BMC Research Notes

RESEARCH NOTE Open Access

Time and cost involved in measuring access to medicines: the case of Albania

E. Petro[1,2*], I. R. Joosse[2], A. C. M. Siebers[2], T. Martopullo[3], R. P. M. Hart[2], A. K. Mantel-Teeuwisse[2], H. A. van den Ham[2*] and F. Suleman[4]

Abstract

Objective This study aimed to assess the resources involved in collecting data for both the WHO/Health Action International (HAI) methodology and the Sustainable Development Goal 3.b.3 indicator to determine the availability and affordability of medicines. Medicines from the WHO Global Core List (GCL) and a basket of pediatric medicines were chosen to reflect a comprehensive range of medicines. The objective was to analyze the time, financial, and human resource investments required to conduct such research in an upper-middle-income country like Albania.

Results Data collection, including travel required approximately 3.5 h per survey area, with a total of 36 h estimated across six areas, not including data analysis. Each survey area was visited by four data collectors. Although collecting this type of data was initially perceived as laborious, our findings revealed that this was primarily due to the pre-survey preparation rather than the data collection process itself. Transportation costs were calculated by including car rental and fuel costs and totaled 120 euro. This exploratory assessment offers valuable insights into the practical challenges of evaluating access to medicines, which can help improve data collection strategies and inform evidence-based policy development to enhance medicine availability and affordability in the future.

Keywords Access to medicines, Cost expenditures, Data collection, Essential medicines, Monitoring tools, Research methodology, Albania

Introduction

Access to medicines relies on four key factors: availability (alignment between medicines required and supplied), affordability (cost relative to users' ability to pay), geographical accessibility (distance to medicine outlets), and acceptability (alignment with users' expectations). In low- and middle-income countries (LMICs), challenges persist in providing access to lifesaving essential medicines [1–3].

The World Health Organization (WHO)/Health Action International (HAI) methodology, has provided a standardized approach to measuring the availability, affordability, and price components of medicines since 2003. Data on a Global Core List (GCL) of essential medicines is collected across six survey areas, reachable within one

*Correspondence:
E. Petro
erionapetro@hotmail.com
H. A. van den Ham
h.a.vandenham@uu.nl
[1]Local Healthcare Unit, Durres, Albania
[2]WHO Collaborating Centre for Pharmaceutical Policy and Regulation, Division of Pharmacoepidemiology and Clinical Pharmacology, Utrecht Institute for Pharmaceutical Sciences (UIPS), Utrecht University, Utrecht, the Netherlands
[3]Lady of Good Counsel University, Tirana, Albania
[4]WHO Collaborating Centre for Pharmaceutical Policy and Evidence Based Practice, Discipline of Pharmaceutical Sciences, School of Health Sciences, University of KwaZulu-Natal, Durban, South Africa

© The Author(s) 2025. **Open Access** This article is licensed under a Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License, which permits any non-commercial use, sharing, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons licence, and indicate if you modified the licensed material. You do not have permission under this licence to share adapted material derived from this article or parts of it. The images or other third party material in this article are included in the article's Creative Commons licence, unless indicated otherwise in a credit line to the material. If material is not included in the article's Creative Commons licence and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder. To view a copy of this licence, visit http://creativecommons.org/licenses/by-nc-nd/4.0/.

day's travel from the main urban center, with at least 5 facilities per area [4–6]. This survey methodology is an effective tool for assessing the availability and affordability of essential medicines across diverse healthcare settings [7].

Additionally, the United Nations (UN), under the leadership of the WHO, has developed Sustainable Development Goal (SDG) indicator 3.b.3 to track progress on access to medicines [8]. The SDG indicator is mostly an analysis method; it uses the WHO/HAI survey method to collect the data. However, a lack of comprehensive data on access to medicines in general and to pediatric medicines specifically, hampers effective assessment and planning of interventions aimed at improving the availability, affordability, and appropriate use of essential medicines [9]. This highlights an urgent need for improved data collection, particularly within the framework of the SDGs [10, 11].

Additionally, longitudinal data is required to track progress with access over time. However, despite calls for more efficient monitoring systems, mobile survey applications like MedMon have only been piloted and remain underdeveloped, resulting in a data collection gap to comprehensively assess medicine accessibility [12].

