

COMMUNITY MENTAL HEALTH SURVEY 2018 PILOT REPORT: THE EFFECTIVENESS OF FOUR INTERVENTIONS IN BOOSTING RESPONSE RATES

Background

Response rates for surveys within the NHS Patient Survey Programme (NPSP) have seen a decline since its inception in 2002. Additionally, the response rate for the Community Mental Health Survey is one of the lowest of all surveys within the programme. The response rate for the 2017 Community Mental Health Survey was 26%, down from 41% when the survey was first introduced in 2004.

In 2017, a pilot study was commissioned to run alongside the standard survey, testing a number of interventions aimed at increasing response rates, this included a redesigned questionnaire and covering letters. When combined, these interventions increased the overall response rate by 3.4% in comparison to the control and were therefore included as standard in the Community Mental Health Survey from 2018. The 2018 pilot discussed in this report was designed to evaluate additional interventions to improve response.

Method

Interventions

Fieldwork for both the pilot and main survey was carried out from 19th February to 22nd June 2018, with the main survey serving as the 'control'. The following four interventions were tested:

A Shorter questionnaire. The shorter questionnaire contained questions that were present in the main survey questionnaire, with approximately half the questions removed to reduce the number of pages from eight to four.

B Online survey package. The online survey used an electronic version of the short questionnaire as in intervention A. Service users receiving this intervention did not receive any paper materials and all contact was via SMS. The first SMS included introductory text with a link to the online survey including an online version of the covering letter. The second SMS included a reminder text with the link to the online survey and the third SMS included a final reminder text, also including a link to the online survey. Owing to the nature of this intervention, the CQC flyer and the multi-language sheet were not included.

C SMS reminders. This intervention comprised of SMS-based reminders sent to service users who received a paper questionnaire. Service users receiving this intervention received the paper covering letter in the initial and third mailings but not the second. In other words, the first paper reminder was removed and an SMS reminder sent instead. A second SMS reminder was sent following the third mailing package. Therefore, service users received up to a total of two SMS reminders.

D No CQC flyer. It is unclear whether the CQC flyers have an impact on response rate. To determine this, the absence of the flyer was tested. Service users did not receive the CQC flyer in the initial and third mailing packages, although they received all other survey materials (questionnaire, covering letters, multi-language sheet).

Design and sample

An invitation to participate was sent to 20 NHS trusts who had earlier indicated that they had some service users with mobile phone numbers on file. Ten trusts were recruited to take part which comprised a good spread in terms of geographical location and trust size. Unfortunately, when drawing the samples for the pilot study it was found that one trust did not have enough service users with mobile telephone numbers. The trust therefore took part but did not test the interventions using SMS reminders. Pilot sampling instructions were created for NHS trusts and for the approved contractor working with these trusts.

The required sample size was worked out on the basis of testing each individual intervention with 95 percent power to detect an increase in response of two percentage points (one-tailed test, alpha=0.05). The actual power for SMS-based interventions was dependent on the availability of mobile numbers in the sample. Each NHS trust drew their normal 850 sample (control group) along with an extra 760 to test the interventions (240 drawn in the same way as the main survey sample plus 520 service users with a mobile phone number listed), totalling 1610 per trust (with the exception of the trust not taking part in the SMS interventions which submitted a sample of 1,090). The sample sizes were as in Table 1.

Table 1: Sample size for pilot study

Pilot group	Sample per trust	Total sample
Control	850	8,500
Intervention A	40	400
Intervention B	160*	1,440*
Intervention C	40*	360*
Intervention D	40	400
Intervention A+C	160*	1,440*
Intervention A+D	160	1,600
Intervention C+D	160*	1,440*
Total	1,610	15,580

*One trust was unable to draw the required sample of service users with mobile numbers so was not included in the interventions testing SMS reminders (sample sizes indicated with an asterisk in the 'sample per trust' and 'total sample' columns). The trust submitted a sample of 1,558 service users, rather than 1,610.

The design was based on combinations of interventions but with a small additional sample of each intervention in isolation to ensure that their independent effect could be measured. Sample members were randomly assigned to interventions by the Survey Coordination Centre.

Findings

Outcome variable

In previous pilots, the adjusted response-rate variable has been used for analysing response, as used for reporting response rates to the national surveys. This excludes cases from analysis where questionnaires were returned undelivered. However, for surveys using multiple contact modes, failure to contact is a feature for all modes that needs to be included in the overall evaluation. Therefore, 'returned undelivered' was included as a non-response outcome for response rate analysis because (a) delivery failures vary with contact mode and (b) the code is currently applied only for postal contacts. Service users who had died were excluded from all analyses regardless of survey mode.

