Stage-based approaches to behaviour change

A systematic review of the effectiveness of interventions based on a stages-of-change approach to promote individual behaviour change

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Executive summary

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Background

Over recent years, interest in reducing early mortality and preventing morbidity through lifestyle changes has grown exponentially. Interventions (or methods) used within healthcare settings to modify risky behaviours have increasingly been based on stage theories or staged approaches to behaviour change. The attraction of stage-based models lies in their ability to explain why interventions aimed at large groups or the general public, such as mass media or community interventions, are rarely universally effective. Stage-based models propose that 'tailored' interventions, which take into account the current stage an individual has reached in the change process, will be more effective than 'one size fits all' interventions.

Despite the widespread use of stage-based models, it has been suggested that there is little evidence available about the effectiveness of this approach in changing behaviour. Therefore, this systematic review draws together information about the effectiveness of interventions based on the stages-of-change approach from different settings and different population groups.

Objective

To systematically assess the effectiveness of interventions using a stage-based approach in bringing about positive changes in health-related behaviour.

Methods

Search strategy

A wide range of electronic databases were searched from inception to May 2000. In addition, searches of the Internet were carried out using a range of search engines.

The bibliographies of retrieved references were scanned for further relevant publications. The authors of abstracts appearing in conferences proceedings identified by the literature search were contacted for further information about their research.

Selection criteria

Randomised controlled trials (RCTs) evaluating interventions, that aimed to influence individual health behaviour, used within a stages-of-change approach were eligible for inclusion. Only studies that reported health-related behaviour change such as smoking cessation, reduced alcohol consumption or dietary intake and stage movement were included. The target population included individuals whose behaviour could be modified, primarily in order to prevent the onset, or progression, of disease. There was no limitation of study by country of origin, language or date.

Procedure

Assessment of titles and abstracts was performed independently by two reviewers. If either reviewer considered a reference to be relevant, the full paper was retrieved. Full papers were assessed against the review selection criteria by two independent reviewers, and disagreements were resolved through discussion. Data were extracted by one reviewer into structured summary tables and checked by a second reviewer. Health behaviour change was the primary outcome of interest. Secondary outcomes included: assessment of stage movement, health-related outcomes, intermediate outcomes, any adverse effects resulting from the intervention, as well as cost-effectiveness data. Information about the implementation of each intervention and how the relevant professionals were trained was also recorded where given. Any disagreements about data extraction were resolved by discussion. Each included trial was assessed against a comprehensive checklist for methodological quality and quality of the implementation of the intervention. Quality assessment was performed by one reviewer and checked by a second, with disagreements resolved by discussion.

Results

Thirty-seven RCTs were included in the review. Three studies evaluated interventions aimed at prevention (two for alcohol consumption and one for cigarette smoking). In 13 trials the interventions were aimed at smoking cessation, seven studies evaluated interventions aimed at the promotion of physical activity, and five studies

evaluated interventions aimed at dietary change. Six trials evaluated interventions aimed at multiple lifestyle changes. Two studies evaluated interventions aimed at the promotion of screening mammography, and one study evaluated an intervention aimed at the promotion of treatment adherence. Four of these studies also included an economic evaluation.

Results of the quality assessment

Methodological quality of the trials was mixed, and ranged from 2 to 11 out of 13 quality items present. The main problems were lack of detail on the methods used to produce true randomisation (methods of randomisation and concealment of allocation); lack of blinding of participants (where appropriate), outcome assessors and care-providers; and failure to use intention-to-treat analysis. The main issue with the quality of the implementation was lack of information on the validity of the instrument used to assess an individual's stage of change.

