The relationship between categorical variables in cross tables was analyzed using χ^2 test and Fisher's exact test. Correlations analysis was performed using either Pearson's correlation coefficient or Spearman's rho according to the normality of the continuous variables. The level of statistical significance was set at $p < 0.05$.

Results

The study included 379 respondents of whom 75.5% ($n = 286$) were women and 24.5% ($n = 93$) were men.

In the survey the age was entered with digits from the applicant, as for the purposes of the survey and according to the National Statistical Institute's standards age groups were formed. Age under 18 was not included, as only adults were surveyed. There were no representatives over 80 years old. The obtained results show that the majority of the respondents are in active working age – 25 to 64 years ($n = 296$; 78.1%). The age distribution is shown in Figure 1.

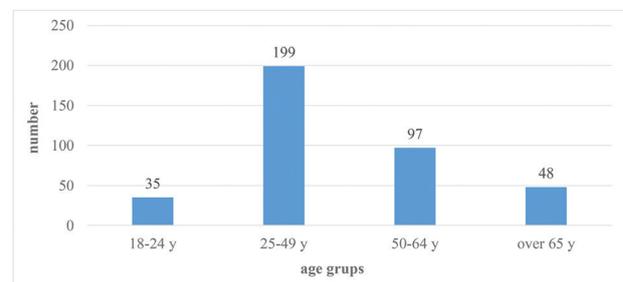


Figure 1. Distribution of the surveyed people by age groups

The mean age was 44.38 ± 12.39 (Mean \pm SD). The youngest respondent was 19 years old and the oldest was 74 years old. No statistically significant difference was found in age ($p=0.828$) and length of service ($p=0.758$) mean values by genders.

According to the education of the respondents, 77.3% have a higher education degree, and around ½ of the respondents (53.0%) have a master's degree. There were no respondents with primary education. The data on the educational degree is presented in Figure 2.

The analysis of the educational level of the respondents shows that the respondents are educated people with the necessary knowledge and experience.

According to our survey, the majority of the respondents live in a city – 346 of them, which is 91.3%, and in a village – 33 or 8.7%.

The focus of our study was mainly on health professionals. Approximately 75% of the respondents state that

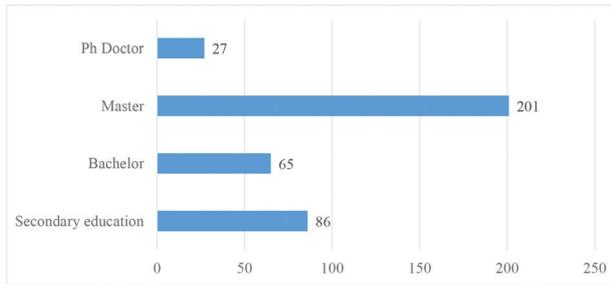


Figure 2. Distribution of the surveyed according to their educational level.

they are such ($n = 285$), and 101 of them claim that they are master pharmacists or assistant pharmacists.

Over 90% ($n = 342$) of the respondents claim that they use the Internet to search for health information. Not a few of the respondents seek information for treatment and self-treatment from the Internet ($n = 221$; 58.3%).

A large number of them state that they read the package leaflet before use ($n=278$; 73.4%). There is a statistically significant difference in the answers, as the less educated are more trusting about the drugs prescribed by a specialist ($\chi^2=56.232$; $p<0.05$).

To the question: *Do you think that the food supplements available on the Internet are efficient enough, safe and meet the necessary legal requirements of production?*, a positive answer is given by about 10% of the respondents. The majority of the respondents are distrustful of the food supplements sold on the Internet (71.3%). Some of them do not have an opinion on the issue (18.8%). Younger people are more inclined to buy food supplements online ($\chi^2 = 38.552$; $p < 0.05$).