The pilot included two distinct sets of interventions, postal interventions appropriate for all in the sample (those using only interventions A and/or D) and SMS-based interventions, which were only applicable for those in the sample for whom a mobile phone number was recorded (those incorporating interventions B and C). These two groups of interventions were analysed separately. For the postal interventions, the control group comprised the main survey sample, whereas for the SMS-based interventions the control group included only those main sample members for whom a mobile phone number was available.

Overall response rates

The proportion of service users responding to each intervention and the respective control groups are shown in the figures below. Figure 1 shows the response rate for the full sample while Figure 2 shows the response rate for the mobile-only sample.

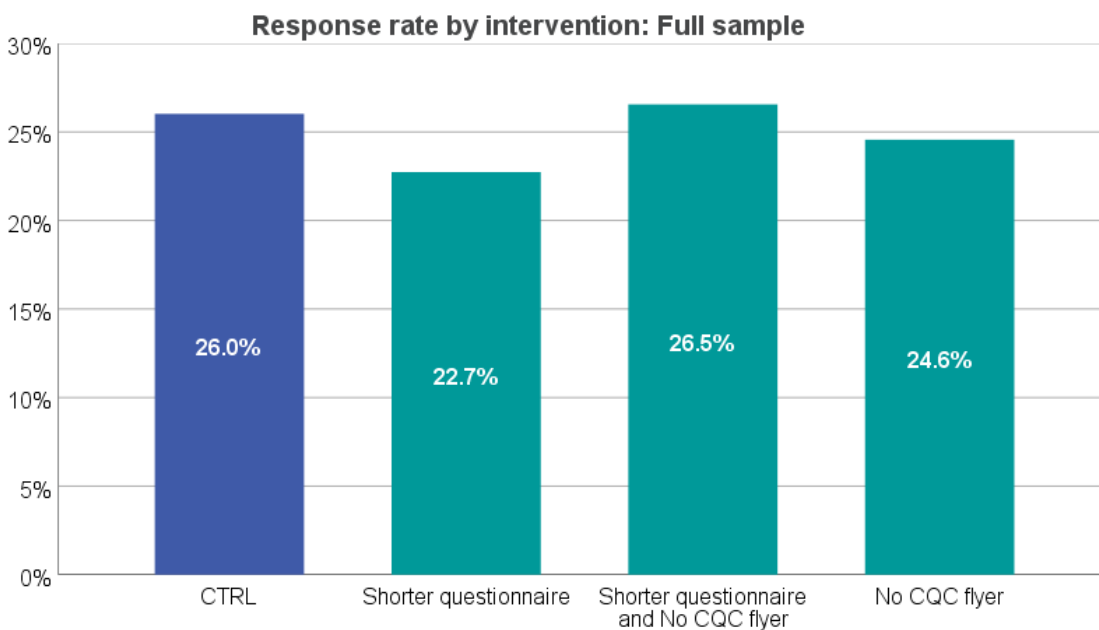


Figure 1: Comparison of response rates for full (postal) sample

As shown in Figure 1, the baseline response rate was 26 percent. Only one of the interventions exceeded this response rate. This was the use of a shorter questionnaire combined with no flyer which produced a marginally higher response rate of 26.5 percent. Each of these interventions used in isolation produced a lowered response.

