The effects of participants' and professionals' preferences in randomised controlled trials

Conceptual framework and systematic review of the effects of participants' and professionals' preferences in randomised controlled trials

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Executive summary

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Executive summary

Background

Participants in randomised controlled trials (RCTs) may have preferences for particular interventions that threaten external and internal validity. We tested three hypotheses: preferences affect recruitment to RCTs; preferences are important effect modifiers in RCTs; and the size of the effect modifier is larger in RCTs that require greater effort and participation by participants.

Objectives

The objective of this study was to develop a conceptual framework of preferences for interventions in the context of RCTs, as well as to examine the extent to which preferences affect recruitment to RCTs and modify the measured outcome in RCTs through a systematic review of RCTs that incorporated participants' and professionals' preferences. A further objective was to make recommendations on the role of participants' and professionals' preferences in the evaluation of health technologies.

Methods

The conceptual framework and review of measurement methods was based on a review of published papers in the psychology and economics literature concerning concepts of relevance to patient decision-making and preferences, and their measurement.

For the systematic review we included RCTs in the world literature that measured or recorded preferences, allocated participants based on preference and had follow-ups of non-randomised cohorts (registry studies) where patients received preferred treatment. We excluded reviews where there was no measurement or recording of preferences, RCTs of decision aids, reviews with *post hoc* measurement of preferences, registry studies with follow-up without regard to preferences and experiments testing normal volunteers.

Data extraction

The following data were extracted:

- general/study information
- setting and population
- experimental/control interventions
- RCT design
- elicitation/measurement of preference
- quality of randomisation
- baseline data
- participation
- management of attrition; type of analysis
- nature of primary outcome and whether defined by trialists or reviewers
- methods and results of analysis
- summary data for primary outcome(s).

Data were synthesised and analysed as follows:

- RCT quality
- elicitation/measurement of preference
- analysis of recruitment
- restriction of participants' preferences in the study design
- baseline differences between randomised and preference cohorts
- treatment participation
- attrition
- analyses in each report
- impact of preferences on outcomes.

Results

Conceptual framework

The following were found to be key elements for a conceptual framework of preferences in the context of RCTs:

- Preferences are evaluations of an intervention in terms of its desirability. Concepts in the wider literature of greatest relevance are utility in economics and attitude in psychology.
- Preferences relate to (a) expectancies concerning the process and outcome of interventions and (b) the perceived value of those processes and outcomes.
- Development of preferences and their influence on decision-making can be conceived of in terms of a four-stage model. The stages relate to information received about an intervention, the assimilation of that information, the development of a global preference and decision-making about randomisation ▶

- RCTs differ in the information provided to patients, the complexity of techniques used to provide that information and the degree to which preference elicitation may simply elicit pre-existing preferences or actively construct them. Most current RCTs use written information alone.
- Preferences can be measured in a number of ways. Willingness-to-pay methods and attitude measurement within psychometrics may be most applicable.
- Most RCTs did not provide quantitative measures of preferences, and those that did tended to use very simple measures.

Systematic review

The search identified 10,023 citations, of which 44 were eventually included in the systematic review. This covered 34 RCTs.

- Most (25) were comprehensive cohort designs.
- Many failed to define a primary outcome(s), make a pre-RCT estimation of treatment effect, conceal randomisation or mask treatment groups to the outcome assessor.
- Quality of statistical analysis varied. Participants with missing data were often excluded from analysis, introducing potential bias.
- There was no consistent approach to examining preference effects.

Our findings give support to our first hypothesis, namely that preferences affect trial recruitment. However there was less evidence of bias in the characteristics of individuals agreeing to be randomised and therefore limited evidence that external validity was seriously compromised. With regard to our second hypothesis, there was some evidence that participant or physician preferences influenced outcome in a proportion of trials. However, evidence for moderate or large preference effects was weaker in large trials and after accounting for baseline differences. Preference effects were also inconsistent in direction. There was no evidence that preferences influenced attrition. Therefore, the available evidence does not support the operation of a consistent and important 'preference effect'. Interventions cannot be categorised consistently on degree of participation. Examining differential preference effects based on unreliable categories ran the risk of drawing incorrect conclusions, so we refrained from testing our third hypothesis.

