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Research Paper

Household health expenditure in Poland and 10 Central and Eastern European countries, and analysis of absenteeism and costs of lost productivity in Poland due to COVID-19

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Abstract

Introduction: The analysis of household expenditure on health in individual countries is of significant importance for public health.

Aim: The main goal of the study was to analyze household health expenditure in Poland against the background of 10 countries in Central and Eastern Europe. The second goal was to analyze absenteeism and calculate the costs of lost productivity due to COVID-19.

Material and methods: In this study covering 11 Central and Eastern European countries, we conducted an analysis of household health expenditure in 2020–2022 and analyzed absenteeism and indirect costs of COVID-19 in Poland in 2019–2023. The Human Capital Method was used to estimate economic losses in employee productivity resulting from COVID-19 in Poland.

Results and discussion: Median household expenditure on health (as % of total expenditure) for the analysed countries (n = 11) in 2020 amounted to 5% (min. 2.4% in the Czech Republic, max. 7.2% in Bulgaria). In 2022, a decrease in the median household expenditure on health was observed in the 11 analysed Central and Eastern European countries, 4.5% of total expenditure. The lowest value was observed in Slovakia (2.6%), the Czech Republic (2.7%), and Estonia (3.2%), and the highest in Romania (6.9%), Poland (6.5%), and Bulgaria (6.5%). Productivity losses in Poland due to COVID-19 in 2020 amounted to EUR 570.330 million; in 2021 – EUR 341 million, in 2022 – EUR 118.900 million, in 2023 – EUR 207.47 million.

Conclusions: In none of the analysed countries did the share of household health expenditure in 2020–2022 exceed 10% of total expenditure. The share of household expenditure on health in Poland was the third highest of the analysed countries, where the highest share of household expenditure on health was observed. Both the number of days of absence in total, the number of absences due to COVID-19, and indirect costs due to COVID-19 were the highest in 2020.

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1. INTRODUCTION

Household expenditure on health services is financial resources paid directly out of pocket, not reimbursed by any third party.[1] The World Bank also includes in this definition gratuities and payments in kind to healthcare workers and suppliers of pharmaceutical products, therapeutic devices, and other goods and services whose primary purpose is to contribute to the restoration or improvement of the health of individuals or population groups.[2] Healthcare expenditures vary significantly across geographic regions and over time.[3]

The percentage of household expenditure on health in total expenditure is one of the indicators that provides information on the financial burden of health care in a given country. The economic situation of a given country related to higher macroeconomic uncertainty encourages households to significantly and permanently reduce their total monthly expenditure in the following months.[4] One such example was the COVID-19 pandemic period, causing serious challenges not only health-wise but also economically and socially for most economies. Coronavirus type 2 (SARS-CoV-2) has become a global threat to many healthcare systems. The lockdown slowed down global economic activity, limited business operations in many sectors of the economy, and caused job losses for many people.[5–7] The absenteeism rate is one of the analytical tools used to assess the economic consequences of employee absences for the economy and is often used by organizations as an indicator of employee health. Absenteeism refers not only to the employee's physical absence from work according to the applicable schedule but also to the employee's failure to perform remote work.[8,9] Absenteeism from work due to illness can lead to disruption of production cycles and lead to material losses for both employers and employees.[10] The solution for some sectors has been the ability to move to remote work, allowing employees to remain productive while following safety guidelines and mitigating the spread of COVID-19.[9,11]

2. AIM

The main goal of the study was to analyse household health expenditure in Poland against the background of 10 countries in Central and Eastern Europe. The second goal was to analyse absenteeism. The third goal was to calculate the costs of lost productivity due to COVID-19.

