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Commentary

Over-the-counter medicines, economic conditions, and citizens most in need in Greece: Is it a challenge for primary care research?

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ABSTRACT

Introduction: Recent austerity experiences in Greece suggest a plausible link between extensive use of over-the-counter (OTC) medicines and socio-economic peculiarities of life.

Commentary: During the economic crisis in Greece, accessibility to healthcare services has been impacted, particularly for people with low income. However, this fact has not been systematically analyzed in conjunction with an observed increase in use of OTC medicines. Gaining a better understanding of the reasons leading to self-care may help to answer additional questions. Further research is needed to assess the gap between self-care and medically assisted care/treatment by designing pilot monitoring actions and focusing on behaviours related to OTC medicine use. Primary care can offer more collaboration between primary care physicians, community pharmacists, patients, and their families.

Implications: It is crucial to create a multimodal research plan to gain a better understanding of motivational reasons that eventually lead to increasing use of OTC medicines. Efforts should be made to develop data collection techniques that will elicit information from various social groups that focus on changeable behaviours and perceived needs in relation to medicine consumption.

Introduction

One of the most cost-effective interventions within health care is treatment with medicines, although it has been observed that a consistent proportion of medicines are irrationally used. This has inevitably led to discussions on patient safety as an issue of public health. The consumption of medicines can be influenced by many factors, such as self-motivation, beliefs, and attitudes. During the past few decades, medication supply status has also changed from prescription-only to over-the-counter (OTC) medicine consumption as well. OTC medicines are medicines used by patients for the treatment of common ailments (e.g., aches, pain, fever) without a prescription from a general practitioner. In Greece, there is a national list of 13 OTC medicines that allow self-treatment for more than just common ailments. Pharmacies remain the primary selling points of OTC medicines in Greece despite ongoing reform efforts to open this market, and easy access to specific drug categories is still a challenging topic for discussion.

Even if there are benefits of OTC medicine usage, such as the expansion in patient autonomy to select therapy and the cost reduction for national health systems, self-medication should be undertaken with special caution because OTC medicine usage...
involves a number of risks, such as improper self-diagnosis, inappropriate dosage, repeated attitude due to prolonged use, adverse drug reactions, and drug interactions. Additionally, countries affected by the economic crisis, such as Greece, have reported that during this period there has been an increase in the number of patients who prefer to take OTC medicines on their own decision (i.e. without medical consultation) and with unknown results on treatment efficacy of common diseases. Moreover, it has been reported that Greek consumers lack knowledge regarding the maximum daily dose of OTCs and are not sufficiently aware of the potential risks associated with the side effects and toxicity of these medications. Studies have shown that self-medication rates are high in Eastern and Southern Europe and relatively low in Northern and Western Europe. This could be influenced by a set of contextual determinants related to primary care services provision and regulations on cost containment aiming to control funds allocated to health, in particular during austerity conditions as in the case of Greece.

In Greece, patients are insured by EOPYY (National Organization for Health Care Services Provision), a public social insurance plan; patients have a pay-co-payment for prescription items, which accounts for 25% of the market share of the medicine's value, while paying 100% of the value for non-prescribed medicines, including OTCs. Typically in Greek urban areas, there is a patient payment when one visits private doctors for prescriptions. Furthermore, according to the Greek legislation, OTC medicines are widely used by patients to control aches, pain, and fever. This category includes analgesics, antipyretics, common cold medicines such as antitussives, decongestants, and antihistamines, as well as various dermatological medicines, laxatives, and antiseptics. Another parameter that affects the usage of OTC medicines is their accessibility. In Greece, the sale of OTC medicines is allowed by pharmacies as well as supermarkets. According to the National Organization for Medicines' statement, OTC medicines in retail shops should be available in a separate space, with the word OTC medicines in a prominent orange circle on the outer packaging and with a clear label that “informs the public that the sale of medicines is not allowed to persons under 18 years.”

During a financially tough period, the extensive use of OTC medicine is emerging as a major issue for discussion in several countries, including that of Greece. Thus, in order to approach a newly emerged field for research, there is a need to discuss a possible link between OTC medicine use with self-management attitudes during a period of financial constraints, using experiences gained in Greece.

