

Reducing alcohol-related harm in disadvantaged men: development and feasibility assessment of a brief intervention delivered by mobile telephone

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Scientific summary

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Background

Alcohol-related morbidity and mortality present a major public health challenge. The cost of alcohol to society has been estimated at more than £55B per year in England and more than £3.5B per year in Scotland. People who are socially disadvantaged are at a markedly higher risk of developing alcohol-related diseases. Brief interventions delivered to middle-aged men in health-care settings are effective in reducing alcohol consumption. However, this approach may not work with disadvantaged young to middle-aged men who are seldom in contact with health services. Thus, there is a need to develop alternative methods of delivering brief interventions to this high-risk group. Given the scale of the current problem, the delivery methods need to be able to reach large numbers of individuals at low cost.

The mobile telephone is an attractive method to deliver interventions to large numbers of people. This approach is well suited to young to middle-aged men because ownership of mobile telephones is high in this group. Text messaging has been used to modify adverse health behaviours and to increase health-care uptake. Recent systematic reviews suggest that brief interventions by mobile telephone can influence behaviour. The aim of this study was to develop and test the feasibility of a brief intervention delivered by mobile telephone. The intervention was intended to reduce the frequency of binge drinking among young to middle-aged disadvantaged men.

Research questions

1. What are the best ways to recruit and retain disadvantaged men in a study aimed at reducing the frequency of heavy drinking?
2. What is the type of content and timing of the delivery that is most likely to engage disadvantaged young to middle-aged men in an intervention delivered by text messages?
3. Is the intervention likely to be an acceptable way to influence frequency of heavy drinking?

Methods

Ethical approval for all aspects of the study was obtained from the East of Scotland Research Ethics Service (reference number 09/S1401/78). To inform the design of the recruitment strategies and the intervention, six focus groups were carried out, five with men and one with women. Focus group participants were purposively recruited from several venues in areas of high deprivation. Focus group discussions were digitally recorded and transcripts were analysed using framework analysis. Three researchers were involved in the analysis to ensure reliability of interpretation and coding.

The feasibility of a full trial was assessed by carrying out all the stages of a double-blind randomised controlled trial. The study group comprised disadvantaged men aged 25–44 years living in the community. Men were included in the study if they had two or more episodes of heavy drinking (≥ 8 units in a single session) in the preceding month. Exclusion criteria were: men currently attending care at an Alcohol Problem Service; and men who would not be contactable by mobile telephone for any part of the intervention and follow-up period.

Two recruitment strategies were tested: letters of invitation from general practices (GPs) and respondent-driven sampling (RDS). Participants were randomised to the intervention or control group using a web-based randomisation system provided by the Glasgow Clinical Trials Unit. Randomisation was

stratified by recruitment strategy and restricted with a block size of four. On completion of the baseline questionnaire participants were sent: an initial £10 gift voucher; a £5 gift voucher for each week of the study; and a £10 voucher for completing the outcome assessment.

The intervention was a series of 36 Short Message Service (SMS) and Multimedia Messaging Service (MMS) messages delivered by mobile telephone. The content of the intervention text messages was derived from seven types of literature: alcohol brief interventions; text message interventions; two psychological models [theory of planned behaviour and the transtheoretical model (TTM)], motivational interviewing, communication theory and reviews of specific behaviour change techniques. The texts were organised according to the stages of the TTM. The text messages emphasised the credibility of the source (University of Dundee), used the informal style and abbreviations of everyday text messages and made frequent use of humour. A variety of techniques were employed to increase message effectiveness: tailoring of messages; use of gain-framed texts; pairing of messages; and inclusion of questions to promote interactivity. The messages were constructed to take advantage of the conventional pattern of heavy weekend drinking. Messages were designed to tap into three windows of opportunity: before weekend drinking; after a heavy drinking episode; and mid-week sobriety. The control group received 34 SMS and MMS messages on general health promotion, which did not incorporate behaviour change techniques.

Baseline and follow-up interviews were conducted by telephone, with the interviewer blind to treatment status. Questions on alcohol consumption were taken from the US Behavioral Risk Factor Surveillance System. This enabled total consumption and frequency of binge drinking to be measured. In addition, the frequency of drinking substantially in excess of the conventional binge drinking level (i.e. ≥ 16 units in a session) was recorded. The Fast Alcohol Screening Test (FAST) was used to determine hazardous drinking because it is short and thus suitable for telephone use. Questions on refusal skills were taken from the Drinking Refusal Self-efficacy Questionnaire. The Readiness to Change Questionnaire was used to measure the stage of intention to reduce consumption. Questions were also asked on knowledge of harms of alcohol, benefits of moderate drinking, the current definition of binge drinking and whether or not participants perceived their current drinking to be harmful.

Extensive process evaluation was undertaken. The delivery of the intervention was assessed from data captured by the computer system which monitored intervention delivery. The frequency of responses to these questions provided a measure of engagement with the intervention and assessed retention in the study. Content analysis of the responses given provided a method to ascertain the nature of engagement with components of the behaviour change intervention. Interviews with a subsample of men were conducted post trial to investigate the reported acceptability and impact of the study.

Results

Focus group analysis found that explanations for current drinking patterns, and the way these have changed over time, appear rooted in shifts in three interacting conceptual areas: private purpose (the individual's personal reasons for drinking); social roles (expectations, duties and sanctions on drinking); and concrete experience (of the adverse effects of excess drinking). The set of social expectations stem from recognition of the person's wider social roles and responsibilities (employee, husband/partner, parent) and abilities (self-discipline/control, ability to tolerate alcohol, judge limits and resist social pressure).

