Pain, pain related and socioeconomic results after multimodal integrated assessment and treatment in patients with back pain

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Introduction: Multimodal interdisciplinary treatment is most efficient for subacute to chronic back pain. Until now the availability of experienced institutions, the access for patients and the financing and reimbursement rates are insufficient throughout Germany. During ongoing health reform direct contracts between health insurance funds and service providers were permitted. Since 2006 a health insurance fund (DAK) offers an interdisciplinary assessment by the Berlin-Brandenburg back pain network (BBR) and - if applicable - treatment options to its regional members with ongoing disability because of low back pain. Aim of this concept and its evaluation is the proof of applicability, efficiency and long-term cost-effectiveness.

Methods:

Patients were selected by DAK, their pain and functional assessment was conducted by assessment centres, who also suggested treatment options.

Treatment options were offered by BBR partners or extern institutions. Half a year later patients were asked to fill in and return a follow-up questionnaire.

Selection of patients by health insurance fund: Members with sick leave for more than 6 weeks with the leading diagnoses of M51 to M54 were invited by their regional office of the DAK and offered the concept, which is not available by usual reimbursement.

Assessment: After comprehensive anamnesis and evaluation of treatment to date, medical, physiotherapeutic and psychological exploration an interdisciplinary consent was arranged by BBR partners as to therapeutic options to be suggested to patient and DAK. Treatment options should reduce pain intensity and disability as well as improve life quality and wellbeing, but were also guided by patients` need of intensity of care and their ability to attend treatment programs.

Treatment: Treatment options were well-aimed diagnostic, outpatient specific (monomodal) treatment –extern of the BBR-, day-care pain management program of two intensities or inpatient treatment provided by BBR.

Data: Data presentation includes information on indication (diagnoses, details of sick leave due to back pain), pain and pain-related details (German Pain Questionnaire GPQ), severity (von Korff) and chronicity of pain disease (Mainz Pain Staging System), comprehensive assessment (functional, psychological, social and comorbid condition), selection of treatment and follow-up after 6 months (GPQ, sick leave for any reason).

Data collection: Data was collected online by DAK and the providers using

- common tasks to exchange information on indication, assessment dates, suggested treatment options, summary of results and
- different data i.e. GPQ, examination sheets, conclusion of assessment by the providers exclusively.

Data was also used for controlling the course of the project and the interdisciplinary discussion of the participating diagnostic and treatment centres.

Data analysis: Data was used for description of included patients, of the course of selection, assessment and treatment, for validation purposes of the assessment and decision making as well as the long term efficacy. Assessment patients were evaluated presenting with a huge data set, who went through different treatment options. There is a strong need for comparative data, which are difficult to receive because usual care is not evaluated in this manner. Data of the health insurance fund DAK were used, but comprise selection bias due to socioeconomic and individual situation of selected patients.

Evaluation: Response was defined in 5 main areas of aim criteria: Usual pain as mean of pain intensity “right now”, mean and most severe pain intensity, usual disability as mean of three areas of disability everyday, during leisure time and at work, in function as

summary of days with everyday disability and physical component summery (SF12), in psychometrics as summery of HADS anxiety and depression, mental component summery (SF12) and social area as days off work 6 months before and after assessment. Nonresponse was defined in patients without or negative difference of pain intensity and pain-related disability, their functional, psychometric or socioeconomic results. Groups of patients were characterized by (1) overall success and 6 months stability (2) nonresponse in sick leave days only (3) nonresponse in 2 of 5 areas unless sick leave (4) nonresponse in 3 of 5 areas of pain, disability, functional, psychometric or socioeconomic results (5) overall nonresponse.

Cooperation between DAK and BBR: Case Managers were informed by their leaders and BBR partners considering their support in selecting patients, communication with providers of assessment and treatment options. When starting and then yearly meetings were held to exchange information on project conduct, show actual data of patients and to answer direct questions.

Results:

Patients and course:

Until june 2008 450 members of the sickness fund were selected by case managers of DAK using the leading diagnostic group of M54 (ICD10) and lasting work disability for 123 / 64 days (mean/median). After proving prognosis, motivation and faculty of German language 386 (80%) patients received an assessment.

The data of 150 patients – 34,7 % male and 47,9 years old -, who had responded to the follow-up questionnaire 6 months after the assessment (fig.2; tab.2) is presented here.

