Effectiveness of pharmacist-led medication review in chronic pain management: systematic review and meta-analysis
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CRD summary
This review concluded that pharmacist-led medication review reduced pain intensity and improved physical functioning and patient satisfaction in patients with chronic pain but the authors cautioned that the clinical significance of these findings remained uncertain due to the small effect sizes observed. Overall this was a well-conducted systematic review and the authors' conclusions are likely to be reliable.

Authors' objectives
To assess the effectiveness of pharmacist-led medication review in chronic pain management.

Searching
MEDLINE, EMBASE, PsycINFO, CINAHL, Cochrane CENTRAL and IPA were searched to June 2012 for studies published in English. Reference lists of retrieved articles and relevant websites were searched. Corresponding authors of identified studies were contacted in an attempt to identify unpublished studies.

Study selection
Randomised controlled trials (RCTs) that investigated pharmacist-led medication review (delivered either independently or as part of a multi-component intervention) in adult patients with chronic pain were eligible for inclusion. Studies of patients with cancer pain were excluded. The authors searched for non-randomised controlled trials, which were to be included if fewer than three relevant RCTs were identified.

The included trials were conducted in UK, Germany, Canada and USA. The trials included patients with osteoarthritic knee pain, chronic headache and migraine, or mixed aetiologies. Where reported, the average ages of participants ranged from 42 to 67 years and most participants were female. The intervention was delivered independently in most trials; in others it was part of a multi-component intervention. Interventions were delivered in settings that included community pharmacies, general practices and a university pain clinic. All trials assessed pain intensity (different scales were used).

Two authors independently screened studies for inclusion. Disagreements were resolved through discussion or consultation with a third reviewer.

Assessment of study quality
One reviewer assessed study quality using the Cochrane risk of bias tool, which was verified by a second reviewer. Disagreements were resolved through discussion or consultation with a third reviewer.

Data extraction
One reviewer extracted data using a standardised data collection form which was verified by a second reviewer. Disagreements were resolved through discussion or consultation with a third reviewer. Relative risks with 95% confidence intervals were extracted for dichotomous data. Mean differences with 95% confidence intervals were extracted for continuous data (such as pain intensity).

Methods of synthesis
The included studies measured the same outcomes but used different scales so standardised mean differences and 95% confidence intervals were pooled.

Clinical heterogeneity was determined by discussion among the reviewers; clinically heterogeneous RCTs were not combined using meta-analysis. Statistical heterogeneity was assessed using the X² test and I² statistic. A X² P value of greater than 0.1 and an I² value of less than 50% was used to indicate statistical homogeneity. Studies that were clinically and statistically homogeneous were combined using a fixed-effect model; studies that were clinically
Results of the review
There were five RCTs (1,035 participants) including two cluster RCTs. Follow-up ranged from three to 12 months. Adequate methods of randomisation were used in three RCTs, one RCT described an adequate method of allocation concealment and two RCTs had blinded outcome assessment.

At three months there was a statistically significant reduction in pain intensity for patients who received pharmacist-led medication review compared with the control group (SMD -0.37, 95% CI -0.58 to -0.16; three RCTs; I²=0%) corresponding to a 0.83 point (95% CI -1.28 to -0.36) reduction on an 11-point numerical rating scale. The difference in pain intensity between groups was still statistically significant at six months (SMD -0.31, 95% CI -0.53 to -0.09; two RCTs; I²=39%) corresponding to a 0.7 point (-1.19 to -0.20) reduction on an 11-point numerical rating scale.

There was a statistically significant improvement in physical functioning for patients who received pharmacist-led medication review, compared with the control group, at three months (SMD -0.38, 95% CI -0.58 to -0.18; three RCTs; I²=0%) and six months (SMD -0.30, 95% CI -0.51 to -0.09; two RCTs; I²=33%) corresponding to a 4.84 point and 3.82 point reduction on a 69-point function subscale.

Patient satisfaction was significantly greater in the pharmacist-led medication review group than the control group (SMD -0.39, 95% CI -0.68 to -0.10; two RCTs).

Quality of life data could not be pooled and results of individual studies were inconsistent.

Authors' conclusions
Pharmacist-led medication review reduces pain intensity and improves physical functioning and patient satisfaction. However, owing to the nature of the data and small effect sizes observed, the clinical significance of these findings remains uncertain.

CRD commentary
The review question was clear. The authors searched a range of relevant sources for eligible studies but only included studies published in English and did not attempt to identify unpublished studies; the authors acknowledged potential for language and publication biases in their review. The authors assessed study quality using appropriate criteria. Appropriate methods to reduce potential for reviewer bias and error were used during study selection, data extraction and quality assessment.

Only three studies were included in the meta-analyses (due to clinical heterogeneity and insufficient data reporting) but the meta-analysis appeared appropriate and there was no significant statistical heterogeneity. The authors discussed the clinical significance of the results, the studies' reporting of average pain scores rather than proportion of patients responding to treatment and that the medication review was part of a multi-component intervention in three RCTs and might not have been the active ingredient.

Overall this was a well-conducted systematic review and the authors' conclusions are likely to be reliable.

Implications of the review for practice and research
**Practice:** The authors stated that issues related to delivery of the intervention (such as intensity, frequency and length of the service) needed consideration before a wider role for pharmacists in chronic pain management could be put into practice. Specialised education and training in pain management for pharmacists was required in order to achieve maximum clinical benefit.

**Research:** The authors stated that further research was required to evaluate the optimum and most cost-effective method and duration of delivery of the intervention to achieve maximum clinical benefit. The quality of reporting of such trials required improvement. Researchers should adhere to Initiative on Methods, Measurement and Pain Assessment in Clinical Trials (IMMPACT) guidance in designing, conducting and reporting their findings. This review did not include studies of patients with cancer pain so pharmacist-led medication review should be evaluated in patients with cancer pain.
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