Tailored information about cancer risk and screening: a systematic review

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CRD summary
This review evaluated tailored interventions that promoted perceived cancer risk and knowledge/behaviour related to screening in high-risk individuals. The authors concluded that behavioural change tailoring increased realistic risk perception, disease knowledge and mammography uptake; risk-factor tailoring increased realistic risk perceptions. The conclusions arose from small numbers of variable and largely low-quality studies, so their reliability is unclear.

Authors' objectives
To evaluate the effects of tailored interventions to promote the perception of cancer risk and knowledge/behaviour in relation to cancer screening in high-risk individuals.

Searching
PubMed, EMBASE, CINAHL, PsycINFO, and The Cochrane Library were searched without publication or language restrictions to June 2007. Search terms were reported. Reference lists of included studies were screened for further studies. Only full-text articles published in peer-reviewed journals were included.

Study selection
Studies of computer-based or printed information concerning cancer risk, screening options, cancer genetic counselling and DNA testing delivered to individuals at risk of developing cancer were eligible for inclusion. Only studies that tailored information using algorithms based on more than one variable were eligible for inclusion. The outcomes of interest were cancer risk perception and knowledge and behaviour in relation to cancer screening.

Most of the included studies were randomised controlled trials published after the year 2000 and were conducted in the USA. A number of articles reported on the same study with different follow-up assessments. Most interventions comprised tailored materials and were based on various theories of behavioural change (full details were reported). Most interventions were computer-tailored. Many interventions were aimed at primary care recipients, most of whom were females, in relation to breast cancer risk and screening. Other interventions focused on breast and ovarian cancer, cervical, colon, skin, prostate and lung cancer and general/multiple cancers. Only studies with control groups that received no intervention, standard information or usual care were included in the synthesis. Studies with co-interventions or with similar co-interventions in the intervention and control groups were excluded.

Studies were initially assessed for inclusion by one reviewer. A 10% sample was checked by a second reviewer. Full-text screening of studies that passed the initial assessment was conducted independently by two reviewers, with disagreements resolved by discussion.

Assessment of study quality
Study quality was assessed using Cochrane criteria of randomisation, allocation concealment, blinding of participants, care providers and outcome assessors, intention-to-treat analysis and dropouts and loss to follow-up. Items were scored as done, unclear or not done. Studies that scored done on at least four out of seven criteria were considered high quality, studies with three out of seven were moderate quality and those with two or fewer were low quality.

Two reviewers independently assessed study quality. Disagreements were resolved by consensus.

Data extraction
Data were extracted to present details of the direction of effect using odds ratios and 95% confidence intervals, proportions and p-values.

Data were extracted by two independent reviewers.

Methods of synthesis
A narrative best-evidence synthesis was presented. Studies were grouped by the outcomes of interest.
**Results of the review**

Forty articles were included in the review and these reported on 37 studies. Twenty-eight articles that reported randomised controlled trials (respondent sample size range, where reported, ranged from 49 to 5,407) were included in the synthesis. Two trials were high quality, seven were moderate quality and 19 were low quality. Blinding, allocation concealment and intention-to-treat analysis were frequently not met.

**Breast screening behaviour (18 studies):** Six out of 11 studies reported a significant effect on adherence to mammography that resulted from tailored educational interventions based on behavioural change constructs when compared to control groups that received no information. There was insufficient evidence to support interventions based only on risk factors (three studies) and no evidence to support interventions comprising behavioural constructs and risk factors (three studies). One study found a significant effect of a tailored intervention that combined behavioural and cultural constructs. The results for cervical screening (three studies), colorectal screening (two studies) and skin cancer screening (one study) showed mixed results.

**Risk perception (seven studies):** Two studies indicated that interventions with tailored risk estimations were superior to provision of standard information in achieving accurate risk perception. The other studies showed mixed effects (based on one or two studies).

**Knowledge (four articles/three studies):** Two studies found a significant positive effect on knowledge, based on tailoring to individual risk factors. One study in two published articles found a significant positive effect on knowledge, tailored by risk factors and behavioural constructs at 24 months, but not at 12 months.

**Authors' conclusions**

Compared to generic information, interventions tailored by behaviour change variables increased realistic perceptions of cancer risks and knowledge of cancer; those tailored by risk factors increased realistic risk perceptions. Compared to no information, interventions tailored by behavioural change constructs increased mammography uptake.

**CRD commentary**

The review question was clear. Inclusion criteria were specified for all aspects except study design; the population was only broadly defined. The search strategy included several relevant data sources. Attempts were made to minimise language and publication biases. The restriction to published studies risked bias, which the authors acknowledged.

Study quality was assessed using a recognised tool and the results indicated that the included trials were generally of poor quality. The review process was largely conducted with sufficient attempts to minimise error and bias, although the selection process may have excluded eligible studies at the initial stage. Study details were provided. Intervention theory base was discussed at length. Clinical heterogeneity was high and the chosen method of synthesis seemed appropriate. The authors accurately drew attention to the limited generalisability of results.

The authors’ conclusions were based on small numbers of highly variable and largely low-quality studies. Consequently, the reliability of the conclusions is unclear.

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

**Practice:** The authors stated that health providers should inform patients about cancer risk and screening via interventions tailored to personal characteristics.

**Research:** The authors stated that future computer-delivered interventions should integrate process measures, such as delivery rate and respondent's reading time.

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**Bibliographic details**

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