

EFFECT OF CVD ON COPD RELATED RESOURCE UTILIZATION AND DIRECT MEDICAL COSTS AMONG STATUTORY HEALTH INSURED PATIENTS IN GERMANY

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Objectives

Chronic obstructive pulmonary disease (COPD) is one of the leading causes of morbidity and mortality worldwide. COPD affects approximately 9-10% of patients aged ≥ 40 years¹. Cardiovascular disease (CVD) is a common comorbidity in patients with COPD^{2,3}. Different medical links between COPD and CVD and how they affect each other are discussed^{2,3}. Comorbid CVD might for instance enhance the risk of COPD exacerbation and result in increased resource utilization and costs^{2,3}. Aim of the study was to describe the effect of CVD on COPD related resource utilization and direct medical costs among patients with COPD.

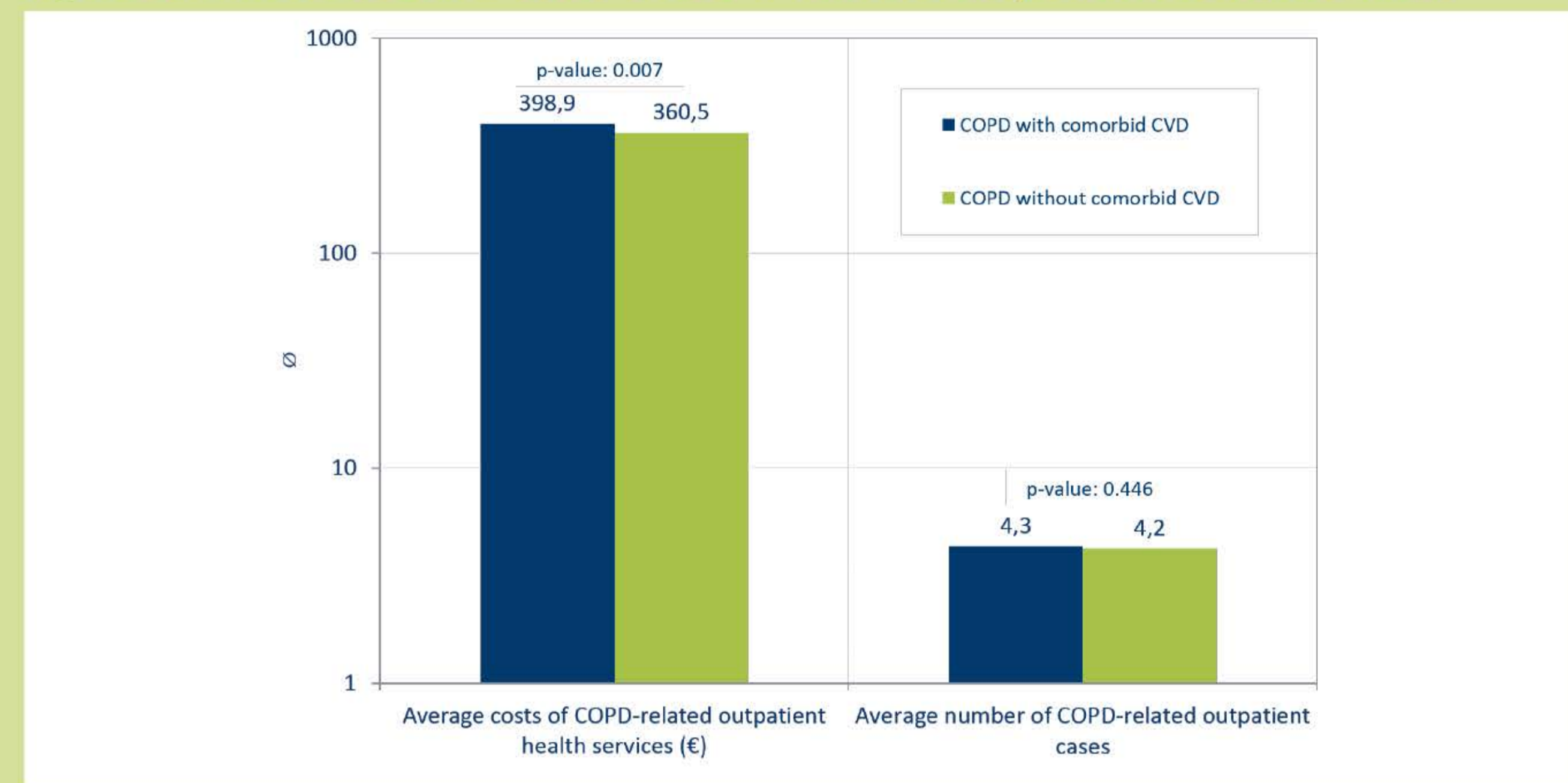
Methods

This study is a retrospective, controlled cohort study based on claims data derived from a German statutory health insurance. Patients ≥ 40 years with COPD and CVD were matched to COPD patients without CVD by means of propensity score (PS) matching to achieve comparable patient populations. Sociodemographic information (e.g. age and gender), comorbidity, resource utilization and costs were considered to calculate the PS. Sector specific as well as overall annual (360 days) resource utilization and direct medical costs were analyzed. Group differences in frequencies or means were identified using Chi-Square or t-test, respectively. A $p < 0.05$ was considered statistically significant.

Results

Use and costs of COPD-related outpatient health services

Figure 1: Annual use and costs of COPD-related outpatient health services



Note: A logarithmic scale was used in this figure.

Characteristics of the PS matched population

Each group of the PS matched study population comprised 7,135 patients. Baseline characteristics were balanced between the two groups after PS matching. The majority of the patients was aged 70 years or older. Approximately 55% of the patients were female.

Use of outpatient health services

Figure 1 gives information on the use and costs of outpatient COPD-related health services. In each group approximately 97% of the patients had at least one COPD-related outpatient physician visit during the follow up period. While the average number of COPD-related annual outpatient physician visits did not differ between patients with COPD and no comorbid CVD and patients with COPD and comorbid CVD (4.2 cases vs. 4.3 cases, $p=0.445$), higher average COPD-related costs were observed in the CVD group compared to COPD patients without CVD (399€ vs. 361€, $p=0.007$) (Figure 1).

Use and costs of COPD-related inpatient health services

Table 1: Annual use and costs of COPD-related inpatient health services

Description	COPD without comorbid CVD n=7,135	COPD with comorbid CVD n=7,135	p-value
COPD-related hospitalizations			
Patients with at least one COPD-related hospitalization (n, %)	279 (3.9%)	285 (4.0%)	0.797
