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Costs of ADHD care in Germany: statutory health insurance (SHI) claims data 2017–2023

Abstract

Introduction: ADHD is associated with a high disease burden and substantial direct and indirect costs, particularly in adults; however, current long-term health economic analyses for Germany remain limited.

Methods: A retrospective cohort study was conducted using anonymized statutory health insurance (SHI) claims data from the InGef database (2017–2023). Prevalent and incident ADHD patients (<18/≥18 years) were analyzed, with a focus on non-pharmacological care, direct costs, and sickness absence.

Results: In 2023, mean annual direct total costs amounted to EUR 3,527 for prevalent and EUR 4,250 for incident patients, with substantially higher costs in adults than in children and adolescents. Inpatient care accounted for the largest share of costs. Psychotherapy was used by 14–17% of patients and cognitive behavioral therapy by 8–10%, with an average of ~14 sessions per year and costs of approximately EUR 1.5 thousand per user. Between 2017 and 2023, direct costs increased by 43–46%. The proportion of adults with sickness absence and its duration increased markedly, particularly from 2021 onwards.

Discussion: ADHD care in Germany is associated with rising costs, driven primarily by inpatient treatment and psychotherapeutic interventions. Early, continuous, and ambulatory multimodal care may reduce costly hospitalizations and productivity losses.

Keywords

ADHD (Attention-Deficit/Hyperactivity Disorder), Epidemiology; Cognitive Behavioral Therapy (CBT), Health Economic Analysis, Secondary Data Analysis

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The prevalence of attention-deficit/hyperactivity disorder (ADHD) in children and adolescents is around 5–8% worldwide, with boys affected about twice as often as girls (Ayano et al., 2023; Wolraich et al., 2019). In adulthood, the sex difference narrows and prevalence is markedly lower at 2–3% (Cortese et al., 2025; Faraone et al., 2006; Posner et al., 2020). The course of ADHD is heterogeneous: around 15% of those affected still meet the full diagnostic criteria in adulthood, 40–60% show partial remission with persistent functional impairment, and only about 9% achieve lasting remission. Fluctuating courses with phases of remission and relapse are common. Prevalence estimates are strongly influenced by methodological differences, regional variability, and the diagnostic criteria used (Ayano et al., 2023; Cortese et al., 2025; Cortese et al., 2023; Edition, 2013; Posner et al., 2020). The current classification systems (DSM-5, ICD-11) allow a later onset of symptoms and thus lower the diagnostic threshold, which particularly affects prevalence in adulthood.

>> The health economic burden of ADHD is substantial and comparable to that of chronic somatic diseases. Comorbidities, including substance use disorders, affective disorders, and anxiety disorders, can be identified in around 80% of those affected (Choi et al., 2022). Direct medical costs as well as indirect costs, e.g., due to productivity losses, are considerably higher in affected individuals than in peers without ADHD (Wu et al., 2012). Studies from Germany also point to particularly high costs in adults with late diagnosis and complex comorbidity (Libutzki et al., 2020; Schlander et al., 2010). The current state of research on health economic analyses of ADHD in Germany shows that ADHD is associated with considerable direct and indirect costs for the health care system and society. Adults with ADHD incur annual direct medical costs of more than EUR 4,000 per person; costs decline after diagnosis but remain high. The disease burden is particularly pronounced in patients with comorbidities and in those receiving medication (Libutzki et al., 2020). In children and adolescents, costs are also markedly increased, in particular due to greater use of medication as well as psychotherapeutic and special education services (Dodds et al., 2024; Grobe, 2017). There are also considerable regional differences in diagnosis rates and prescribing patterns that have not yet been adequately explained on medical grounds (Akmatov et al., 2021; Grobe, 2017).

Nevertheless, there is a lack of health economic studies with long observation periods, of analyses of psychosocial and non-pharmacological interventions, and of studies on the cost-effectiveness of ADHD treatments in adulthood (Dijk et al., 2021; Sampaio et al., 2022). Most available studies focus on children and adolescents and on pharmacological therapies, while psychosocial interventions, the actual care of adults, and the associated costs are underrepresented (Dijk et al., 2021; Kaman et al., 2025; Libutzki et al., 2020; Sampaio et al., 2022). In addition, standardized methods for capturing indirect costs, such as productivity losses and effects on family members, are lacking (Chhibber et al., 2021; Le et al., 2014). The literature explicitly calls for more methodologically rigorous health economic research, particularly for the German health care setting (Dijk et al., 2021; Kaman et al., 2025; Libutzki et al., 2020).

