



MEDICAL
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Indirect Cost of Illness in Polish Economic Evaluation of Healthcare Programs

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Abstract

OBJECTIVES: The inclusion of indirect costs of illness in pharmacoeconomic studies is still a subject of considerable debate. The aim of the systematic literature review was to present the Polish economic practice concerning indirect costs evaluation of healthcare interventions. Study was conducted as a first stage of a research project aimed to develop recommendations for methods of calculation indirect cost in Poland.

METHODS: MEDLINE, EMBASE, Cochrane Library and Polish Medical Bibliography (PBL) were searched. Cut-off dates were set to February and March 2009. The main specific keywords were 'indirect costs' or 'costs and cost analysis'. Extracted data covered type of study, disease under study, methods for evaluating indirect cost, measures of productivity loss value and share in total costs.

RESULTS: Nineteen studies fulfilled the inclusion criteria for this review, of a total of 2,300 references. Seventeen out of 19 studies were cost of illness studies, 2 were economic analyses. Methods of evaluating indirect costs were all based on human capital approach. The work absenteeism unit time measure used to value productivity loss were average salary (9/19), Gross Domestic Product (GDP) per capita (7/19), Gross National Product per capita (1/19), GDP per active worker (1/19), sold production of industry per active worker (1/19). Mean indirect costs amounted to 58% of total costs with a range of 16%-98%. In 5 studies transfer payments (e.g. sick leave) were added to productivity loss category.

CONCLUSIONS: Indirect cost is rarely included in the economic analyses in Poland. Different methods of calculating indirect costs limit comparison between studies and support the development of robust and widely accepted methodology.

Background and objectives

Indirect costs reflect the reductions in productivity in market and household work due to morbidity and mortality [1]. The inclusion of indirect costs of illness in pharmacoeconomic studies is still a subject of considerable debate and the attitude towards indirect costs is likely to vary in each country [2]. Also there is no consensus which methods of calculations of indirect costs should be used – human capital approach (HCA) or friction cost (FCM) or Washington panel method. According to Polish HTA guidelines analysis taken from social perspective can be only additional the one of the entity financing health care services (public payer, patient, other payers) [3]. The aim of this systematic literature review was to present the Polish economic practice concerning indirect costs evaluation of healthcare interventions. Study was conducted as a first stage of a research project aimed to develop recommendation for methods of calculation indirect cost in Poland.

Methods

The systematic review was conducted according to Guidelines for conducting Health Technology Assessment (HTA) April 2009 [3]. The Cochrane Library, MEDLINE (table 1), EMBASE databases were searched for original studies with cut-off dates set to February 2009. Additional the Polish Medical Bibliography (PBL) search was performed on March 2009. The main keywords were 'indirect costs', 'costs and cost analysis' and Polish, Poland and all Polish voivodeship capital cities. Retrieved articles were manually searched for further relevant references. Full published original studies were included if they were regarding Polish Health care system and included and monetized indirect costs. Extracted data covered type of study, disease under study, methods for evaluating indirect cost, measures of productivity loss value and share of indirect costs in total costs.

