

# **SWAT 110: Printing the primary outcome on Pink Paper versus standard paper to increase participant engagement to postal questionnaires (PEPPER)**

## **Objective of this SWAT**

To evaluate the effects of printing the primary outcome measure on pink paper versus on white paper in a questionnaire collecting the primary outcome measure in a randomised trial.

Study area: Follow-up, Retention, Data Quality

Sample type: Participants, Patients

Estimated funding level needed: Low

## **Background**

Missing data on the primary outcome of a randomised trial risks introducing bias and reducing its available sample size and statistical power. It affects the validity, reliability and generalisability of the trial's findings.[1-6] There are numerous ways to deal with missing data, for instance data imputation,[7] but the best means to negate this issue is to not have data missing in the first place.

Human perception (attention) and consequent cognition (thoughts), emotion and behaviour can be influenced by colour. Neurophysiological models of perception suggest coloured objects are attended to for saliency more than grey-scale objects.[8] We are also primed to attend to colours which match our beliefs and expectations.[9] Therefore, we surmise that automatic visual attention is drawn to coloured objects in preference to grey-scale and that if we expect (believe) an object to be in grey-scale, for example a letter or questionnaire, then when it is not our attention is moved to examine this mismatch. This principle has been tested in pragmatic psychological and market research. A study of 1.4 million customers showed that using background colour in email messages can result in a higher percentage of emails being clicked on and read.[10] When choosing colour, we are advised to check for cultural specific connotations.[11] For example, using the colour green, which holds sacred associations in Islam, could be perceived as inappropriate. The idea of using coloured paper to increase response rates in research has been around for some time in various settings, including direct mail advertising,[12] and sports management.[13] Although most studies have reported no significant effects from using coloured paper,[1] some have found positive results.[14] A 2003 meta-analysis found that pink paper had the greatest effect.[15] It has been hypothesised that if colour is psychologically appealing to respondents, the response rates for an initial mailing of a questionnaire should be higher and there is also a reduced chance of the questionnaire being misplaced.[14] Colour in marketing is a powerful tool that significantly influences consumer purchases,[16] so much so, that one study found that it accounts for 85% of the reason why someone decides to purchase a product.[17]

Despite there being a large evidence pool on the use of colour in questionnaires, there appears to be no test of colouring only one question and examining the impact on response rates. Having a single question on coloured paper should make it more appealing than the remainder of the questionnaire printed on white paper. So printing the primary outcome measure for a trial on coloured paper should improve response and retention rates. Printing the primary outcome questionnaire on pink paper is a simple, cheap and easily implemented way that might make the questionnaire more engaging to the participant and increase compliance. It may also make the whole questionnaire more appealing, reducing the number of secondary questions skipped, improving overall response rate and reducing the need for prompts to participants to complete and return the questionnaire.

This SWAT will be embedded in the PEP-TALK trial, which is testing a behaviour change physiotherapy intervention to increase physical activity following hip and knee replacement (ISRCTN29770908) and is funded by the National Institute of Health Research for Patient Benefit scheme in the UK.

## **Interventions and comparators**

Intervention 1: Primary Outcome PROM printed on pink paper in the 6-month follow-up questionnaire

Intervention 2: Primary Outcome PROM printed on white paper in the 6-month follow-up questionnaire

Index Type: Method of Follow-up, Questionnaire Format

### **Method for allocating to intervention or comparator**

Randomisation

### **Outcome measures**

Primary: Proportion of participants in each group who complete the host trial's primary outcome measure.

Secondary: Proportion of participants reminded to fill in the questionnaire; proportion of other questions in the questionnaire completed; overall return rate of the questionnaire.

### **Analysis plans**

An intention-to-treat analyses will be conducted with proportions compared using a chi-square test and reported as risk ratios and 95% confidence intervals. Any participants who withdraw or drop out of the randomisation and mail-out in the PEPPER sub-study will be retained in the intention-to-treat analysis and categorised as incomplete for the primary outcome.

### **Possible problems in implementing this SWAT**

There are few anticipated problems because the logistical mechanisms are similar to the standard procedure for sending out postal questionnaires. The only modification is replacing one outcome measure printed on white paper with one printed on pink paper for half the participants.

### **References**

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### **Publications or presentations of this SWAT design**

#### **Examples of the implementation of this SWAT**

This SWAT is being implemented in the PEP-TALK Trial ([www.isrctn.com/ISRCTN29770908](http://www.isrctn.com/ISRCTN29770908)).

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