Based on the care situation of patients with ADHD in Germany, the aim of this study was therefore to examine the costs of ADHD care using SHI routine data from 2017 to 2023.

Material and methods

Study design and data sources

A retrospective cohort study was conducted based on anonymized routine data from statutory health insurance (SHI). The analysis used the InGef research database, which covers around 10 million insured persons from company and guild health insurance funds and is considered representative of the SHI population with respect to morbidity, mortality, and drug prescriptions (Andersohn & Walker, 2016; Ludwig et al., 2022). The observation period extended from January 1, 2017, to December 31, 2023. The claims data used comply with strict German data protection requirements and can be analyzed secondarily without an additional ethics vote.

Study population

Insured persons with at least one inpatient or at least two confirmed outpatient ADHD diagnoses (ICD-10-GM F90.0) in two different quarters within two calendar years were included. The analysis was performed separately by age group (<18 years and ≥18 years) and for prevalence (2017–2023) and incidence cohorts (2018–2023; no ADHD diagnosis in the previous year). Insured persons without continuous SHI coverage in the respective observation year were excluded, except in cases of birth or death.

Endpoints and variables

The primary focus of the analysis was annual health care costs from the SHI perspective, based on services actually billed. The emphasis was on non-pharmacological therapies, in particular psychotherapeutic services, multimodal therapies, and inpatient psychiatric treatment. Hospitalizations were defined using specialty department codes; the underlying diagnoses were not taken into account. All variables were analyzed per calendar year; services spanning year boundaries were assigned to the year of the discharge date.

Cost assessment

The cost analysis was performed from the perspective of statutory health insurance based on the claims data of healthcare providers. Patient costs were extrapolated to an annual basis and weighted according to the individual observation period. Combination therapies were assigned to the respective care categories regardless of their chronological sequence.

Statistical analysis

The analysis was descriptive and age-group-specific. Missing values were not imputed. To test the robustness of the results, sensitivity analyses were performed, including extended diagnostic criteria, less restrictive inclusion definitions, and alternative diagnosis-free periods for incident cases. All analyses were performed using R (version 4.0.2).

Results

Description of the population

As described previously (Betzler et al., 2026), the study population was derived from the InGef research database and comprised 78,919 continuously SHI-insured persons who met the defined insurance-related and clinical inclusion criteria for an F90.0 diagnosis in 2023.

Costs

In 2023, the mean total direct costs of ADHD care were higher for incident than for prevalent patients (EUR 4,250 vs. EUR 3,527 per patient per year), with inpatient services accounting for the largest share of costs (Table 1). In addition, adults in both groups had markedly higher costs than children and adolescents (prevalent: +41%; incident: +43%).

Between 2017 and 2023, total direct costs for prevalent ADHD patients rose from EUR 2,463 to EUR 3,527 (+43%) per patient per year, while incident patients showed an increase from EUR 2,910 to EUR 4,250 (+46%) between 2018 and 2023 (Fig. 1). The cost increase was observed in all age groups examined and was driven primarily by rising inpatient expenditure, while outpatient and pharmacological costs increased moderately and costs of therapeutic remedies and medical aids remained comparatively stable.

Psychotherapy

Table 2 shows the utilization and mean annual costs of psychotherapy (PSY) and its subset behavioral therapy (BT) among prevalent and incident ADHD patients. Overall, 14.3% of prevalent and 17.4% of incident patients used at least one psychotherapy, while BT was used by 8.4% and 9.6%, respectively. In both populations, adults consistently showed higher utilization rates than children and adolescents. The mean annual costs per patient with at least one service ranged from EUR 1,476 to EUR 1,590 for psychotherapy and from EUR 1,480 to EUR 1,608 for BT in prevalent cases; in incident patients, they ranged from EUR 1,414 to EUR 1,496 and from EUR

Direct costs of ADHD care in 2023

	Prevalent			Incident		
	Children/ adolescents (<18 years)	Adults (≥18 years)	Total	Children/ adolescents (<18 years)	Adults (≥18 years)	Total
Inpatient care	1.279 (3.761)	1.738 (4.398)	1.494 (4.078)	1.606 (4.245)	2.590 (5.277)	2.015 (4.727)
Outpatient care	1.082 (888)	1.092 (958)	1.087 (922)	1.133 (906)	1.323 (1.045)	1.212 (971)
Pharmacological care	319 (391)	423 (469)	367 (432)	174 (283)	351 (415)	248 (355)
Other costs: remedies and medical aids	837 (1.558)	284 (898)	579 (1.321)	1.131 (1.729)	275 (857)	775 (1.493)
Total direct costs	3.518 (4.295)	3.537 (4.976)	3.527 (4.626)	4.044 (4.694)	4.539 (5.711)	4.250 (5.147)

Table 1: Direct costs [mean (standard deviation) in EUR] of ADHD care in 2023. Own illustration.