Average costs of COPD-related hospitalizations per patient (€)	160.90 €	154.90 €	0.779

Source: IGES

Table 1 illustrates the results of the analysis of the use and costs of inpatient COPD-related health services.

The proportion of patients with at least one hospitalization with COPD as the main discharge diagnosis was comparable between patients with COPD and no comorbid CVD and patients with COPD and comorbid CVD (3.9% vs. 4.0%, $p=0.796$).

Furthermore, the average costs for hospitalization also showed no statistically significant difference between the two patient groups (160.90 € for patients without comorbid CVD and 154.90 € for patients with comorbid CVD).

The analyses also revealed that the average number of hospitalizations and the average length of the hospital stay were comparable between COPD patients with comorbid CVD and COPD patients without comorbid CVD.

Use and costs of COPD-related drugs

Table 2: Annual use and costs of COPD-related outpatient drugs

Description	COPD without comorbid CVD n=7,135	COPD with comorbid CVD n=7,135	p-value
COPD-related outpatient prescriptions			
Use of at least one COPD-related drug (n, %)	4,999 (70.1%)	5,159 (72.3%)	0.099
Average costs of COPD-related prescriptions per patient (€)	346.40 €	359.50 €	0.109

Source: IGES

Table 2 shows the use and costs of COPD-related outpatient prescriptions. Patients with COPD and comorbid CVD were more frequently treated with COPD related drugs compared to COPD patients without comorbid CVD (72.3% vs. 70.1%, $p=0.003$).

However, the average costs for COPD-related drugs did not differ between the two patients populations (346.40 € in the group of patients without comorbid CVD and 359.50€ in the group with comorbid CVD, p -value: 0.779).

Furthermore, differences regarding the number of prescriptions of COPD-related drugs as well as the sum of the defined daily dose could also not be observed.

Conclusions

This study showed that comorbid CVD has an effect on COPD-related sector specific annual utilization and direct medical costs. A comparable study which was also based on claims data showed similar results⁴. However, the study by Dalal et al. revealed larger differences between the two patient populations. This might likely be due to the fact that patients with COPD and comorbid CVD had a relatively short exposure time to CVD during the observation period in our study. A shorter exposure time to CVD would likely lead to fewer CVD-related physician contacts and would therefore also reduce the probability of documented COPD-related health services. Nevertheless, our study points towards an intensified treatment need of COPD in the presence of CVD and the need for effective co-treatment strategies.

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Conflict of interest

This study was funded by GlaxoSmithKline. MK, FH, AH, GS and HHB declare no conflict of interest. ST is a GSK employee and shareholder.

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