The rationale for this research stems from the perception that data collection for these surveys is labor-intensive and costly, but the resource requirements had not been systematically studied. This information is vital for countries and researchers to effectively budget for regular evaluations. Therefore, this study's objective was to evaluate the time, cost and human resources requirements for data collection in surveying access to essential medicines in Albania, with a particular emphasis on the WHO GCL and pediatric medicines. Albania, as with other middle-income countries (MICs), wants to enhance its access to medicines, especially as it aligns with European Union health standards [13–14].

Table 1 Travel distances: movement within areas and distance to Durres combined

Survey area	Population [#]	Distance from Durrës* (km)	Recorded journey duration from Durrës (minutes, single journey)
Durrës	153,614	5	10
Fier	101,963	79	70
Kavajë	30,012	21	25
Lushnjë	63,135	52	45
Tirana	598,176	38	45
Vlorë	183,436	123	105

*Including the distances travelled from one pharmacy to another within the respective survey area. [#]Resident population by municipality [13]

Methods

Study design and setting

This study is part of a broader assessment of medicine access in Albania that applied the WHO/HAI methodology (evaluating the availability and affordability of medicines on the GCL) and the SDG 3.b.3 basket of medicines (for children) [3, 4]. The survey was developed for this study (*see*Supplementary material) and data were collected for adults and pediatric populations, providing insights into the accessibility of essential medications across age groups, thus allowing for assessment of resources required for a general survey as well as distinct surveys for specific population groups.

Pharmacy selection

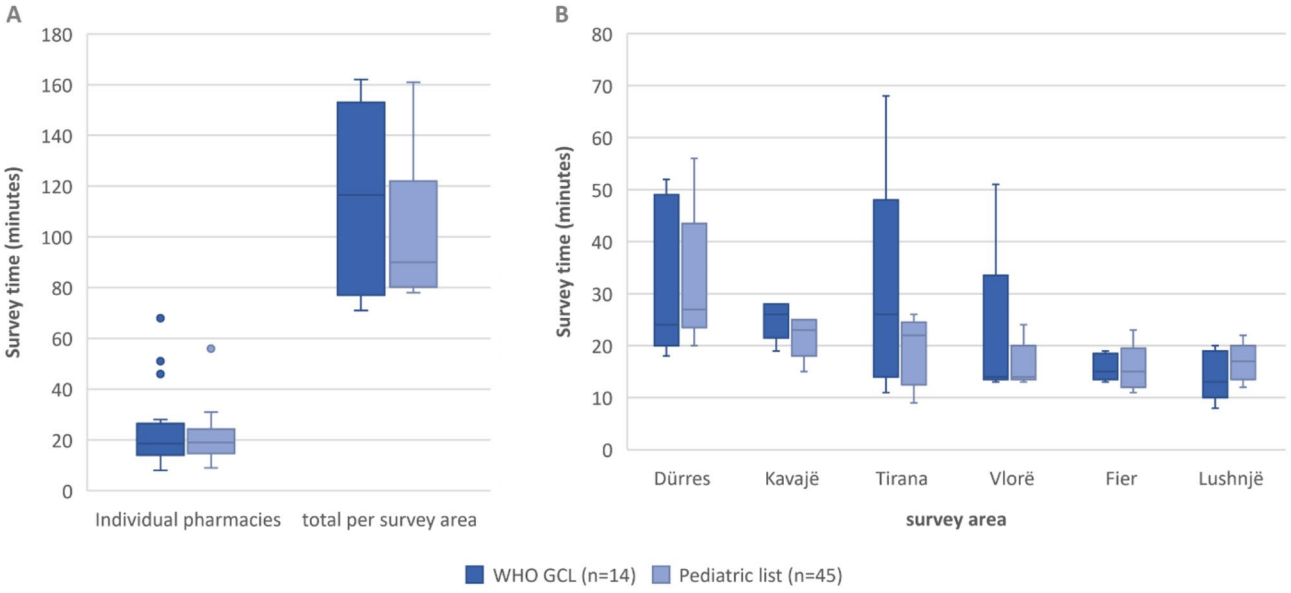
Pharmacies were selected according to the principles described in the WHO/HAI survey manual [4]. To enhance representativeness, we included pharmacies both contracted and uncontracted to the Albanian Mandatory Health Insurance Fund [15], while also recruiting from various geographic areas across Albania (see Table 1), to capture a range of experiences in accessing essential medicines.

Basket of medicines

We surveyed 14 medicines from the WHO GCL and a modified basket of 45 unique pediatric essential medicines without duplicates (31 for children aged 1–59 months and 31 for school-aged children), based on local health needs. By simultaneously surveying multiple baskets of medicines, we aimed to maximize data collection efficiency, as the total number of medicines surveyed directly affects the time required for data gathering.