3. MATERIAL AND METHODS

3.1. Study design

In this study covering 11 Central and Eastern European countries, we conducted an analysis of household health expenditure in 2020–2022 and analysed absenteeism and indirect costs of COVID-19 in Poland in 2019–2023. Given the similar epidemiological market situation in Central and Eastern European countries, which were subject to similar health and organizational shocks, this study combined data on household health expenditure with the costs of absenteeism in Poland. Changes in private household health expenditure may reflect changes in the supply of healthcare services, access to healthcare services within the public healthcare system, and patient attitudes in the face of uncertainty. This regional approach allows for a broader contextualization of the costs of absenteeism in Poland in the pre- and post-pandemic periods (2019–2023).

3.2. Household health expenditure

The budget share method was used to present household expenditure on health (as a percent of household expenditure on health in total expenditure). The criterion for including countries from Central and Eastern Europe was full availability of data from all years. The collected data were presented for Poland and the following Central and Eastern European countries: the Czech Republic, Slovakia, Lithuania, Latvia, Estonia, Hungary, Bulgaria, Romania, Croatia, and Slovenia in the years 2020–2022. The study excluded the Countries of Central and Eastern Europe for which data were not available. The data was collected from the Eurostat database. For 11 countries, the median was calculated in each analysed year. The cut-off value was set at 10% of household expenditure on health, considered as critical health expenditure according to the literature.

3.3. Absenteeism dynamics in Poland in 2019–2023

Changes in absenteeism in Poland were analysed in terms of general and COVID-19-related absenteeism in the analysed period. General absenteeism meant the number of days due to own illness, child-care, and care for another family member. Absence due to COVID-19 included the number of days of employee absences; sick leave was assumed due to the following diseases according to the International Classification of Diseases and Health Problems ICD-10: U07.1 (COVID-19); U08 (Patient's history of COVID-19); U08.9 (Patient's history of COVID-19, unspecified); U09 (Patient's health after COVID-19), U09.9 (Patient's health after COVID-19, unspecified), U10 (COVID-19-related multisystem inflammatory syndrome); and U10.9 (COVID-19-related multisystem inflammatory syndrome, unspecified). The data was obtained from the reports of the Social Insurance Institution. The differences in the number of days due to general absenteeism were then calculated (and presented in percent, as an increase/decrease) compared to the previous year.

3.4. Absenteeism costs of COVID-19

To estimate the economic losses resulting from the loss of employee productivity resulting from illness, hospitalization, or quarantine related to COVID-19 in the years 2019–2023 in Poland, the Human Capital Method was used. Productivity costs were calculated as the product of lost workdays and the daily wage. The analysis used the average wage in the national economy for each year, obtained based on data published by the Central Statistical Office. The average daily salary separately for each year was calculated as the quotient of the average monthly salary in a given year and

the average number of working days in a month. For simplicity, a constant value of the average number of working days in a month equal to 21 was assumed. Data on unpaid work and presenteeism were not included in this study. Values expressed in Polish zloty (PLN) converted into euro at the average annual exchange rate announced by the National Bank of Poland for 2023, which is 1 euro = 4.34 PLN.

3.5. Statistical methods

The dynamics of changes in absenteeism in the analysed years are presented as a decrease/increase [%] year-on-year. In order to check whether the number of days of absence increased in the years 2019–2023, a univariate regression analysis with trend analysis was performed. Statistical analyses were conducted using Statistica 13 and Microsoft Excel. $P \leq 0.05$ was accepted as the level of statistical significance.

4. RESULTS

4.1. Household health expenditure

Median household expenditure on health (as a percentage of total expenditure) for the analysed countries (n = 11) in 2020 amounted to 5% (min. 2.4% in the Czech Republic, max. 7.2% in Bulgaria). In 2021, the median remained at the same level of 5%, household expenditure on health, of which the lowest share – concerned the Czech Republic at 2.7%, Slovakia at 2.8%, and Estonia at 3.7%. On the other hand, the highest share % of household expenditure on health concerned Bulgaria – 7.2%, Romania 6.9% and Poland 6.8%. In 2022, a decrease in the median was observed for the analysed 11 countries of Central and Eastern Europe, which was 4.5%. The lowest percentage share of household expenditure on health was recorded in Slovakia (2.6%), the Czech Republic (2.7%) and Estonia (3.2%), and the highest in Romania (6.9%), Poland (6.5%) and Bulgaria (6.5%).