To the question: *Where would you buy medicines, food supplements and/or cosmetics online?*, 66.4% claim that they would buy them from “online pharmacies whose websites are approved and licensed by the Executive Agency for Medicines”, in second place with 42.3% is the answer “directly from the site of the manufacturer/importer”. Quite a few say they would not buy online (11.7%). Older respondents are more conservative about online purchases ($\chi^2 = 118.323$; $p < 0.01$). The distribution of responses is shown in Figure 3.

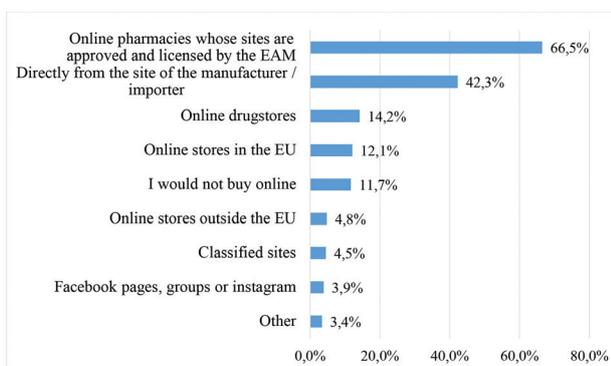


Figure 3. Frequency of responses to “Where would you buy medicines, food supplements and/or cosmetics online?”

To the question: *What products in the field of pharmacy would you buy online?*, the respondents had the opportunity to indicate more than one answer. About half of them state that they would buy cosmetics ($n = 194$; 50.2%), sanitary and hygienic products ($n = 170$; 44.9%) and medical devices and accessories ($n = 141$; 37.2%). A considerable number of them claim that they would not buy anything online ($n = 68$; 17.9%). At the same time, 22.2% will benefit from the purchase of non-prescription medicinal products and only 10.6% from prescription medicines (Figure 4).

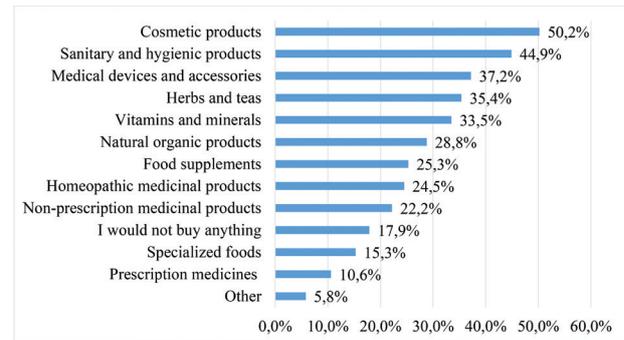


Figure 4. Frequency of responses to “What products in the field of pharmacy would you buy online?”

To the question: *Would you buy prescription drugs online or via a mobile application, if this was allowed by law?*, more than half of the respondents stated that they would not do so ($n = 215$; 56.8%). We assume that the answers to the question are influenced by the lack of a legal framework for the online sale of medicines in the country.

Quite a few of the respondents state that they would consult a pharmacist for a therapy prescribed at a distance ($n=184$; 48.5%), as well as that they would use a mobile application for monitoring drug therapy ($n = 127$; 33.5%).

Discussion

Nowadays, people need wider access to medicines due to the increasing share of the aging population and concomitant diseases (Bates et al. 2016). This demographic change, which particularly includes high-income countries, leads to greater demand for health workers, including pharmacists, in order to meet these new needs (Koehler and Brown 2017). The World Health Organization (WHO) points out in its reports on the global pharmaceutical workforce that there are fewer pharmacists worldwide and that this trend is intensifying in countries with lower economic indicators (Bates et al 2018). The European institutions estimate that a shortage of 1 million medical professionals is expected by 2020 and that nearly 10% of them will be pharmacists. This discouraging information will be a reality in the very near future and indeed this process has already begun. That is why it is essential to quickly implement effective solutions. The International Pharmaceutical Federation (FIP) recognizes the increased use of technology as one of the key factors

in tackling the shortage of pharmacists. The possibilities offered by telepharmacy are great and may be a suitable solution for replacing a pharmacist on site.