Patients who did not attend the programs were older, had a lower level of education and a longer sick leave.

	day-care						in-patient stay			other			all		
Treatment group	RIP1			RIP2											
Number of patients (%)	28	18,7		92	61,3		17	11,3		13	8,7		150		
Gender (% female)		68,0			68,5			47,1			61,5			100	
age (years, mean / SD)		48,1/	8,0		47,5/	8,8		45,6/	9,7		53,5/	8,8		47,9/	8,9
education (% none or primary school)		28,0			26,19			20,0			38,5			27	
period of current sickleave (days median/25%/75%)	51/	39/	71	62/	42/	101	62/	42/	101	102/	43/	260	64/	42/	114
Diagnoses (% of pts)															
M54 (number, %*)	21	14,0		61	40,7		9	6,0		9	6,0		100	66,7	
M41-48 (number, %*)	3	2,0		12	8,0		2	1,3		2	1,3		19	12,7	
M50 (number, %*)	2	1,3		2	1,3		1	0,7		0	0,0		5	3,3	
M51 (number, %*)	13	8,7		44	29,3		9	6,0		4	2,7		70	46,7	
M53 (number, %*)	4	2,7		7	4,7		3	2,0		2	1,3		16	10,7	

%* of all patients

Tab. 2: Demographic data and diagnoses in treatment groups

Tab. 5 shows the baseline situation with the percentage of patients with pain, pain-related disability and psychometrics considered as problematic in pain treatment settings.

Most patients were severely impaired by pain and pain related disability, well-being (MFHW), 83 % in grade 4 (von Korff pain severity grade), 80% in stage 2 or 3 of Mainz Pain Staging System (MPSS) but fewer impaired in anxiety and depression (HADS) or life quality (SF12).

Treatment group		day-care RIP1		day-care Rip2		in-patient stay		other		all	
		n	%	n	%	n	%	n	%	n	%
Pain intensity … in the mean in past 4 weeks	> 4	21	77,8	75	89,3	12	92,3	10	83,3	118	86,8
mean pain related disability in past 3 months	> 4	21	77,8	81	95,3	13	100,0	11	91,7	126	92,0
Pain related disability on …days in past 3 months	> 42 days	15	55,6	74	82,2	15	88,2	8	66,7	112	76,7
Pain duration	> 6 months	22	81,5	60	71,4	11	84,6	10	83,3	103	75,7
MFHW wellbeing	< 10	16	59,3	66	80,5	9	69,2	9	75,0	100	74,6
HADS anxiety	> 11	8	29,6	32	38,6	7	58,3	8	66,7	55	41,0
HADS depression	> 11	7	25,9	30	36,1	4	30,8	8	80,0	49	36,8
SF12 physical component summary	< 29	10	37,0	49	57,6	6	46,2	8	66,7	73	53,3
SF12 mental component summary	< 44	11	40,7	37	43,5	9	69,2	8	66,7	65	47,4
Stage of chronification (MPSS Gerbershagen)	stage 2-3	18	75	58	75,3	13	100	10	100	99	79,8
Chronic pain Grade (von Korff)	grade 4	18	66,7	79	87,8	13	76,5	11,0	91,7	121	82,9

Tab. 5: Problematic values of pain, pain related disability psychometric data in treatment groups (n=150)

Treatment options were followed but results still differed between treatment groups after risk-adaptive intensity of treatment (tab.4). While pain clinic patients showed the worst baseline values of all criteria, pain and wellbeing improved in all patients significantly, but the most in the day-care pain management groups. Even long-term disabled patients went back to work again.