Survey team and data collection process

The data collection team consisted of four members with pharmacy/medical backgrounds (of whom three were students) with no prior experience conducting such surveys. Before data collection two practice run sessions were undertaken. Preparation for the study involved conducting preparatory meetings by phone with pharmacy staff to obtain cooperation and clarify objectives, as well as optimizing schedules to ensure efficient data collection. The team worked in pairs, visiting a total of five pharmacies per day between March 7–16, 2024 within each of the six survey areas. Each day, the team visited all pharmacies within a designated area to minimize travel and eliminate the need for return trips. The overall schedule was adjusted based on pharmacy availability to maximize efficiency. Participants were required to sign informed consent forms before the survey. Participation was voluntary and participants had the option to withdraw from the study at any point. Data collection focused on the availability of selected medicines and their prices,



Graph 1 Survey times **(A)** overall and **(B)** per survey area. Travel times, preparation, data validation, and barriers encountered not included

as well as the facility's characteristics. For data entry, the KoboCollect mobile application was used, and the survey was designed in KoboToolBox [16].

For the purpose of this analysis, the timing of the data collection process was also recorded, including the starting time of travel, the duration of the pharmacy visit, the ending time, and any interruptions encountered while completing the data collection. Field notes were made during the data collection process to document the barriers encountered.

Data analysis

The study assessed the time involved in data collection by calculating the total time spent traveling from Durrës (data collectors' place of residence) to the survey areas, as well as the time spent in each area and at each pharmacy. This included time spent on planning, travel, and conducting on-site assessments. Transportation costs, including car rental fees and fuel expenses, were recorded. Fuel costs were calculated based on travel distance, fuel consumption, and current fuel prices. All costs were reported in Albanian LEK and then converted to euros (EUR) using exchange rates from the European Commission's Inforeuro database [17], for the period from March 7–16.

We used descriptive statistics to summarize the time and costs associated surveying access to the WHO GCL and pediatric medicines sets. Time expenditures were systematically aggregated to assess the total hours required for data collection across the survey areas, excluding the time dedicated to data analysis.

Results

Assessment of time expenditure for data collection

Data collection required 3.5 h per survey area, including travel time, but excluding preparation, data validation, and delays (such as those caused by pharmacists' busy schedules, traffic, and necessary breaks). On days with such delays, the time spent in one survey area could extend to 6 h.

Travel time to survey areas ranged from 10 to 210 min, with a mean of 98 min (see Table 1). With the six survey areas combined, the total time spent surveying the WHO GCL and pediatric medicine sets was approximately 36 h, spread across 6.5 days. This estimate does not include the time required for data analysis.

Data collection for the WHO GCL took a median of 18.5 min per pharmacy and 116.5 min per survey area. In comparison, the pediatric list required a median of 19 min per pharmacy and 90 min per survey area (see Graph 1). While the median time per pharmacy was slightly higher for the pediatric list, the overall time per survey area was lower. This is because pharmacists became more familiar with the survey process as the study progressed, starting with the GCL list. By the time they reached the pediatric list, their experience made the process more efficient. However, the longer time per survey area for the GCL was due to outliers in larger cities like Tirana and Durres, where high patient loads during our pharmacy visits contributed to longer survey times.

.

Table 2 Time expenditure and human resources for other components in relation to data collection