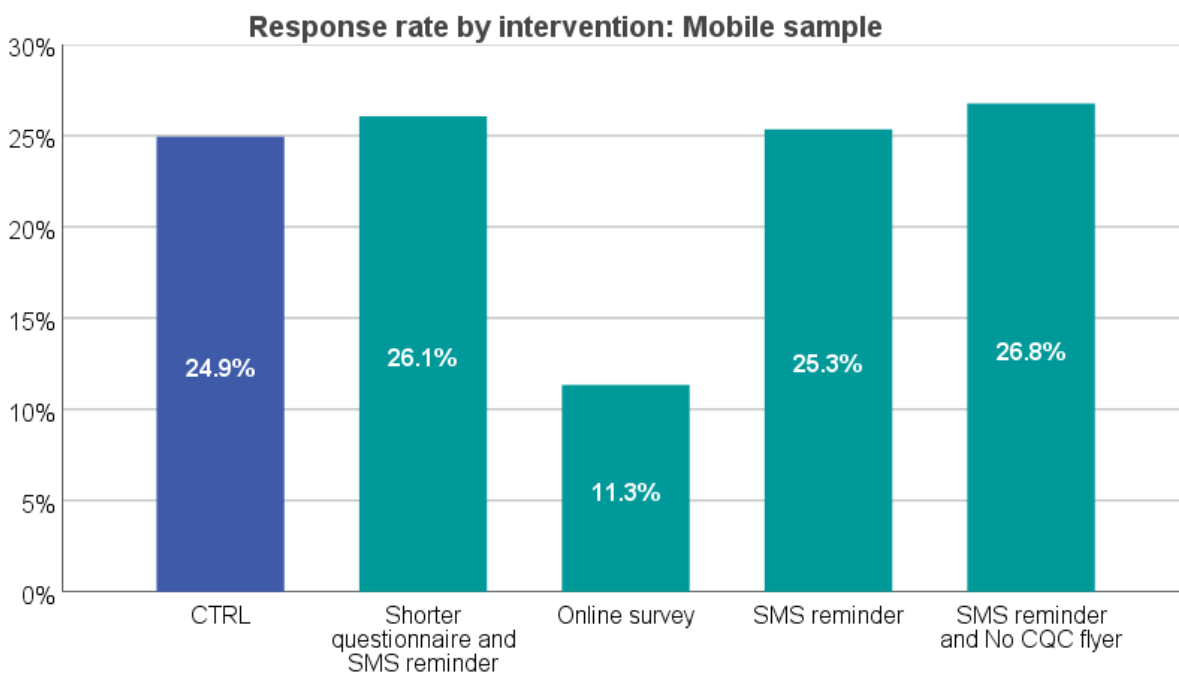


Figure 2: Comparison of response rates for mobile-only sample

As shown in Figure 2, the baseline response rate was slightly lower at 24.9 percent for service users with available mobile phone numbers. The three interventions using SMS reminders resulted in small increases in the number of responses. The use of an SMS in combination with no flyer produced the highest response rate with almost two percentage points more than the control group. The online survey which was not used in combination with any other interventions, resulted in a radically lower response rate – less than half that of the control group.

Response rates by age group

Figure 3 shows the response rate for the full sample broken down by age group, while Figure 4 shows the response rate for the mobile-only sample broken down by age group.

