

Supplementary Tables

Table S1. Features of the text message interventions

Author, Year, (Study)	Frequency of SMS	SMS content and characteristics	Text messaging platform	Additional support
Arora, 2014 (TEXT-MED) ²⁷	2 daily text messages for 6 months	SMS. Educational/motivational (1 per day), Medication reminders (3 per week), Healthy living challenges (2 per week), trivia (2 per week). Unidirectional SMS based on framework of 'Health Belief Model.'	Third party message delivery service	Participants received modest compensation (\$175 for 6 months) for time and travel costs. Participants were given \$20 per month to upgrade to unlimited messaging plan if they were not already part of one.
Bobrow, 2016, (StAR) ¹⁵	1 non-health related SMS every 6 weeks (usual care) Number of messages per week not reported	Provided both Informational (unidirectional) and Interactive (bi-directional) SMS service. Messages were available in 3 languages: English, isiXhosa and Afrikaans. Mapped on a taxonomy of behaviour change techniques.	Open-source Web-based electronic medical record system (Open MRS version 1.6.1, Open MRS Ltd, Grandville, MI)	
Chow, 2015, (TEXT ME) ²⁴	4 messages per week for 24 weeks	Semi-personalised unidirectional SMS providing advice, motivation and information. A bank of messages was developed based on the Australian Heart Foundation Healthy Living Guidelines.	Study-developed computerised message management program	
Islam, 2015, (MPID) ³⁰	1 SMS every day for 6 months	One-way SMS. Total 90 SMS. Based on principles of behavioural learning theory and trans-theoretical model of behavioural change.	Automated text messaging in partnership with Grameenphone Bangladesh	None
Kiselev 2012 ¹⁶	SMS frequency determined by an algorithm	SMS on BMI and smoking sent once per week, and on BP medication were sent daily or weekly.	IT system with SMS and mobile phone technology	Telephone consultation?
Maddison, 2014 (HEART) ³²	6 SMS per week for the first 12 weeks, 5 SMS per week for 6 weeks and 4 SMS per week for the remaining 6 weeks	Personalized automated SMS program with 1) regular exercise prescription, 2) provision of behaviour change strategies and 3) technical support. The behavioral support program is grounded in self-efficacy theory and role modeling	Not reported	Additional support was provided via a secure website, that included role model video messages, an opportunity to self-monitor progress, and information on physical activity
Pfaeffli Dale, 2015 (Text4Heart) ²⁵	7 SMS per week for 12 weeks and 5 SMS per week for the remaining 12 weeks	Personalized SMS with participants' name and preferred time of day to receive messages. Bidirectional messaging as the participants were prompted to text their weekly pedometer step counts and to ask questions or for feedback in behaviours. Evidence- and theory-based	Not reported	Additional support in a secure website with additional information, biweekly tips via a participant blog, graphs with pedometer step counts and short video messages from role models. Participants were reimbursed for any costs

Ramachandran, 2013 23	2 to 4 SMS per week	Messages were based on the trans-theoretical model of behaviour change.	A mobile phone messaging delivery manager website was created in partnership with Intel (Bangalore, India).	associated with text-messaging. At baseline all participants received personalized education and motivation about healthy lifestyle principles and written information about diet and physical activity. Patients who had not taken their medication or not responded to the messages were telephoned to determine whether there was a reason for not taking the medication and if so, discuss this with a view to resolve the issue.
Wald DS, 2014 29	Daily for 2 weeks, alternative days for 2 weeks and weekly thereafter for 22 weeks	The text messages were customized so each patient received the text just after the time they were advised to take their medication. Participants were asked to send text message reply to each message sent, indicating whether they had taken their medications, whether the message had reminded them to take it if they had forgotten or whether they had simply not taken it.	Text messages were automatically generated using a software application designed for the trial.	

Table S2. Sensitivity analysis without HEART study at End of Follow-up*

Outcome	Model	Intervention	Control	Mean Difference (95% CI)	P for difference
SBP	Random effects model (1a)	131.1 (127.2 - 135.0)	133.8 (129.9 - 137.7)	-2.7 (-6.5 ;1.1)	0.1
	Fixed effects model (2)	130.7 (129.5 - 131.8)	134.4 (133.2 - 135.5)	-3.7 (-5.1; -2.3)	<0.001
DBP	Random effects model (1a)	81.1 (79.4 - 82.8)	82.3 (80.6 - 83.9)	-1.2 (-3.0; 0.6)	0.1
	Fixed effects model (2)	80.9 (80.1 - 81.6)	82.4 (81.7 - 83.2)	-1.6 (-2.5; -0.7)	0.001
BMI	Random effects model (1b)	30.8 (30.3 - 31.3)	31.1 (30.5 - 31.6)	-0.3 (-1.0; 0.5)	0.4
	Fixed effects model (2)	30.7 (30.5 - 30.9)	31.2 (31.0 - 31.4)	-0.5 (-0.7; -0.3)	<0.001

Note: All randomised patients with both visits assessed at baseline and month 6 have been included in this analysis.

Note: Primary analysis - Analysis of covariance including randomised treatment and baseline value as fixed effect:

-Model 1: a) includes trial random effect and random treatment by trial interaction, b) includes trial fixed effect and random treatment by trial interaction when model 1a estimates trial random effect to zero,

-Model 2: only fixed effects including trial effect. *For the StAR study, 12-months data was used for follow-up. For all other studies, 6 month data was used for follow-up *HEART study²⁶ was dropped from the analysis.

