



Rational Drug Use and Community Pharmacy

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ABSTRACT

Rational drug use is the set of rules that should be followed to enable people to take drugs in accordance with their clinical needs, at doses that meet their personal requirements, within sufficient time, and at the lowest cost to themselves and society. Rational drug use is briefly defined as “the planning, implementation, and monitoring process that enables effective, safe, and economical implementation of drug therapy.” Pharmaceutical care is personalized care for the patient using drugs and aims to improve treatment outcomes, including quality of life. In Europe, the concept of pharmaceutical care is based on “personalized professional care for the patient in the pharmacy.” This concept is defined as the individualized coaching of patients by pharmacists regarding their drugs. The concept includes close monitoring of the patient’s prescription and use and education about the medication. It is also the pharmacist’s responsibility to monitor treatment progress, provide advice, and evaluate all outcomes of care. The pharmacist’s pharmaceutical care responsibilities include: presenting medication to the patient, informing the patient about the medication, patient counseling, monitoring treatment, monitoring adverse drug reactions, developing medication protocols/guidelines, working in an integrated manner with other health-care professionals, and recording medication histories. Pharmacists are in a position to improve preventable drug-related problems. One way to do this is for them to be educated in the rational use of drugs during their undergraduate and on-the-job training.

Keywords: Community pharmacy, pharmacy services, rational drug use

INTRODUCTION

Over the past 50 years, significant advancements in medical science have transformed many once-incurable diseases into treatable conditions. The continuous development of novel and more effective drugs with improved safety profiles has naturally led to a substantial increase in drug consumption.¹ For instance, in Turkey, drug consumption has experienced a notable surge. In 2002, approximately 700 million boxes of drugs were consumed, whereas this figure soared to 1.7 billion boxes in 2011, with an average per capita drug consumption of 23 boxes.² Consequently, the importance of making rational and informed choices when it comes to drugs has become increasingly significant, prompting the rise of the concept of rational use of drugs.¹ On a global scale, it is estimated that more than half of all drugs are inappropriately prescribed, dispensed, or sold. In response to this concern, the World Health Organization (WHO) has conducted extensive research on irrational drug use, recognizing it as a crucial health issue in developed countries. The WHO has also issued a statement outlining 12 fundamental principles to address this matter.³

12 key policies recommended by WHO to promote RDU:

1. Establish a multidisciplinary national institution to coordinate drug use policies,
2. Clinical guidelines,
3. Basic drug lists based on treatment choices,
4. Presence of drug and treatment committees in districts and hospitals,
5. Problem-based pharmacotherapy education in undergraduate curricula,
6. Maintenance of continuing medical education as a licensing requirement,
7. Follow-up of audits, inspections, and feedback,
8. Use of independent information on drugs,
9. Educating the public about drugs,
10. Avoidance of unethical financial incentives,
11. Establish appropriate and binding regulations,
12. Adequate government spending to ensure the availability of drugs and personnel.

Rational drug use (RDU) is the set of rules that should be followed to enable people to easily take drugs in accordance with their clinical needs, at doses that meet their personal requirements,



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within sufficient time, and at the lowest cost to themselves and society. Rational drug use is briefly defined as “the planning, implementation, and monitoring process that enables effective, safe, and economical implementation of drug therapy.”⁴ On the other hand, Taşdemir defines RDU as “a systematic approach that includes making the correct diagnosis for the patient, carefully defining the problem, determining the treatment goals, selecting the treatment with proven efficacy (reliable) from different options, writing an appropriate prescription, starting the treatment by giving clear information and instructions to the patient, and monitoring and evaluating the results of the treatment.”⁵ In this definition, rational use of drugs is assessed in a process that starts with the diagnosis of the patient and ends with the analysis of the results of the treatment. The RDU concept can be summarized by the 7 principle:⁶

- Appropriate indication
- Appropriate drug
- Appropriate route, dose, duration
- Appropriate patient
- Appropriate patient counseling
- Appropriate evaluation
- Reasonable price