Factors on time expenditure	Description	Time expenditure (per survey area) and researchers involved	Additional explanation
Familiarization with WHO/HAI Methodology	Data collectors need to become familiar with WHO/HAI methodology, including study protocols, data collection processes, and quality assurance measures.	4 work days, 4 researchers involved	Initial training required explanation of protocols and time for questions to ensure understanding of the methodology.
Training the Data Collectors	Time spent preparing and training data collectors to perform studies according to WHO/HAI methodology.	2 work days, 3 researchers involved	The training includes both theoretical understanding and Q&A sessions.
Learning to Use Tools and data input (KoboCollect mobile app and Kobo Toolbox)	Data collectors must be trained on how to properly use the survey tools, including how to collect and input data, as well as troubleshoot common issues.	5 work days, 2 researchers involved	Practical sessions and demonstration of tools may take additional time.
Practice Runs	Conducting pilot surveys with the data collectors to ensure that they understand the methodology and the tool.	2 work days, 4 researchers involved	Pilot surveys help identify and correct any misunderstandings or mistakes before actual data collection begins and any other issue with the survey tool.
Pre-Survey Coordination and Communication	Preparatory meetings with the President of the Albanian Order of Pharmacist to choose the pharmacies.	4 h*, 1 researcher involved	Two 2-hour meetings were held.
	Inform pharmacies by phone pharmacies about visits.	30 min, 1 researcher involved	The principal investigator informed pharmacists one day in advance about visits.
	Making schedule for the day.	30 min, 4 researchers involved	Every morning of every area surveyed.
Data validation	Ensuring accuracy and reliability of data collected.	30 min, 4 researchers involved	Performed after data collection was completed in every survey area.
Within-pharmacy barriers	Obstacles encountered within the research setting.	Differed per survey area.	Busy schedules of pharmacists.
External Factors	Obstacles encountered outside the research setting	Differed per survey area	Traffic congestion; team sustenance breaks.

*: time expenditure was not considered per survey area, but consisted of two meetings three months prior to the data collection phase. # work days at least 8 h per day

Assessment of time expenditure and human resources for other components

The time expenditure and human resources for other components in relation to the survey are broken down into preparation and data validation, with additional time for addressing barriers. Table 2 describes the factors contributing to the overall time expenditure for the survey.

Two preparatory meetings with the President of the Albanian Order of Pharmacists were held three months before data collection, lasting up to two hours each (see Table 2). These meetings facilitated the selection of ten pharmacies per city, including five backups.

Pharmacies were contacted via SMS/email in December 2023 to request participation. Non-consenting pharmacies were excluded, and backup pharmacies were used if primary ones were closed. Time needed for the coordination of the aforementioned activities was approximately 60 min per survey area. One day before data collection, pharmacies were notified about upcoming visits, which took about 30 min per survey area.

Data collection took longer than expected due to pharmacists' busy schedules, traffic congestion, and required meal breaks, all of which contributed to higher-than-expected time requirements. These delays varied across different survey areas, as visible in Graph 1. The type of pharmacy also influenced the time needed: chain pharmacies with more streamlined processes were quicker, while independent pharmacies took longer. Additionally, the time of day played a significant role, with peak hours leading to longer waiting times. These factors contributed to the longer survey area times for the GCL compared to the pediatric list, as discussed earlier. The variability in time requirements underscores the complexity of data collection, highlighting how local circumstances and operational characteristics can significantly affect the process.

Costs

The data collection team did not receive compensation for their time spent preparing or conducting the study. The Kobocollect mobile app and KoboToolbox were available at no cost. For six survey areas the car was needed for 5 days. Fuel costs, based on distance traveled and fuel prices, totaled 60 euros, equivalent to the total costs for car rental.

Discussion

This is the first study to describe the time and costs needed to survey access to essential medicines. One key observation is that the preparation phase required more

time than the data collection period. This indicates that with experienced researchers/data collectors, it may be possible to shorten the time needed for both aspects. Policymakers may consider this a worthwhile investment as collecting reliable data to guide healthcare policies and improve access to essential medicines is crucial.

This study confirmed that effective preparation for the process—including pre-surveys, coordination, communication, and scheduling—ensured efficiency. Morris et al. (2011) stress the importance of good management and resource use to reduce delays in research and enhance project effectiveness [18]. Planning surveys during off peak periods can increase efficiency further. Also, using digital tools in healthcare research can make data collection more efficient and engage stakeholders more effectively [18]. This study leveraged digital solutions can help reduce resource demands over time. The use of these digital tools eliminated the need for manual data entry, as recommended in the WHO/HAI manual, and enabled rapid data validation. These streamlined processes could significantly reduce the time required, saving considerable time compared to traditional methods, although unforeseen delays cannot be completely eliminated. Another observation was that the WHO GLC took slightly longer initially, as it was the first list surveyed at each pharmacy. The pediatric sets went quicker based on the pharmacist's familiarity with the process. In addition, Durrës was the first city sampled and the process took longer. The data collectors worked faster thereafter, as they gained more experience and confidence.

In Albania, urban centers are relatively close to one another, facilitating coordination and logistics, unlike other countries. However, the methodology is adaptable to the different conditions such as geographical distances between cities and infrastructure challenges. Successful adaptation lies in tailoring the approach to the specific context, particularly with respect to the type of data being collected and the available budget. A balanced approach can be found by adjusting logistics strategically and leveraging local partnerships, e.g. with academic institutions/research organizations. These considerations can ensure that the survey process can be optimized across diverse settings.

