

# Inpatient rehabilitation - A systematic Pub Med review

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## Abstract

rehabilitation aims at an improvement of function, capacity and participation<sup>1</sup>. Outpatient and inpatient programs are available worldwide for the rehabilitation of patients with impairments or disabilities in various medical field. Aim of this paper is to find evidence for inpatient rehabilitation independent of the speciality, because there are certain claims of the German pension scheme trying to influence and determine content and quality management of inpatient rehabilitation. Two papers were found when searching for prospective controlled studies, none were found searching for a RCT. The two papers found were reviews citing one prospective controlled study on scoliosis rehabilitation. At least one randomized controlled study has been found in a hand search, however this was a pre- / post design, not containing any data about mid- or long-term effects. The following conclusions can be drawn:- Actually there is no evidence for inpatient rehabilitation in terms of health related issues. To gain the psychological effects striven for in rare conditions like in scoliosis, a two weeks rehabilitation program (or even less) can be considered as being sufficient. - Generally, inpatient rehabilitation does not seem to justify the high costs when there is no evidence for beneficial long-term outcomes.- The Quality management programs of the German pension scheme are not based on evidence and therefore are not justified.- Inpatient rehabilitation, if at all necessary, should be allocated to the health care insurances instead of the pension scheme, in order to avoid cost intensive double treatments.

## INTRODUCTION

Medical rehabilitation aims at an improvement of function, capacity and participation<sup>1</sup>. Outpatient and inpatient programs are available worldwide for the rehabilitation of patients with impairments or disabilities in various medical field. Especially in Germany there is a long history of inpatient rehabilitation for various diseases. The German Pension Insurance scheme has introduced a comprehensive practice guidelines programme for the development of process guidelines for inpatient rehabilitation. However outcome studies in this field are very rare, which would justify the costs of such treatment. Aim of this study is to find evidence for the application of inpatient rehabilitation programs.

In the era of evidence based medicine, the usefulness, necessity and efficiency of inpatient rehabilitation has to be proven as every other mode of treatment. For the German system of inpatient rehabilitation of chronic back pain available evidence is not conclusive, due to a lack of randomised controlled studies. The prevailing design of observational cohort studies has severe limitations in proving a causal relationship between outcomes and intervention<sup>2</sup>.

The small size of medium term effects of inpatient rehabilitation indicates a basic problem of inpatient rehabilitation for chronic back pain in Germany. This becomes even greater when the results of international controlled studies are used as reference. Possible reasons for the disappointing situation are weak methodology, inappropriate selection of patients and weak intervention. At present, as pointed out by Hüppe and Raspe<sup>3</sup> we have no convincing evidence for a general effectiveness of Germany's system of inpatient rehabilitation for chronic back pain.

There are other papers accepted in Pub Med listed journals, however these do not provide evidence for rehabilitation, but promote the assumptions of the senior staff members of the German Pension Insurance scheme<sup>4</sup>:

„Most of the patients treated have been suffering from chronic illness for many years and have developed psychological complaints besides their serious somatic symptoms and impairments. Here, rehabilitation takes on a fundamental assignment in the care of chronically ill patients. The projects carried out under the promotional focus highlight concrete perspectives for evidence based enhancement of medical rehabilitation. This, amongst others,

also holds true for the positive experience with treatment modules within specific vocational training and with patient education. Some of the insights gained are already being realized. As a current task of development, the findings point to further improving the sustainability of rehabilitation's positive impact particularly in chronic low back pain. Pertinent conceptual approaches can be derived from the projects presented."

Until now there is no clear consensus about the aim of rehabilitation in Germany.

This is reflected in a paper by Meyer et al <sup>5</sup> who have drawn the following conclusion: „The significance of individual goal-setting as the “essence of rehabilitation” is not reflected in present-state rehabilitation in Germany. Starting points for change are found on different levels: patients, staff, development of organisational mission statements within the clinics, but also in changing organisational processes that appear to be dominated by economic directives.”

