DO TREATMENT COSTS FOR CHRONIC PAIN PATIENTS CHANGE AFTER INTERDISCIPLINARY MULTIMODAL PAIN THERAPY?

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Total costs for health insurance services do not differ in the year before and after participation in an Interdisciplinary Multimodal Pain Therapy.

Expenses for specific services (e.g. opioids and outpatient doctor visits) significantly decreased.

The variation of individual medical costs was huge.

A differentiation of pain-related services and other services is challenging.

Background
Since chronic pain and its treatment represent a major economic challenge and lead to an increased use of health services, an effective and cost-effective pain treatment is becoming more and more important. Interdisciplinary Multimodal Pain Therapy (IMPT) has been demonstrated as an effective therapy for chronic pain conditions, but its cost-benefit ratio is controversially discussed.

Objective
To examine the change in the use of services and costs from the perspective of a health insurance company in chronic pain patients who participated in a four-week day-care IMPT four quarters before and after the therapy.

Methods
The study includes billing data from 83 chronic pain patients from AOK Plus who participated in an 4 week IMPT in the Pain Day Clinic at Jena University Hospital between 2013 and 2018. Frequency and costs of the outpatient medical treatment, hospital treatments (excluding costs / duration of IMPT), drugs, remedies and adjuvants and rehabilitation measures as well as the number of days of sick leave were compared four quarters before and after an IMPT. As far as possible, results were analysed both for services in general and costs that are related to a pain diagnosis.

Results
There was a significant reduction in expenses for opioids, but not in overall drug costs, and a significant reduction in the costs of outpatient doctor visits (**Table 1** and **Figure 1 D and G**). Nonetheless, effect sizes were small. The median sum of the costs of all recorded service areas before the IMPT € 2,391.60 (Q_{1-3}: € 885.20 - € 4,745.90) and in the year thereafter € 2,208.30 (Q_{1-3}: € 877.90 - € 5888.30) differed not significantly. The variation of total costs was huge (**Figure 1 L**). The median number of days of incapacity for work decreased from 11 to 9.5 days after completing the IMPT.

Conclusion
From the perspective of the health insurance company, the available results indicate that yearly expenses for specific services (e.g. opioids and outpatient doctor visits) but not overall costs are significantly decreased after compared to before participation in an IMPT. Possible savings through the reduction of sick leave are not considered so far. Due to the small study population, it cannot be ruled out that real effects are masked by the large variation of individual medical costs. With the exception of analgesics, a differentiation between pain-related services and costs for other indications was not always possible.

		1 year before IMPT					1 year after IMPT						effect
		median	Q_1	Q_3	mean	SD	median	Q_1	Q_3	mean	SD	p	size
hospital: days of treatment	[days]	**2.5**	0.0	8.3	16.4	40.3	**3.0**	1.0	13.0	32.6	74.8	0.850	-0.10
hospital: costs	[Euro]	**201.2**	0.0	2,064.9	1,809.4	3,887.3	**344.7**	108.4	3,761.3	3,295.3	6,018.7	0.976	-0.14
outpatient doctor visits	[days]	**27.5**	18.8	40.3	31.1	17.2	**28.0**	19.0	38.3	30.4	14.7	0.256	0.00
outpatient doctor visits: costs	[Euro]	**224.6**	94.5	687.7	465.2	622.4	**140.5**	89.9	337.6	299.3	452.6	**< 0.001**	0.13
drug costs: total	[Euro]	**444.5**	173.1	1,313.4	1,327.8	3,349.4	**572.3**	209.3	1,200.9	1,190.5	2,796.4	0.362	-0.02
drug costs: pain-specific	[Euro]	**153.0**	17.5	506.4	479.3	826.9	**155.1**	39.5	471.6	372.1	515.6	0.427	-0.02
drug costs: opioids	[Euro]	**0.0**	0.0	0.0	188.3	632.9	**0.0**	0.0	0.0	24.8	151.3	**< 0.001**	0.23
incapacity for work	[days]	**11.0**	0.0	48.8	46.5	82.3	**9.5**	0.0	83.3	56.9	93.0	0.805	-0.02
remedies/adjuvants	[days]	**12.0**	6.0	24.0	21.6	26.7	**16.0**	6.0	28.0	20.8	22.5	0.375	-0.01
remedies/adjuvants: costs	[Euro]	**212.7**	89.2	421.7	356.7	529.5	**231.2**	70.8	406.4	357.9	507.3	0.554	-0.02
rehabilitation: costs	[Euro]	**0.0**	0.0	0.0	243.3	1,177.4	**0.0**	0.0	0.0	69.9	366.2	0.075	0.06
sum of all costs	[Euro]	**2,391.6**	885.2	4,745.9	4,202.4	6,902.4	**2,208.3**	877.9	5,888.3	5,213.0	8,055.1	0.783	-0.04

Effect size r (absolute values): ≥ 0.1 small, ≥ 0.3 medium, ≥ 0.5 large

Table 1. Descriptive statistics for the analysed variables. In total data from 83 patients were analysed. Median (including first and third quartile, Q_1 and Q_3) and mean with standard deviation (SD) are presented. Differences between the year before and after IMPT were analysed with Wilcoxon signed-rank tests. Corresponding effect sizes (r) are reported, with positive values indicating lower variable values for the year after IMPT.