As surveys are repeated or scaled up, resource needs may increase. In addition, while the initial survey may require more time and coordination, subsequent rounds can become more efficient as data collectors gain experience and familiarity with the process. Larger-scale surveys may require more expenditure on human resources and travel, but can benefit from streamlined processes and optimized team management, ensuring scalability even in resource-constrained environments.

As this is the first study to describe the resources required for these surveys, it provides an important reference for other countries. It demonstrates that cross-sectional surveys can yield valuable insights with relatively low resource requirements. However, longitudinal studies may provide additional benefits, such as tracking changes over time and evaluating the impact of interventions. This study can serve as a useful benchmark for planning similar surveys in other countries, while also raising awareness of the key elements to consider when organizing such a study. The conversion of all financial figures into euros (EUR) enables international comparison of resource requirements across countries.

This study has some limitations. Firstly, a coordinating team time requirement was not factored in. Secondly, costs related to data collectors, (per diem, accommodation, and daily wages), were not included in the budget analysis. However, since the data collection process took six days (one day per city), these additional costs could be calculated for each country based on the local per diem rates, accommodation costs, and wages for data collectors in those settings. To enhance transparency, future research should provide a detailed cost breakdown, distinguishing between direct costs (e.g., travel, accommodation, per diem, and wages) and indirect costs (e.g., administrative support, overhead, and shared office expenses). Additionally, future studies could explore the cost implications of longitudinal data collection. Finally, the study setting did not include regions with limited resources and poor road infrastructure. These findings are specific to Albania and may not apply to other LMICs due to different healthcare systems and geographical access challenges.

Conclusion

Collecting availability and price data to monitor and ultimately improve access to essential medicines is crucial. An investment in surveys of this type is urgently required. Data collection for this study took less than a week for a small team with healthcare background indicating that the required investments were proportionate to the value of the data collected for a country. Although data collection was initially perceived as laborious, our findings revealed that this was primarily due to the pre-survey preparation rather than the data collection itself. This suggests that, with streamlined preparation, the process can be more efficient. While this example comes from a small upper-middle-income country, other nations can begin to estimate their own budget requirements for regular monitoring and evaluation of access to medicines, while exploring expanded research initiatives to enhance access to medicine monitoring between surveys.

Abbreviations

EUR	Euro
GCL	Global Core List
HAI	Health Action International

KoboCollect	Mobile data collection application
KoboToolBox	Data collection tool used with KoboCollect
LEK	Albanian Lek
MICs	Middle–Income Countries
SDG 3.b.3	Sustainable Development Goal indicator 3.b.3
SMS	Short Message Service
UN	United Nations
WHO	World Health Organization
WHO/HAI	World Health Organization / Health Action International

Supplementary Information

The online version contains supplementary material available at https://doi.org/10.1186/s13104-025-07168-5.

Supplementary Material 1

Acknowledgements
We would like to extend our sincere gratitude to the pharmacists who generously volunteered their time to participate in the survey and share their valuable insights. Additionally, we are deeply appreciative of the support and collaboration of Diana Toma, former President of the Albanian Order of Pharmacists, for her instrumental role in assisting with the selection of participants for this study.

Author contributions
Conceptualization: All authors were involved in the conception and study design.Data curation: EP, ACMS, RPMH and TM conducted data collection. Formal analysis: EP, IRJ, ACMS, RPMH, TM and FS conducted data analysis. Validation: EP conducted data validation.Writing– original draft: EP drafted the article.Writing– review and editing: IRJ, HAvdH, AKM-T, FS, ACMS, RPMH, TM and EP were involved in critical revision of the article.All authors approved the final version of the manuscript.

Funding
This research received no specific grant from any funding agency in the public, commercial or not-for-profit sectors.

Data availability
All data generated or analyzed during this study are included in this published article.

Declarations

Ethics approval and consent to participate
This study involved human participants and Institutional approval was obtained from the Science-Geosciences Ethics Review Board (SG ERB) of Utrecht University (Sci R-23.011) and the Albanian Order of Pharmacists (Protocol nr.948 date 11.12.2023). Participants were required to sign informed consent forms before the survey. Participation was voluntary and participants had the option to withdraw from the study at any point. This study was conducted in accordance with the ethical principles outlined in the Declaration of Helsinki.

