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Primary health care versus emergency department care: The economic burden of green area patients in emergency department

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Abstract

Emergency departments (EDs) are medical treatment facilities that provide continuous 24/7 services to patients requiring urgent care for acute illnesses, injuries, or traumas. In contrast, primary health care is a fundamental type of health service that offers comprehensive, continuous, and holistic health care to individuals across all age groups, genders, or diseases. The present study prospectively analyzed data from 52,950 patients who presented to the Malatya Training and Research Hospital (MTRH) Emergency Department between October 1, 2022, and October 30, 2022. Among these patients, 24,918 were evaluated in the green triage area. Based on the Emergency Severity Index (ESI) criteria, 15,314 patients (classified under ESI categories 4 and 5) were identified as not-urgent cases that did not require emergency intervention and could have been managed in primary care settings. The financial impact of treating patients within the national social security system vary depending on the facility where care is provided. The average cost per patient in the ED for ESI 4 and 5 patients was 32,737 TL (1,749 USD). However, no direct costs were incurred for treating the same patients in primary care settings, as they were not billed. This finding supports the hypothesis that redirecting non-urgent cases to primary care settings would contribute to a more efficient use of healthcare resources. It would enhance cost-effectiveness and also enable the prioritization of patients requiring truly urgent care, thereby alleviating overcrowding in the ED.

Keywords: Primary care, emergency department, healthcare resource utilization

Introduction

Emergency departments (EDs) are medical treatment facilities that operate 24 hours a day, seven days a week and play a vital role in the healthcare system by providing immediate care for a broad spectrum of medical conditions, including life-threatening emergencies and require immediate intervention. These units are typically situated in easily accessible areas within hospitals and clinics, and are equipped to manage a broad spectrum of medical emergencies [1]. The main goal of medical care provided in EDs is to prevent disability and death in cases of sudden and unexpected onset of illnesses or injuries [2]. EDs are generally located within secondary and tertiary care hospitals.

The roles and responsibilities of primary care services were first outlined in the 1978 Alma Ata Declaration and have since been further developed. A primary care physician plays a central role in delivering comprehensive, continuous, and holistic healthcare,

regardless of the patient's age, sex, or specific condition. Therefore, primary care serves as the initial point of contact between individuals and the healthcare system [3]. Effective and accessible primary care enables timely medical intervention, which can help prevent disease progression. Furthermore, it represents a cost-effective approach to healthcare delivery [4]. High-quality primary care is associated with improved overall functioning of the healthcare system, as it facilitates prevention, as well as effective referral, coordination, and continuity of care [5]. Also, a well-functioning primary care system decreases unnecessary emergency department visits, thereby enabling more efficient allocation of healthcare resources [6,7].

In the most widely accepted Emergency Severity Index (ESI) triage system, patients are categorized into five levels based on the urgency of their condition and the resources required for treatment [8,9]. Patients categorized as ESI 1 have unstable vital

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signs and required immediate life-saving interventions. ESI 2 patients also have unstable vital signs and serious health issues but may not require immediate life-saving measures, though they cannot safely wait. ESI 3 patients have stable vital signs and require multiple resources for evaluation and treatment. ESI 4 patients have stable vital signs and require only a single resource, while ESI 5 patients also have stable vital signs and require no resources beyond a physical examination for diagnosis. Patients in ESI levels 4 and 5 are considered non-urgent and can safely wait for hours.

The aim of this study was to evaluate patients admitted to the emergency department of a university hospital through the ESI triage system, to identify those categorized as ESI 4 and ESI 5, and to compare the costs associated with their examination and treatment in primary healthcare facilities versus tertiary care hospitals.

Material and Methods

This prospective observational study was conducted with the approval of the Malatya Turgut Özal University Clinical Research Ethics Committee (Approval Number: 2022-190, Approval Date: 15.19.2022). The study included volunteer patients aged 18 years and older who presented to the Emergency Department of Malatya Training and Research Hospital. Upon admission, patients were initially triaged using the "Emergency Triage System of the Republic of Türkiye Ministry of Health," which classifies patients based on the urgency of their condition. According to this system, patients are categorized into three color-coded groups: green (non-urgent), yellow (urgent), and red (emergent). This study included all patients who were assessed in the green-coded triage area of the Emergency Department between October 1 and October 30, 2022.

