Effectiveness of interventions to increase Papanicolaou smear use
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CRD summary
This poorly reported review assessed the effectiveness of interventions to increase Papanicolaou (Pap) smear use. The authors' concluded that most of the interventions strategies assessed increased Pap smear use, although there was much variability in their effectiveness. The review has a number of methodological limitations and the authors’ conclusions appear more positive than the results presented in the review support.

Authors' objectives
To provide information on the effectiveness of controlled interventions to increase Papanicolaou (Pap) smear use.

Searching
MEDLINE was searched for articles published in English from 1980 to April 2001; the search terms were reported. In addition, reference lists and published reviews of interventions were examined. Handsearches of the journals 'Preventive Medicine' and the 'American Journal of Preventive Medicine' were also conducted (from 1999 to April 2001).

Study selection
Study designs of evaluations included in the review
Studies with random or concurrent assignment of the participants to the intervention or control groups, as well as prospective follow-up, were eligible for inclusion. Pre-test post-test designs without control groups were excluded from the review. The majority of the studies followed up the participants for at least 12 months, although the range of follow-up began at less than 3 months.

Specific interventions included in the review
Studies examining interventions to increase Pap smear use were eligible for inclusion; those designed to improve follow-up after abnormal smears were excluded. The included studies employed behavioural, cognitive, sociologic, or combined approach interventions. The behavioural strategies included: written, telephone or mass-media reminders; health diaries; checklists; patient-carried prompts; and financial incentives. The cognitive strategies included: individualised, group or mass-media education; audit with feedback; or counselling. The sociologic strategies employed peer or lay health workers, or video presentations. The control groups received modified interventions (active control) or usual care.

Participants included in the review
Studies based in the USA were eligible for inclusion. The included studies targeted patients, physicians, patients and physicians, or health care systems. The majority of the studies examined the rates of screening in women in the 40- to 49-year and 50- to 59-year age groups; women aged less than 40 years and over 60 years were also assessed.

Outcomes assessed in the review
Studies detailing the receipt or recommendation of a Pap smear were eligible for inclusion. The included studies assessed the uptake or recommendation of screening by self-report, chart audit, claims or electronic record.

How were decisions on the relevance of primary studies made?
The authors did not state how the papers were selected for the review, or how many reviewers performed the selection.

Assessment of study quality
The authors did not state that they assessed validity.
Data extraction
The authors did not state how the data were extracted for the review, or how many reviewers performed the data extraction.

Effect sizes and 95% confidence intervals (CIs) were calculated for each intervention. Effectiveness was expressed as the difference in uptake between treatment groups for randomised studies, and as the difference in uptake pre and post intervention between treatment groups for concurrently controlled studies. Compliance with recommended screening frequency was determined by the proportion of women screened. Information on the intervention strategy, target and content, outcome measurement, and patient population was also recorded.

Methods of synthesis
How were the studies combined?
The primary studies were combined narratively according to the target and strategy of the intervention.

How were differences between studies investigated?
Within intervention categories, graphical representations of effects sizes and 95% CIs for each intervention were inspected for signs of heterogeneity.

Results of the review
Forty-six studies, reporting 63 separate interventions, were included in the review (the total number of participants was not reported). Of these, 31 were randomised controlled trials.

Patient-targeted interventions (24 studies).
Most behavioural interventions increased Pap smear use compared with usual care or active controls. Cognitive, combined cognitive and behavioural, or sociological interventions were generally not effective. Two comprehensive interventions combining behavioural, cognitive and sociologic elements reported large effect sizes of 36.0 (95% CI: 25.1, 46.9) and 18.0 (95% CI: 7.6, 28.4), respectively.

Provider-targeted interventions (25 studies).
The results of the behavioural interventions showed considerable heterogeneity, with effect sizes ranging from an 18% decrease (95% CI: -29.2, -6.8) to a 44% increase (95% CI: 28.2, 59.8) in Pap smear use.

Amongst the cognitive interventions, slight increases in uptake were seen but these were statistically significant in only one study. The combined cognitive and behavioural interventions reported variable results.

Patient- and provider-targeted interventions (12 studies).
These interventions did not appear to be any more effective than interventions targeted to either patients or providers alone.

Health system interventions (2 studies).
One intervention involved the integration of a nurse practitioner and same-day screening. This led to a 32.7% (95% CI: 20.5, 44.9) increase in Pap smear use.

Authors' conclusions
Overall, most interventions increased Pap smear use, although there was tremendous variability in their effectiveness.

CRD commentary
The research question was well reported but it was unclear whether subsequent inclusion criteria were determined a
priori. The search for primary studies was limited to articles published in English, identified from a single electronic database, plus reference checking and limited handsearching. Thus, the review may have missed references and been affected by publication and/or language bias. The authors did not report any attempts made in the review process to minimise bias, nor did they report any systematic assessment of validity. Poor-quality studies may potentially bias the results of this review.

The characteristics of the included studies were poorly presented. The authors made no attempt to differentiate between randomised and non-randomised studies. The studies were synthesised in narrative form across multiple measures of Pap smear use without distinction. The investigation of heterogeneity was limited: notable sources of heterogeneity related to study design, outcome measurement, or patient population may have been overlooked. The results of this review are potentially subject to numerous biases and highlight a need for further research, rather than offering pragmatic and conclusive recommendations on screening strategies. The authors’ conclusions appear more positive than the results presented in the review support. Overall, the review synthesis is difficult to interpret due to the inclusion of diverse interventions and comparators.

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

**Practice:** The authors stated that the selection of intervention strategies will depend on the provider and patient population characteristics and the feasibility of implementation.

**Research:** The authors highlighted the need to explore differences in intervention effectiveness, as well as any differential impact of underlying barriers to screening between types of screening tests.

**Bibliographic details**


**PubMedID**

12755245

**Original Paper URL**

http://www.jabfp.org/cgi/content/full/16/3/188

**Indexing Status**

Subject indexing assigned by NLM

**MeSH**

Female; Humans; Papanicolaou Test; Patient Education as Topic; Randomized Controlled Trials as Topic; Reminder Systems; Vaginal Smears /utilization

**AccessionNumber**

12003001032

**Date bibliographic record published**

30/11/2004

**Date abstract record published**

30/11/2004

**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.