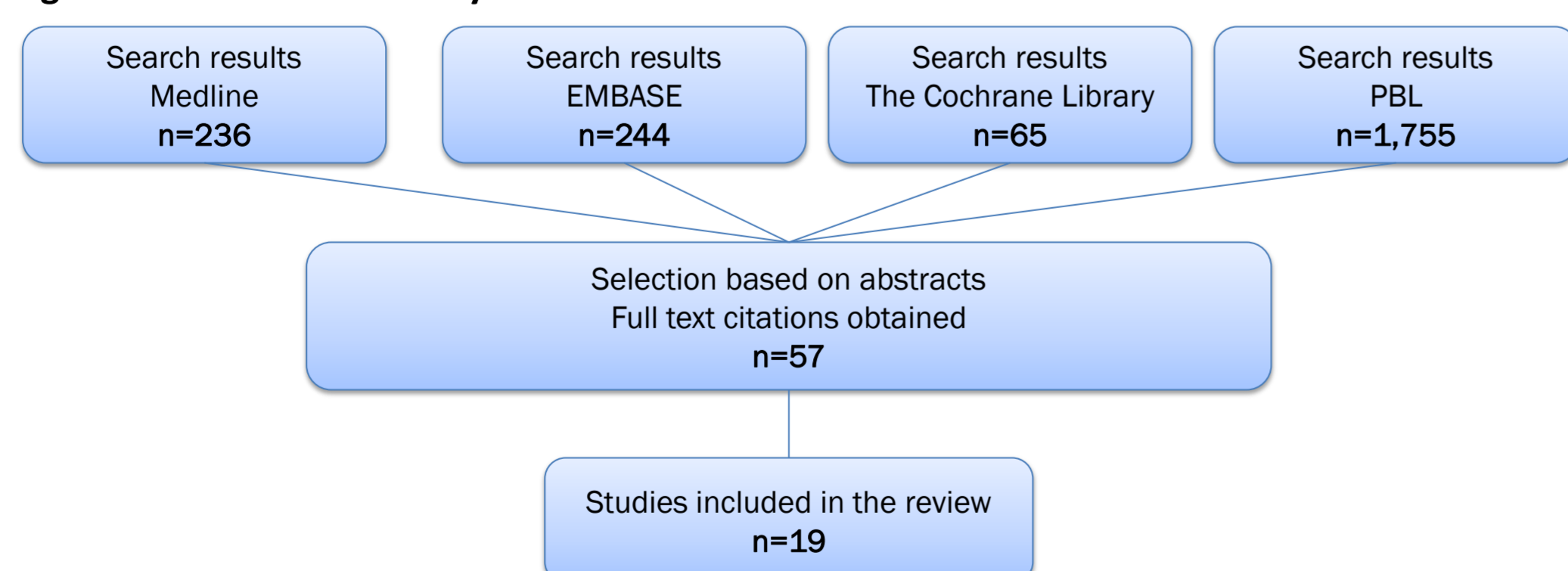
Studies included

The searches of the electronic databases resulted in the retrieval of 2,300 titles and abstracts. These were screened for inclusion in this review. Fifty seven papers were identified as being potentially eligible for the review and the full text of the articles was retrieved. A total of 19 studies were included (figure 1).

Table 1. Search strategy - MEDLINE.

Search	Queries	Results
#1	"indirect cost"[tw]	307
#2	"costs and cost analysis"[mh]	139,638
#3	„health care costs”[mh]	31,953
#4	"cost benefit analysis"[mh]	44,227
#5	"cost of illness"[tiab]	2,020
#6	"cost effectiveness analysis"[tiab]	3,483
#7	"cost utility analysis"[tiab]	670
#8	"cost minimization analysis"[tiab]	227
#9	#1 OR #2 OR #3 OR #4 OR #5 OR #6 OR #7 OR #8	140,312
#10	poland[mh]	30,439
#11	poland[tiab]	10,378
#12	polish[tiab]	7,007
#13	warsaw[tiab] OR mazowieckie[tiab]	2,685
#14	kielce[tiab] OR swietokrzyskie[tiab]	1,075
#15	cracow[tiab] OR malopolskie[tiab]	735
#16	lublin[tiab] OR lubelskie[tiab]	834
...
#29	#10 OR #11 OR #12 OR #13 OR #14 OR #15 OR #16 OR #17 OR #18 OR #19 OR #20 OR #21 OR #22 OR #23 OR #24 OR #25 OR #26 OR #27 OR #28	39,401
#30	#9 AND #29	236

Figure 1. Flow chart of study identification.



Conclusions

Indirect cost is rarely included in the economic analyses in Poland. Lack of detailed methods descriptions and differences in definition of indirect costs implicate that reliable interpretation of result is difficult. Different methods of calculating indirect costs limit comparison between studies and support the development of robust and widely accepted methodology. If indirect costs become an important part of cost analysis within the framework of HTA, clear recommendations will be needed.