In modern health-care services, the predominant approach to treat illnesses involves the administration of drugs. However, this widespread usage of drugs has given rise to the issue of irrational use of pharmaceuticals. The core of this problem stems from 2 main factors: the incorrect selection of drugs by health-care professionals and/or the inappropriate use of medications by patients.⁴ A study conducted by Patel et al⁷ in the USA revealed that drug-related issues constituted 28% of emergency department admissions. Strikingly, 70% of these cases were deemed preventable. The preventable conditions were predominantly attributed to various factors, including inappropriate drug use (46%), incorrect prescribing and insufficient patient follow-up (44%), lack of patient education (8%), and errors made by pharmacists during prescription filling (2%).⁷

Diagnosis, being the initial and crucial step in the RDU, treatment, which involves the accurate application of drugs, and finally patient follow-up, collectively ensure the successful implementation of RDU principles.⁸

Rational Prescribing Process and Rational Treatment Steps

Rational drug use represents a significant health issue on a global scale, with particular prominence in developing countries.⁹ One of the most important actors in RDU is the physician, who determines the diagnosis and treatment and prescribes the medication.¹⁰ Patients taking medication without a physician’s advice or prematurely discontinuing medication before the recommended treatment duration, constitutes one of the primary issues encountered in RDU.¹¹ Rational drug use in Turkey revealed some concerning statistics. Specifically, 46.6% of patients were found to take medication without a physician’s recommendation,¹² 77.3% of patients discontinued their medication earlier than recommended by the physician,¹¹ and 24.5% of patients recommended a medication they were satisfied with to someone else.¹³ Data from the literature consistently indicate that rational drug prescribing practices are not being adhered to, and there is a lack of adequate communication between physicians and patients regarding RDU.¹⁴

The WHO lists a lack of knowledge on the part of physicians, a lack of updating of their skills and knowledge, busy working hours, unlimited availability of drugs, profit for physicians from the sale of drugs, and inaccurate and incomplete explanation of drugs to patients as some of the reasons that hinder the rational prescribing phase.¹⁵

Iskit summarized the rational prescribing process as follows:¹⁶

- Identifying the patient’s problem and setting treatment goals.
- The most critical question to answer is: “Is drug treatment necessary?” Not all diseases or conditions require drug treatment. If medication will improve the patient’s quality of life, it should be given after diagnosis.
- The patient’s other medications and habits should be questioned. All medications used should be known. Smoking and alcohol consumption can alter the effects of medications.
- Make a list of effective drug groups and select an effective drug according to the criteria: Four main characteristics should be considered when deciding which class of drug to use in treatment. In accordance with the principles of rational pharmacotherapy, drug options that can achieve the physician’s treatment goals should be compared in terms of efficacy (adequate dose, duration), safety (side effects, drug interactions), suitability (contraindications, ease of storage use), and treatment cost, and the best option should be determined.
- Personal choice is required. A drug molecule should be chosen from the drug group decided as a result of the previous analysis, using the same criteria (efficacy, safety, suitability, cost).
- The minimum number of drugs should be sufficient. A small number of drugs with known properties should be used in treatment.
- Treatment should be started at a low dose and the dose should be increased as slowly as possible. The dose may need to be adjusted according to the patient’s response to the drug (individualization of treatment).
- Medication regimens should be simplified to improve patient compliance. Liquid formulations of drugs or, if possible, single daily administration should be preferred. Adequate and comprehensible information (preferably in writing) about the drug should be provided to the patient and their family. An easy-to-understand prescription should be written and the patient’s family should be empowered to monitor the use of the medication.
- Treatment should be reviewed regularly and unnecessary drugs should be removed from the regimen. Adding new medications should be preferred if it will improve the patient’s quality of life; it should be remembered that new medications may cause new problems.
- Effective communication between the patient and/or their relatives and the physician is necessary.