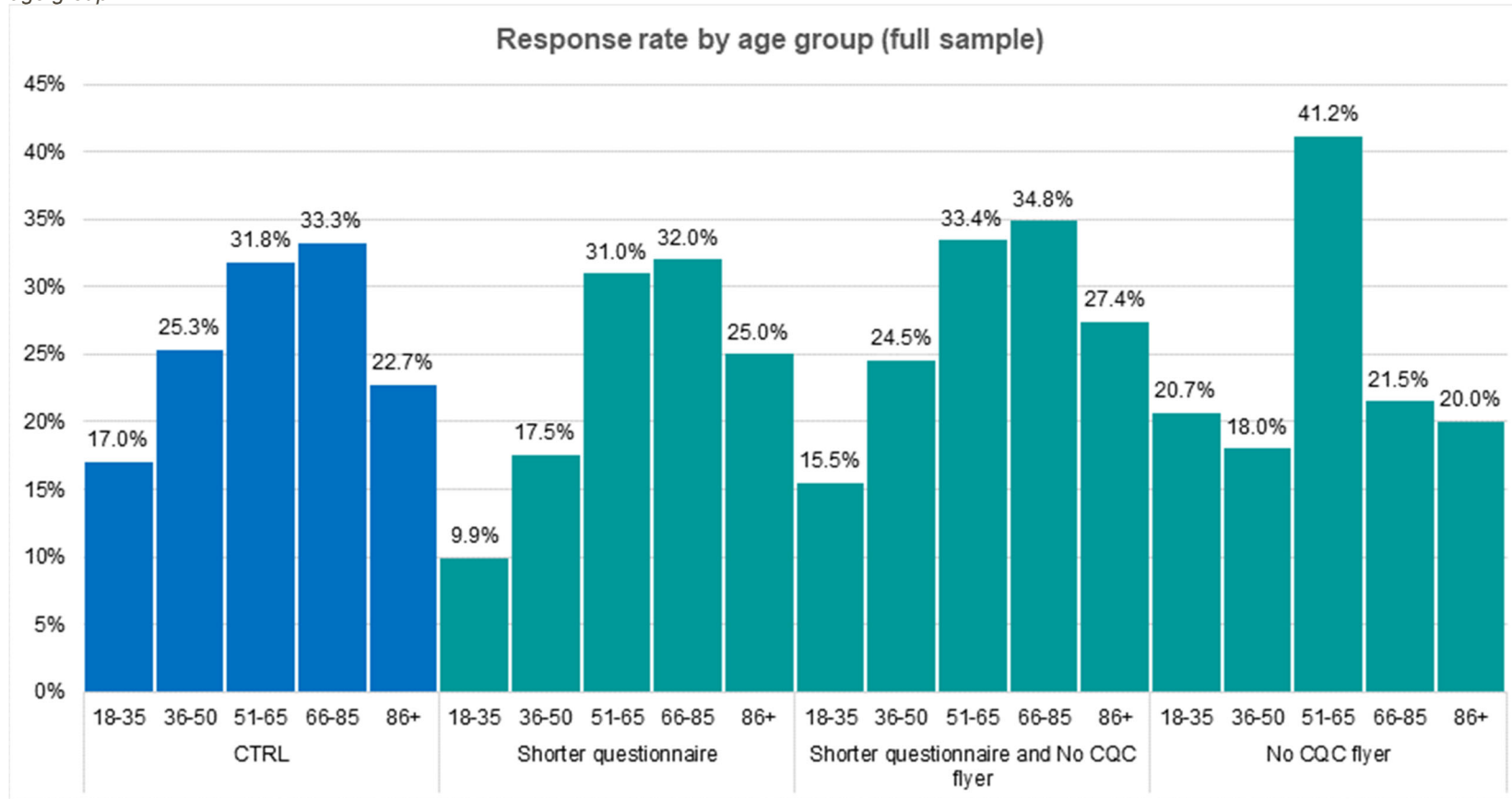


Figure 3: Response rates by age group for postal sample

As shown in Figure 3, the different age groups show broadly the same patterns of response within each intervention. Response rates increase with age up to the 66-85 band and then decrease slightly for the oldest service users in the sample. This pattern changes somewhat for the 'no flyer' intervention, where response rates are fairly similar except for the 51-65 band, where there is a markedly higher response, up by around a third compared to its control. This was also the only postal intervention to produce an increased response amongst the youngest (18-35) age group.

