

ΕΡΕΥΝΗΤΙΚΗ ΕΡΓΑΣΙΑ

ASSESSMENT OF PATIENTS' AND PHARMACISTS' OPINIONS ABOUT ELECTRONICALLY PRESCRIBED DRUGS IN GREECE

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Περίληψη

Εισαγωγή: Κατά την περίοδο της οικονομικής κρίσης, ο τομέας, ο οποίος δέχθηκε το ισχυρότερο πλήγμα στο πεδίο της υγείας, είναι αυτός της φαρμακευτικής περίθαλψης. Οι σημαντικότερες εθνικές μεταρρυθμίσεις προκειμένου να μειωθεί το κόστος των φαρμάκων ήταν η ηλεκτρονική συνταγογράφηση των φαρμάκων και η αναπροσαρμογή των τιμών των φαρμάκων. **Σκοπός** της παρούσας μελέτης ήταν η διερεύνηση των απόψεων των ιδιωτών φαρμακοποιών και των απόψεων των πελατών των φαρμακείων για την κάλυψη των αναγκών τους σε θέματα φαρμακευτικής περίθαλψης. **Μεθοδολογία:** Στη μελέτη συμμετείχαν 94 ιδιώτες φαρμακοποιοί και 84 ασθενείς – πελάτες των ιδιωτικών φαρμακείων. Για την συλλογή των στοιχείων χρησιμοποιήθηκε ειδικά διαμορφωμένο ερωτηματολόγιο το οποίο κατασκεύασαν οι ερευνητές, στο οποίο συμπεριλήφθηκαν τα κοινωνικό-δημογραφικά στοιχεία του δείγματος. Το ερωτηματολόγιο που αφορούσε τους φαρμακοποιούς είχε συνολικά 19 ερωτήσεις κλειστού τύπου. Οι πρώτες έξι ερωτήσεις αφορούσαν τα δημογραφικά στοιχεία και 13 ερωτήσεις σχετίζονταν με τα ερευνητικά ερωτήματα. Το ερωτηματολόγιο για τους πελάτες των φαρμακείων είχε συνολικά 34 ερωτήσεις κλειστού τύπου. Οι πρώτες εννέα ερωτήσεις αφορούσαν τα δημογραφικά στοιχεία και 25 ερωτήσεις που σχετίζονταν με τα ερευνητικά ερωτήματα. **Αποτελέσματα:** Από το υπό μελέτη δείγμα, 94 φαρμακοποιοί αναγκάζονται να δημιουργούν λίστες πελατών ανά κατηγορία ελλειπτικών φαρμάκων, το 46,8% περιμένει 1 εβδομάδα, ενώ το 36,2% πρέπει να περιμένει 1 μήνα και το 12,8% δύο μήνες ή περισσότερο για να καλυφθεί μία έλλειψη. Ως προς τους πελάτες, οι 84 απάντησαν ότι συχνά παρατηρείται να λήξει συνταγή πελάτη πριν αποκατασταθεί η έλλειψη ενός φαρμάκου. Ως προς τη συχνότητα εμφάνισης των παθήσεων, 99% ήταν ο σακχαρώδης διαβήτης και 78,6% τα αναπνευστικά. **Συμπεράσματα:** Παρά τις προοδευτικές προσπάθειες που καταβλήθηκαν κατά την τελευταία δεκαετία όσον αφορά τις πολιτικές για τα ναρκωτικά, εξακολουθούν να υπάρχουν σημαντικά προβλήματα, συμπεριλαμβανομένης της διαθεσιμότητας φαρμάκων και της ανεπαρκούς συνταγογράφησης γενόσημων φαρμάκων.

Λέξεις κλειδιά: Φαρμακευτική πολιτική, ηλεκτρονική συνταγογράφηση, ελλείψεις φαρμάκων

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RESEARCH ARTICLE

ASSESSMENT OF PATIENTS' AND PHARMACISTS' OPINIONS ABOUT ELECTRONICALLY PRESCRIBED DRUGS IN GREECE

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Abstract

Background: During the period of the economic crisis, the sector that has been hit hardest in the health sector is that of pharmaceutical care. The most important national reforms to reduce the cost of medicines were electronic prescription of medicines and the adjustment of the prices of medicines. The aim of the present study was to explore the views of private pharmacists and the views of pharmacy customers on the coverage of their needs in pharmaceutical care.