Table S3. Sub-group analyses

Outcome	Intervention	Control	Mean Difference (95% CI)	P for the difference
SBP				
Education				0.8797
<12 yrs	130.8 (127.0 – 134.6)	131.5 (127.7 – 135.4)	-1.1 (-5.5 ;3.3)	0.6199
>= 12yrs	131.5 (127.7 - 135.4)	132.4 (128.5 – 136.2)	-0.9 (-5.4 ;3.7)	0.7123
Age				0.9362
<60 yrs	129.9 (126.5 – 133.3)	130.9 (127.5 – 134.3)	-1.0 (-5.2 ;3.1)	0.6216
>=60 yrs	133.0 (129.5 – 136.6)	133.9 (130.4 – 137.5)	-0.9 (-5.3 ;3.5)	0.6823
Gender				0.6569
Male	130.7 (126.9 – 134.6)	132.0 (128.1 – 135.9)	-1.3 (-5.5 ;3.0)	0.5635
Female	131.8 (127.7 – 135.8)	132.3 (128.2 – 136.3)	-0.5 (-5.1 ;4.1)	0.8327
DBP				
Education				0.6843
<12 yrs	79.9 (78.4 – 81.3)	80.6 (79.1 – 82.1)	-0.8 (-2.7 ;1.2)	0.4470
>= 12yrs	81.2 (79.6 – 82.7)	81.5 (79.9 – 83.1)	-0.3 (-2.5 ;1.7)	0.7500
Age				0.4820
<60 yrs	81.0 (79.4 – 82.5)	81.7 (80.2 – 83.2)	-0.8 (-2.7 ;1.2)	0.4330
>=60 yrs	79.5 (77.9 – 81.2)	79.7 (78.0 – 81.3)	-0.1 (-2.3 ;2.1)	0.9218
Gender				0.7177
Male	80.5 (79.2 – 81.9)	81.2 (79.9 – 82.6)	-0.7 (-2.6 ;1.2)	0.4762
Female	80.3 (78.7 – 81.8)	80.6 (79.0 – 82.1)	-0.3 (-2.5 ;1.8)	0.7708
BMI				
Education				0.3160
<12 yrs	30.2 (29.7 – 30.6)	30.2 (29.8 – 30.7)	-0.1 (-0.7 ;0.5)	0.7910
>= 12yrs	29.8 (29.3 – 30.2)	30.1 (29.7 – 30.5)	-0.3 (-0.9 ;0.3)	0.3062

Outcome	Intervention	Control	Mean Difference (95% CI)	P for the difference
Age				0.6337
<60 yrs	30.0 (29.6 – 30.4)	30.2 (29.8 – 30.6)	-0.2 (-0.8 ;0.4)	0.4467
>=60 yrs	30.0 (29.6 – 30.4)	30.1 (29.7 – 30.6)	-0.1 (-0.7 ;0.5)	0.7024
Gender				0.6489
Male	29.9 (29.5 – 30.3)	30.1 (29.7 – 30.6)	-0.2 (-0.8 ;0.3)	0.4278
Female	30.1 (29.6 – 30.5)	30.2 (29.8 – 30.7)	-0.1 (-0.7 ;0.5)	0.7112

Note: All randomised patients with both visits assessed at baseline and month 6 have been included in this analysis.

Note: Primary analysis - Analysis of covariance including randomised treatment and baseline value as fixed effect:

-Model 1: a) includes trial random effect and random treatment by trial interaction, b) Includes trial fixed effect and random treatment by trial interaction when model 1a estimates trial random effect to zero,

-Model 2: only fixed effects including trial effect

Table S4. Risk of bias assessment (Cochrane)

Study ID	Random sequence generation	Allocation concealment	Blinding of participants and personnel	Blinding of outcome assessment	Incomplete outcome data
Aurora 2014 ²⁷	Low	Unclear	Low	Unclear	Low
Bobrow 2016 ¹⁵	Low	Low	Low	Low	Low
Chow 2015 ²⁴	Low	Low	Low	Low	Low
Islam 2015 ³⁰	Low	Low	Low	Low	Unclear
Kiselev 2012 ¹⁶	Unclear	Unclear	Low	Unclear	High
Maddison 2015 ³²	Low	Low	Low	Low	Low
Pfaeffli Dale 2015 ²⁵	Low	Low	Low	Unclear	Low
Ramachandran 2013 ²³	Low	Unclear	Low	Low	Low
Wald 2014 ²⁹	Low	Low	Low	Unclear	Low

Table S5. impact of the studies on cardiovascular risk factors

Studies

Aurora 2014 ²⁷

Bobrow 2016 ¹⁵

Chow 2015 ²⁴

Islam 2015 ³⁰

Kiselev 2012 ¹⁶

Maddison 2015 ³²

Pfaeffli Dale 2015 ²⁵

Ramachandran 2013 ²³

Wald 2014 ²⁹

*Non-significant

Impact at the end of the study

All non-significant (HbA1c, medication adherence, quality of life- SF36) *

BP, medication adherence

LDL-C, BP, BMI, physical activity, smoking, heart rate, waist and hip circumference, physical activity

HbA1c, quality of life

BP

Physical activity (quality of life-SF36 Health Domain, self-efficacy) *

Medication adherence

Diabetes incidence, BMI, dietary adherence, (physical activity) *

Medication adherence