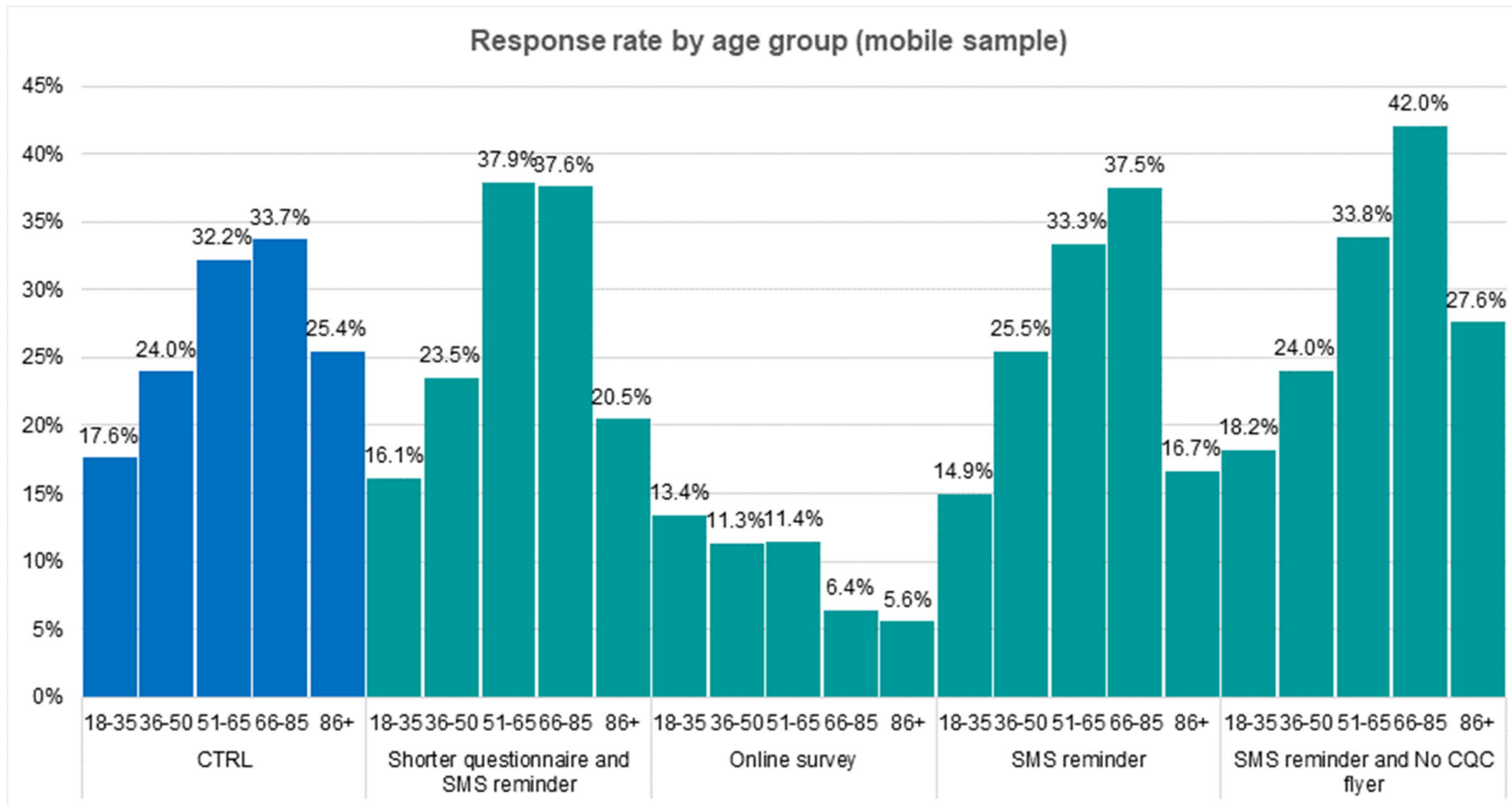


Figure 4: Response rates by age group for mobile sample

As shown in Figure 4, the various interventions also follow a similar pattern of response by age to those for the control, with the notable exception of the online response intervention, where the response rate decreased with increasing age. However, even the lowest age group was less likely to respond to the online survey than their respective control. In addition, there was nothing to suggest that SMS reminders were any less effective amongst the older age groups than for the youngest in the sample.

Response modelling

A full analysis of response, including statistical significance testing, required evaluation of the independent effects of the intervention components.

Response propensity was modelled using multilevel logistic regression with NHS trust as a random effect. Two sets of models were developed, one for the postal-contact interventions and one for the SMS-focused interventions. Interventions were coded into main effects and first analysed for the impact of main effects only. Interactions between effects were then added to the models to determine whether the combination altered the impact of the interventions.

The tabulated results (Tables 2 and 3) comprise:

- The model coefficient, which is not directly interpretable except that negative values indicate a lower response propensity and positive values a higher response propensity associated with that model term. The coefficient is supplemented by a standard error and confidence limits.
- A 1-tailed p-value, which is the probability of obtaining a coefficient of at least this magnitude when the 'true' value of the coefficient is not positive. P-values greater than 0.05 are consistent with a 'no positive effect' null hypothesis.
- A predicted response rate. This is calculated from the model coefficients and is additive, so that the response rate for a main effect is the sum of the control response rate and the effect of the intervention. For interaction terms, it is the sum of the control rate, both main effects and the additional effect of the combination. For the full model with interactions, this response rate is equivalent to the naïve response rates reported above, except that it controls for any NHS trust effects.

Table 2: Model results for postal interventions

Intervention	Model coefficient	Standard error	95% UCL	95% LCL	1-tailed p	Predicted response rate
Main effects						
Control	-1.052	0.037	-1.124	-0.981		0.259
A	-0.046	0.087	-0.216	0.124	0.703	0.250
D	0.049	0.087	-0.120	0.219	0.284	0.268
Main + interaction						
Control	-1.047	0.037	-1.119	-0.975		0.260
A	-0.179	0.123	-0.419	0.061	0.928	0.227
D	-0.077	0.120	-0.312	0.157	0.742	0.245
A&D	0.284	0.179	-0.067	0.634	0.057	0.265

Postal intervention results are in Table 2. The shorter questionnaire (intervention A) tends towards a lower response (negative coefficient) and no flyer (intervention D) a higher response (positive coefficient). However, none of the modelled effects was statistically significant and there is therefore insufficient evidence to infer a positive impact on response from either intervention or their combination.

Table 3: Model results for SMS interventions

Intervention	Model coefficient	Standard error	95% UCL	95% LCL	1-tailed p	Predicted response rate
Main effects						
Control	-1.104	0.042	-1.187	-1.022		0.249
B	-0.963	0.089	-1.138	-0.788	1.000	0.112
C	0.064	0.051	-0.037	0.165	0.107	0.261
Main + interaction						
Control	-1.104	0.042	-1.187	-1.022		0.249
B	-0.963	0.089	-1.138	-0.788	1.000	0.112
C	0.014	0.126	-0.232	0.260	0.455	0.252
A&C	0.037	0.135	-0.228	0.303	0.391	0.256
C&D	0.074	0.135	-0.191	0.339	0.293	0.263

SMS-focused intervention results are in Table 3. Interventions involving an SMS reminder (intervention C) have a tendency to higher response and the online survey (intervention B) a much-reduced response. None of the modelled effects was associated with a statistically significant increase in response.