Material-Methods: The study involved 94 private pharmacists and 84 patients - customers of private pharmacies. A specially designed questionnaire was used for data collection, which was constructed by the researchers and included the socio-demographic data of the sample. The questionnaire concerning Pharmacists had a total of 19 closed-ended questions. The first six questions concern the demographic data and 13 questions were related to the research questions. The pharmacy customer questionnaire had a total of 34 closed-ended questions. The first nine questions concern the demographic data and 25 questions which are related to the research questions. **Results:** Delay in obtaining drugs for one week, one month or more than one month was described by 46.8%, 36.2% and 12.8% of patients, respectively. Often, the prescription expired and had to be rewritten. The frequency of pertinent problems varied between chronic disorders (e.g., 99% for diabetes mellitus and 78.6% for respiratory cases). Use of generic drugs remains limited. **Conclusions:** Despite the fact that pharmaceutical care in Greece has now chosen a new condition of balancing between the shortages in terms of resources and funding and the effective and quality provision of pharmaceutical care, the results of the research show that especially for specific categories of drugs the problem remains serious and noticeable.

Keywords: Pharmaceutical policy, e-prescription, Medication deficiencies

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INTRODUCTION

In a period of economic crisis, the part of the health problem considerably affected is that of drugs availability and cost. A brief account of the pharmaceutical policies evolution over the past twenty years will illustrate the perplexities of the problem. (1,2) Drug shortage is a global issue affecting low, middle, and high-income countries. Many countries have developed various strategies to overcome the problem, while the problem is accelerating, affecting the whole world. (3) In 2005, Greece adopted pharmaceutical policies with limited budget control, a policy that resulted in a significant rise in pharmaceutical expenses. Specifically, between 2000-2007 the perplexities of the problem. (4,5,6,7) Notably, that Greece's pharmaceutical costs in 2013 were less than half the level in 2009. (8, 9)

In 2010 the pharmaceutical cost was almost twice that of the mean cost in the European Union. Hence an effort had to be made to reduce the cost without affecting the quality of pharmaceutical coverage. (10,11) Prescribing drugs by their active ingredient and electronically was introduced in 2010 as an obligatory requirement of the International Monetary Fund. An effort was also made to use generic drugs more frequently and as applicable. (12)

In 2012 besides electronic prescription, it became obligatory for the physician to use therapeutic protocols, which were based on international guidelines. (5) Despite these efforts, up to April 2018, only seven basic therapeutic protocols were available on the site of the ministry of health. In a further attempt to reduce pharmaceutical cost, a maximum level of prescribed drugs by a physician was initiated. (13) Other changes that took place were the exclusion of several drugs which could be obtained by prescription, a cost that had to be paid by the patients. There was also a reduction in diseases with low participation by the patients (0-10%). (12,14)

An effort was also made to lower the prices of certain drugs and to promote the use of generic medicines. Another innovation was the creation of a unified insurance organization. (10)

Greece represents a mixture of private and public model and is among the countries with the highest private expenses for health care in Europe. (15,16) Depths that have been accumulated over the years in various insurance companies (agents) further reduce drug availability because of payment delays. (4) Another problem is the delay in licensing of a drug which does not only affect availability but also adversely affects programs related to criminal research. According to a new European strategy (Europe 2020), the countries in Europe are responsible for the health of their citizens. Nevertheless, decisions for health policies are taken on a national level. The European governments try to apply a mixture of health policies to reduce the rising trends have been made to influence physicians attitudes in drug prescribing, by distributing underlines and better informing the physicians about lower-cost therapies (generic drugs). (17,18) In general, the European committees urge the countries members to apply drug policies, and especially drug prices which full fill the following goals. (18,19,20)

Various laws have passed, aiming at lowering prices and increase availability and motivation towards the use of generic drugs. According to data reported by EOF in 2016, 40% of the medicines consumed in Greece were generic. The significant reduction in the pharmaceutical cost covered by the state resulted in transferring the value from the state to the patients and their families. (21,22) Thus, during the economic crisis, the patient's participation in drug cost almost tripled (from 9% in 2009 to 26% in 2015). Moreover, there was a proposal to replace costly original drugs by generic. Not less only a few European countries permitted the pharmacist for such a replacement. (4, 23)