In the Republic of Bulgaria, only medicinal products without a prescription may be distributed on the Internet in accordance with the Medicinal Products in Human Medicine Act. The sale of non-prescription medicinal products via the Internet is only permitted for pharmacies that have a retail marketing authorization for medicinal products and for drugstores which have a drug registration certificate. The activity of these pharmacies and drugstores is regulated in the Medicinal Products in Human Medicine Act and Ordinance № 28 of the Ministry of Health on the structure, order and organization of the work of pharmacies and the nomenclature of medicinal products.

The Internet provides users with global access to health information, services and support. This allows consumers to independently choose, order and buy medicines online. They are often delivered across national and state borders without facing a medical professional. In Bulgaria, e-pharmacies are websites that sell over-the-counter drugs, medical devices, nutritional supplements and cosmetics. They are specifically authorized by the Bulgarian Drug Agency (BDA) (Kochev et al 2015a).

As a major force it can be noted that the internet marketing is an affordable and convenient method which offers competitive prices and the ability to deliver to remote areas where there are no pharmacies. But as a weakness it can be pointed out that it can lead to a loss of connection between the pharmacist and the patient, which is a factor for misdiagnosis and treatment errors. To satisfy customers in today's competitive e-marketplace, online pharmacies need to take a closer look at this type of retail service. For this purpose, most online pharmacy companies would be focused on achieving the following key points – responsiveness, reliability, ease of use and perceived price (Kochev et al 2015a).

Since July 2015 the European Union (EU) has introduced a common logo for people who retail medicines on the Internet. The aim of this logo is to make it easier to identify legitimate internet retailers and to raise citizens' awareness of the risk of buying medicines from illegal sources on the Internet. Online pharmacies approved by other EU member states must use the same logo. In each member state the logo must include the national flag and text in the official language of the respective country (https://ec.europa.eu/health/human-use/eu-logo_en).

Our results confirm the researches of other authors. Finding reliable information in the digital age is one of the greatest challenges facing our modern society, especially during a global pandemic (Mihaylova et al. 2020). The easy spread of misinformation requires public health

professionals to develop strategies for communication and public engagement in the social media era. Clear, accurate and timely transmission of information from reliable sources, verification of health information on the Internet, increasing media literacy and critical thinking of citizens are of key importance in the fight to reduce health-related misinformation (Karanesheva and Grigorov 2020).

Internet commerce can be considered as a convenient method of supplying patients with reduced mobility and patients living in hard-to-reach areas of the country, but there are gaps related to the lack of sufficient staff, and also the disconnection of the patient-pharmacist is taken into account. This is a prerequisite for an inadequate treatment.

Trends in the emerging distribution of medicinal products require to study the patient's profile and to identify the factors that motivate the use of self-medication without consulting a specialist, thus establishing and introducing new pathways for the implementation of the supply process to patients, without endangering their health (Kochev et al 2015b).

This is the place of telepharmacy with the main purpose of shortening the distance in the delivery of pharmaceutical services.

Conclusion

The Internet is a place where people can search for health information, including treatment and self-medication. Consumers read leaflets and are skeptical about food supplements sold online. They would buy pharmaceutical products from online pharmacies whose sites are approved and licensed by the Executive Agency for Medicines. The lack of legal regulation in the online sale of prescription medicines is the reason for the hesitant responses. The idea of providing telepharmaceutical services at a distance, such as consulting a pharmacist or using a mobile application to monitor drug therapy, is well received.

The use of telepharmacy can address the shortage of pharmacists and ensure appropriate high-quality pharmaceutical care in areas where there is none or is insufficient. The spread and acceptance of telepharmacy is a challenge involving cooperation between the public and private sectors, as well as scientific institutions and academia, which is essential for achieving appropriate results and effectively improving health services.

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