1,502 to EUR 1,565, respectively. Among ADHD patients with at least one psychotherapeutic or behavioral therapy session, around 90% received individual therapy and about 10% group therapy.

Among patients using behavioral therapy, the distribution of short-term and long-term therapy showed no substantial changes over the entire observation period. Short-term therapy predominated in all years. In 2023, 64.4% of cases involved short-term and 35.6% long-term therapy. This pattern was seen in both age groups, with the share of long-term therapy being higher in adults (38.8%) than in children and adolescents (30.8%).

Figure 2 shows an overall increase between 2017 and 2023 in the proportion of ADHD patients with at least one psychotherapy or behavioral therapy session, with the increases being more pronounced in adults than in children and adolescents.

While psychotherapy utilization increased from 14.8% to 17.6% in adults and moderately from 10.8% to 11.3% in children/adolescents, behavioral therapy utilization rose continuously in both age groups (adults: 7.1% to 10.8%; children/adolescents: 5.1% to 6.3%). Overall, the proportion with psychotherapy increased from 12.0% to 14.3% and with BT from 5.7% to 8.4%, with the increase accelerating from 2021 onward.

Sickness absence

From 2017 to 2023, the proportion of adult ADHD patients with at least one day of sickness absence rose markedly in both prevalent and incident cases, with a pronounced jump in 2022 (Table 3). At the same time, the mean number of sickness absence days per year increased, particularly among incident patients, whose mean absence duration was markedly higher than that of prevalent cases from 2021 onward.

Sensitivity analysis

Sensitivity analyses with extended ICD-10 codes (F90.0–F90.9, F98.8), less restrictive inclusion criteria (≥1 diagnosis), and a prolonged diagnosis-free period (up to 6 years) showed relative deviations of 4.6 to 38.5% from the primary case definition, with the deviations decreasing over the observation period. The results proved robust to methodological variations, with maximum deviations of 15% (2023) for less restrictive criteria and 9% for a prolonged look-back.

Discussion

Based on SHI claims data, this analysis describes the utilization of non-pharmacological therapies and the direct and indirect costs of ADHD care in Germany between 2017 and 2023.

The results confirm a substantial and growing economic burden, particularly in adulthood, and are consistent with earlier German routine data analyses (Libutzki et al., 2019; Libutzki et al., 2020; Zeidler et al., 2013). Direct health care costs for incident ADHD patients averaged EUR 4,250 in 2023. These figures are comparable to results from the period 2013 to 2017, which reported costs of EUR 4,006 in the first year after diagnosis (Libutzki et al., 2020).

For children and adolescents, lower mean costs of EUR 2,634 were reported (Hasemann et al., 2024). Differences between the studies are likely due, among other things, to methodological deviations, in particular the case definition (e.g., M1Q criterion).

The large share of costs attributable to inpatient services, particularly among incident adults, suggests intensive, often acute utilization around the time of initial diagnosis and is consistent with earlier analyses (Libutzki et al., 2020). Between 2017 and 2023, total direct costs rose by 43% (prevalent) and 46% (incident), mainly due to rising inpatient expenditure. The increase is likely related, among other factors, to higher diagnosis rates in adulthood, increasing intensity of care, and methodological differences between studies (Cummings et al., 2025; Danielson et al., 2024; Li et al., 2025).

The observed cost increase of 43 to 46% must be interpreted in the context of general cost increases in the German health care system. Since the analysis is based on annual reimbursement rates, the increase does not solely reflect an intensification of care but may partly be due to remuneration adjustments (e.g., state base rates, EBM point values), general price trends, and inflation (Stahmeyer et al., 2018). The consumer price index rose cumulatively by about 21% over the observation period (Destatis, 2026). The observed nominal cost increase must therefore also be interpreted against the background of general price trends. However, the available data do not allow quantification of the share of the cost increase explained by these factors.