Conclusions

Preferences are hypothesised to be based on expectancies concerning the process and outcomes associated with the intervention and the perceived value placed on those outcomes and processes. However, participants' preferences may be based on insufficient or incorrect information. In addition, decisions about treatment choice may not always accord with preferences and may be influenced by clinicians, relatives or friends. When preferences are likely to affect the external validity of an RCT, it is important to present potential participants with appropriate evidence, without straying into coercion. We have suggested how preferences might best be measured. Once participants have been recruited, preferences may affect perceptions of the intervention and satisfaction but appear to exert few major effects on further participation or clinical outcome. Comprehensive cohort designs may still be worthwhile; however, when a significant proportion of patients refuse to be randomised and (1) follow-up data are economical to collect, for example, from routinely collected sources, or (2) when costs of follow-up are higher, a random sub-sample of participants are allocated to their preferred treatment and followed up.

Our review also adds to the growing evidence that when preferences based on informed expectations or strong ethical objections to an RCT exist, observational methods are a valuable alternative. Data from observational studies may be valuable in situations where:

- there are strong preferences based on informed expectations on the part of eligible participants or physicians and when only a small proportion of them will accept randomisation;
- known confounders of treatment outcome (including strength of preference) are measured and taken account of in the analysis;
- there are strong ethical or legal objections to undertaking an RCT.

All RCTs in which participants and/or professionals cannot be masked to treatment arms should attempt to estimate participants' preferences. This would increase the amount of evidence available to answer questions about the effect of treatment preferences within and outwith RCTs. Furthermore, RCTs should routinely attempt to report the proportion of eligible patients who refused to take part because of their preferences for treatment. Beyond these two general recommendations, our findings also indicate a number of approaches to the design, conduct and analysis of RCTs that take account of participants' and/or professionals' preferences. We refer to these as a methodological tool kit for undertaking RCTs that incorporate some consideration of patients' or professionals' preferences. ▶

Relevance to the NHS

Besides understanding more about how participants' and professionals' preferences affect the internal validity of RCTs and informing professionals and patients about the need for good evidence of efficacy, we need greater application of information systems within the NHS to make use of routine data collection as one source of evidence on effectiveness.

Recommendations for research

The following areas are suggested for future research:

- An assessment of the amount and source of information available to patients about interventions in RCTs, with special emphasis on the relationship between sources inside and outside the RCT context. Qualitative research undertaken as part of ongoing RCTs might be especially useful.
- An examination of the processes by which this information leads to preferences in order to develop or extend the proposed expectancy–value framework. Key questions relate to the type of expectancies that enter into decision-making, and the way in which different expectancies are valued by patients. Conjoint analysis may be especially useful in this regard.
- An investigation into how information about interventions changes participants' preferences and a comparison of the feasibility and effectiveness of different informed consent procedures.
- A study of how strength of preference varies for different interventions within the same RCT and how these differences can be taken account of in the analysis.
- An exploration of the differential effects of patients' and professionals' preferences on evidence arising from RCTs. Our findings suggest that patients' preferences act mainly at recruitment. Professionals' preferences may affect external and internal validity but the number of RCTs in which professionals' preferences were reported was very small.
- An assessment of whether the standardised measurement of preferences within all RCTs (and analysis of the effect on outcome) would allow the rapid development of a significant evidence base concerning patient preferences, albeit in relation to a single preference design.

Publication

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The research reported in this monograph was commissioned by the HTA Programme as project number 98/26/03. The contractual start date was in November 2001. The draft report began editorial review in August 2003 and was accepted for publication in June 2004. As the funder, by devising a commissioning brief, the HTA Programme specified the research question and study design. The authors have been wholly responsible for all data collection, analysis and interpretation, and for writing up their work. The HTA editors and publisher have tried to ensure the accuracy of the authors' report and would like to thank the referees for their constructive comments on the draft document. However, they do not accept liability for damages or losses arising from material published in this report.

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