	day-care								in-patient stay				other				all			
Treatment group	RIP1				RIP2															
Number of patients	28				92				17				13				150			
	vor		nach		vor		nach		vor		nach		vor		nach		vor		nach	
	x	SD	x	SD	x	SD	x	SD	x	SD	x	SD	x	SD	x	SD	x	SD	x	SD
Pain intensity right now	5,0	1,8	2,7	2,1	5,6	1,9	3,8	2,9	6,8	1,5	6,0	2,3	6,2	2,3	5,3	2,7	5,6	1,9	4,0	2,8
…in the mean in past 4 weeks	6,2	2,0	3,7	2,2	6,5	1,7	4,6	2,4	7,0	1,8	6,2	2,0	6,6	1,8	5,8	2,6	6,5	1,8	4,7	2,4
…most severe in past 4 weeks	8,2	1,4	5,1	2,8	8,2	1,4	6,5	2,5	8,6	1,4	7,6	2,2	7,8	1,8	7,3	2,7	8,2	1,4	6,4	2,6
Pain related disability	47,2	29,6	4,2	5,6	67,6	24,8	22,2	30,1	73,3	22,2	46,4	39,3	67,5	29,0	32,0	40,9	64,5	26,9	21,4	30,5
…everyday in past 3 months	5,0	2,8	1,7	2,1	7,0	1,9	3,5	2,8	6,6	2,4	5,1	2,8	7,1	2,5	5,8	3,7	6,6	2,3	3,6	3,0
…at leisure time in past 3 months	6,7	2,8	2,2	2,4	7,7	1,8	4,1	3,1	8,3	1,4	5,7	2,9	7,3	2,7	6,0	3,6	7,5	2,1	4,1	3,2
…at work in past 3 months	7,3	3,1	2,0	2,0	8,7	1,7	4,3	3,2	8,9	1,4	6,1	3,0	7,9	3,0	6,5	3,7	8,4	2,2	4,2	3,3
MFHW wellbeing	10,1	9,1	22,6	10,7	5,8	4,8	19,3	9,6	6,6	5,6	12,8	8,4	4,7	5,5	6,3	8,3	6,6	6,2	18,1	10,5
HADS anxiety	8,0	4,6	6,5	5,7	8,8	4,8	7,6	4,6	11,4	3,8	10,6	5,1	11,5	5,5	12,4	5,1	9,1	4,8	8,2	5,2
HADS depression	8,1	4,9	5,7	5,5	8,9	4,5	6,5	4,3	10,2	3,6	10,1	5,1	13,0	5,6	13,4	5,3	9,2	4,7	7,4	5,2
SF12 physical component summary	31,7	7,2	44,5	8,1	27,7	6,3	38,9	10,9	26,9	5,4	30,8	8,1	28,9	7,2	31,5	9,8	28,5	6,6	38,4	10,8
SF12 mental component summary	47,7	10,7	44,8	9,9	46,7	9,5	46,2	8,4	42,4	8,7	41,8	8,1	40,1	8,7	39,1	7,8	45,9	9,8	44,8	8,8

Tabelle 4: Result: Pain, pain related disability and psychometric data prior to assessment and 6 months after in treatment groups (n=150)

Patients were selected, who were mainly more than the aimed at 6 weeks off-work.

Comparison with published studies

There is no comparator group in this concept. Although patients from Berlin, the largest city in Germany, and Brandenburg, the backdrop countryside next to it, might already differ, we initiated an intra DAK comparison with the region of Hamburg expecting a similar patient population. Vielleicht kommt da noch etwas, was wir in die Graphik einbauen können.

An external comparison is available by published studies, which address a similar patient population (fig. 4).

1 Anema 2004: 3-4 mo sick leave, 54% still off work with, 62% without adaptation of workplace after 200 days

2 Haldorsen 2002: 8 weeks sick leave, back to work with good prognosis (rhombs) and bad prognosis (square)
3 Hagen 2003: 8-12 weeks sick leave, still off work 32% with information, 44% without after 12 months
Patients with long term sick leave should attend an assessment and risk adapted intensive everyday program containing medical information, psychological and physiotherapeutic exercise in the group and in individual sessions as needed.

This graph represents a larger population of 310 DAK members, who were selected by case managers with sick leave because of back pain and were ongoing controlled for their sick leave data due to all reasons. Time to back-to-work was listed and used as censors for the Kaplan-Meier-regression. Data of studies read from the published papers were introduced into the graph. They addressed similar patients, but used different interventions, mainly less intensive, and watched longer periods.

In spite of this bad start and bad prognosis, programs succeeded in 5 main areas of target criteria. There are ongoing discussion about the small "other" group with their bad prognosis, but no option to attend programs (fig.5).

Conclusions:

Patient selection was supposed to aim at patients with 6 weeks sick leave. But the largest group of patients was between 7 weeks and 6 months on sick leave. This made the most intensive day care program (RIP2) the largest group of the treatment options.
The concept starting with the selection of patients by health fund, followed by interdisciplinary assessment and severity adapted treatment suggestion resulted in significant pain and functional improvement in disabled back pain patients.
"Other" patients not able to attend the programs showed the worst outcome, but this was a small group.

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