**Commentary**

Access to high-quality health and social services should be ensured for all citizens, given that the right to medical care is one of the fundamental human rights. Based on this notion and according to principles established by the Greek National Health System from its foundation, the state is exclusively responsible for protecting the health of the national population; this can be seen as a social input through a unified, decentralized, and democratic health system. The economic crisis that has affected the European Union’s (EU) countries since 2008 has disproportionally challenged Greece, with negative consequences in socioeconomic and health figures. As a consequence, economy adjustment was imposed through rescue packages for many years. Moreover, from 2008 to 2016, the economic crisis in Greece led to the reduction of national product, an increase in unemployment rates, and a reduction of health expenditure. Consequently, income discrepancy among citizens, poverty, and social “pressure” increased dramatically. Based on data by the Hellenic Statistical Authority, in the middle of the crisis period, 28% of the Greek population was at risk of poverty, 35.7% was at risk of poverty or social exclusion, and 37.3% faced a financial burden with a lack of at least three out of nine types of basic goods and services as it was meaningfully summarized by Economou et al.

In 2008, reforms and cuts in public spending were also focused on the healthcare system. In Greece, strong annual growth increases were reversed after 2009 and, in tandem with the economic recession, a pressure on service availability and overall capacity of the public health system with consistent user charges, and lower ability to pay for health care, emerged. Moreover, the user charges had been increased once an economic adjustment program was approved, especially for pharmaceutical expenditures. Furthermore, patients’ co-payments ranged from 10% to 25% for prescribed medication.

As a consequence, the social pillar of the welfare state was affected, especially for vulnerable groups, by generating an access “discomfort,” increasing unmet health care needs, and enlarging health inequalities. In 2016, at least 10% of the population in Greece, especially among low income groups, reported that they had certain unmet medical care needs due to financial or other reasons. This is one of the highest rates in EU countries. Not surprisingly, as previously mentioned, these are some of the key drivers of self-medication. Consequently, the OTC market in Greece followed an uprend from €122 million in 2013 to €161 million in 2016, an increase of 32%. Community pharmacists deserve a role on the primary care team, and interprofessional training should be added into the education agenda in this country. A convincing reason that health policy makers should support this educational direction, with interventions in community pharmacy, is the acceptance and perceived practicality of an intervention program by general practitioners. Therefore, pharmacists could advise the consumer to make appropriate choices and identify inaccurate self-diagnosis that requires medical professional advice. Thus, the empowerment of patients’ self-care behaviours could contribute to rational use of OTC medicines, decreased physician visits, and reduction of costs for the national health system. These factors converge to the recognition that primary care in Greece needs more collaboration between primary care physicians, community pharmacists, and patients and their families.

**Implications**

Nowadays, living in a period with high uncertainty due to the coronavirus disease of 2019 pandemic, interdisciplinary work seems as necessary as ever. This also applies to use of OTC medicines. To that direction, pharmacy practitioners should work to contribute to the enhancement of health literacy in collaboration with physicians and other health professionals. Blogs could improve
trainee(s)’ learning through daily discussions of their experiences, allowing the pharmacy educator to behave more like a facilitator instead of a teacher. Furthermore, the implementation of a pharmacist’s blog along with multidisciplinary teams could contribute to the educator and trainee(s). In addition, interventions such as interprofessional continuing education and face-to-face meetings at a practice level could lead to outcomes of reduced stress and conflict and better productivity outcomes. This has been proposed by Gallagher and Gallagher, who called for interprofessional and multiprofessional learning opportunities at early stages within both professional educations.

Based on the above-mentioned conditions, research is necessary in order to assess the potential gap between self-management and health service-guided care expectations as well as how this gap affects medicine consumption. It is crucial to develop a needs assessment in order to gain a better understanding of access problems that eventually lead to self-care and increased use of OTC medicines. Program design should be based on the role of primary health care in assessing the use of OTC medicines, using indicators that monitor content and variation. The aim should be to study influential factors of self-care and OTC use and to shape this knowledge to develop health policy recommendations that can lead to improvement of quality and safety for people that are not covered. Efforts should be made to develop data collection techniques that will elicit information from various social groups that focus on changeable behaviours and perceived needs in relation to medicine consumption.

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Declaration of Competing Interest

