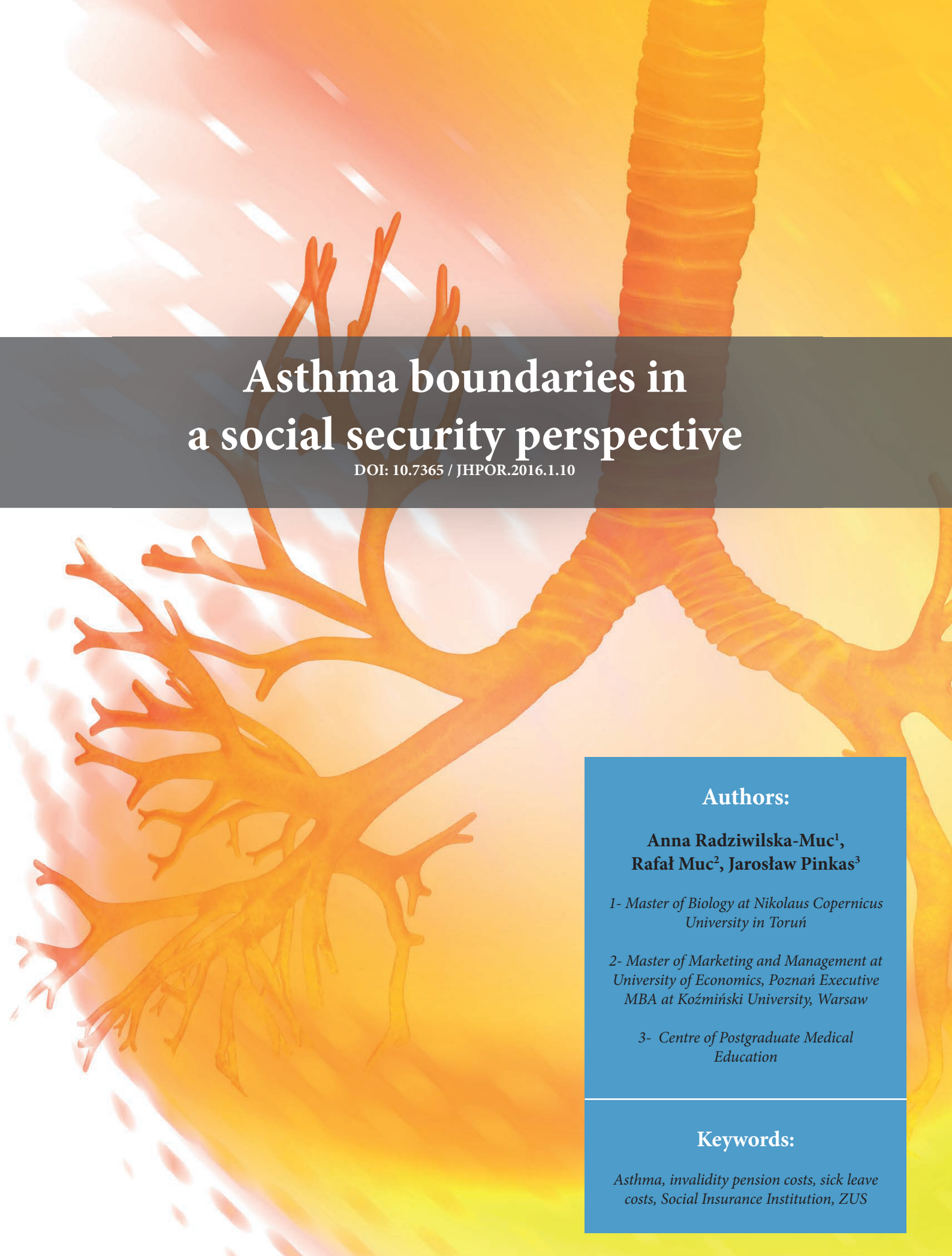

Asthma boundaries in a social security perspective

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Abstract

Introduction: Patients in Poland, including asthmatics are beneficiaries of social security system in case of severe disease exacerbation. Usually sick leave due to uncontrolled asthma is enough to get better and come back to regular life, however some patients with permanent severe symptoms require invalidity pension to secure their social rights and life quality. Nowadays, the social security system is overloaded due to insufficiency of income versus expenditures, and asthma as disease might represent a significant part of this costs due to its prevalence.

Objective of the study: In this article we have analysed trends in asthma management at the social insurance financial perspective, comparing the asthma social security costs to the overall social security system expenses.

Material and methods: The study and analyses are based on the Polish Social Security Institution (ZUS) data publicised in years 2010-2014.

Results: In year 2014 total ZUS and employers spendings on social benefits to ill patients were calculated at 32,5 billion of Polish Zloty. Respectively all respiratory system diseases social security costs accounted 2,2 billion of Polish Zloty, of which estimated asthma (J-45) 64 million of Polish Zloty, and status asthmatics (J-46) 580 thousands of Polish Zloty.