During the study period, a total of 52.950 patients were evaluated in the Emergency Department, of whom 24.918 were examined in the green triage-coded area. These patients exhibited stable vital signs, presented with uncomplicated symptoms, and did not require interventions such as wound dressing, suturing, medical imaging, laboratory testing, or other emergency procedures. They typically had the mildest clinical presentations and were discharged following a physical examination, often with a prescription. Patients were further categorized using the ESI, and a total of 15,314 individuals were classified as ESI level 4 or 5.

The inclusion criteria for the study were as follows: patients aged 18 years or older who were triaged to the green-coded area of the emergency department; had stable vital signs; did not require laboratory tests, imaging, or emergency interventions; were eligible for discharge following clinical examination and prescription-based treatment; and were classified as ESI level 4 or 5.

The exclusion criteria were as follows: patients under the age of 18; those triaged with yellow, red, or yellow trauma codes; patients with unstable vital signs; those requiring laboratory testing, imaging, or emergency interventions; and individuals classified as ESI level 1, 2, or 3.

The invoices of patients classified as ESI level 4 and ESI level 5 were obtained from the national social security system for both primary healthcare services and hospital emergency departments, and subsequently compared. In Türkiye, primary healthcare services are provided by family physicians. No co-payment shall be required for physician and dental consultations provided at primary healthcare facilities [10].

Statistical Analysis

Statistical analysis was performed using SPSS version 22.0 for Windows (SPSS Inc., Chicago, IL, USA). Descriptive statistics were reported as frequencies, percentages, median, and interquartile ranges (IQR).

Results

A total of 52.950 patients were admitted to the Emergency Department during the study period, of whom 24.918 were evaluated in the green triage-coded area. According to the ESI, 15.314 patients categorized as ESI level 4 or 5 were included in the study.

Table 1 list the distribution of triage codes for all patients during the study period. Based on triage categorization, 47.05% of patients were assessed under the green triage code, while 50.6% were evaluated under the yellow triage code, which also includes yellow trauma cases. Only 2.35% of patients were treated in the red triage area. Among those assessed with the green triage code, 61.45% (15,314 patients) presented with the mildest clinical symptoms and were discharged with a prescription following medical examination.

Table 1. Triage codes for all patients during the study period

Triage code	Number of patients	%
Green	24.918	47.05
Yellow	26.798	50.60
Red	1.236	2.35
Total	52.950	100

Table 2 presents the age and sex distribution of patients classified as ESI level 4 and ESI level 5. Of these patients, 44.4% (6.806) were female, and 55.6% (8.507) were male. The median age of the study population was 35.51 years.

Table 2. Age and gender of the patients with ESI 4 and ESI 5

	Value
Age (years) (median, min-max)	35.51 (15 to 91)
Male, n (%)	8.507 (55.6)
Female, n (%)	6.806 (44.4)

Table 3 summarizes the diagnoses of patients classified as ESI level 4 and ESI level 5 during their ED evaluation. The most common diagnoses were upper respiratory tract infection (6.156 cases, 40.1%), back pain (1.551 cases, 10.1%), soft tissue injuries (951 cases, 6.2%), headache (887 cases, 5.7%), and acute sinusitis (721 cases, 4.7%).

Table 3. The diagnoses of patients classified as ESI level 4 and ESI level 5 during their ED evaluation

Diagnosis	All patients, n (%)
Upper respiratory tract infection	6.156 (40.1)
Back pain	1.551 (10.1)
Soft Tissue Trauma	951 (6.2)
Headache	887 (5.7)
Acute sinusitis	721 (4.7)
Abdominal pain	617 (4.0)
Acute otitis media	493 (3.2)
Acute gastroenteritis	475 (3.1)
Joint pain	423 (2.7)
Myalgia	419 (2.7)
Acute cystitis	373 (2.4)
Gastritis	364 (2.3)
Dysmenorrhea	361 (2.3)
Conjunctivitis	202 (1.3)
Renal colic	167 (1.0)
Tinea pedis	140 (0.9)
Pneumonia	139 (0.9)
Gastroesophageal reflux	134 (0.8)
Hypertension	131 (0.8)
Hemorrhoids	92 (0.6)
Urticaria	91 (0.6)
Other	427 (2.7)
Total	15.314 (100)

The cost table of the National Social Security Fund, according to the institutions where patients were examined, is presented in Table 4. Costs were calculated based on the official tariffs of the relevant healthcare institutions. The average cost for patients with ESI levels 4 and 5 in the Emergency Department of a tertiary healthcare institution (3rd level) was 32,737 TL (1,749 USD), whereas the treatment cost for the same patients in primary care was 0 TL (0 USD). An exchange rate of 1 USD=18.737 TL was used during the study period. As of 2025, the exchange rate is approximately 1 USD=36.253 TL and the exchange rate has been continuously fluctuating in an upward direction.