Results

Searches of the electronic databases resulted in the retrieval of 2,300 titles and abstracts. These were screened for inclusion in this review and 57 papers were identified as being potentially eligible for the review and the full text of the articles was retrieved. A total number of 19 studies were included (table 2).

Table 2. Included studies.

Author, year	Disease	Type of study	Method	Indirect cost, %	Parameter
Kokot 2001	asthma exacerbation	cost of disease	HCA	15,5	average salary
Jahnz-Różyk 2008	COPD exacerbation	cost of disease	HCA	16,5	average salary
Hermanowski 2001	hypertension	cost of disease	HCA	26,6	GDP [†]
Matschay 2008	sclerosis multiplex	CCA	HCA	28,0	average salary
Hermanowski 2001	hypertension	CEA	HCA	31,5	GDP [†]
Niewada 2002	recurrent stroke	cost of disease	HCA	34,3	average salary
Richter 2001	depression	cost of disease	HCA	49,4	GDP [†]
Meineche-Schmidt 1999	dyspepsia	cost of disease	HCA	57,8	average salary
Maciąg 2008	ischemic heart disease	cost of disease	HCA	60,7	average salary
Orlewska 2005	sclerosis multiplex	cost of disease	HCA	65,6	average salary
Kawalec 2006	diabetes	cost of disease	HCA	68,1	GDP [†]
Kiejna 2001	depression	cost of disease	HCA	70,9	GDP [†]
Kinalska 2004	diabetes	cost of disease	HCA	73,7	GDP [†]
Matusewicz 2001	drugs adverse reactions	cost of disease	HCA	90,5	average salary
Steciwo 2007	influenza	cost of disease	HCA	94,4	average salary
Trybus 2006	hand injuries	cost of disease	HCA	96,0	GDP [†]
Guzik 2004	multiple injuries	cost of disease	HCA	98,5	GDP [†] , average salary
Brongel 1994	accidents	cost of disease	HCA	100*	NNP [†] , average salary
Rydlewska-Liszowska 2006	accidents	cost of disease	HCA	100*	GDP [†] , sold production [†]

COPD – chronic obstructive pulmonary disease; CCA – cost-consequence analysis; CEA – cost-effectiveness analysis; HCA – human capital approach; GDP – gross domestic product; NNP – net national product; *only indirect cost reported; †per capita; ‡per active worker.

Seventeen of included studies were cost of disease studies. Only two were truly economic analysis either cost-consequence analysis or cost-effectiveness analysis. Two studies were focused only on indirect costs and no share in total costs were reported (studies concerning work accidents).

In all studies only costs of absenteeism were calculated and no study faced the problem of costs when employees come to work in spite of illness (presenteeism).

Method of calculation of the value of productivity loss was based on human capital approach, however methods were not clearly stated in 9 studies.

In 5 studies transfer costs (e.g. pension and sick pay) and in 2 study transportation costs were included into indirect costs category.

The work absenteeism unit time measure used to value productivity loss were average salary (9/19), Gross Domestic Product (GDP) per capita (7/19), Gross National Product per capita (1/19), GDP per active worker (1/19), sold production of industry per active worker (1/19). Data were obtain from Central Statistical Office and Social Insurance Institution, but no details were provided in publications.

Share of indirect cost in total costs were calculated form 16% for single asthma exacerbation to 98% for multiple injuries. After exclusion of studies where shares were not reported the mean share value was 58% (±28%) – figure 2.

The parameters used to value productivity losses were varied across studies. The work absenteeism unit time measure used to value productivity loss were average salary (9/19), Gross Domestic Product (GDP) per capita (7/19), Gross National Product per capita (1/19), GDP per active worker (1/19), sold production of industry per active worker (1/19) – figure 3.

Figure 2. Indirect costs share in total costs.