Drinking motives had changed significantly from when the men were younger. This was accompanied by a shift from 'freedom to' enjoy the pleasures of alcohol to 'freedom from' life stresses through the use of alcohol. Personal experience and knowledge of the harmful effects of alcohol was detailed and widespread. There was often a marked discrepancy between an individual's drinking habits and the intended aims of drinking. Thus, brief interventions could highlight the mismatch between being drunk, and success in socialising, working, 'doing good turns' and feeling good about oneself.

Both recruitment strategies (GP and RDS) proved successful, and 67 men were recruited, exceeding the target of 60 participants. Recruitment by RDS required prior fieldwork to establish suitable venues for recruitment. Flexible recruitment strategies involving multiple attempts at contact at different times of the day and days of the week were essential.

There were substantial differences between the men recruited by the two methods. The men recruited by RDS were more likely to be unemployed and less likely to be married than those recruited through GPs. They also drank more than twice as much as the men recruited through GP practices (139.5 units per month vs 65.5 units per month; $p=0.003$) and had many more binge drinking days (57% of RDS-recruited men had over five binge drinking days per month compared with 17% of GP-recruited men; $p=0.002$). Consequently, these men were also much more likely to have frequent episodes (more than one per month) where they forgot what they had done following a binge drinking session (54% of RDS-recruited men vs 6% of GP-recruited men; $p=0.001$).

At baseline the participants were spread across the age range 25–44 years, almost four-fifths were in the lowest two deprivation deciles and over half only had school-level qualifications. Most men (84%) were classified as hazardous drinkers (positive FAST). The common pattern of alcohol consumption was one of occasional heavy drinking episodes interspersed between periods of complete abstinence. The men all had regular binge drinking sessions, with one-third having six or more binge drinking sessions per month. More than two-thirds of the men had binge drinking sessions at which they consumed more than twice the conventional binge drinking level (8 units of alcohol in a session). However, more than three-quarters of participants had at least 21 alcohol-free days per month, so that average weekly consumption was modest.

Few men (5%) knew the conventional definition of binge drinking and most were unaware that this level of drinking is harmful. Although most men were drinking hazardously, only 25% believed their drinking to be harmful. The Readiness to Change Questionnaire showed that most men (61%) were in the pre-contemplation stage and few were taking action to cut down.

At the 3-month follow-up, 64 of 67 men (96%) completed the outcome interview. The reasons for the high follow-up rate could include a friendly initial contact, incentives for participation, or the humorous non-nagging intervention. Although not powered to detect effectiveness, the results of the feasibility study are compatible with the intervention being effective. The men in the intervention group reported a larger reduction in the frequency of binge drinking (the primary outcome of the full trial). The reduction in the frequency of binge drinking days was accompanied by an increase in the frequency of moderate drinking days. Consistent with this, the Readiness to Change Questionnaire showed that more men in the intervention group had moved out of the pre-contemplation stage and more were taking action to cut down.

Extensive process evaluation was carried out. Ninety-five per cent of the SMS text messages were delivered to the participants' telephones. There was a high level of engagement with the text messages which sought responses. Most men (88%) had replied to at least one response-seeking text message, with more than half (53%) replying to at least seven of the nine texts which sought a response. Many of the replies were carefully structured personal messages. For example, a question about what participants would do if they spent less on alcohol elicited the response: 'saving that money would help me take my girlfriend out for a meal now and then'. Asked about reasons for drinking less, one man replied: 'I really wanna stay out of trouble and not become the person I can be after a few too many'. At the end of the study most men (94%) felt that taking part in the study was worthwhile. They also reported that they told friends and family about the study: 95% to at least one person, 40% to five or more people. A post-trial evaluation showed high levels of satisfaction with the study. Opportunities to improve the recruitment strategy and the intervention were identified.

Conclusions

This feasibility study has demonstrated the feasibility of all stages of a trial of a theory-based intervention delivered by text messages. The flexible recruitment strategies meant the target sample size of individuals from a hard-to-reach group was exceeded. The intervention, tailored to the target group and delivered through a medium familiar to the participants, promoted high levels of engagement. Loss to follow-up was very low.

A very high proportion of the men were classed as hazardous drinkers and thus would be referred for brief interventions. A common pattern of drinking involved occasional episodes of very heavy drinking interspersed with periods of abstinence. This is likely to be causing substantial harm. Men recruited through the RDS were most at risk because they binge drink much more frequently and consume much larger amounts. Such men are likely to be missed by health service-based interventions.

The interactive nature of the intervention was successful in engaging participants. This feasibility study has identified a new and very useful tool for process evaluation in assessing complex interventions delivered electronically. Content analysis of responses to text messages measured the extent of engagement with components of the behaviour change strategy, identified ambiguity in messages and highlighted gaps in the intervention and areas for improvement. The process measures showed that the men engaged seriously with the text messages. They also showed that key components of the behaviour change strategy had the desired impact on the participants.

In summary, this study has successfully tested the feasibility of all aspects of a behaviour change intervention study which used text messages to deliver a brief alcohol intervention to disadvantaged men in early mid-life. As the target group has been little studied and the design and delivery of the intervention posed interesting challenges, the study provided the opportunity to make a series of important empirical and methodological advances. This study design has demonstrated the potential to recruit, engage and modify drinking behaviour among disadvantaged young to middle-aged men. We recommend that a full trial of the intervention be carried out to assess the effectiveness of the intervention. We further recommend that a cost-effectiveness study be incorporated into the trial to determine whether or not the approach is truly a low-cost method of reaching large numbers of disadvantaged men.

Study registration

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