The effect of additional physiotherapy to hospital inpatients outside of regular business hours: a systematic review

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CRD summary
This review evaluated the effects of additional out of regular business hours physiotherapy services to hospital in-patients. The authors concluded that a significant improvement to patient outcomes for all in-patients could not be found. Evidence of beneficial effects in various branches of medicine or specific patient subgroups is limited. This conclusion reflects the evidence presented and is likely to be reliable.

Authors’ objectives
To evaluate the effect of additional out of regular business hours (OBH) physiotherapy services to hospital in-patients.

Searching
CINAHL, EMBASE, MEDLINE, AMED, PEDro, the Cochrane Library and PubMed were searched from inception to 2005; the search terms were reported. Reference lists were screened and citations of key authors were searched in order to retrieve additional studies. No language restrictions were applied but studies only available as abstracts were excluded.

Study selection
Study designs of evaluations included in the review
Randomised and quasi-randomised controlled trials, case-control studies, and prospective and historical cohort studies were eligible for inclusion. Case studies were excluded.

Specific interventions included in the review
Studies that compared additional OBH physiotherapy with physiotherapy within regular business hours (defined as Monday to Friday, 9 a.m. to 5 p.m.) were eligible for inclusion. A variety of combinations of physiotherapy techniques were evaluated in the included studies.

Participants included in the review
Studies of hospital in-patients were eligible for inclusion. Studies of patients in nursing homes were excluded. The included studies evaluated orthopaedic, neurological and surgical patients. Where reported, the mean age of the participants ranged from 26.1 to 78.9 years for controls and from 29.4 to 70.9 years for treatment arms.

Outcomes assessed in the review
There were no specific inclusion criteria relating to outcomes. The primary outcome was length of stay (LOS) in hospital, physiotherapy or unit. The secondary outcomes included pulmonary complications, discharge destination, discharge mobility status, quality of life, mortality or adverse events. In the included studies, the named outcomes were reported with the exception of quality of life, adverse events and mortality.

How were decisions on the relevance of primary studies made?
Two reviewers independently selected the studies. Any disagreements were resolved by consensus.

Assessment of study quality
Two reviewers independently assessed validity and resolved any disagreements by discussion. RCTs and quasi-randomised studies were rated using the PEDro scale, which was modified with regard to the blinding criterion. The reviewers developed a quality scale, based on recommendations made by the Centre for Reviews and Dissemination, to assess the validity of case-control and cohort studies.
Data extraction
One reviewer extracted the data and a second reviewer checked the extraction. The outcomes from individual studies were extracted as a significant increase, decrease or not significant.

Methods of synthesis
How were the studies combined?
The studies were grouped according to outcomes and primarily combined in a narrative. Additional descriptive information was tabulated. Some data for LOS were combined in a meta-analysis, using a fixed-effect model, to produce a weighted mean difference (WMD) and 95% confidence intervals (CIs).

How were differences between studies investigated?
Differences between the studies were discussed in the text with reference to various aspects of study characteristics and validity. Pooled LOS data were displayed graphically using a forest plot. However, no statistical assessment of differences between the pooled studies was reported.

Results of the review
Nine studies (n=2,013) were included: 3 RCTs (n=732), 2 quasi-randomised controlled studies (n= 277), 3 historical cohort studies (n=990) and 1 case-control study (n=14).

Out of a possible 9 points for quality, 3 studies scored 9, one scored 8, three scored 5, one scored 4 and one scored 3. LOS.

Four trials showed a statistically significant reduction in LOS associated with additional OBH physiotherapy. Studies reported significant reductions in LOS in patients undergoing elective joint arthroplasty, patients with pelvis/spine trauma and non-surgical neurological patients.

There were no significant decreases in hospital stay for patients with ankle/foot trauma, or stroke, rheumatology or cardiac patients. The overall WMD for LOS was -0.15 days (95% CI: -0.37, 0.07).

Pulmonary complications. Two studies reported a statistically significant reduction in pulmonary complications for patients in an intensive care unit.

Discharge destination and/or discharge mobility status.

Three studies considered the effect on discharge destination and/or discharge mobility status and found no significant difference.

Cost information
Costs were considered in 3 studies. Of these, two reported a cost-saving through additional OBH physiotherapy.

Authors' conclusions
The provision of additional OBH physiotherapy could not be shown to make a significant improvement in patient outcomes for all in-patients.

CRD commentary
This review addressed a clear question defined in terms of the participants, intervention and study design. Several relevant sources were searched, thus reducing the potential of publication bias, although this was not investigated. No language restrictions were applied, which reduces the potential for language bias. Methods used to reduce the potential for error and bias during the study selection, data extraction and quality assessment processes were described and appear appropriate. Sufficient details of the included studies were presented and limitations of the available evidence
were discussed. In view of the small number of clinically diverse included studies, it was appropriate to synthesise the results in a narrative way. The meta-analysis of LOS might not have been appropriate given the considerable clinical heterogeneity present between the studies. Apart from this issue, the authors' conclusions appear to correctly reflect the evidence presented, and are likely to be reliable.

**Implications of the review for practice and research**

**Practice:** The authors did not state any implications for practice.

**Research:** The authors stated that future trials need to ensure factors such as random allocation, baseline comparability, blinding and proven interventions are incorporated in the study design.

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