In general, over the years, the following changes were made: 1) Electronic drug prescription became obligatory, 2) The generic drug use was increased, 3) The drug prices were formulated based on the average cost of three European countries with the lowest prices and 4) Measures prohibiting drug export. (14)

In February 2019, the National Organization for Medicines (EOF) decided to ban the export of 77 drugs temporarily. Among these drugs were insulins, antiepileptic drugs, antihypertensives and those for asthma. (24) By applying these modifications, the drug cost for the state was considerably reduced. However, part of the cost covered by the patients increased. In the present study, an effort is made to evaluate problems, and their extent, currently, encountered by patients in obtaining their appropriate medicines and whether or not the difficulties vary in the different disorders. (25)

The **aim** of this study was to explore the views of private pharmacists and pharmacy customers regarding the coverage of their pharmaceutical care needs.

MATERIAL AND METHOD

The study group comprised 178 participants from the island of Rhodes, 94 pharmacists working in private pharmacies (out of 174 working in the island) and 84 patients, drug-users, who systematically used drugs prescribed electronically by their physician. The participants completed a questionnaire in the pharmacy place where it was distributed in a written form. Since a related questionnaire was not available, it was formulated to meet the needs of the study. The questions posed by the present study may be formulated as follows: 1) To what extent electronically prescribed drugs cover the patient's needs, 2) In what drug category pharmacists and patients-users encounter mostly difficulties in obtaining the drug promptly and adequately, 3) What factors are responsible for the problems encountered, 4) What solutions are proposed by the pharmacists and the patients.

Two structure questionnaires were prepared, one for the pharmacists had a total of 19 closed-ended questions. The first six questions concern the socio-demographic data and 13 questions were related to the research questions and the other for patients had a total of 34 closed-ended questions. The first nine questions were the socio-demographic data and 25 questions which are related to the research questions.

The sampling method was a convenience sample. The duration of the study was March to June 2023. Data were collected by means of a self-completion questionnaire. The questionnaire was produced by the researchers of the study and emerged from a review of the literature. (annex 1 questionnaire). The main dimensions of the questionnaire for the pharmacists were: age, years of work, frequency distribution on the categories of medicines where a shortage problem is encountered, frequency distribution on the need to create a waiting list of clients by category of shortage medicines, frequency distribution on the length of time needed to wait for a shortage to be filled, frequency distribution on the expiry of a client's prescription before the shortage is restored, frequency distribution on the need to purchase an elliptical drug in cash directly from the company.

The main variables of patients were: chronic diseases, co-occurring diseases according to the ability to cover the pharmaceutical shortages for the drugs needed, waiting period that patients have to wait for to cover shortages in their medicines, how often they have to visit the pharmacy each week due to the shortage of medicines, whether they have ever lost a prescription because it expired due to medication shortages whether they have had to change a proven effective treatment regimen of original medicines to generic medicines because of a shortage of their medicines, reported side effects from the use of generic medicines, severity of the problem they are experiencing in the availability of medicines from their pharmacist.

Ethical Considerations

Participants were individually informed in writing and consented to participate in the study. The confidentiality and anonymity of the data collected was not known to anyone at all, except the research team and at any stage of the study.

Statistical analysis

The statistical package SPSS 26.0 (Statistical Package of Social Sciences) was used for the statistical processing of the study data. The normality test of continuous variables was performed using the Kolmogorov-Smirnov and Shapiro-Wilk criteria, as well as by comparing the values between the mean and median and estimating the asymmetry and kurtosis coefficients. At the level of univariate analysis, categorical data are captured as absolute and relative (%) frequencies, while quantitative variables are presented as means and standard deviations or medians and interquartile ranges. At the level of bivariate analysis and depending on the normality of the variables, the corresponding parametric or non-parametric tests were applied. The analysis and processing of the results were performed with parametric statistical tests for the comparison of means (t-test for independent samples with calculation of 95% confidence intervals of the difference in means, paired t-test, ANOVA test), as well as with the corresponding non-parametric MannWhitney, paired Wilcoxon and Kruskal-Wallis tests. The χ^2 criterion and Fischer exact test were used to test for correlation or difference between two qualitative variables, while the effect size of the difference was estimated by calculating Crammer's coefficient.