For the 7 countries analysed, a decrease in the percentage share of household expenditure on health was observed in 2022 vs. 2020, for 2 countries a slight increase (Czech Republic, Slovakia), and no change for Romania and Poland. In none of the analysed countries did the share of household health expenditure in 2020–2022 exceed 10% of total expenditure (Figure 1).

4.2. Absenteeism in Poland in 2019–2023

The highest number of days of absence in the analysed period was observed in 2020 – it was 296.9 million days, which was an increase of 4.4% in the number of days of absence compared to 2019. The lowest number of days of absence was observed in 2021 and amounted to 282.5 million days. A decrease in the number of days of absence compared to the previous year was observed in 2021 (a decrease of 4.9%) and in 2023 (a decrease of 0.6%) (Figure 2).

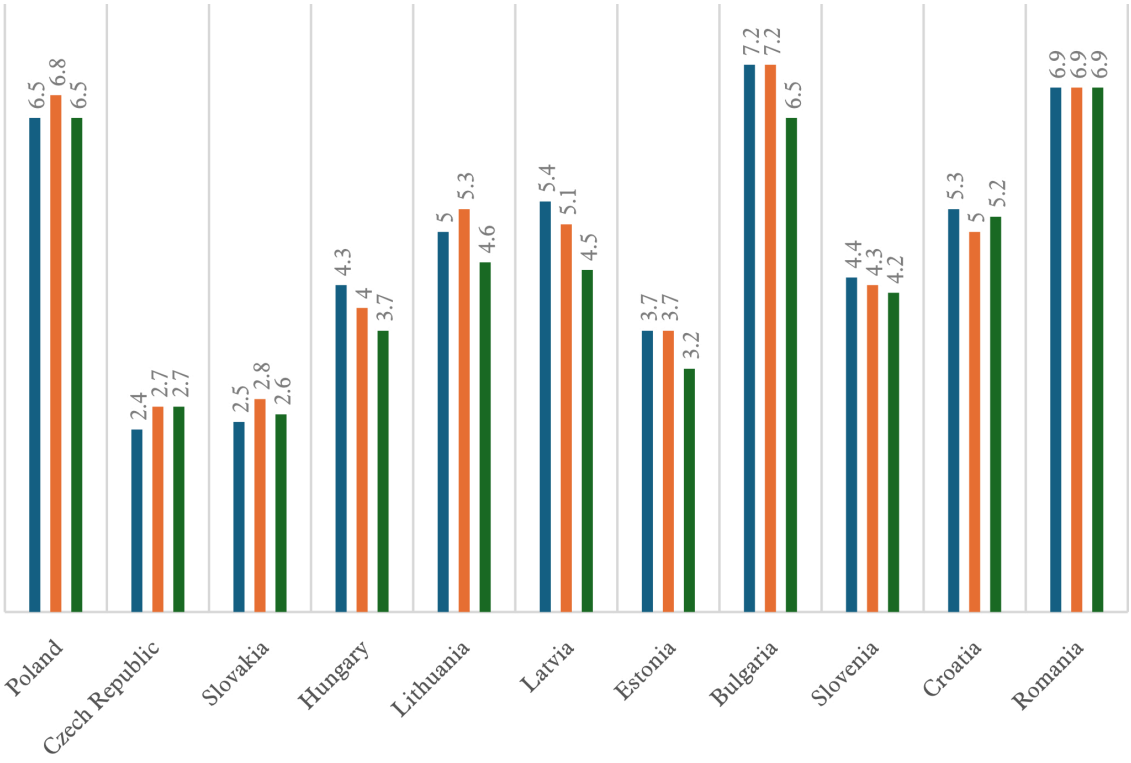

Figure 1. Household expenditure on health (as % of total expenditure) in 11 Countries of Central and Eastern Europe in the years 2020–2022 [based on data from Eurostat; https://ec.europa.eu/eurostat/cache/infographs/hhexpcofog/hhexpcofog_2022/].

