INDIRECT COSTS OF OBESITY IN POLAND

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OBJECTIVES

Obesity with at least 400 million adults being obese worldwide is a global epidemic. Overweight is a major risk factor for chronic diseases such as: cardiovascular disease (world's number one cause of death), diabetes, musculoskeletal disorders, some cancers.[WHO] In Poland near 1,5 million employees are obese. The objective of the studies was to estimate the indirect costs of obesity among Polish society. The costs analysis included costs of absenteeism and presenteeism.

METHODS

Human Capital Approach method was used in costs quantifying. Data were collected from obese Polish citizens (BMI≥30,0 kg/m^2) in working age (women's age 18-59; men's age 18-64), who were employed at the time of collecting data. Work Productivity and Activity Impairment General Health questionnaire was used to estimate absenteeism and presenteeism in obese population. Indirect cost for obese population was calculated on the basis of the gross value added per employee in 2008, which amount to 19 250 EUR (exchange rate: 1 EUR=4,10 PLN). Central Statistical Office (GUS) data were used to identify obese epidemiology in employed population.

RESULTS

Data from 96 people were analyzed (mean age=41,7 years, 34,4% men). The average BMI was 34,2 kg/m^2, and the majority of respondents (74,0%) were classified to first class of obesity (BMI=30,0-34,9 kg/m^2).

Table 1. Baseline characteristics.

Sex [n (%)]	
•Female	63 (62,6)
•Male	33 (34,4)
Age [mean (SD)]	41,7 (11,1)
BMI kg/m^2 [mean (SD)]	34,2 (4,5)
Obesity class [n (%)]	
•1° (BMI=30-35 kg/m^2)	71 (74,0)
•2° (BMI=35-40 kg/m^2)	18 (18,7)
•3° (BMI>40 kg/m^2)	7 (7,3)
Tertiary education [n (%)]	69 (72,1)
Structure of employee by ownership sectors [n (%)]	
•Public	39 (40,6)
•Private	57 (59,4)
Comorbidities [n (%)]	
•Back pain	64 (66,7)
•Hypertension	42 (43,8)
•Depression	32 (33,3)
•Musculoskeletal disorders	19 (19,8)
•Dyslipidemias	16 (16,7)
•Biliary tract diseases	15 (15,6)
•Coronary heart disease	15 (15,6)
•Hormonal abnormalities	14 (14,6)
•Short of breath	13 (13,5)
•Diabetes mellitus	10 (10,4)
•Obstructive Sleep Apnea	9 (9,4)

Overall work impairment due to health problems in questioned population was estimated at 36,3%, with 11,8% of work time missed due to health problems (figure 1.).

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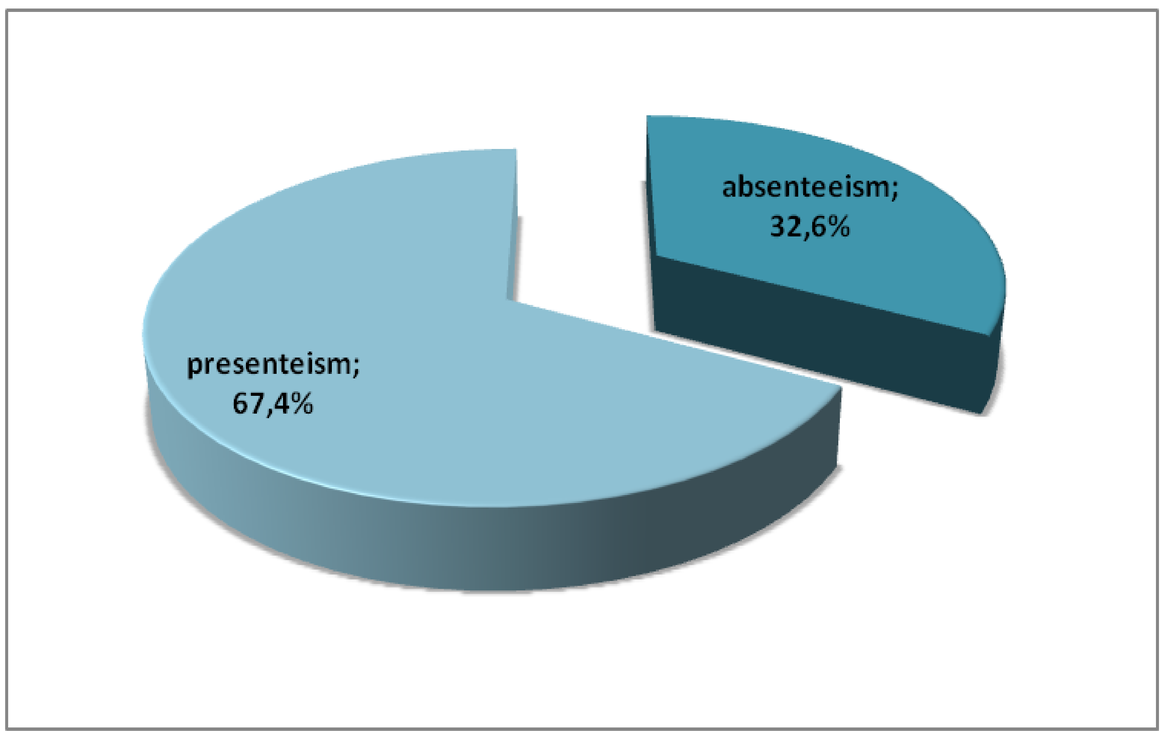
Figure 1. Structure of work impairment due to obesity.



We didn't find any correlation between BMI score and work impairment (neither absenteeism or presenteeism) due to health problems (r=0,15). However week or moderate correlation between number of obesity-related comorbidities and absenteeism or presenteeism was found (r=0,37 and r=0,45 respectively). Although no strict correlation between BMI score and work impairment due to health problems was found, population with 3rd class of obesity seems to have significantly higher loss of productivity then population with 1st or 2nd class of obesity (table 2.).

Table 2. Work impairment due to obesity.

Obesity class	mean	SD	p value (test t-student)		
			1° vs 2°	1° vs 3°	2° vs 3°
total work impairment					
1° (n=71)	33,39%	26,31%			
2° (n=18)	39,07%	27,32%	0,420	**0,009**	0,092
3° (n=7)	62,00%	34,27%			
absenteeism					
1° (n=71)	10,00%	21,43%			
2° (n=18)	10,97%	17,52%	0,419	0,099	0,110
3° (n=7)	34,29%	44,29%			
presenteism					
1° (n=71)	27,71%	20,65%			
2° (n=18)	34,44%	22,81%	0,106	**0,006**	0,090
3° (n=7)	48,57%	23,40%			

Taking into consideration that based on GUS data near 1,5 million employees are obese total indirect costs of obesity in Poland in the year 2008 reached 10,46 billion EUR representing 3,8% of gross domestic product. Absenteeism account for near 1/3 of this costs (3,05 billion EUR) while pressenteism costs were estimated at amount of 7,41 billion EUR.

CONCLUSIONS

Indirect costs of lost productivity due to obesity are substantial to polish economy. However we suppose that not obesity itself but obesity related diseases generate most of indirect costs.

Due to the relatively small population studied, non-representative for obese population in the working age in Poland, presented results should be treated with caution. Considerable differences in the estimates in relation to other countries exists, and bearing in mind the restrictions mentioned above, extensive analysis covering sufficiently representative population of the obese polish in working age must be carried out.