Mau <sup>6</sup> states that despite the lack of randomised controlled studies, which are frequently difficult to perform in the field of rehabilitation under the conditions of the German legislation and health care system, the studies discussed in his article, provide numerous useful data regarding the effects and cost-effectiveness of medical rehabilitation. Usually simple follow-up studies however are not regarded as to provide evidence enough to draw such conclusions.

There are numerous papers providing evidence that outpatient rehabilitation is as effective as inpatient rehabilitation <sup>7-14</sup>. An outpatient cancer rehabilitation program may be an effective alternative treatment to inpatient programs for specific groups of patients <sup>7</sup>.

There are no indications of poorer care quality in outpatient rehabilitation of orthopedic patients, while economic analyses show better cost effectiveness in outpatient treatment by comparability of treatment, patients, and results <sup>9</sup>. The results of the latter study suggest that outpatient care, offered in the same quality as in the examined rehabilitation centres, is an alternative or complement to inpatient care at least for those patients, who can be treated in both the outpatient and inpatient setting <sup>9</sup>. Also different cardiac rehabilitation programs (in- and outpatient) can be regarded as comparable concerning effectiveness and costs following rehabilitation <sup>10</sup>.

In a prospective longitudinal study <sup>11</sup>, stroke patients with largely intact ADL-functions who were treated in a

rehabilitation center were assessed at the beginning and end of rehabilitation treatment and 6 months afterwards. They were treated as outpatients, if they expressed a preference for this setting and if outpatient rehabilitation was logistically and geographically possible, otherwise as inpatients. The authors found medium- to large-size gains for physical and ADL function and associated quality-of-life dimensions (WHOQOL-BREF, SF-36). However, there were also losses in other aspects of quality of life, e. g. in the social domain. There were no differences with respect to type of setting. Patients' setting preferences influenced the development of perception of own health. There was only a small and insignificant influence of satisfaction with rehabilitation treatment <sup>11</sup>.

An article by Klingelhöfer and Lätsch <sup>12</sup> outlines the findings of a project comparing the economic effects of outpatient and inpatient rehabilitation in Mecklenburg-Vorpommern. The study statistically covers the total population of applicants for orthopaedic-traumatologic rehabilitation who are suitable for outpatient rehabilitation. As a randomised and controlled study, it compares outcome parameters of the two variants of rehabilitation. Because the results are approximately equal, analysing the differences between amounts and periods of payments and costs for the pension insurance agency do not result in disadvantages for the patients. The results obtained from the investigation confirm that, in suitable patients, outpatient rehabilitation can achieve approximately the same outcomes as inpatient rehabilitation - but at distinctly lower cost <sup>12</sup>.

No clear-cut differences between in- and outpatient modes of rehabilitation were detected in a study with patients suffering from rheumatoid arthritis (RA) <sup>14</sup>. Both modes showed improvement in different assessment parameters; patients with higher education and, therefore, with a less joint-disturbing work profile appeared to profit more from an extensive inpatient rehabilitation program. Patients with less education and a more manually-oriented working profile, did worse and had a higher tendency to seek medical pensioning, in spite of rehabilitative measures. As the total costs for outpatient rehabilitation only add up to 15.8% of the total costs for inpatient rehabilitation, this study setting cautiously suggests that outpatient rehabilitation might be an acceptable alternative to individualized patient groups that might not compromise clinical and vocational outcome. Larger patient groups are needed, however, to confirm these findings <sup>14</sup>. (Fig 1)

Also the matter of long-term effect of rehabilitation is discussed controversial. While Hüppe and Raspe<sup>3</sup> were not able to detect long-lasting effect of rehabilitation in their study, Dippelt et al.<sup>15</sup> found at least some evidence, however not in a controlled study design.

Interestingly adverse effects of inpatient rehabilitation have also been found, but there are not many investigations focussing on this topic<sup>16</sup>.

Despite of the opinion of many researchers in the field of rehabilitation<sup>6</sup>, Schlademann et al.<sup>17</sup> have shown the feasibility of a randomised controlled trial in rehabilitation-related Health Services Research. Nevertheless, the use of questionnaires<sup>18</sup> in the evaluation of rehabilitation outcomes may be questioned due to the dissonance effect, not rarely leading to false positive results<sup>19</sup>.