None

References

1. Rational Use of Medicines: Progress in Implementing the WHO Medicines Strategy. World Health Organization. 11 May 2006. Accessed 1 October 2020 https://apps.who.int/iris/bitstream/handle/10665/21525/B118_en.pdf?sequence=1&isAllowed=y; 2020.
2. Donaldson SL. An international language for patient safety: global progress in patient safety requires classification of key concepts. *Int J Qual Health Care.* 2009;21(3). https://doi.org/10.1093/intqhc/mzn056.
3. Kamekis A, Bertasias A, Moschandreas J, et al. Patients’ intention to consume prescribed and non-prescribed medicines: a study based on the theory of planned behaviour in selected European countries. *J Clin Pharm Ther.* 2018;43(1):26–35. https://doi.org/10.1111/jcpt.12601.
4. Grigoryan L, Burgerhof JG, Haaijer-Ruskamp FM, et al. Is self-medication with antibiotics in Europe driven by prescribed use? *J Antimicrob Chemother.* 2007;59(1):152–156. https://doi.org/10.1093/jac/djl457.
5. Silho S, Hemminki E, Ahonen R. Physicians’ attitudes toward reclassifying drugs as over-the-counter. *Med Care.* 1999;37(5):518–525. https://doi.org/10.1097/00002018-199905000-00011.
6. Blenkensop A, Bradley C. Patients, society, and the increase in self medication. *BMJ.* 1996;312(7031):629–632. https://doi.org/10.1136/bmj.312.7031.629.
7. Bradley C, Blenkensop A. Over the counter drugs. The future for self medication. *BMJ.* 1996;312(7034):835–837. https://doi.org/10.1136/bmj.312.7034.835.
8. Albert NM, Ratham L, Ross D, et al. Predictors of over-the-counter drug and herbal therapies use in elderly patients with heart failure. *J Card Fail.* 2009;15(7):600–606. https://doi.org/10.1016/j.cardfail.2009.02.001.
9. Kontogiorgis C, Nena E, Berberoglu E, et al. Estimating consumers’ knowledge and attitudes towards over-the-counter analgesic medication in Greece in the years of financial crisis: the case of paracetamol. *Pain Ther.* 2016;5:19–28. https://doi.org/10.1007/s40122-015-0042-x.
10. Anderson JG. Health services utilization: framework and review. *Health Serv Res.* 1973;8(3):184–199.
11. Updated list of over-the-counter drugs (MSYFA). 11. Government’s Gazette B 2014. Tax Heaven. 22 July 2014. Accessed 1 October 2020 https://www.taxheaven.gr/circulars/19203.
12. Macelkova B, Tsardis MP, Machulis M. OTC market - comparing Czech Republic and Greece. *Ceska Slov Farm.* 2019;68(2):78–85.
13. Sinclair HK, Bond CM, Hannaford PC. Long term follow-up studies of users of nonprescription medicines purchased from community pharmacies: some meth-
14. Macešková B, Tsadaris MP, Machlis M. OTC market - comparing Czech Republic and Greece.
15. Bond C, Hannaford P. Issues related to monitoring the safety of over the counter (OTC) medicines. *Drug Saf.* 2003;26(15):1065–1074. https://doi.org/10.2165/00002018-200326150-00001.
16. Sansgiry SS, Patel HK. Non prescription drugs. *Swarbick J, Ed. Pharmaceutical Science and Technology.* 4th ed. CRC Press; 2013. https://doi.org/10.1081/EP-100002121.
17. Sansgiry SS, Bansal SS, Bapat SS, Xu Q. Abuse of over-the-counter medicines: a pharmacist's perspective. *Integr Pharm Res Pract.* 2016;6:1–6. https://doi.org/10.2147/IPRP.S103494.
18. Schizas D, Michalinos A, Kanavidis P, et al. The profile of patients receiving public and private surgical services in Greece during the economic crisis: a comparative study. *Ann Transl Med.* 2019;7(11):5. https://doi.org/10.21037/atm.2018.12.07.
19. Grigoryan L, Haaier-Ruskamp FM, Burgerhof JG, et al. Self-medication with antimicrobial drugs in Europe. *Emerg Infect Dis.* 2006;12(3):452–459. https://doi.org/10.3201/eid1203.050992.
20. EOPPY (National Organization for Health Care Services Provision). Accessed 1 October 2020 https://www.eoppy.gov.gr/faq/%CE%91%CF%83%CF%86%CE% B1%CE%B8%CE%96%CE%85%CE%80%CE%9D%CE%4F%CE%B5; 2018.
21. Updated catalog of over-the-counter medicines. Government Gazette 1222/B/14.5.2014. Scrubid. 14 May 2014. Accessed 1 October 2020. https://www.scribd.com/doc/225400446/%CE%A6%CE%95%CF%86%CF%92-1222-14-5-2014-%CE%B8%CE%96%CE%85%CE%80%CE%9D%CE%4F%CE% B5; 2020.
22. Determination of the Terms and Conditions for the Creation of a Sub-Category of Drugs of General disposal (GEDLF), Within the Category of Non-Prescribed Drugs (NON.SY.FA). Government’s Gazette B* 2219. Tax Heaven. Accessed 1 October 2020 https://www.taxheaven.gr/circulars/24182/ario-g5a51194-14-7-2016; 18 July 2016.