Table 4. The average National Social Security Fund expenses for the university hospital and the primary healthcare institution for patients classified as ESI 4 and ESI 5

	Cost (per patient)	Total cost n=15.314
Tertiary hospital (green area of ED)	32.737TL (1.749\$)	501.334,418 TL (26.795\$)
Primary healthcare	0TL (0\$)	0 TL (0\$)

Discussion

Healthcare is a social service closely linked to the level of development in many countries. As healthcare is considered a fundamental personal right, its provision is the responsibility of the welfare state [11]. Every individual has the right to access healthcare services, live in a healthy environment, and maintain their well-being. Governments are obligated to ensure non-discriminatory access to healthcare for all citizens, and to establish, manage, support, and sustain institutions and organizations that protect and promote public health. This right is also recognized in the constitution of our country, as in the constitutions of many developed nations [12].

In general, healthcare is a non-profit sector in which the interests and well-being of patients are prioritized [13]. Healthcare services cannot be postponed or canceled, and in many cases, they constitute an urgent necessity. Due to these factors, governments allocate specific budgets for the provision of healthcare services. These budgets are utilized throughout the year to ensure the treatment of individuals in need of medical care [14].

Emergency departments (EDs) play a critical role in the healthcare system by delivering immediate care for a wide range of medical conditions, including life-threatening emergencies. However, EDs are increasingly burdened by non-urgent cases that could be more appropriately managed within primary care settings. This inefficiency contributes to escalating healthcare costs, overutilization of resources, and prolonged waiting times for patients requiring urgent medical attention. Numerous studies have shown that strong primary care systems are associated with lower hospitalization rates, decreased maternal and infant mortality, and significant reductions in mortality from conditions such as cancer, respiratory illnesses, and cardiovascular diseases [15-19]. There is substantial evidence indicating that accessible and efficient primary healthcare services are linked to reduced hospitalization rates and overall improved health system performance.

The leveled service model is the most effective and widely accepted approaches to the delivery of healthcare services [20]. Dividing healthcare into distinct levels-each responsible for a specific scope of care-ensures more accurate, efficient, and practical service delivery while also helping to reduce overcrowding. This model begins with preventive healthcare services and progresses through primary, secondary, and tertiary care, followed by rehabilitation services [21].

All states aim to optimize the use of limited resources-such as budget and time-allocated to healthcare services [22]. Reducing unnecessary expenditures can alleviate constraints on essential healthcare services and improve overall system efficiency. Conversely, an increase in avoidable costs may place a significant burden on the social security system and hinder the allocation of funds for necessary medical services.

This study is preliminary and can be expanded in the future research. The main goals of this study were to identify unnecessary

expenditures within the national social security fund and to illustrate how the level-based healthcare system is utilized by the population. The ED is one of the most frequently accessed units in our country. Therefore, evaluating the profiles of patients presenting to emergency services and conducting a cost analysis is essential.

EDs play a critical role in healthcare systems. However, the increasing number of non-urgent visits to these departments has led to a substantial increase in both workload and financial burden. This situation negatively impacts the quality of care provided to patients with genuine emergencies and contributes to the inefficient use of healthcare resources. Previous studies have demonstrated that a significant number of patients who visit emergency departments could be effectively managed in primary care settings [8,9,23,24]. The findings of the present study are consistent with these studies, revealing that a considerable number of patients categorized as ESI levels 4 and 5 could have been appropriately treated in primary care.

In 47.05% of cases, patients who visited the ED were categorized as green area triage codes, indicating that approximately half of those admitted were not in a life-threatening condition. Additionally, 2.35% of the patients required immediate life-saving interventions. These findings suggest that non-emergency cases constitute a significant proportion of the ED workload and resource utilization. A study involving 5,818 individuals reported that 31.8% of patients visiting the ED did not meet the criteria for emergency admission and unnecessarily occupied the ED [23]. Similarly, a study conducted in Brazil found that approximately 24.2% of visits were for non-urgent or inappropriate reasons [24].