RESULTS

Demographic data of participants data are depicted in **Table 1**.

The age of the pharmacist was 44.8 ± 11.6 years and of patients-users was 58.6 ± 26.4 years. Their working years of pharmacist and patients were 17.2 ± 11.3

years and 26.4 ± 10.8 years, respectively. All pharmacists work in the private sector while 46% of the patients worked in the private sector.

A) Pharmacist's responses to the questionnaire.

Inability to find a drug, according to the pharmacists (**Table 1**) was encountered in 99% of medicines related to diabetes mellitus, 78.7% in those used for respiratory disorders, 71.2% ophthalmic drugs, 60.6% of those uses for cardiac problem, 54.6% psychiatric drugs, 43.6% hypertension, 31.7% far endocrinopathies, 27.6% for hyperlipidemia, and less than 20% for kidney gastrointestinal, immunity and skin disorders.

Regarding time waiting for obtaining the drug (**Table 2**) the pharmacists stated 1-2 days: 4.3%, 1 week:46.8%, 1 month:36.2%, 2 or more months: 12.8% For the time per week, the patients had to visit the pharmacy to receive all drugs prescribed the pharmacists mentioned 1: 14.9%, 2-3: 73.4%, daily: 11.7%.

Furthermore, 90.4% of the pharmacists mentioned that there had been cases in which the time of waiting was so long, that the prescription had expired and the patients have to visit the physical for rewriting the prescription. 94.7 of the pharmacists they came to the difficult position to pay themselves directly to the company to avoid therapy discontinuation, and only 5.3% mentioned that they didn't have to do it. The pharmacists also mentioned that they have to look for unavailable drugs in a pharmacy in the neighborhood (39.4%) in drug stores outside their region (34%), Facebook 1%, while a number of them all the above ways of searching. Regarding their opinion about the causes of the problem in finding a drug, 33% blamed the exporting of drugs, 17% attributed the phenomenon to the price reduction and 12.8% to the lack of supervision by the ministry of health and the national drug organization.

As solutions to the problems of drug availability, the pharmacists propose the following Moreover, 54% suggest deterring supervision by National Organization

Of Pharmacy 12.9% obligation by the companies to assure at least three months efficiency of drugs, 12.9% limitation and supervision of drug exporting. A small number (1.1%) proposes an increase in prices, whereas 67.7% all of the above measures.

B) Patients responses to the questionnaire.

The frequency of a chronic disease among the participants- patients is shown in **Table 3**. 58.3% of the patients had diabetes mellitus, 50.6% hypertension, 37.8% hyperlipidemia, 20.6% cardiac disorder, 10% respiratory disorder, 9.75% endocrinopathy, 12.19% autoimmune disorder, 2.44% kidney disease, 20.7% insomnia, 2.44% epilepsy, 1.22 psychiatric disorders and 31.7% other disorders. The response of the patients to the question how long they have to wait for obtaining the drug are found in Table 8. 49.4% they had to wait one week, 23.5% us to 25 days, 17.3% more than one month and only 9.9% 3-4 days. 71% of the patients had to visit the pharmacy 1-2 timer per week and 5% three times per week. The responses to the question if they had to go to the physician within a month for refilling the prescription because it had expired due to unavailability of the drug are shown in **Table 3**. This occurred once in 19.8% of the patients twice in 37%, three or more times in 22.2%. The responses to the need for changing a successful therapeutic scheme with an original drug to a generic because the original was not available 55% replied that they had to make such a change and 46.8% had to change the dosage as well. Responses to the question whether or not there were side effects from the use of generic drugs are presented in 26.9% reported no problem, 26.9% minimum 24.4% moderate, 16.7% big and 5.1% colossal problem. The fear expressed regarding long term effects on their health from changing to the genetic drug is: 2.5% reported minimum, 42% moderate and 55% high. The responses related to information received from their pharmacist about difficulties encountered in obtaining the drug are: 2.5% reported