Conclusions: Asthma social security costs represent 0,21% of all diseases social security costs and less than 3% of all respiratory diseases social security costs. Despite variability of the costs over years 2012-2014, there are no significant negative trends of asthma costs into the social security system.

Insured persons in Poland, experiencing sick leave, receive salary compensation, paid by either employer or Social Insurance Institution (ZUS), depending on specific rules. To simplify the understanding of the sick leave insurance system in Poland, generally we can say, that in most cases an employer (>20 employees) is paying sick leave compensation for the first 30 days, after this period ZUS is taking over the financial responsibility for a patient. For smaller companies ZUS is paying sick leave compensation from the first day of the benefit rights acquisition by a patient[1].

In case of longer inability to work, exceeding 182 days, ZUS is stopping payment of the salary compensation, but patients can apply for at first phase temporary, then permanent, invalidity pension. However we need to bear in mind, that sick leave salary compensation usually represents 80% of an employee average salary, but in case of work inability pension - rates are significantly lower. Social Insurance Institute publishes data about insured persons, including employees, self-employed persons as well as retirees remaining in employment. These statements do not include individual farmers, their family members, and uniformed services. The cause of sickness absence is determined in accordance with the International Statistical Classification of Diseases and Related Health Problems Tenth Revision (ICD-10). Patients with disease exacerbations after approaching an outpatient clinic or hospital building, and having professional medical consultation, usually obtaining medical certificates of temporary inability to work, a sick leave certificate. In year 2014 total ZUS and employers spendings on social benefits to ill patients were calculated at 32,5 billion of Polish Zloty (approx 8,1 billion USD), whereas expenditures on sick leaves salary compensations were 13,5 billion of Polish Zloty (approx 3,4 billion USD), while ZUS expenditures on inability to work pensions were amounted 15,6 billion of Polish Zloty (approx. 3,9 billion USD) [2]. These amounts might seem large, but we must bear in mind that average inability pension rate was 1257,3 Polish Zloty per month (approx 314,3 USD), which was in year 2014 - 75% of minimum salary in Poland, and only 18% above of poverty threshold[3].

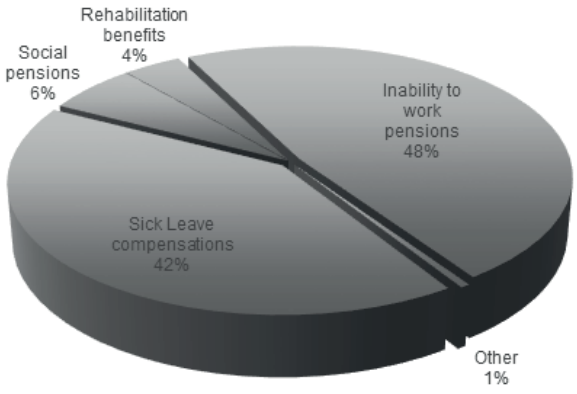

Figure 1. Social Insurance expenditures structure in Poland[4]

Respiratory system diseases are serious social problem due to its inflammatory complexity and prevalence. Especially asthma is one of the biggest management challenges, as despite the number of available modern treatments still seems to be not defeated, just or up, controlled. Based on the two big studies in Poland, asthma prevalence is calculated at 8,6% in children and 5,4% in adults (PMSEAD study) [6] and respectively 4,6% (ECAP study) (approx. 1,7 MM) suffer from asthma symptoms. Also, ac-

	2010	2011	2012	2013	2014
	Invalidity pensions				
ZUS expenditures (in thousands)	14 907 089 zł	15 122 385 zł	15 064 973 zł	15 639 962 zł	15 598 299 zł
Number of beneficiaries (in thousands)	1 227,0	1 169,1	1 111,0	1 074,5	1 033,8
Work inability pension (average per month)	1 012,43 zł	1 077,92 zł	1 129,99 zł	1 212,96 zł	1 257,36 zł
	Sick Leave Salary Compensation (sum of Social Insurance Institution and employers)				
ZUS and employers expenditures (in thousands)	11 142 987 zł	11 713 122 zł	12 280 679 zł	13 315 468 zł	13 522 400 zł
Number of work absence days (in thousands)	187 780	189 504	189 610	197 025	194 237

Table 1. Social Insurance expenditures in Poland 2010 - 2014[5]

cording to the ECAP 66,9% of patients have not had diagnosed asthma despite symptoms, but simultaneously 39% patients have been wrongly diagnosed as asthmatics[7]. In addition, Prof. Przemysław Kardas (Medical University in Łódź) studies shows that up to 90% of patients with asthma, stops regular receiving of prescribed asthma medicaments just after one year after the diagnosis[8].

Taking into account above studies outcomes, we need to raise the question: whether high asthma prevalence in an overall population and at the same time non-compliance of asthma treatment generates significantly higher negative consequences to social security system versus average?