In our study, the most common diagnosis among patients with the mildest clinical presentation was upper respiratory tract infection (URTI). This finding may be associated with seasonal changes as a sudden drop in temperature leads to increased incidence of URTIs. Additionally, it is expected that patients presenting with URTI symptoms and stable vital signs would not be triaged to the yellow or red areas, for treatment, thereby contributing to higher proportion of such cases being managed in the green area. A study conducted in Japan reported that the most common reason for non-emergency visits to the ED was URTI, accounting for 21.4% of cases [25]. Similarly, a study conducted in Izmir found that among 624 non-emergency ED visits, the most common reason was musculoskeletal pain (25.2%), followed by URTIs (19.7%) [21].

Reducing the number of non-urgent admissions to the ED would not only enable emergency patients to receive earlier and more effective treatment but would also alleviate the financial burden on the national social security system. In this context, a cost comparison between primary care services and university hospital providers reveals that, according to national social security fund regulations in our country, there is no examination fee for primary care providers. In contrast, both secondary and tertiary (university) hospitals impose varying examination fees for services delivered in ED and all outpatient clinics. In the university hospital where this

study was conducted, the average cost of an examination for patients triaged to the green area of the ED was 32.737 TL (approximately 1.749 \$). Based on this rate, the estimated total cost over a 30-day period would amount to 501.334, 418 TL (approximately 26.795 \$). If these patients had instead been evaluated in primary care settings, the cost of the national social security fund would have been zero. These findings clearly indicate that non-emergency patients examined and treated in primary care facilities rather than university hospital EDs, would provide substantial economic benefits to the national social security system.

To achieve cost savings and promote the efficient use of EDs, it is essential to evaluate the profiles of non-emergency patients presenting to these units. Therefore, these patients should be appropriately redirected to primary care settings. Identifying the underlying reasons why these individuals choose not to utilize primary care facilities is critical for developing targeted solutions. A study conducted with approximately 3,000 ED patients found that the primary reason for avoiding primary care was a higher level of trust in ED compared to primary care [26]. Similarly, a large-scale study conducted in Portugal involving over 117,000 patients aimed at reducing inappropriate ED visits demonstrated that strengthening primary care settings and assigning a dedicated specialist to primary care significantly decreased non-urgent ED utilization [27].

The treatment cost for these patients in primary care settings is minimal – particularly from the patient's perspective, as primary care settings is generally covered by national social security system- especially when compared to the significantly higher cost associated with ED care. This underscores the importance of redirecting non-urgent cases to primary care. Such redirection has the potential to yield substantial cost savings for the healthcare system and enhance the overall efficiency of resource utilization.

The present study had several limitations. First, it was conducted at a single center, which these findings may not be generalizable to all EDs in Turkey. Second, the study period was restricted to one month; a longer duration could provide more comprehensive end representative data. Third, the analysis focused solely on direct medical costs, excluding the indirect costs such as patient transportation lost work time, and other societal expenses. Future research should aim to address these limitations by including multi-center data, extending the study duration, and incorporating both direct and indirect cost analyses for a more holistic assessment.

The large number of non-emergency patients presenting to EDs is a growing concern worldwide. Reducing these non-urgent admissions to university hospital ED would offer several significant advantages. First, it would allow patients with life-threatening conditions to receive more timely and effective care, reduce unnecessary workload, and burn out among healthcare personnel, and enable the more efficient allocation of time and resources toward true medical emergencies. Secondly, major benefit would be the potential for substantial cost savings for national social security systems.

Various strategies have been discussed in the literature to reduce hospital admissions, emergency department visits, and the economic burden by strengthening the role of primary care within healthcare systems. First, strengthening gatekeeping mechanisms in primary care can ensure that patients access appropriate care before visiting EDs, which has been shown to reduce costs and improve health outcomes [28-30]. Second, after-hours primary care services play a crucial role in alleviating the burden on emergency departments, as demonstrated in countries such as Canada, the United Kingdom, and Australia, where these services have been successfully integrated into the healthcare system [31-35]. Additionally, improving health literacy through public education campaigns helps patients make informed decisions, encouraging them to seek primary care for non-urgent conditions rather than overwhelming EDs [36]. Building trust in primary care providers is also essential, as consistent access to family physicians reduces unnecessary ED visits [37,38]. Lastly, adopting reimbursement models that financially incentivize primary care providers to manage a wider range of patient needs has proven effective, as seen in the Patient-Centered Medical Home (PCMH) model in the United States [39,40]. Together, these strategies can optimize the healthcare system, reduce costs, and improve patient outcomes by prioritizing primary care.