Irrational Use of Drugs

Today, the pharmacist plays an active role in ensuring that patients are properly informed and monitored about their drugs.^{8,17} Failure at any of these stages will change the benefit of the drug, making it ineffective or even harmful.⁶ Drug information is needed at every stage where decisions are made about RDU. Drug information should be reliable, unbiased, complete, and up-to-date.^{18,19}

In addition to prioritizing the safe and effective use of drugs, it is also important to provide them at the lowest possible cost.²⁰ Irrational drug use reduces the quality of medical care and wastes

resources.⁵ The use of drugs outside the principles of the RDU leads to unnecessary use of drugs and places a burden on the national economy in terms of health expenditure.²¹ The psychosocial impact on patients of irrational use of the drug and the burden on the national budget are some of the main reasons for the emergence of RDU.⁴

Common examples of irrational patterns of drug use include:⁶

- Prescribing more than 1 drug to a patient (polypharmacy)
- Use of injectables when oral formulations would be more appropriate.
- Use of antimicrobials in inadequate doses or duration or for infections of nonbacterial origin, leads to antimicrobial resistance
- Failure to adhere to prescriptions
- Inappropriate self-administration of drugs or noncompliance with prescribed treatments

Rational Drug Use in Community Pharmacy

In Turkey, pharmacy is defined as *"a health service that carries out activities related to the preparation and presentation of various pharmaceutical types of drugs from natural and synthetic drug raw materials used in the diagnosis and treatment of diseases and the prevention of diseases; analysis of the drug, monitoring in terms of the continuity of its pharmacological effect, safety, effectiveness, and cost; ensuring standardization and quality assurance related to the drug; and informing patients about problems related to the use of drugs and reporting the problems that arise."*²² In recent years, the pharmaceutical approach to pharmacy has changed to put the patient at the center. The profession is evolving from a supplier of drugs to a provider of information and services, and ultimately to a provider of pharmaceutical care.²³

A pharmacist must have good business skills as well as in-depth knowledge of drugs and the ability to communicate well. Pharmaceutical care can only be provided if a good relationship with the patient is established and pharmacists are able to communicate well with the patient about pharmacotherapy and related issues. In 1997, the American Society of Health-System Pharmacists published guidelines on pharmacist-led patient education and counselling, which emphasize that building a caring relationship with the patient in the pharmaceutical care process involves not only the technical aspects of information provision and communication but also the emotional aspects and empathy.²⁴

Irrational use of drugs is a widespread problem in many countries, particularly in developing countries⁹, because in most developing countries, community pharmacies are the main source of drugs.²⁵ The step where the pharmacist's role is most evident in the RDU is the prescription fulfillment stage.¹⁸ Although it is the physicians who make the diagnosis and write the prescription, the pharmacist is the last person the patient communicates with before starting treatment. The patient will often remain in contact with the pharmacist until the next medical check-up.⁸ The potential of community pharmacies to reach patients is considerable. To realize this potential, pharmacists are expected to fill the prescription while encouraging the patient to use the drugs effectively and safely.²⁶ Pharmacists are uniquely placed to ensure the safe and effective use of drugs.²⁵ Potential medication errors can be identified and minimized through pharmacist intervention.²⁷

In the study conducted by Toklu et al²⁵ in 2002 in Istanbul, in which pharmacy practice in 84 community pharmacies was

evaluated by questionnaire and simulated scenario application, it was found that only 43% of prescriptions were adequately labeled on the drug cabinet and only 6.5% of patients were informed about drug interactions in simulated prescription scenarios. In addition, 32% of pharmacists were not present in the pharmacy during the study and only 40.5% of prescriptions were filled by pharmacists. In a study conducted in community pharmacies in Ankara, it was found that pharmacy staff gave the opposite information to that given by the pharmacist on a topic that the pharmacy staff answered to the patient themselves, without referring the patient to the pharmacist.²⁸ As a result of the studies, it is observed that pharmacy practice in community pharmacies is inadequate in terms of good pharmacy practice.^{25,28}

The involvement of pharmacists and the health-care team in the treatment process makes a significant contribution to improving the quality of prescribing and reducing medication-related problems.²⁹ However, communication between physicians and pharmacists, the 2 main pillars of treatment, is very limited and there is no dialogue between the 2 unless there is a problem with the prescription.³⁰ In particular, WHO wants pharmacists to be more involved in the overall health system and to utilize their broad academic experience.²³