Aim of this paper is to find evidence for inpatient rehabilitation independent of the speciality, because there are certain claims of the German pension scheme trying to influence and determine content and quality management of inpatient rehabilitation. Studies on neurologic, pediatric, orthopedic and all other specialities like oncology have been taken into account.

## **MATERIAL AND METHODS**

Types of studies included: clinical evaluations of inpatient rehabilitation, which are prospective, controlled or randomised controlled trials. Meta analyses, due to their recognised good standard have also been included. To attempt to detect the true effects of the treatment, the control group must have consisted of patient groups with observation as the only intervention. Only studies better than level III have been taken into account, as these have been shown to be a good standard in health care research.

Search strategy for identification of the studies; Pub Med; Medline; Key words: “inpatient rehabilitation”, “prospective controlled study” / “inpatient rehabilitation”, “randomized controlled study”

## **RESULTS**

Two papers were found when searching for prospective controlled studies, none were found searching for a RCT. The two papers found were reviews citing one prospective controlled study on scoliosis rehabilitation. One paper has been found by hand search which was randomized and controlled, however did not display in the Pub Med search<sup>20</sup>.

## **DISCUSSION**

Inpatient scoliosis rehabilitation has been assessed in a prospective controlled study. However, the study published 2003 was performed with patient samples treated between 1989 and 1991 when the program lasted 6 weeks at average. Rehabilitation length has been reduced drastically since then. The results of postural changes are no more significant today and the improvement of vital capacity after inpatient rehabilitation is far from the values obtained in 1991<sup>21</sup>.

Meanwhile there is evidence that improvements of health related measures can be achieved using outpatient based rehabilitation concepts and that outpatient based programs have similar rates of surgery<sup>22,23</sup> when compared to the only inpatient concept described in literature<sup>24</sup>.

While the material in the papers on the incidence of surgery in populations treated conservatively as cited above<sup>22-24</sup> consisted of patients with curvatures of more than 30°, there is also a paper on the same topic from an Italian team with an average curve at the start of observation of less than 24° and an age of more than 13 years<sup>25</sup>. Considering the fact that the average patient from this population of mainly mediterranean girls has at least Risser 2, the calculated risk for progression is less than 40% and therefore this population would not have needed any treatment at all, especially no brace treatment<sup>26</sup>. Therefore we have not taken the latter low quality paper into consideration when comparing inpatient to outpatient treatment within this review. (Fig 2)

There is no evidence that inpatient scoliosis rehabilitation with reduced rehabilitation times (3-4 weeks) is superior to outpatient rehabilitation. Without a doubt especially in scoliosis rehabilitation the psychological effect of inpatient rehabilitation may be an important issue, but there is no evidence that with respect to health related issues actually inpatient rehabilitation with reduced treatment times is superior to outpatient based concepts as it has been earlier on (6 weeks program).

At least one randomized controlled study has been found in a hand search, however this was a pre- / post design, not containing any data about mid- or long-term effects<sup>20</sup>.

We therefore accept that the search might be incomplete. Nevertheless, if our search would not find more evidence easily, we may assume that there is not enough evidence for inpatient rehabilitation available in literature at the moment to justify the immense costs of inpatient rehabilitation born

by the community. A healthcare system run by a pension scheme, parallel to the general one can economically be regarded as outdated in view of the limited resources there are for health care in all countries and communities worldwide.

## CONCLUSIONS

Actually there is no evidence for inpatient rehabilitation in terms of health related issues. To gain the psychological effects striven for in rare conditions like in scoliosis, a two weeks rehabilitation program (or even less) can be considered as being sufficient.

Generally, inpatient rehabilitation does not seem to justify the high costs when there is no evidence for beneficial long-term outcomes.

The Quality management programs of the German pension scheme are not based on evidence and therefore are not justified.

Inpatient rehabilitation, if at all necessary, should be allocated to the health care insurances<sup>27</sup> instead of the pension scheme, in order to avoid cost intensive double treatments.

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