Conclusion

The findings of this study demonstrate that a substantial proportion of patients presenting to the university hospital ED (those in ESI 4 and 5) could be appropriately managed in primary care settings. The management of these cases within the primary care settings offers significant benefit for both patients and healthcare system. It promotes more efficient utilization of healthcare resources and alleviates overcrowding in EDs. Furthermore, the redirection of non-urgent cases to primary care settings has the potential to generate considerable cost savings and improve the quality of care delivered to patients with acute medical conditions. To achieve these outcomes, it is essential that patients are adequately informed about what constitutes a medical emergency, that their health literacy is improved, and that they are encouraged to seek care at primary healthcare facilities for non-emergency conditions. It is believed that increased utilization of primary healthcare settings by more patients and along with the systematic identification and elimination of the factors preventing access to these services would provide significant benefits to the healthcare system.

Conflict of Interests

The authors declare that there is no conflict of interest in the study.

Financial Disclosure

The authors declare that they have received no financial support for the study.

Ethical Approval

The study was approved by the Malatya Turgut Özal University Clinical Research Ethics Committee (Approval Number: 2022-190, approval date: 15.09.2022) in accordance with the principles of the Helsinki Declaration, and informed consent was obtained from all patients.

References

1. Söyük S, Kurtuluş SA. The evaluation of the problems' emergency services from staff perspectives. GÜSBİD. 2017;6:44-56.
2. Altıntop I, Tatlı M. A different perspective to emergency service crowd : a survey study. Journal of Anatolian Medical Research. 2017;2:45-57.
3. World Health Organization. Geneva: 1978. Primary health care: report of the International Conference on Primary Health Care, Alma-Ata, USSR.
4. Başer DA, Kahveci R, Meltem K, et al. Strong primary care for effective health systems. Ankara Med J. 2015;15:26-31.
5. Casanova C, Starfield B. Hospitalizations of children and access to primary care: a cross-national comparison. Int J Health Serv. 1995;25:283-94
6. Kirkland SW, Soleimani A, Newton AS. Review: the impact of pediatric mental health care provided in outpatient, primary care, community, and school settings on emergency department use - a systematic review. Child Adolesc Ment Health. 2018;23:4-13.
7. Huntley A, Lasserson D, Wye L, Morris R, Checkland K, England H, Salisbury C, Purdy S. Which features of primary care affect unscheduled secondary care use? A systematic review. BMJ Open. 2014;23;4:e004746.
8. Eitel DR, Travers DA, Rosenau AM, et al. The emergency severity index triage algorithm version 2 is reliable and valid. Acad Emerg Med. 2003;10:1070-80.
9. Tanabe P, Gimbel R, Yarnold PR, et al. The reliability and validity of The Emergency Severity Index version 3. Acad Emerg Med. 2004;11:59-65.
10. SGK. Sosyal Güvenlik Kurumu 2024 Yılı Genelgesi. <https://www.sgk.gov.tr/Download/DownloadFile?f=22e91f19-972d-49d7-8d48-4edc5e156798.pdf&d=edd7d180-9e59-46e7-88f0-00b3ec0c068d> access date 25.05.2025.
11. Mera JA. A review of the 'welfare state' and alternative ways of delivering health care. Int J Qual Health Care. 2002;14:87-90.
12. Zengin N. "Sağlık hakkı" ve sağlık hizmetlerinin sunumu. Sağlıkta Performans ve Kalite Dergisi. 2010;1:44-52.
13. Almeida AS. The role of private non-profit healthcare organizations in NHS systems: Implications for the Portuguese hospital devolution program. Health Policy. 2017;121:699-707.
14. Başol E. Developing strategies in developing countries: delivery chain in health systems. BJSS Balkan Journal of Social Sciences. 2015;4:128-40.
15. Macinko J, Starfield B, Shi L. The contribution of primary care systems to health outcomes within Organization for Economic Cooperation and Development (OECD) countries, 1970–1998. Health Serv Res. 2003;38:831-65.
16. Gulliford MC, Jack RH, Adams G, Ukoumunne OC. Availability and structure of primary medical care services and population health and health care indicators in England. BMC Health Serv Res. 2004;4:12.
17. Schäfer WL, Boerma WG, Kringos DS, et al. QUALICOPC is a multi-country study evaluating quality, costs, and equity in primary care. BMC Fam Pract. 2011;12:115.
18. Parchman ML, Culler S. Primary care physicians and avoidable hospitalizations. J Fam Pract. 1994;39:123-8.
19. Macinko J, Starfield B, Erinosho T. The impact of primary healthcare on population health in low- and middle-income countries. J Ambul Care Manage. 2009;32:150-71.
20. Nolte E, Karanikolos M, Rechel B. Service delivery, Chapter 7. In: Papanicolas I, Rajan D, Karanikolos M, et al., eds. Health system performance assessment: a framework for policy analysis [Internet]. Copenhagen (Denmark): European Observatory on Health Systems and Policies, 2022.