Barriers to the Diffusion of Rational Drug Use in Community Pharmacies

- Wrong medication given to the patient by the pharmacist^{7,8}
- Inadequate indication information in pharmacy education³⁰
- The fact that pharmacy education is not geared towards rational use of drugs and the practical shortcomings in this regard³¹
- Insufficient benefit from pharmacy placements during training³⁰
- The reluctance of pharmacists to keep up with professional innovations²⁴
- Failure to adapt to the new pharmacy service model and practices³⁰
- Professional knowledge is outdated, and in parallel no internal training is organized¹⁹
- Problems related to the adaptation of knowledge acquired in undergraduate education to practice³¹
- Community pharmacists unable to practice due to problems with reimbursement systems and bureaucracy³⁰
- The pharmacist does not feel the need to obtain information about the patient's medical history and treatment^{8,30}
- Due to pharmacy workload, lack of time to spend with patients during the medication education phase and lack of communication between patient and pharmacist⁸
- Incomplete/incorrect information written or not written on drug boxes^{8,25}
- Fulfillment of prescriptions by pharmacy assistants and technicians²⁵
- Another fundamental problem is that the pharmacist is not present in his pharmacy²⁵
- Pharmacists' lack of knowledge about adverse reaction reporting³⁰
- Financial concerns and a lack of job satisfaction among pharmacists are also among the issues raised by pharmacists.³⁰

Pharmacy Education and Rational Drug Use

The length and content of pharmacy education vary from country to country. Although the basic pharmacy courses are similar, the concept of pharmaceutical care varies according to the practice of community pharmacy in the region or country.^{32,33}

In recent years, the place of rational drug use, medication management, and pharmaceutical care in the curricula of pharmacy schools in many countries has increased.¹⁷ However, courses on ethics, clinical pharmacy, social pharmacy, communication, and health promotion are still insufficiently included in pharmacy faculty training in many European countries. As a result, pharmacists are thought to be reluctant to change the way they practice pharmaceutical care. Potential pharmacist trainees are reported to lack the knowledge and skills relevant to their new roles. The main problem in this area is that most universities still focus on training pharmacists only in their classical functions (compounding, developing, manufacturing, analyzing, and dispensing drugs). In particular, social pharmacy helps students learn theoretical issues from a community-oriented perspective.²³

Rational Drug Use and Pharmaceutical Care

Pharmaceutical care was defined by Hepler and Strand as “the professional responsibility of the pharmacist to achieve therapeutic outcomes that improve the quality of life of patients.”³⁴ Pharmaceutical care is based on the relationship between the patient and the health-care professionals who take responsibility for the patient’s care.³⁵ The ultimate goal of all health-care professionals, including pharmacists, is to improve the quality of life of patients.³⁶ Pharmaceutical care involves the active participation of the patient and the health-care professional in decisions about medication therapy. Pharmaceutical care has 3 main functions: identifying potential and existing drug-related problems, solving existing drug-related problems, and preventing drug-related problems.³⁵

Pharmaceutical care is personalized care for the patient using the drugs and aims to improve treatment outcomes, including quality of life. In Europe, the concept of pharmaceutical care is based on “personalized professional care for the patient in the pharmacy.” This concept is defined as the individualized coaching of patients by pharmacists regarding their drugs. The concept includes close monitoring of the patient’s receipt, use, and education about the medication. It is also the pharmacist’s responsibility to monitor treatment progress, provide advice, and evaluate all outcomes of care.²⁴

The pharmacist’s pharmaceutical care responsibilities include: presenting medication to the patient, informing the patient about the medication, counseling the patient, monitoring treatment, monitoring adverse drug reactions, developing medication protocols/guidelines, working in an integrated manner with other health-care professionals, and recording medication histories.³⁵

