Complex interventions to improve the health of people with limited literacy: a systematic review

Clement S, Ibrahim S, Crichton N, Wolf M, Rowlands G

CRD summary
This generally well-conducted review evaluated published literature on the effects of interventions on the health-related outcomes of people with limited literacy or numeracy. The outcomes most likely to improve were those related to health knowledge and self-efficacy. The authors' conclusions seem reliable based on the evidence presented.

Authors' objectives
To evaluate the published literature on the effects of complex interventions on the health-related outcomes of people with limited literacy or numeracy.

Searching
Eight appropriate electronic databases were searched from inception to March and April 2007. There were no language restrictions. Search terms were reported. Reference lists of retrieved articles and other relevant reviews were searched for additional studies. Experts in the field were contacted to identify further published studies.

Study selection
Published randomised or quasi-randomised controlled trials of adults that evaluated complex interventions intended to improve health outcomes for people with limited literacy or numeracy were eligible for inclusion. Studies had to measure at least one of the following outcomes: clinical (health or psychological); health knowledge; health behaviours; self-reported health status/quality of life; self-efficacy/confidence in relation to health/health behaviour; utilisation of health care; and health professional behaviour.

Participants in the eligible studies included those with mixed and limited literacy/numeracy. Interventions were conducted in out-patient settings, community settings, a maternity unit and a hospital pharmacy. Most interventions were health education and related to condition management. Most interventions included between one and 17 contacts. The interventions were compared to any active or inactive control. Controls included usual care, waiting list, alternate complex intervention and attention control or minimal intervention. Health issues studied included newborn hearing screening, hypertension, heart failure, colorectal cancer screening, nutrition education for cancer and cardiovascular disease, medication adherence and understanding, diabetes management, HIV (human immunodeficiency virus) medication and knowledge, and depression. Most studies measured reading rather than literacy; where literacy assessments were undertaken, different measurement tools were used. Most studies were conducted in USA.

Two reviewers independently assessed the studies for inclusion. Discrepancies were resolved through discussion and referral to a third reviewer if necessary.

Assessment of study quality
Two reviewers independently assessed methodological quality using the Delphi list modified to include criteria from the CONSORT statement for evaluations of a priori sample size calculations and participant flow diagrams. Assessment criteria included randomisation, treatment allocation, comparability at baseline, blinding of outcome assessors, intention-to-treat analysis and sample size calculations.

Data extraction
Data were extracted as reported at the final follow-up points in the included trials. The primary outcomes were those defined by the authors of each study.

Two reviewers extracted data independently. Any differences were resolved by discussion and arbitration with two additional reviewers. Statistical issues were resolved by a statistician.
Methods of synthesis
Because of clinical heterogeneity in the included trials of outcome measures and follow-up, the outcome data were analysed qualitatively in a narrative review. The results were tabulated and supported by data in the text. The authors assessed the relationship between the primary outcome and quality (a score of 6 or more on the Delphi scale compared to a score of 3 or less) and study design (randomised compared to quasi-randomised).

Results of the review
Fifteen trials (n=5,321) were included in the review: 11 RCTs and four quasi-randomised trials. Five trials that met six or more of the nine quality criteria were considered high-quality studies; five studies that met five criteria or less were considered low-quality studies. Follow-up ranged from immediate one-contact follow-up to multiple contacts over 18 months for which data were available (although the authors stated in the text that follow-up was up to 10.5 months).

For the total populations studied (including mixed literacy groups) statistically significant differences were observed at follow-up in favour of the intervention in 13 of 15 trials. Four trials reported statistically significant gains in health knowledge and recognition of terms. Six trials reported improvements in health-related self-efficacy, which in some cases were reflected in changes in blood test results and medication use.

Four trials analysed subgroups that included participants stratified by literacy level, but none were sufficiently powered to detect differences in subgroups. These findings were reported in the review.

There was no evidence of a relationship between the primary outcome and quality or study design.

Authors' conclusions
A variety of interventions for adults with limited literacy can be beneficial in improving some health outcomes. Knowledge and self-efficacy were the classes of outcome most likely to improve.

CRD commentary
The review addressed a question that was broad in scope. Criteria for including studies in the review were stipulated. The search was comprehensive and designed to minimise language bias. Only published studies were included, so relevant studies may have been missed and publication bias could not be ruled out. Steps were taken to minimise reviewer bias and errors in all parts of the review process. Validity was assessed using a quality scoring system. The authors' decision not to pool the studies in a meta-analysis was justified given the apparent differences between the studies. None of the studies that compared limited literacy participants were sufficiently powered to detect differences in subgroups defined by literacy or numeracy level, so the results of the subgroup analyses should be interpreted with some caution (acknowledged by the authors). It was not possible to identify which element of the complex interventions was most effective in improving health outcomes. This was generally a well-conducted review, although publication bias could not be ruled out. As most studies were conducted in USA, the results may not be applicable to other populations.

Implications of the review for practice and research
Practice: The authors stated that the results of this review supported wider initiation of interventions with limited literacy, especially within an evaluative context.

Research: More research was needed on components of interventions that were most effective for improved health outcomes and studies that measured clinical, quality of life and cost outcomes. Research that used longer durations of follow-up was also required. There was limited evidence on interventions that targeted health professionals and their ability to deliver care optimally to patients with limited literacy. The evidence base was predominantly of studies from North America; there was a need for research to be undertaken in a wider variety of contexts.

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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.