Psychotherapeutic services played a relevant role in the cost structure: 14–17% of patients used at least one psychotherapy in 2023, with higher

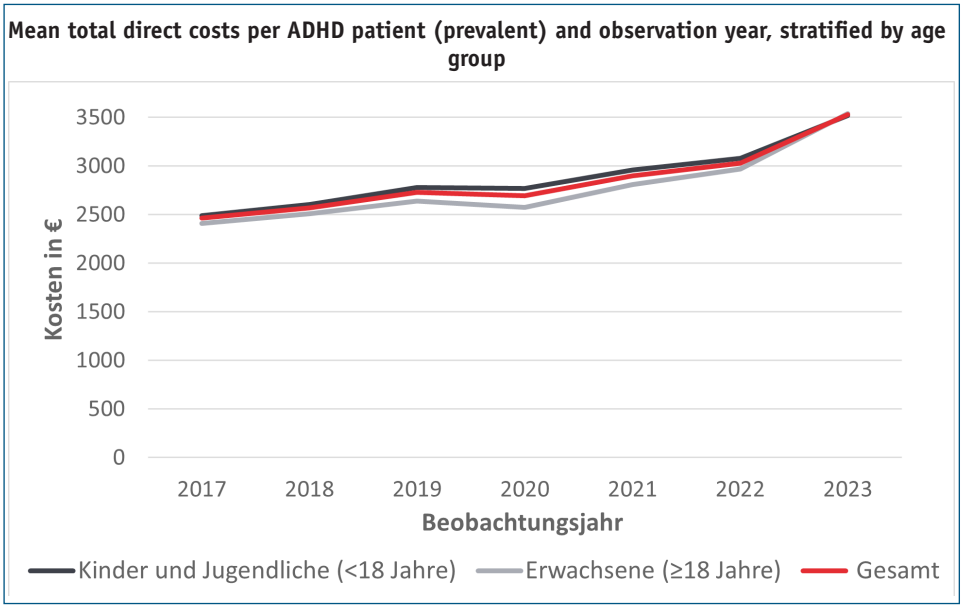


Fig. 1: Mean total direct costs per ADHD patient (prevalent) and observation year, stratified by age group. Source: own illustration.

Utilization of psychotherapy and behavioral therapy (BT) in 2023 for prevalent and incident patients with ADHD				
		Proportion of patients with >1 prescription	Units per patient M (SD)	Costs per patient M (SD) in euros
Prevalent				
Children/adolescents (<18 years)	**PSY**	11,3%	14,8 (12,0)	1.590 (1.339)
	BT	6,3%	14,5 (10,1)	1.608 (1.125)
Adults (>18 years)	**PSY**	17,6%	13,8 (11,6)	1.476 (1.271)
	BT	10,8%	13,4 (9,5)	1.480 (1.038)
Total	**PSY**	14,3%	14,2 (11,8)	1.524 (1.301)
	BT	8,4%	13,9 (9,8)	1.531 (1.075)
Incident				
Children/adolescents (<18 years)	**PSY**	11,2%	13,4 (11,6)	1.414 (1.286)
	BT	5,5%	13,6 (10,0)	1.502 (1.112)
Adults (>18 years)	**PSY**	26,0%	14,1 (11,6)	1.496 (1.269)
	BT	15,5%	14,2 (9,5)	1.565 (1.038)
Total	**PSY**	17,4%	13,8 (11,6)	1.465 (1.276)
	BT	9,6%	14,0 (9,7)	1.544 (1.063)

Table 2: Utilization of psychotherapy and behavioral therapy (BT) in 2023 for prevalent and incident patients with ADHD. Legend: M = mean, SD = standard deviation; patients with BT are a subset of those with psychotherapy. Own illustration.

proportions among adults and incident cases. Mean costs of around EUR 1,500 per patient, with a high session frequency (≈14 sessions/year) and a clear predominance of individual settings (~90%), underline the importance of psychosocial interventions (Wolraich et al., 2019). Among patients using behavioral therapy, short-term therapy predominated over long-term therapy throughout the observation period; this indicates that a relevant share of psychotherapeutic costs is incurred immediately and is not primarily driven by long-term continued courses of treatment.

In contrast, drug costs accounted for only a comparatively small share of total direct costs in incident and prevalent cases. This finding is consistent with earlier analyses (Chhibber et al., 2021; Dodds et al., 2024; Libutzki et al., 2019; Quintero et al., 2018) and shows that inpatient services and psychosocial treatment components substantially shape direct costs in ADHD patients.

International studies show that productivity losses account for the largest share of the societal costs of ADHD, particularly in adults (Chhibber et al., 2021). In addition, studies report an increase in ADHD-related diagnoses and prescriptions following pandemic-related gaps in care (Butt et al., 2023; Given et al., 2025; Myran et al., 2025; Rogers & MacLean, 2023; Shkalim Zemer et al., 2024).