The % share of the number of days of absence due to COVID-19 in total absences showed a downward trend: 2020 – 3.3%, 2021 – 2.3%, 2022 – 2.1%, 2023 – 1.1%, even though the number of days of absence due to COVID-19 in 2023 was higher (2.6 million days), than in 2022 (1.68 million days).

In the trend analysis (Figure 2), the regression slope (–023) is negative, i.e., a very weak downward trend is observed, resembling a horizontal line.

Indirect costs related to absences due to COVID-19 were the highest in Poland in 2020 and amounted to 561.3 mln Euro.

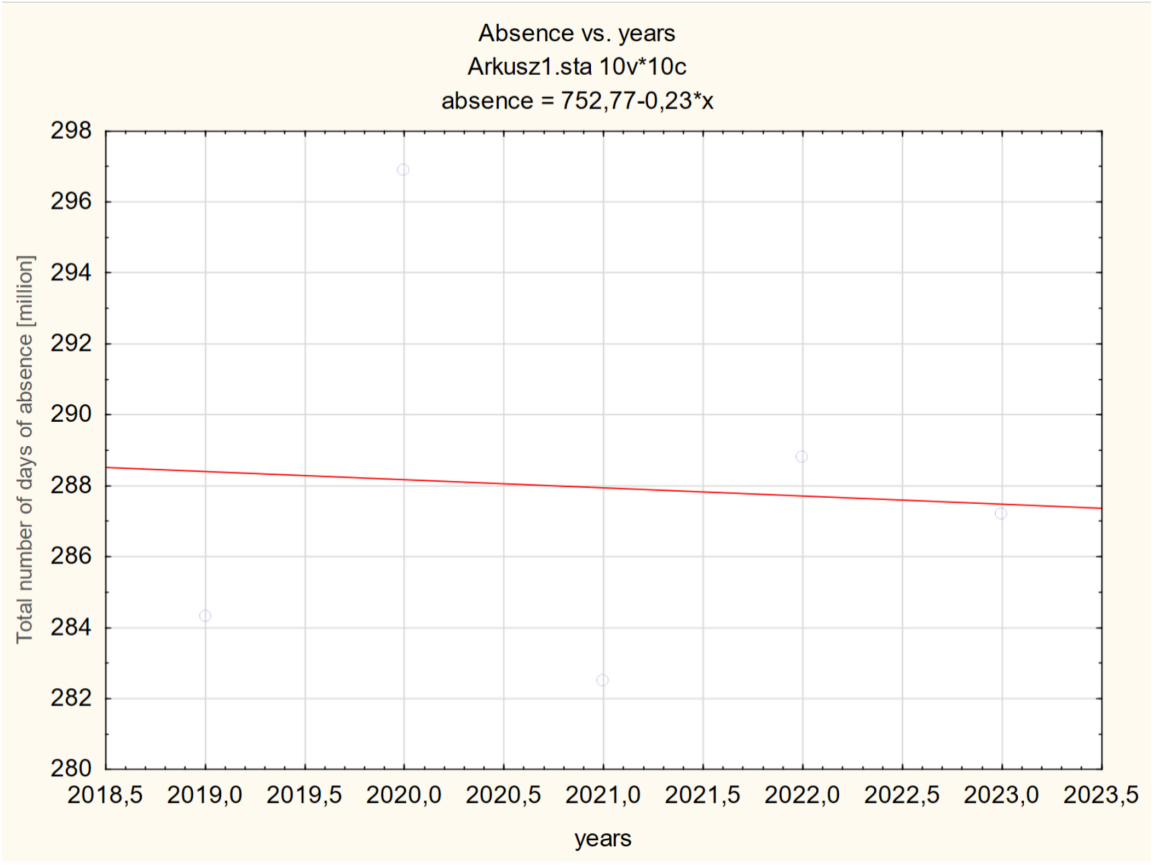

Figure 2. Trend in total absenteeism in Poland in the years 2019–2023.