To examine further the impact of the interventions with younger adults, the models were re-run including only those sample members within the age group 18-35. The results are reported in Tables 4 and 5.

Table 4: Model results for 18-35s (postal interventions)

Intervention	Model coefficient	Standard error	95% UCL	95% LCL	1-tailed p	Predicted response rate
Main effects						
Control	-1.597	0.068	-1.730	-1.465		0.168
A	-0.460	0.218	-0.887	-0.032	0.983	0.113
D	0.326	0.209	-0.084	0.736	0.060	0.219
Main + interaction						
Control	-1.593	0.068	-1.727	-1.460		0.169
A	-0.625	0.356	-1.323	0.074	0.960	0.098
D	0.231	0.264	-0.286	0.749	0.191	0.204
A&D	0.281	0.461	-0.622	1.185	0.271	0.154

None of the postal interventions (Table 4) produced a statistically significant increase, but no flyer (intervention D) was associated with a higher response rate than for the control condition.

Table 5: Model results for 18-35s (SMS interventions)

Intervention	Model coefficient	Standard error	95% UCL	95% LCL	1-tailed p	Predicted response rate
Main effects						
Control	-1.549	0.067	-1.680	-1.417		0.175
B	-0.327	0.144	-0.609	-0.045	0.989	0.133
C	-0.051	0.104	-0.254	0.152	0.689	0.168
Main + interaction						
Control	-1.549	0.067	-1.681	-1.417		0.175
B	-0.327	0.144	-0.609	-0.045	0.989	0.133
C	-0.202	0.271	-0.733	0.328	0.773	0.148
A&C	0.092	0.292	-0.481	0.664	0.377	0.189
C&D	0.240	0.289	-0.326	0.807	0.203	0.213

Similarly, none of the SMS interventions produced a statistically significant increase among this age group, with the largest increment being for the combination of SMS reminder (C) and no flyer (D).

Representativeness

Representativeness of the achieved sample was estimated separately for each pilot condition using R-indicators (Bethlehem, Cobben, & Schouten, 2009). The purpose of R-indicators is to provide a single indicator of sample representativeness, allowing comparisons between different samples – useful when different interventions may produce a differing balance of respondents over demographic subgroups. The method is dependent on having appropriate stratification variables available for the entire drawn sample. In the current pilot, this was restricted to age and gender as these were the only variables with sufficiently-complete data.

Preliminary modelling indicated that an interaction between age group and gender was the best predictor of response. Using this model specification, response propensity was modelled and R-indicators with 95% confidence intervals computed using the RISQ program Version 2.1 (de Heij, Schouten, & Shlomo, 2015). The results can only be interpreted in relation to the demographic factors included in the model, as there may be important predictors of response that are not represented.

The R-indicators for the postal interventions are shown in Figure 5 and reported in Appendix 1.