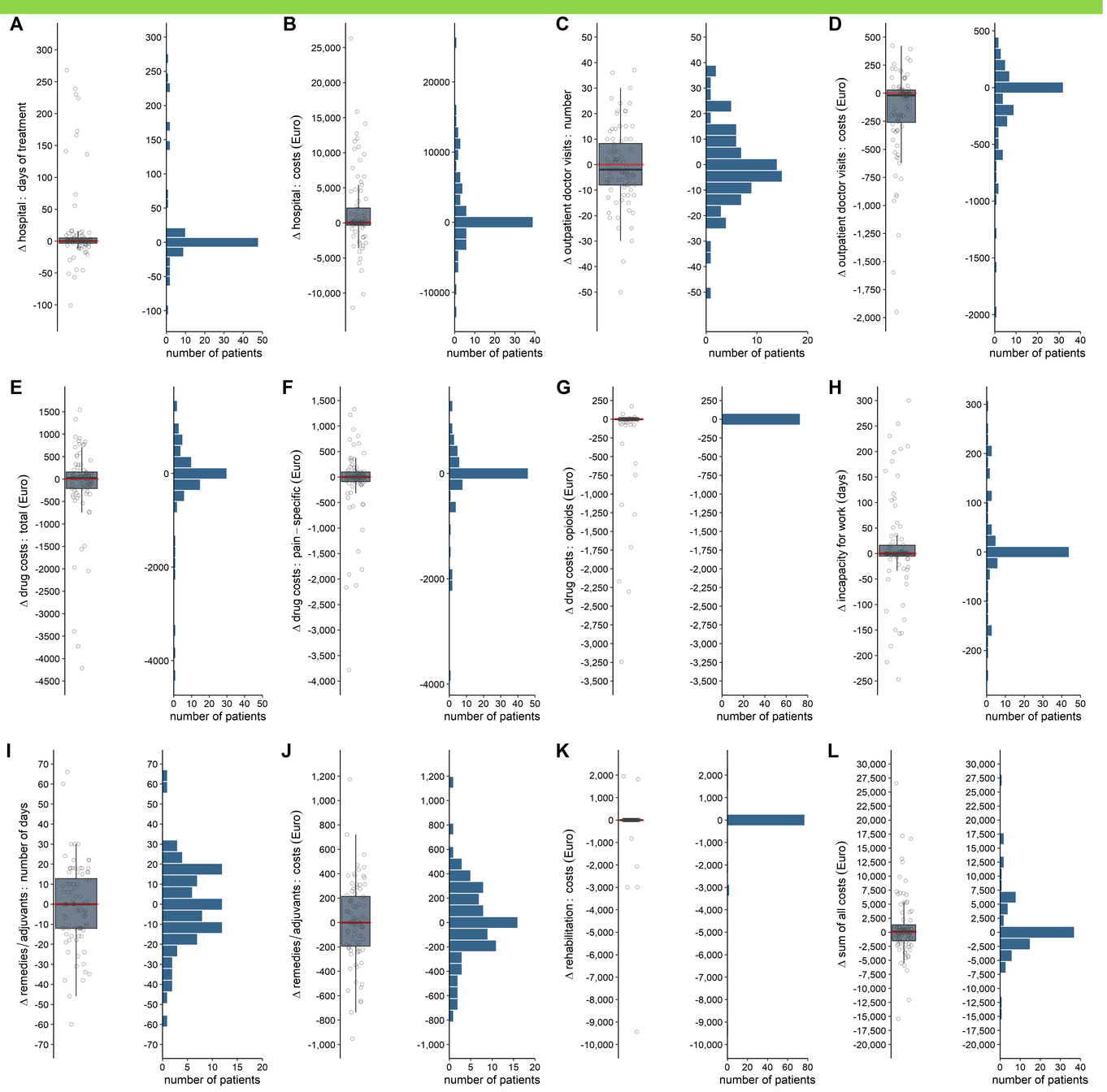

Figure 1. Individual differences in health insurance services in the year before and after IMPT. In each panel the left graph shows the boxplots with individual differences (dots). Negative values indicate a decrease and positive values indicate an increase compared to the year before IMPT. The red line indicates no change between the year before and after IMPT (i.e. zero). For most of the analysed variables the median was zero. The right graphs display the frequency distribution of patients (histogram). For most of the analysed variables the majority of patients showed differences around zero. Of note, in every variable there were patients with highly positive or negative values (outliers, except for costs of opioids).

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