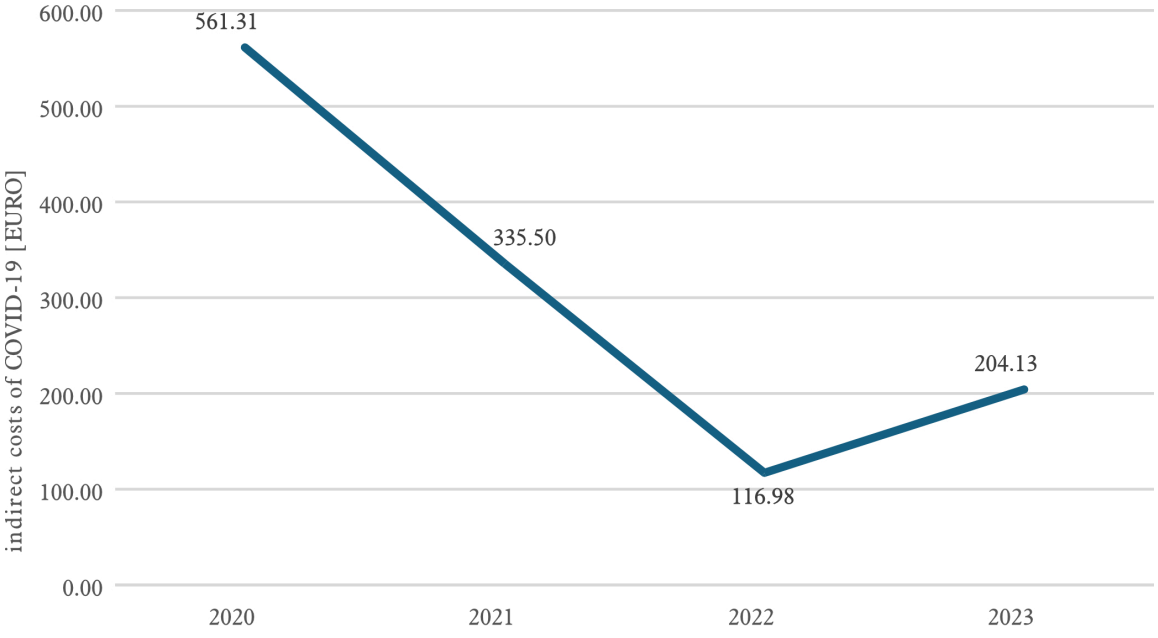

Figure 3. Indirect costs of COVID-19 in Poland in the years 2020–2023.

In 2021, costs decreased by 65.13% compared to the previous year. In 2022, a 40.22% decrease in costs was observed vs. 2021. 2022 was the year in which the lowest indirect costs were observed in the period under review. After that, in 2023, there was an increase in indirect costs by 74.5% vs. 2022 (Figure 3).

5. DISCUSSION

In this study, we observed that the share of household expenditure on health remained stable in Poland in 2020 and 2022. A similar situation was observed only in Romania, while for the 7/11 countries analysed, we observed a decrease in the percentage of household expenditure on health. There are two main methods used to analyse household expenditure on health described in the literature: the budget share method and the ability-to-pay approach.[1]

The "ability to pay" approach assumes that households must first cover their basic needs before covering health care expenditures and is therefore deducted from total household expenditures. After this adjustment, the remaining expenditures constitute the "household ability to pay", which can be linked to healthcare expenditures and used in the calculation of healthcare catastrophe expenditures, which in this case is defined as the situation in which out-of-pocket payments exceed a specified proportion (usually 40%) of the household's ability to pay over a given period.[1,12] This approach includes adjustment for basic needs expenditures, but its limitation is that it requires more data and is therefore not as straightforward to implement as the budget share approach.[13]