Analysing statistics of sick leave certificates and absence days, the registry [9] of medical certificates data shows that in year 2014 there were registered 16,9 million of medical certificates of temporary inability to work due to illness, that equals to 212,6 million of sickness absence days (ratio 12,5 absence days per 1 certificate). Respectively the respiratory system number of medical certificates amounted 4,1 million and 24,9 million of sickness absence days (ratio 6,07). Asthma (J45) absence medical certificates and absence days weighted 65,5 and 713,9 thousands respectively (ratio 10,9 absence days per 1 certificate). Status asthmatics were counted respectively 0,524 vs 6,5 thousands (ratio 12,34).

Analysing absence days per 1 certificate in years 2012-2014 we can observe, that in contrast to all diseases as well as respiratory system, the ratio of Asthma (J-45) and Status Asthmatics (J-46) significantly decreases, that might bring us into the conclusion, that asthma control is improving over the years.

Based on the sick leave certificates and absence days data presented above we cannot say, that asthma management is more difficult and less controllable than average of all diseases- that would result in an outstanding numbers of sick absences.

But medical certificates and number of absence days might not give us the proper picture of financial consequences to the social security system. Therefore what are the social security costs of asthma, comparing to the total ZUS average expenditures on sick leaves and invalidity pensions?

As mentioned above, in year 2014 total ZUS and employers spendings on social benefits to ill patients were calculated at 32,5 billion of Polish Zloty, but respiratory system diseases social security costs accounted 2,2 billion of Polish Zloty, respectively estimated asthma (J-45) 64 million of Polish Zloty only, and estimated status asthmatics (J-46) 580 thousands of Polish Zloty[11].

Concluding, asthma social security costs represent 0,21% of all diseases social security costs and less than 3% of all respiratory diseases social security costs. Despite variability of the costs over years 2012-2014, there are no significant negative trends of asthma costs into the social security system.

Discussion

This study aimed to show, that asthma due to its prevalence and treatment non-compliance by patients might generate unnecessary cost to the social security system. The results show, that asthma sick leaves and days of absence levels are stable, with no negative trends observed. Security costs represent only 0,21% of all diseases social security costs and less than 3% of all respiratory diseases social security costs. Also based on the above calculations - severe asthma patients experiencing status asthmatics are not generating significant burden to the social security system.

Based on that, we could conclude that in spite of asthma is not defeated as disease, but it is much better controlled than in the past.

Year	Diseases Scope	Scope ICD-10	Number of sickness absence days	Number of medical certificates received	Ratio Absence Days per 1 Certificate
2012	All Diseases	A00-Z99	206 776 323	16 600 095	12,5
2013	All Diseases	A00-Z99	213 392 670	17 333 946	12,3
2014	All Diseases	A00-Z99	212 616 713	16 965 652	12,5
2012	Respiratory System	J00-J99	25 330 312	4 082 612	6,2
2013	Respiratory System	J00-J99	29 543 347	4 778 871	6,2
2014	Respiratory System	J00-J99	24 962 568	4 103 099	6,1
2012	Asthma	J-45	735 410	66 373	11,1
2013	Asthma	J-45	748 474	67 664	11,1
2014	Asthma	J-45	713 979	65 564	10,9
2012	Status Asthmatics	J-46	7 919	587	13,5
2013	Status Asthmatics	J-46	6 444	486	13,3
2014	Status Asthmatics	J-46	6 464	524	12,3

Table 2. Summary of sick leave certificates and absence days[10]

Year	Diseases Scope	Scope ICD-10	% of expenses vs respiratory system	**Social security expenses (000 Polish Zloty)**	**Inability to work pensions (000 Polish Zloty)**	**Sick leave compensations (000 Polish Zloty)**
2012	All Diseases	A00-Z99	-	30 438 586	15 064 974	12 280 679
2013	All Diseases	A00-Z99	-	32 276 116	15 639 962	13 315 468
2014	All Diseases	A00-Z99	-	32 539 825	15 598 289	13 522 400
2012	Respiratory System	J00-J99	100%	2 157 868	846 470	1 285 199
2013	Respiratory System	J00-J99	100%	2 525 276	886 736	1 610 435
2014	Respiratory System	J00-J99	100%	2 239 131	891 632	1 316 728
2012	Asthma	J-45	2,90%	62 649	24 575	37 313
2013	Asthma	J-45	2,53%	63 977	22 465	40 800
2014	Asthma	J-45	2,86%	64 044	25 502	37 661
2012	Status Asthmatics	J-46	0,03%	675	265	402
2013	Status Asthmatics	J-46	0,02%	551	193	351
2014	Status Asthmatics	J-46	0,03%	580	231	341

Table 3. Summary of social security expenses of pulmonary diseases[12]

However, as authors of this article, we must emphasize, that this study does not show the full picture of asthma management costs in Poland. We have not analyzed asthma hospitalization costs, mortality levels, potential male vs female differences in asthma patients. Therefore next studies are required to finally compare available asthma epidemiological data with trends in hospitalization, and only together with social security costs, we could try to hypothesize whether asthma management in Poland is really under maximum possible control or rather it is only smothered, despite of huge physicians' and healthcare system efforts.

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