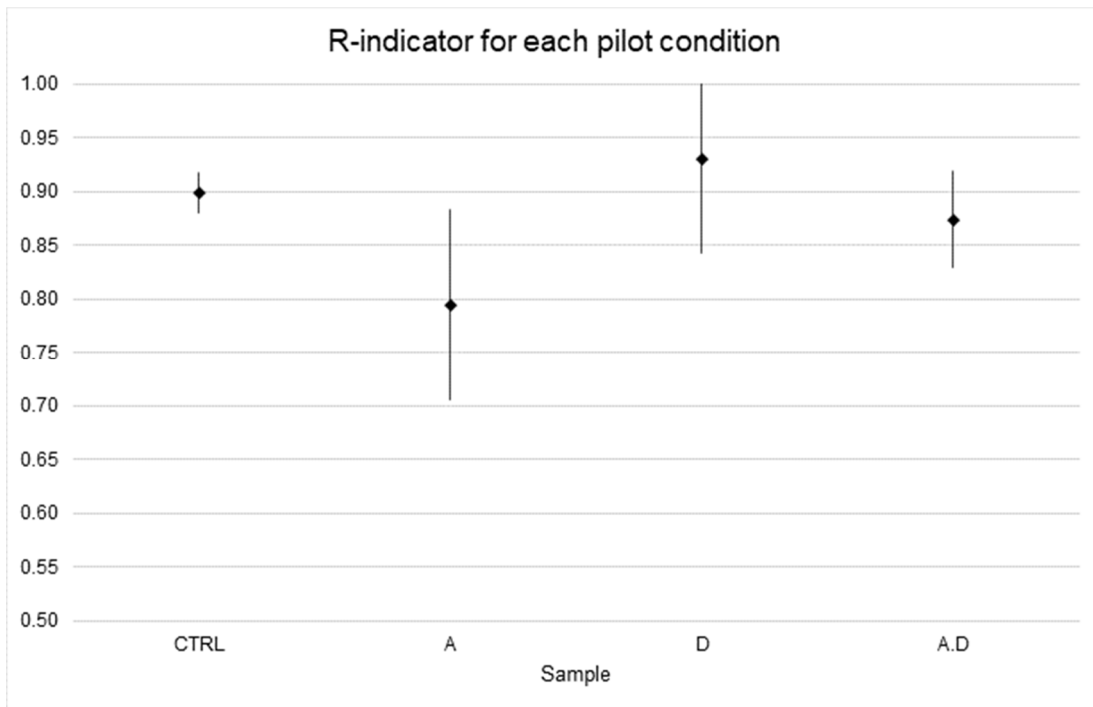


Figure 5: R-indicators for the postal interventions

The results show that the shorter questionnaire (intervention A) achieves a less representative sample compared to the other pilot conditions.

The R-indicators for the SMS conditions are shown in Figure 6 and reported in Appendix 1.

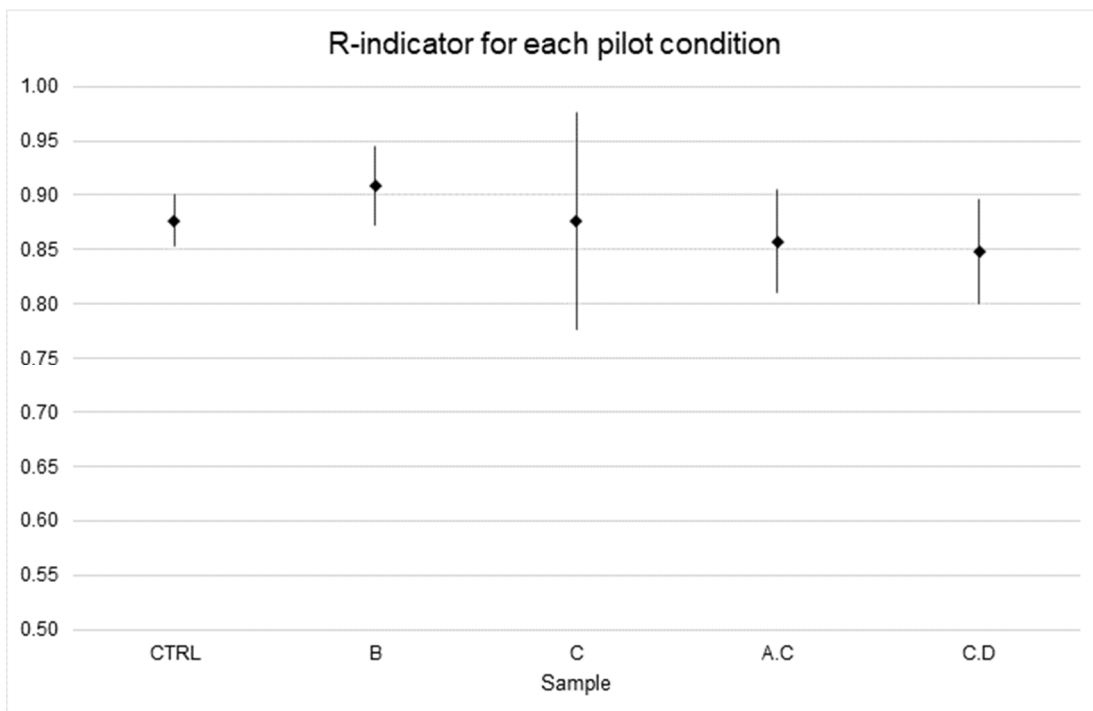


Figure 6: R-indicators for the SMS interventions

There is considerable overlap in representativity between these samples, suggesting little advantage to any approach.

Survey error

The calculated R-indicators also allow computation of a Root Mean Square Error (RMSE) associated with the different survey conditions. The reported RMSE is for standardised survey variables (i.e. having a variance of 1) and is an upper bound based on the assumption that variability in response is explained by the modelled demographic factors. This assumption is questionable. Unlike R-indicators, the RMSE takes response rate into account as well as representativity. All else being equal, interventions with lower response will produce a larger RMSE.