In our study, we used the budget share approach, which defines catastrophic expenditure as occurring when payments out of pocket exceed a specified proportion (usually 10% or 25%) of the total household income or expenditure in a given period. This method is simple to implement because there is no need to distinguish between different types of expenditure, but it is also limited because it does not take into account differences in purchasing power between different income classes.[1,13,14] In our study, in none of the 11 Central and Eastern European countries analysed did the percentage of household expenditure on health in the period 2020–2022 amount to 10% of total health expenditure.

The factors that include the percentage of household health expenditure in a given country may be complex. On the one hand, it may be the economic situation of the country,[14] because economic decline can strongly affect the system's ability to meet the health needs of the population and the ability to stabilize its internal structure,[15] and on the other, individual behaviours in the area of health of household members. Zhang et al. found that the frequency and duration of physical activity were closely related to household health expenditure. Exercising 1–5 times per week and maintaining exercise duration at 31–60 minutes per session were effective in reducing annual health expenditures among urban residents aged 45 years and older.[16]

In Poland in 2020, an increase was observed in the total number of days of absence (4.4% vs. 2019). These results are similar to Goda et al., in the United States, in a typical week of the pandemic, about 10/1000 employees missed a full week of work due to their health problems, compared to 6/1000 health-related absences in an average week from 2010 to 2019.[17] Similar results were obtained by Culqui et al., namely a high impact in terms of COVID-19-related sick leave among Spanish workers and important differences by gender, economic activity, and occupation that characterized this impact.[4]

Although the highest number of days of absence due to COVID-19 occurred in 2020 (9.9 mln days), in the following years, 2021 included 5.4 million days, and in 2023, 2.6 mln days of absence. This may have been due in part to the far-reaching health effects of Kerksieck et al., who suggested that the presence of self-reported COVID-19-related symptoms was associated with reduced work capacity 1 year after SARS-CoV-2 infection and led to incapacity for work in some infected individuals.[18]

The indirect costs resulting from productivity losses caused by COVID-19 have significant societal implications.[19] As reported by Faramarzi et al., the resulting pooled estimate indicated that indirect costs due to COVID-19 were responsible for 10.53% of global GDP.[19]

In Sweden, Kisiel et al. showed that the average costs of absenteeism due to COVID-19 doubled compared to the year before the pandemic.[20]

Therefore, it is necessary to envisage in advance the strategic preparation and action plan for public health interventions that can help in the fight against infectious diseases.[21]

5.1. Strengths and limitations of the study

The advantages of the study are the analysis of household expenditure on health in Poland against the background of 10 countries of Central and Eastern Europe, which allows for the comparison of regional trends and the identification of specific features of Poland. The combination of the analysis of household expenditure, absenteeism, and the costs of lost productivity allows for a comprehensive look at the economic and health effects of the pandemic in Poland. The limitation of this study is that the analysis of absenteeism and lost productivity applies only to Poland, which limits the comparability of results, but this is limited access to this data.

6. CONCLUSION

(1) In none of the countries analysed in 2020–2022 did the percentage share of household health expenditure reach 10% or more, which would indicate catastrophic expenditure on household health.
(2) The study found that the share of household health expenditure remained stable in Poland in 2020–2022.
(3) Both the number of days of absence in total, the number of absences due to COVID-19, and indirect costs due to COVID-19 were the highest in 2020.

(4) Further research on the impact of the long-term effects of COVID-19 on the ability to work is recommended.
(5) To effectively manage health expenditure in Poland and respond to social needs and health challenges, it is recommended to analyse household health expenditure to track its changes in response to international and domestic events.

Ethics approval
None declared.

Conflicts of interest
None declared.

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Author Contributions
Study design: KS, TH
Data collection: AR
Data interpretation: AR
Manuscript preparation: AR, KS, TH
Literature search: AR, KS

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