This study is based on a secondary analysis of SHI claims data from the InGef research database, which is considered representative of the SHI-insured population in Germany (Andersohn & Walker, 2016; Ludwig et al., 2022). Key limitations of the secondary data analysis include the lack of clinical detail, possible diagnostic inaccuracies in the claims data, the non-capture of privately financed services, and the absence of a control group for deriving ADHD-specific excess costs. In addition, the chosen case definition and right censoring at the end of the observation period may have led to an underestimation of case numbers in 2023.

Conclusion

This analysis shows that ADHD care in Germany is associated with substantial and further rising direct and indirect costs. Inpatient services and psychotherapeutic interventions largely shape the cost structure, particularly in adulthood and in incident cases. The observed trends call for continuous monitoring of developments in care and further analyses to identify potential for optimization. <<

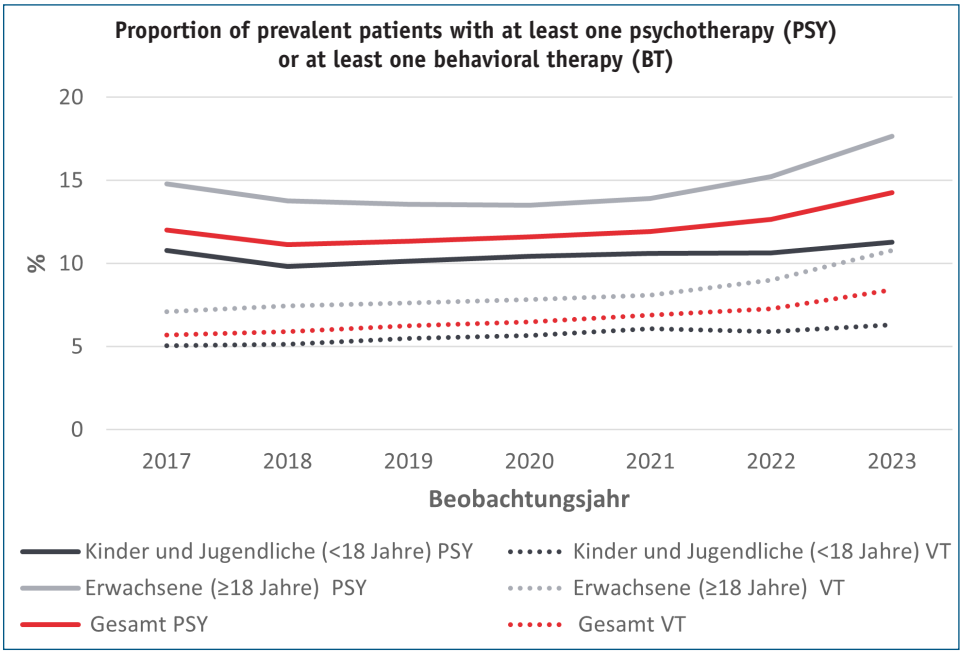


Fig. 2: Proportion of prevalent patients with at least one psychotherapy (PSY) or at least one behavioral therapy (BT), stratified by age group and observation year. Source: own illustration.

Proportion of adult ADHD patients with at least one day of sickness absence and mean duration of sickness absence days per year over time						
Year	Prevalent			Incident		
	Proportion with SA	Duration of SA in days per		Proportion with SA	Duration of SA in days per	
		M	SD		M	SD
2017	**25,5**	13,0	47,6	-	-	-
2018	**27,8**	14,6	54,4	26,4	19,6	67,2
2019	**28,7**	15,5	58,2	26,1	19,6	65,6
2020	**28,5**	15,0	57,9	26,4	20,9	73,5
2021	**30,7**	17,0	65,0	26,7	17,7	64,7
2022	**47,2**	24,4	70,8	43,4	25,8	73,2
2023	**52,6**	26,3	68,5	51,5	31,6	78,9

Table 3: Proportion of adult ADHD patients with at least one day of sickness absence and mean duration of sickness absence days per year over time. Legend: SA = sickness absence, M = mean, SD = standard deviation. Own illustration.

Author declaration

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Daniel Schöttle and Felix Betzler contributed equally to the conception and preparation of this article and share senior authorship.
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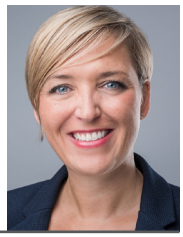
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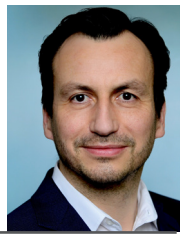
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