Table 6 shows the estimated RMSE for the postal interventions. In comparison to the control, the largest error is associated with the shorter questionnaire (intervention A). This is a result of both lowered response and poor representativity.

Table 6: Upper-bound RMSE estimates for standardised variables (postal)

Condition	RMSE		
	Estimate	95% LCL	95% UCL
CTRL	1.019	1.012	1.026
A	1.097	1.032	1.191
D	1.010	1.001	1.050
A&D	1.028	1.012	1.050

Table 7 shows the estimated RMSE for the SMS-based interventions. In comparison to the control, the largest error is associated with the online survey (intervention B). This is primarily a result of the very poor response rate.

Table 7: Upper-bound RMSE estimates for standardised variables (SMS)

Condition	RMSE		
	Estimate	95% LCL	95% UCL
CTRL	1.030	1.020	1.042
B	1.078	1.029	1.147
C	1.029	1.001	1.092
A&C	1.037	1.017	1.064
C&D	1.039	1.019	1.067

SMS message status

Very limited information was available on the status of SMS messages sent to sample members in the mobile-only sample. The records show that a 1st reminder SMS message was sent to 90 percent of pilot sample members, a 2nd reminder message to 83 percent of the sample and a 3rd reminder to 28 percent. The data in Table 8 show the status of the last SMS message sent.

Table 8: Status of last SMS message

SMS status	Frequency	Percent
Buffered	1	0.0
Delivered	3,230	76.7
Invalid Number	142	3.4
Rejected	789	18.7
Sending	47	1.1
Total	4,209	100.0

These results show a delivery rate of around three quarters but also a rejection rate of over 18 percent. There were relatively few attempts to contact an invalid number, suggesting that records – where held – were reasonably accurate (although it is not known whether any contact made was with the right person).

Conclusion

None of the tested interventions could be relied upon to improve response or sample representativeness. There is some indication that use of SMS reminders produces a good response among those for whom mobile numbers are recorded, but the increase is too small to be confident of its effect. There are however clear indications that the online survey (intervention B) resulted in a very poor response, and this is reflected in a relatively large survey error component. The shorter questionnaire on its own (intervention A) produced a less representative sample compared with other pilot conditions and this also contributed to a relatively large RMSE.

Recommendations

At present, there is no evidence to support using any of these interventions in the main survey, although the use of SMS reminders is a relatively low-cost option and appears to be at least as effective in prompting a response as the standard system of postal reminders. Inclusion of this intervention in further studies would be helpful to gain more evidence. At present, its effectiveness overall is limited by the proportion of service users with mobile numbers recorded.

The online response mode (via SMS) is not viable at present for the community mental health survey.

The study was designed and powered to test interventions to improve response, and therefore could not simultaneously test for a significant decrease in response. With the advent of mixed-mode surveys, it is advisable to power future studies to apply a two-tailed test and thereby detect any significant decrease in response.

References

- Bethlehem, J., Cobben, F., & Schouten, B. (2009). *Indicators for the representativeness of survey response* (Statistics Canada's International Symposium Series: Proceedings). Statistics Canada.
- de Heij, V., Schouten, B., & Shlomo, N. (2015). RISQ manual 2.1. Retrieved from <http://www.risq-project.eu/>

Appendix 1

R-indicators for postal interventions

Condition	Statistics		95% CI for R-indicator	
	R-indicator	SE of R-indicator	LCL	UCL
CTRL	0.899	0.009	0.881	0.918
A	0.795	0.045	0.706	0.883
D	0.930	0.044	0.844	1.016
A.D	0.874	0.023	0.830	0.918

R-indicators for SMS-based interventions

Condition	Statistics		95% CI for R-indicator	
	R-indicator	SE of R-indicator	LCL	UCL
CTRL	0.877	0.012	0.854	0.900
B	0.909	0.019	0.873	0.945
C	0.876	0.051	0.777	0.976
A.C	0.857	0.024	0.810	0.905
C.D	0.849	0.024	0.801	0.896

Appendix 2

Participating NHS trusts

CQC and the Survey Coordination Centre wish to extend thanks to the ten NHS trusts who volunteered to participate in this pilot: Barnet, Enfield and Haringey Mental Health NHS Trust; Essex Partnership University NHS Foundation Trust; Livewell Southwest; Central and North West London NHS Foundation Trust; Cheshire and Wirral Partnership NHS Foundation Trust; Coventry and Warwickshire Partnership NHS Trust; South West London and St George's Mental Health NHS Trust; South West Yorkshire Partnership NHS Foundation Trust; Northumberland, Tyne and Wear NHS Foundation Trust and Oxford Health NHS Foundation Trust.