Effect of drug reminder packaging on medication adherence: a systematic review revealing research gaps

Boeni F, Spinatsch E, Suter K, Hersberger K, Arnet I

CRD summary

The authors of this review could not draw firm conclusions on the effect of drug reminder packaging on adherence to medication due to incomplete information and lack of quality across the included studies. There were some limitations in the conduct of the review but this finding appears to be reliable and the recommendations for future better primary research seem appropriate.

Authors' objectives

To assess the effect of drug reminder packaging on medication adherence

Searching

PubMed, EMBASE, CINAHL and PsycINFO were searched up to September 2013 for studies published in English or German. Search terms were presented. References of retrieved articles were checked.

Study selection

Eligible studies were prospective controlled trials with at least one outcome related to adherence. Eligible interventions were drug reminder packaging for patients taking one or more oral medicines (prescribed or over the counter) without the help of a health care professional. This included reusable multi-component adherence aids, non-reusable multidrug punch cards and non-reusable unit-of-use packaging. Trials were excluded if they took place in developing countries (unspecified) or if they used drug reminder packaging with incorporated electronic features.

Participants ranged from 38 to 87 years old and (where described) took from one to nine medications. Various mostly chronic conditions were included. Study durations ranged from seven days to 14 months (where described). Most studies presented clinical outcomes with a small number presenting economic, humanistic measures or safety issues. Half of the studies used pill count to assess outcomes and other methods included patient self report, refill data, therapeutic drug monitoring, appointment keeping and clinical measures.

Two reviewers were selected studies independently for the review and consensus was reached by discussion.

Assessment of study quality

Studies were assessed for methodological quality using an adapted version of the Effective Public Health Practice Project (EPHPP) tool. This involved assessing components for selection bias, study design, confounders, data collection method for adherence, withdrawals and dropouts, intervention integrity and analysis. Studies were classified as weak, moderate or strong.

Quality was assessed by two reviewers independently and consensus achieved through discussion.

Data extraction

Any measure estimating taking adherence was extracted as an adherence outcome. Studies were assessed for completeness of information and scored between 0 (no item on completeness of information available) to 1 (all items on completeness of information available).

It was unclear whether more than one reviewer was involved in extracting data from studies included in the review.

Methods of synthesis

The Economic, Clinical and Humanistic Outcomes (ECHO) model was used to classify study outcomes. The authors conducted a narrative synthesis of the included studies, accompanied by tables.

Results of the review

Thirty studies were included in the review (5,737 participants, range 14 to 2,081). There were 10 randomised controlled trials (RCTs), 19 controlled clinical trials and one observational study with no control group. Five studies were rated as strong, 12 as moderate and 13 weak. Main weaknesses related to data collection, reporting of confounders and group comparisons.

A significant effect of drug reminder packaging was reported in 17 studies and related to at least one of the measured adherence outcomes. Twelve studies reported significant adherence improvement when drug reminder packaging was part of a multiple intervention strategy. Six of 10 studies found significantly improved clinical outcomes with multiple adherence-enhancing strategies in the intervention group. Nine studies reported a significant effect when drug reminder packaging was a single intervention but effects were less pronounced than with multiple interventions.

Further results on humanistic outcomes, safety issues and economic outcomes were reported.

Authors' conclusions

Although several studies found significant results for adherence and clinical outcomes, no firm conclusions could be drawn on the effect of drug reminder packaging due to incomplete information and lack of quality across the included studies.

CRD commentary

This review was based on defined inclusion criteria and was based on a search of a range of databases. The restriction to studies reported in English and German may have led to studies being missed. The authors did not report searching for unpublished studies so the risk of publication bias could not be ruled out. Quality was assessed using an appropriate tool and completeness of information was considered. Study selection and quality assessment were performed by two reviewers which helps to minimise the possibility of bias and error; it appeared that data extraction was conducted by one reviewer.

A narrative synthesis appeared to be appropriate given the diversity of the studies. There were some limitations in the conduct of the review but the overall conclusions appear to be reliable and recommendations for future better primary research seem appropriate.

Implications of the review for practice and research

Practice: The authors stated that drug reminder packaging should be distributed according to patient needs, requests and abilities.

Research: The authors recommended development of methodologically sound studies that report complete information to clarify the effect of drug reminder packaging on medication adherence. They identified gaps in the evidence base including the need to explore alternatives to conventional randomised study designs, to consider patient-relevant disease-unspecific long-term clinical outcomes such as hospitalisation and to assess economic outcomes, humanistic outcomes and issues of safety.

Funding

Pharmaceutical Care Research Group, Basel, Switzerland.

Bibliographic details

Boeni F, Spinatsch E, Suter K, Hersberger K, Arnet I. Effect of drug reminder packaging on medication adherence: a systematic review revealing research gaps. Systematic Reviews 2014; 3: 29

PubMedID

24661495

DOI

10.1186/2046-4053-3-29

Original Paper URL

http://www.systematicreviewsjournal.com/content/3/1/29/abstract

Indexing Status
Subject indexing assigned by NLM

MeSH
Drug Packaging /methods; Humans; Medication Adherence /psychology /statistics & numerical data; Reminder Systems

AccessionNumber
12014023435

Date bibliographic record published
08/04/2014

Date abstract record published
23/04/2014

Record Status
This is a critical abstract of a systematic review that meets the criteria for inclusion on DARE. Each critical abstract contains a brief summary of the review methods, results and conclusions followed by a detailed critical assessment on the reliability of the review and the conclusions drawn.