Evidence of effectiveness

In one of the 13 trials aimed at **smoking cessation** the results could not be compared to a non-stage-based intervention, because only stage-based interventions were included. In four of the remaining 12 smoking cessation trials, significant differences favouring the intervention group for scores on quit rates were found; in three of these the comparator was a usual-care control group and in one a non-stage-based intervention. One study showed mixed outcomes. In the remaining seven smoking cessation trials no significant differences between groups in behavioural change outcomes were found. One of the seven trials aimed at the promotion of **physical activity** did not report any data on behaviour change. Three trials found no significant differences between groups in behavioural change outcomes. Two trials showed mixed effects, and one trial mainly showed significant effects in favour of the stage-based intervention. Two of the five trials aimed at **dietary change** reported significant effects in favour of the stage-based intervention; in one trial this was in comparison to a non-stage-based intervention and in the other to a usual-care control group. Two trials showed mixed effects, and in one trial no significant differences between groups in behavioural change outcomes were found. Three of the six studies aimed at **multiple lifestyle changes** showed no differences between groups for any outcomes included. Two studies showed mixed effects, and one study showed positive effects for all outcomes included: smoking cessation, fat intake and physical activity. One of the two trials aimed at the promotion of **screening mammography** found no significant differences between groups for nearly all outcomes. The other trial showed a significant difference in favour of the stage-based intervention. The trial aimed at the promotion of **treatment adherence** showed significant results in favour of the stage-based intervention. Two out of three trials aimed at **prevention** showed no significant differences between groups for any measure of behaviour change. The other trial showed mixed outcomes. Studies with low-income participants tended not to report effects favouring the stage-based intervention. Other study characteristics, such as number of respondents, age and sex of respondents, year of publication, setting and verification of outcome measures, seemed to have little relationship with the effectiveness of the stage-based intervention.

Conclusions

Overall there appears to be little evidence to suggest that stage-based interventions are more effective compared to non-stage-based interventions. Similarly there is little evidence that stage-based interventions are more effective when compared to no intervention or usual-care. Out of 37 trials, 17 showed no significant differences between groups, eight trials showed mixed effects, and ten trials showed effects in favour of the stage-based intervention(s). One trial presented no data on behavioural outcomes, and another included stage-based interventions only. Twenty trials compared a stage-based intervention with a non-stage-based intervention, ten trials reported no significant differences between groups, five reported mixed effects and five reported significant effects in favour of the stage-based intervention.

There does not seem to be any relationship between the methodological quality of the study, the targeted behaviour or quality of the implementation (both in terms of exposure and in terms of full use of the model) and effectiveness of the stage-based intervention.

The methodological quality of studies was mixed, and few studies mentioned validation of the stages-of-change instrument. In addition, there was little consistency in the types of interventions employed once participants were classified into stages and little knowledge about the types of interventions needed once people were classified. It was unclear in a number of trials whether the intervention was properly stage-based.

Given the limited evidence for the effectiveness of interventions tailored to the stages-of-change approach practitioners and policy makers need to recognise that this approach has a status which appears to be unwarranted when it is evaluated in a systematic way.

Recommendations for research

There is a need for well-designed and appropriately implemented RCTs that are characterised by tailored interventions derived from accurate stage measurement, and which involve frequent reassessment of readiness to change in order to permit evolving, stage-specific interventions.

Publication

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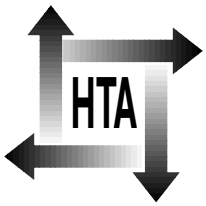

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Initially, six HTA panels (pharmaceuticals, acute sector, primary and community care, diagnostics and imaging, population screening, methodology) helped to set the research priorities for the HTA Programme. However, during the past few years there have been a number of changes in and around NHS R&D, such as the establishment of the National Institute for Clinical Excellence (NICE) and the creation of three new research programmes: Service Delivery and Organisation (SDO); New and Emerging Applications of Technology (NEAT); and the Methodology Programme.

This has meant that the HTA panels can now focus more explicitly on health technologies ('health technologies' are broadly defined to include all interventions used to promote health, prevent and treat disease, and improve rehabilitation and long-term care) rather than settings of care. Therefore the panel structure has been redefined and replaced by three new panels: Pharmaceuticals; Therapeutic Procedures (including devices and operations); and Diagnostic Technologies and Screening.

The HTA Programme continues to commission both primary and secondary research. The HTA Commissioning Board, supported by the National Coordinating Centre for Health Technology Assessment (NCCHTA), will consider and advise the Programme Director on the best research projects to pursue in order to address the research priorities identified by the three HTA panels.

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