Pharmacists providing sufficient and accurate information about prescription or nonprescription drugs recommended by the physician, being aware of side effects, following up on the patient’s treatment, and referring the patient to the physician when necessary are the factors that will directly influence the success of treatment in the rational use of drugs. Pharmacists have an important responsibility to provide accurate information in order to prevent pharmacy-related and patient-related errors.^{20,30,37}

Pharmacists need training and support to improve their practical skills to provide comprehensive pharmaceutical care and manage the rational use of drugs.³⁵ Many countries have active programs to introduce pharmacy-based pharmaceutical care.²³

It seems that pharmacists especially play the role of dispensing drugs. In the near future, this activity will be carried out by the internet, machines, and/or technicians with minimal training. The fact that pharmacists have an academic education gives them a responsibility to serve society better than they do now. Pharmacists are in a position to improve preventable drug-related problems. It is thought that one way to do this is to be trained in the rational use of drugs during their undergraduate and professional training.

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REFERENCES

1. Yılmaztürk A. Türkiye’de ve Dünyada Akılcı İlaç Kullanımı. *Kastamonu Univ İktisadi İdari Bilimler Fak Derg.* 2013;2:42-49.
2. Erol H, Özdemir A. Türkiye’de Sağlık Reformları ve Sağlık Harcamalarının. *SGD-Sosyal Güvenlik Dergisi.* 2014;4:9-34.
3. World Health Organization. *The World Medicines Situation* (No. WHO/EDM/PAR/2004.5); 2004.
4. Acar A, Yeğenoğlu S. Akılcı İlaç Kullanımı Penceresinde Farmakoe-konomi ve Hastane Formüllerleri. *Ankara Ecz Fak Derg.* 2005;34(3):207-218.
5. Taşdemir S. Akılcı (Rasyonel) İlaç Kullanımı. *İnönü Univ Sağlık Hizmetleri Meslek Yüksek Okulu Derg.* 2013;1(1):1-5.
6. Bliss-Guest PA. Meeting of Government Experts on Regional Marine Programmes, held in Nairobi, Kenya, during 18–21 January 1982. *Environmental Conservation.* 1982;9(2):168-169. [CrossRef]
7. Patel P, Zed PJ. Drug-related visits to the emergency department: how big is the problem? *Pharmacotherapy.* 2002;22(7):915-923. [CrossRef]
8. Toklu HZ, Dülger GA. Akılcı İlaç Kullanımı ve Eczacının Rolü. *Marmara Pharm J.* 2011;3(15):89-93. [CrossRef]
9. Sürmelioglu N, Kiroğlu O, Erdoğan T, Karataş Y. Akılcı Olmayan İlaç Kullanımını Önlemeye Yönelik Tedbirler. *Arşiv Kaynak Tarama Derg.* 2015;24(4):452-462. [CrossRef]
10. Akıcı A, Kalaça S. Topluma Yönelik Akılcı İlaç Kullanımı. *Sosyal Güvenlik Kurumu Başkanlığı.* 2013;93.
11. Ekenler Ş, Koçoğlu D. Bireylerin akılcı ilaç kullanımıyla ilgili bilgi ve uygulamaları. *Hacettepe Univ Hemşirelik Fak Derg.* 2016;3:44-55.
12. Deniz S, İlişkin Tutum AİK, Bir Araştırma DBY. *Hacettepe Sağlık İdaresi Derg.* 22:619-632.
13. Özçelikay G. A pilot study on rational drug use. *Ank Univ Eczacılık Fak Derg.* 2001;30:9-18.
14. Yılmaz M, Güler N, Güler G, Kocataş S. Bir Grup Kadının İlaç Kullanımı İle İlgili Bazı Davranışları: Akılcı Mı? *Cumhuriyet Med J.* 2011;33:266-277.
15. World Health Organization. *Promoting Rational Use of Medicines: Core Components* (No. WHO/EDM/2002.3). World Health Organization: Geneva; 2002.
16. İskit A, Kullanımı Aİ. *Sürekli Tıp Eğitimi Derg.* 2006;15.
17. Anderson S. The state of the world’s pharmacy: a portrait of the pharmacy profession. *J Interprof Care.* 2002;16(4):391-404. [CrossRef]
18. Sancar M. Çocuklarda Akılcı İlaç Kullanımı ve Eczacının Rolü. *Türk Eczacıları Birliği Meslek İçi Sürekli Eğitim Derg.* 2016;37-38:29-42.