21. Idil H, Kilic TY, Toker İ, et al. Non-urgent adult patients in the emergency department: Causes and patient characteristics. *Turk J Emerg Med.* 2018;18:71-4.
22. Lorenzoni L, Marino A, Morgan D, James C. Health Spending Projections to 2030: New results based on a revised OECD methodology. OECD Health Working Papers, No. 110, OECD Publishing, Paris, 2019.
23. Pereira S, Oliveira e Silva A, Quintas M, et al. Appropriateness of emergency department visits in a Portuguese University Hospital. *Ann Emerg Med.* 2001;37:580-6.
24. Carret ML, Fassa AG, Kawachi I. Demand for emergency health service: factors associated with inappropriate use. *BMC Health Serv Res.* 2007;7:131.
25. Miyazawa A, Maeno T, Shaku F, et al. Inappropriate use of the emergency department for non-urgent conditions: patient characteristics and associated factors at a Japanese hospital. *J Gen Fam Med.* 2019;20:146-53.
26. Sempere-Selva T, Peiró S, Sendra-Pina P, et al. Inappropriate use of an accident and emergency department: magnitude, associated factors, and reasons--an approach with explicit criteria. *Ann Emerg Med.* 2001;37:568-79.
27. Almeida A, Vales J. The impact of primary healthcare reform on hospital emergency department overcrowding: evidence from Portuguese reform. *Int J Health Plan Manage.* 2020;35:368-77.
28. Sripa P, Hayhoe B, Garg P, et al. Impact of GP gatekeeping on quality of care, and health outcomes, use, and expenditure: a systematic review. *Br J Gen Pract.* 2019;69:e294-303.
29. Liang C, Mei J, Liang Y, et al. The effects of gatekeeping on the quality of primary care in Guangdong Province, China: a cross-sectional study using primary care assessment tool-adult edition. *BMC Fam Pract.* 2019;20:93.
30. Spalletta O, Green S. The Gatekeeper's dilemma: unpacking the complexity of low-value care in general practice. *Sociol Health Illn.* 2025;47:e70034.
31. Trankle SA, Reath J. Afterhours telehealth in Australian residential aged care facilities: a mixed methods evaluation. *BMC Health Serv Res.* 2023;15:23:1263.
32. A better after-hours system – Review of afterhours primary care programs and policy. https://www.health.gov.au/sites/default/files/2024-10/a-better-after-hourssystem-review-of-after-hours-primary-care-programs-and-policy_0.pdf access date 25.05.2025.
33. Hong M, Thind A, Zaric GS, Sarma S. The impact of improved access to after-hours primary care on emergency department and primary care utilization: a systematic review. *Health Policy.* 2020;124:812-8.
34. Salehi L. Expanding after-hours access to primary care unlikely to decrease burden on EDs. *Can Fam Physician.* 2017;63:110-1.
35. Smits M, Rutten M, Keizer E, et al. The development and performance of after-hours primary care in the Netherlands: a narrative review. *Ann Intern Med.* 2017;166:737-42.
36. World Health Organization (WHO). Investing in children: the European child and adolescent health strategy 2015–2020. <https://iris.who.int/bitstream/handle/10665/128703/e96854.pdf> access date 25.05.2025
37. Starfield B. Is patient-centered care the same as person-focused care?. *Perm J.* 2011;15:63-9.
38. Van Weel C. Person-centred medicine in the context of primary care: A view from the world organization of family doctors (WONCA). *J Eval Clin Pract.* 2011;17:337-8.
39. Nelson KM, Helfrich C, Sun H, et al. Implementation of the patient-centered medical home in the Veterans Health Administration: associations with patient satisfaction, quality of care, staff burnout, and hospital and emergency department use. *JAMA Intern Med.* 2014;174:1350-8.
40. Fakeye OA, Hsu YJ, Weiner JP, Marsteller JA. Impact of the patient-centered medical home on consistently high-cost patients. *Am J Manag Care.* 2023;29:680-6.