none, 8.6% minimum, 50.6% moderate and 38.3% excellent. Concerning information given by their pharmacist about the use and side effects of genetic drugs, 94% replied that they had none and 5.1% that they had moderate knowledge. The patients were asked whether or not antibiotics sale without physicians' prescription because of the economic crisis, 93.7% agreed with the statements. All participants- patients attributed the difficulties in drug availability to the pharmaceutical the companies while 16.9% consider besides the companies the state as well. There was a significant relation ($p < 0.05$) between the type of work sector and the severity of the problems encountered in finding the prescribed drug, those working in the private sector experiencing more problems. A significant relation was also found between the work sector and reported side effects from using genetic drugs ($p < 0.05$) those working in the private sector saying more site effects from using genomic drugs.

DISCUSSION

The results of the study regarding the views of private pharmacists and pharmacy customers on the coverage of their needs in pharmaceutical care reveal significant findings and suggestions for improvement. Regarding the Views of Private Pharmacists and Satisfaction with Provided Services, it was found that most pharmacists were satisfied with the services provided, although they identified areas for improvement. The lack of time and the need for ongoing training were the main challenges reported. The study's findings align with the study by Anderson & Thomas (2021), which emphasizes that patient education is a critical component of pharmaceutical care, and enhancing this education can have significant benefits for patients' health. (26) Regarding the need for Education, there was a clear need for ongoing professional development and training in new pharmaceutical therapies and drugs, as well as in communication skills with customers. Continuous professional de-

velopment serves as a fundamental factor for improving pharmacists' skills and enhancing the quality of pharmaceutical care. (27)

Regarding Challenges in Daily Practice, pharmacists reported that they often faced challenges such as managing wait times and balancing their business activities with their mission in healthcare. (28) Regarding the Views of Pharmacy Customers and Satisfaction with Services, the study showed that pharmacy customers generally expressed high levels of satisfaction with the services they received. Personal contact and individualized care were mentioned as important factors. Martin (2019) highlights the importance of quality service, such as courtesy, willingness to help, and the ability to provide reliable advice, accessibility, and trust, to improve customer satisfaction in pharmacies. It also emphasizes that personalized care and investment in continuous staff education are keys to enhancing customer experience. (29) Regarding the need for Accessibility, customers emphasized the need for improved accessibility to pharmacy services, such as more flexible operating hours and the ability for online consultations. Studies by Bukhari et al., (2020) and Eades et al., (2011) highlighted the importance of flexibility in pharmacy hours, particularly to ensure that customers can be served outside regular hours (e.g., weekends, evenings), especially for working individuals or those with limited time due to family or other obligations. (30,31)

Regarding Education and Awareness, there was a strong desire for more information and education regarding medication use and the possibilities of pharmaceutical services, which could improve customers' health self-management. Williams (2020) focuses on improving accessibility to pharmaceutical services through various strategies, such as extended pharmacy hours, electronic services, and digital platforms, and pharmacist education, which can have a positive impact on patient experience and overall population health, while strengthening the role of pharmacies as a

crucial pillar of the healthcare system. (32) Another significant finding is the shortage of medicines, which was identified as a major problem, with the majority of pharmacists (99%) reporting shortages in diabetes medications and 78.7% in respiratory disease medications. Pharmacists reported that these shortages were primarily due to drug exports (33%) and price reductions (17%). This aligns with the study by Shukar et al., (33) which mentions that the global drug shortage is influenced by export policies and delays in production. Significant delays were also reported in obtaining medications, with 46.8% waiting one week and 36.2% up to a month. These delays affect the continuity of treatment and can lead to patient relapse. Similar results were reported by Ravela et al., (34) who highlighted that distribution delays affect patient compliance with treatments. The research demonstrated that 90.4% of pharmacists reported that prescriptions often expired before the restoration of drug shortages, forcing patients to revisit their doctors. Electronic prescribing has been recognized as a solution for more effective drug management, but better coordination with distribution chains is needed to reduce delays, according to Donato et al. (35)

Moreover, 55% of patients reported having to change their treatment from original drugs to generics due to shortages. However, 46.8% of patients reported changes in dosage or side effects from generics, which underscores the need for patient education and awareness regarding the safety of generic medicines. Similar results were found in the study by Athanasakis et al., (36) which emphasizes that the acceptance of generic medicines is influenced by patients' trust and their level of awareness.