19. Alpdoğan C, Altındış S. Eczacıların Akılcı İlaç Kullanımı ile İlgili Yaklaşımları. *Sakarya Tıp Derg.* 9:103-112.
20. Toklu HZ, İlaç Kullanımı EUA. *Turk Klin.* 2015;3:74-83.
21. Abacioğlu N, Ekonomi-Politiği F. *Univ Toplum (Electron J).* 2007;7(4).
22. Ministry of Health. *About Pharmacists and Pharmacies Law*; 2012.
23. Wiedenmayer K, Summers RS, Mackie CA, et al. *Developing Pharmacy Practice: a Focus on Patient Care: Handbook* (No. WHO/PSM/ PAR/2006.5). World Health Organization: Geneva; 2006.
24. van Mil JW, Schulz M, Tromp TFD. Pharmaceutical care, European developments in concepts, implementation, teaching, and research: a review. *Pharm World Sci.* 2004;26(6):303-311. [\[CrossRef\]](#)
25. Toklu HZ, Akıcı A, Oktay Ş, Cali S, Sezen S, Uysal MK. The pharmacy practice of community pharmacists in Turkey. *Marmara Pharm J.* 2010;1(14):53-60. [\[CrossRef\]](#)
26. Hussain A, Ibrahim MI, Baber ZU. Using the potentials of community pharmacies to promote rational drug use in Pakistan: an opportunity exists or lost? *JPMA J Pak Med Assoc.* 2012;62(11):1217-1222.
27. Pickard AS, Johnson JA, Farris KB. The impact of pharmacist interventions on health-related quality of life. *Ann Pharmacother.* 1999;33(11):1167-1172. [\[CrossRef\]](#)
28. Eczane İçi UD E, Yoluyla İncelenmesi EKÇ. *Uzmanlık Bilgisi Gösterimi*; 2018.
29. Melo DOD, Castro LL. Pharmacist's contribution to the promotion of access and rational use of essential medicines in SUS. *Cien Saude Colet.* 2017;22(1):235-244. [\[CrossRef\]](#)
30. Akıcı A, Alp Fİ, Dülger GA, et al. Serbest eczanelerde ilaç sunumu sürecinde karşılaşılan sorunlar: akılcı ilaç kullanımı yönünden değerlendirme. *Hacettepe Univ Eczacılık Fak Derg.* 2009:75-82.
31. Toklu H, Demirdamar R. The evaluation of prescription dispensing scores of the pharmacy students before and after the problem-based "rational drug use" course: results of the two years' experience. *Marmara Pharm J.* 2013;17:175-180.
32. Bourdon O, Ekeland C, Brion F. International pharmacy education supplement. *Am J Pharm Educ.* 2008;72(6):132. [\[CrossRef\]](#)
33. Sánchez AM. Pharmacy education in Cuba. *Pharm World Sci.* 2010;32(6):696-700. [\[CrossRef\]](#)
34. Hepler CD, Strand LM. Opportunities and responsibilities in pharmaceutical care. *Am J Hosp Pharm.* 1990;47(3):533-543. [\[CrossRef\]](#)
35. Al-Quteimat OM, Amer AM. Evidence-based pharmaceutical care: the next chapter in pharmacy practice. *Saudi Pharm J.* 2016;24(4):447-451. [\[CrossRef\]](#)
36. Planas LG, Kimberlin CL, Segal R, Brushwood DB, Hepler CD, Schlenker BR. A pharmacist model of perceived responsibility for drug therapy outcomes. *Soc Sci Med.* 2005;60(10):2393-2403. [\[CrossRef\]](#)
37. Hong K, Hong YD, Cooke CE. Medication errors in community pharmacies: the need for commitment, transparency, and research. *Res Social Adm Pharm.* 2019;15(7):823-826. [\[CrossRef\]](#)