Consent for publication
Not applicable.

Competing interests
The authors declare no competing interests.

Conflict of interest
The authors have no relevant financial or non-financial interests to disclose.

Received: 13 December 2024 / Accepted: 26 February 2025
Published online: 10 March 2025

References

1. World Health Organization. Equitable access to essential medicines: a framework for collective action. Geneva: World Health Organization; 2004.
2. Yenet A, Nibret G, Tegegne BA. Challenges to the availability and affordability of essential medicines in African countries: a scoping review. Clinicoecon Outcomes Res.2023;15:443– 58. doi: 10.2147/CEOR.S413546. PMID: 37332489; PMCID: PMC10276598.
3. Joosse IR, Mantel-Teeuwisse AK, Suleman F, van den Ham HA. Child (Basel). 2024;11(3):266. https://doi.org/10.3390/children11030266. PMID: 38539301; PMCID: PMC10969351. Monitoring access to child medicines: introducing a standardized set of age-appropriate medicines.
4. World Health Organization. Health action international. Measuring medicine prices, availability, affordability and price components. 2nd ed. Geneva: World Health Organization; 2008. p. 293.
5. Cameron A, Ewen M, Ross-Degnan D, Ball D, Laing R. Medicine prices, availability, and affordability in 36 developing and middle-income countries: a secondary analysis. Lancet Jan. 2009;373(6959):240–9.
6. Ewen M, Zweekhorst M, Regeer B, Laing R. Baseline assessment of who's target for both availability and affordability of essential medicines to treat non-communicable diseases. PLoS ONE. 2017;12(2).
7. Sharma A, Rorden L, Ewen M, Laing R. Evaluating availability and price of essential medicines in Boston area (Massachusetts, USA) using WHO/HAI methodology. J Pharm Policy Pract. 2016;9:12. https://doi.org/10.1186/s40545-016-0059-5.
8. Joosse IR, Wirtz VJ, Mourik AT, Wagner BA, Mantel-Teeuwisse AK, Suleman F, van den Ham HA. SDG indicator 3.b.3– an analysis of its robustness and challenges for measuring access to medicines for children. BMC Health Serv Res Jun. 2023;23(1):574.
9. Joosse IR, Mantel-Teeuwisse AK, Wirtz VJ, Suleman F, van den Ham HA. Missing data on accessibility of children's medicines. Bull World Health Organ. 2022;100(10):636–42. https://doi.org/10.2471/BLT.22.288137. Epub 2022 Sep 2. PMID: 36188021; PMCID: PMC9511669.
10. Chattu VK, Singh B, Pattanshetty S, Reddy S. Access to medicines through global health diplomacy. Health Promot Perspect. 2023;13(1):40–6. https://doi.org/10.34172/hpp.2023.05. PMID: 37309432; PMCID: PMC10257564.
11. Jenei K, Wirtz VJ. (2024). Measuring access to essential medicines in the sustainable development goals. Bulletin of the World Health Organization, 102 (8), 555–555A. World Health Organization. https://doi.org/10.2471/BLT.24.291399
12. World Health Organization. MedMon mobile application [Internet]. Geneva: World Health Organization. 2018 [cited 2024 Nov 1]. Available from: https://www.who.int/news/item/18-02-2018-medmon-mobile-application
13. Instat. *Institute of Statistics of Albania*. Available from: https://www.instat.gov.al/en/. Accessed [5 Dec 2024].
14. European Health Management Association. Health management in South-Eastern Europe: challenges and opportunities. [Internet]. Brussels: European Health Management Association. Dec 2022. Available from: https://ehma.org/app/uploads/2022/12/Health-Management-in-South-Eastern-Europe-challenges-and-opportunities.pdf
15. FSDKSH. Financial Supervisory Authority of Albania. Available from: https://fsdksh.gov.al/. Accessed [5 Dec 2024].
16. Kobotoolbox. [Internet]. Available from: https://ww.kobotoolbox.org. [Accessed 5 Aug 2024].
17. European Commission. Inforeuro exchange rates. Available from: https://commission.europa.eu/funding-tenders/procedures-guidelines-tenders/information-contractors-and-beneficiaries/exchange-rate-inforeuro_en
18. Morris ZS, Wooding S, Grant J. The answer is 17 years, what is the question: Understanding time lags in translational research. J R Soc Med. 2011;104(12):510–20. https://doi.org/10.1258/jrsm.2011.110180.

Publisher's note

Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.