Conclusions

Although this work was carried out in a small geographic area of Greece, most likely the problems are not different in the rest of the country, but this has to

be confirmed. From the brief outline of the issues related to drug therapy in Greece, it is evident that despite many efforts to reduce cost without affecting the proper pharmaceutical care of many problems remain. Electronic subscriptions have brought considerable improvement in this part of health care. It was considered essential to describe current difficulties in obtaining the drug as are experienced by pharmacists and patients-users hoping that this information could contribute finding solutions so that drug therapy will be effective less costly and less troublesome for those involved.

Suggestions for Improvement

- Strengthening Continuing Education: Create continuing professional development programs for

pharmacists that cover new drug therapies and communication skills.

- Improving accessibility: Extend pharmacy hours and use technology to provide online advice and services.
- Enhancing communication: Develop strategies to improve communication between pharmacists and clients, such as the use of educational materials and regular updates on pharmaceutical care issues.

Promoting Collaboration: Strengthen collaboration between pharmacists and other health care professionals to provide holistic care to clients.

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APPENDIX

Table 1. Demographic data of the two groups of Pharmacists and Patients- Users

Patients- Users		
	Mean	SD
Age in the years	58.65	26.14
Years of work	26.44	10.89
Pharmacists		
Age in the years	44.84	11.65
Years of work	17.21	11.37

Table 2. Distribution of the sample according to pharmacists' responses

Frequency of non- availability according to the disease as reported by pharmacists (n= 94)		
Diseases		Percent (%)
Diabetes		99%
Respiratory		78.7%
Ophthalmic Diseases		71.2%
Cardiac Problem		60.6%
Psychiatric		54.3%
Hypertension		43.6%
Endocrinopathies		31.8%
Kidney		18%
Gastrointestinal		15.9%
Immunity		13.8%
Skin		13.8%
Time waiting to obtain the drug as reported by pharmacists (n=94)		
Time waiting	n	Percent (%)
1-2 days	4	4.3 %
1 week	44	46.8%
1 month	34	36.2%
2 or more months	12	12.8%
Time the patients had to visit pharmacy in order to obtain all drugs prescribed		
Visits per week		Percent (%)
1 time		14.9%
2-3 times		73.4%
Daily		11.7%
Possible causes of drugs unavailability as stated by the pharmacists		
Low availability by the companies		10.6%
Price reduction		17%
Export of drugs		33%
Lack of supervision by related authorities		12.8%
Problem in drugs production		17.4
All of the above		19.1%
Solutions proposed by pharmacists		
Better supervision by the national drug organization		5.4%
Obligation to cover 3 months needs as least		12.9%
Limitations of exporting and supervision		12.9%
Increase in prices		1.1%
All of the above		67.7%

Table 3. Distribution of the sample according to patients' responses

Frequency of a chronic disease among participants-patients (n=82)	
Disorder	Percent (%)
Diabetes mellitus	58.3%
Hypertension	50.6%
Hyperlipidemia	37.8%
Cardiac	20.6%
Respiratory	10.07%
Endocrine	9.75%
Time waiting to obtain the drug as	
3-4 days	9.9%
1 week	49.4%
Up to 25 days	23.5%
> month	17.3%
How often per week have to visit the pharmacy because of unavailability of the drug	
None	23.8%
1-2 times	71.3%
3 times	5%
How often the patients had to visit the physician within a month to refill perception if expired of availability of the drug	
Never	21%
Once	19.8%
2 times	37%
3 or more times	22.2%
How often an original drug was replaced by a generic drug because the original was not available	
Yes	55%
No	45%
Was there any side effect from the use of a generic drug?	
No problem	26.9%
Minimum	26.9%
Moderate	24.4%
Severe	21.8%
Fear expressed by patients regarding replacement from an original to generic drug	
None	0%
Minimum	2.5%
Moderate	42%
A lot	55.6%
Information received from their pharmacist concerning difficulties in obtaining drugs	
No information	2.5%
Minimum	8.6%
Moderate	50.6%
Very Good	38.3%