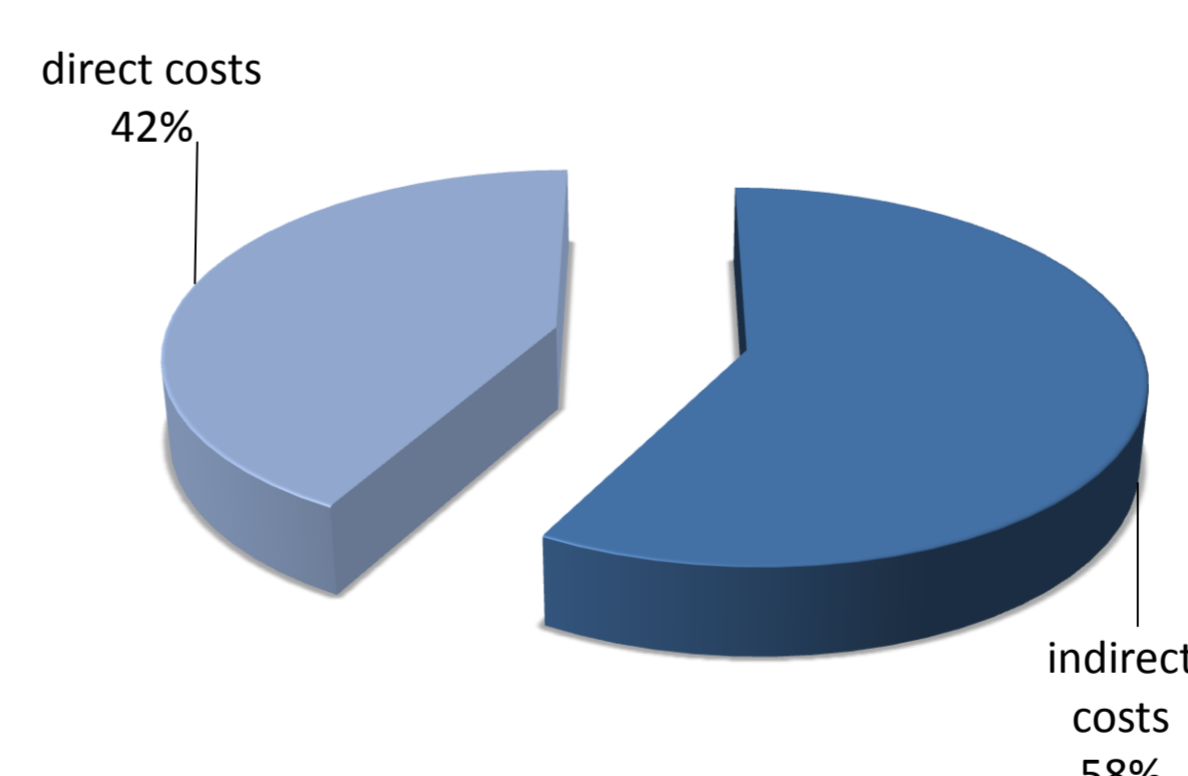
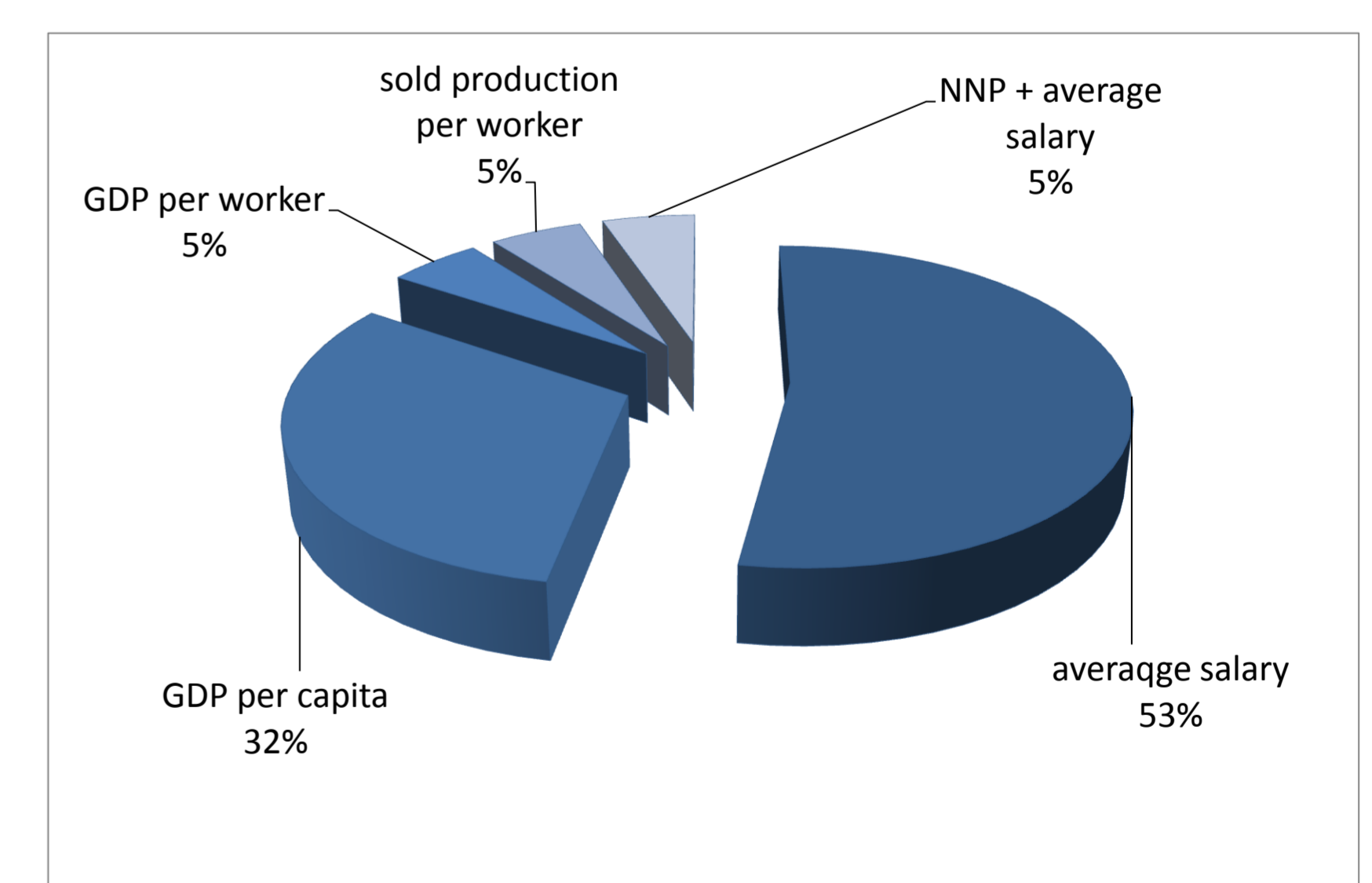


Figure 3. Summary of indirect costs parameters.



Limitations:

- only two pharmacoeconomic studies,
- lack of detailed decryption of used method,
- value of one working day not stated,
- not stated how was value of working day calculated (GDP per 365 or 252 or 226 days),
- incorporation of transfer costs and transportation costs into indirect costs category,
- presenteeism costs not mentioned,
- no studies consideration value of production loss due to mortality.

References

- [1] Gold M, Siegel J, Russell L, Weinstein M. Cost-effectiveness in health and medicine. Oxford University Press. New York 1996
- [2] International Society For Pharmacoeconomics and Outcomes Research. Pharmacoeconomic Guidelines Around the World. www.ispor.org [accessed September 2009].
- [3] Agency for Health Technology Assessment. Guidelines for conducting Health Technology Assessment (HTA) April 2009. (Preliminary); www.aotm.gov.pl [accessed September 2009].

Acknowledgments

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