

SWAT 29: Effect of envelope colour on response rates

Objective of this SWAT

This SWAT investigates whether envelope colour affects response rates in three different stages of a study:

- (1) Invitation process
- (2) Consenting process
- (3) Return of first questionnaire.

Study area: Recruitment, Retention

Sample type: Participants

Estimated funding level needed: Unfunded

Background

Postal questionnaires are widely used in health research to provide measurable outcomes in areas such as quality of life. The use of such questionnaires enables researchers to collect data from a larger group of people than is possible where data collection is based on interviews. Additionally, postal questionnaires are easy to use, allow data collection from a large geographical area and are substantially cheaper to initiate than interviews [1, 2]. However, a poor response rate is one of the disadvantages to their use. Participants who fail to return postal questionnaires can introduce non-response bias [2, 3], because the characteristics and outcomes of non-responders may be very different to responders. Furthermore, non-responders reduce statistical power [2, 3]. This SWAT was embedded in a study of screening older women for osteoporosis [4] and previous studies in populations over the age of 65 years have reported response rates between 60% and 65% [3, 5, 6]. Therefore, methods to enhance response rates are crucial to enhancing the quality of health research. A recent Cochrane Methodology Review identified several methods to improve response rates to postal questionnaires [1]. One of these was the effect of using brown envelopes, as opposed to white envelopes. Five studies were identified [3, 7-10] and there was a non-statistically significant greater response rate with brown envelopes compared with white envelopes (odds ratio (OR): 1.23, 95% confidence interval (CI) 0.81 to 1.87). Two trials of envelope colour and response rates found no overall effect of using brown or white envelopes on response rates. In the study of envelope colour by Taylor et al, 62.3% of brown and 64.8% of white (OR: 0.90, 95% CI: 0.76 to 1.06) envelopes were returned. However, there was significant heterogeneity between the general practices included and when this interaction of envelope colour and general practice was taken into account, white envelopes were found to increase response rates compared to brown envelopes (OR: 1.22, 95% CI: 1.09 to 1.37) [3]. McCoy and Hargie evaluated whether envelope colour affected response rates to a public relations questionnaire in a business population; envelope colour was not found to significantly affect response rates ($p = 0.973$) [7]. Previous studies have investigated the effects of envelope colour on response rates to a questionnaire but other types of response rates can be measured. For example, healthcare trials often recruit participants through the use of postal forms, as well as sending out questionnaires for baseline or outcome information. Response rates may be different for the recruitment process depending on the colour of the envelope used.

Interventions and comparators

Intervention 1: Brown coloured mailing envelope, with a pre-paid brown reply envelope.

A study questionnaire was also sent out in a brown envelope 1 week after consenting to participate in the trial. Participants were sent a reminder letter and a copy of the questionnaire if the research team had not received their completed questionnaire 14 days after the original questionnaire was sent. The questionnaire and reminder mailing were in a brown envelope. The mailing envelope and the pre-paid reply envelope were also brown.

Intervention 2: White coloured envelope, with a white pre-paid reply envelope.

A study questionnaire was also sent out in a white envelope 1 week after consenting to participate in the trial. Participants were sent a reminder letter and a copy of the questionnaire if the research team had not received their completed questionnaire 14 days after the original questionnaire was sent. The questionnaire and reminder mailing were in a white envelope. The mailing envelope and the pre-paid reply envelope were also white.

Index Type: Method of Recruitment, Method of Invitation, Method of Follow-up

Method for allocating to intervention or comparator

Alternation

Outcome measures

Primary: There were three co-primary outcomes to investigate whether envelope colour affected response rates for the:

- (1) Trial Invitation
- (2) Consent
- (3) Return of first questionnaire

Secondary:

Analysis plans

The response rate for the invitation process is the number of patients who returned the invitation to take part (including those who consented and declined to take part) divided by the number of patients who were sent an invitation.

The response rate for the consenting process is the number of patients who consented to take part divided by all other patients (including those who declined to take part in the study and non-responders).

The response rate for the return of the first questionnaire is the number of participants who returned a completed questionnaire divided by the number of participants who, following consent to take part, had been sent a questionnaire.

Univariate odds ratios were calculated for envelope colour.

Possible problems in implementing this SWAT

This SWAT used alternation to decide which envelope colour was used for each patient, with the envelopes alternately arranged (brown, white, brown, white etc.). Patients were sent a brown or white envelope depending on their position in the sequence. This systematic method of allocation is as effective at producing equivalent groups as true randomisation if there is no relationship between sequence and prognostic variables and if the person sending out the envelopes is not aware of the prognostic characteristics of the participants [11]. In this instance both of these criteria were fulfilled. In determining the sample size for the SWAT, it may be constrained by the number of invitations to be sent out for the main study. In the implementation of this SWAT in the study of screening older women for osteoporosis, the researchers anticipated sending out approximately 2,800 invitations which would give 77% power to show an absolute difference of 5% ($2p = 0.05$) between the two groups, using a baseline response rate of 60%.

References

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11. Torgerson DJ, Torgerson CJ. Designing randomised trials in health, education and the social sciences. Basingstoke: Palgrave Macmillan; 2008.

Publications or presentations of this SWAT design

Examples of the implementation of this SWAT

Mitchell N, Hewitt CE, Torgerson DJ, and SCOOP Trial Group. A controlled trial of envelope colour for increasing response rates in older women. Aging clinical and experimental research 2011;23(3):236-40.

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