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Mobile phone messages to provide support to women during the home phase of medical abortion in South Africa: a randomised controlled trial☆,☆☆,★

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Abstract

Objectives: Home use of misoprostol for medical abortion is more convenient for many women than in-clinic use but requires management of abortion symptoms at home without provider backup. This study evaluated whether automated text messages to women undergoing medical abortion can reduce anxiety and emotional discomfort, and whether the messages can better prepare women for symptoms they experience.
Study design: A multisite randomized controlled trial was conducted in which women undergoing early medical abortion were allocated to receive standard of care (SOC) only (n=235) or SOC+a messaging intervention (n=234). Consenting women were interviewed at the clinic after taking mifepristone and again at their follow-up clinic visit 2–3 weeks later; the intervention group received text messages over the duration of this period. Emotional outcomes were evaluated using the Hospital Anxiety and Depression Scale, Adler's 12-item emotional scale and the Impact of Event Scale-Revised. Preparedness for the abortion symptoms and overall satisfaction with the procedure were assessed using 4-point Likert-type scales.
Results: Between baseline and follow-up, anxiety decreased more (p=0.013), and less emotional stress was experienced (adjusted for baseline anxiety, p=0.015), in the intervention compared to the SOC group. Participants in the intervention group were also more likely to report that they felt very well prepared for the bleeding (p<0.001), pain (p=0.042) and side effects (p=0.027) they experienced. Acceptability and other negative emotions relating to the abortion did not differ between study groups. Ninety-nine percent of the intervention group stated that they would recommend the messages to a friend having the same procedure.
Conclusions: Text messages to women following mifepristone administration for early medical abortion may assist them in managing symptoms and appear highly acceptable to recipients.
Implication Statement: This randomized controlled trial provides evidence for the effectiveness of text messages following mifepristone administration in strengthening medical abortion care. The messages were associated with significant reductions in women's anxiety and stress during the abortion process; they improved preparedness for the abortion symptoms experienced and appeared highly acceptable.

Keywords: Text messaging; Mental health; Acceptability; Medical abortion; South Africa

1. Introduction

Medical abortion (MA) services using mifepristone followed by misoprostol have expanded in South Africa as an intervention to increase access to abortion services. Compared to surgical methods, MA with home use of misoprostol is less burdensome for health care providers, as responsibility for managing symptoms after misoprostol ingestion is shifted to the woman without direct support from providers [1,2]. MA in the first trimester has been shown to be highly acceptable to women in South Africa and elsewhere [3,4]. MA acceptability is dependent primarily on the success of the procedure, and may be moderated by experiences of pain, side effects and access to support [4–7].

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Overall satisfaction and fewer adverse emotional reactions to the abortion have been associated with both the availability of psychosocial support and adequate preparation for expectations around the procedure [8–10]. For women taking misoprostol at home, counselling and guidance by providers [8] and the positive effect of sympathetic and nonjudgmental support systems [11] are important components of effective care.

The use of text messages on mobile phones to strengthen sexual and reproductive health services in low- and middle-income countries has shown promising results [12–16] and is considered feasible in settings where coverage and penetration of mobile phones is extensive or increasing [14]. As in many parts of the world, mobile phone usage is commonplace in South Africa, especially in urban areas [17,18].

Remote support using the Internet or telephone to inform, to support and/or to assist women with assessment of their abortion has been successful in other settings [19–22]. To our knowledge, text messaging has not been used previously to offer guidance and information for women managing their abortion symptoms at home. This research examined whether timed, automated text messages delivered between clinic visits for mifepristone and follow-up of MA could provide support and guidance in "real time" to women. Specifically, we hypothesized that a series of text messages could reduce anxiety and emotional discomfort experienced by women and better prepare them to manage abortion symptoms when at home and without provider care.

2. Materials and methods

Women undergoing MA were recruited from October 2011 to May 2012 at two nongovernmental organizations (NGOs) and two public sector primary care clinics in Cape Town, South Africa. Eligible women were scheduled to undergo MA at the clinic, over 18 years old, willing to comply with visit schedules, accessible by mobile phone and comfortable with receiving abortion-related messaging following enrolment in the study.

Consent was in writing in the woman's language of choice. The study protocol was approved by the World Health Organization Research Ethics Review Committee and the University of Cape Town's Faculty of Health Sciences Human Research Ethics Committee. The trial is registered with the Pan African Clinical Trials Registry (PACTR201302000427144).

The randomization schema was based on randomly permuted blocks of varying size with stratification by site. Participants were assigned (1:1) to the standard-of-care (SOC) control group or the SOC+messaging intervention group. Sequentially numbered, opaque, sealed envelopes containing written indication of assignment were used. The outcome assessment included acceptability of the intervention; thus, interviewers were not blinded.

Both study groups received the standard abortion care from the clinic: abortion counselling and administration of 200-mg mifepristone on site; self-administration of 800-mcg misoprostol (400-mcg sublingual and 400-mcg buccal for all study clinics) 1 to 2 days later at home; and a follow-up clinic visit 2 to 3 weeks later for assessment of abortion completion. At all clinics, standard counselling included information on home use of misoprostol, abortion symptoms, possible medication side effects, signs of complications and the need for follow-up for assessment and initiation of a contraceptive method. When they received mifepristone, consenting participants were administered a baseline interview before randomisation. A second interview took place at the follow-up clinic visit; at this visit, participants were remunerated ZAR 50 (about USD 5.80).

Women in the intervention group received a uniform programme of automated text messages, starting on the day of their mifepristone. Thirteen timed text messages were sent including reminders to take medication as well as information on managing the bleeding, cramping and side effects (such as pain, vomiting and diarrhoea). Messages also highlighted potential problems, such as excess or no bleeding or fever in the days after the misoprostol (Table 1), and were available in three local languages (English, Afrikaans and isiXhosa). Women in the intervention group were given a phone number they could dial at no cost to themselves, if they wished to opt out of the message programme.

The baseline interview included items on sociodemographic information, social support, personal decision making related to the abortion and psychosocial measures of anxiety, depression and emotional discomfort. Study outcomes and acceptability of the intervention were determined at the second interview. Both interviews were conducted by trained fieldworkers using structured questionnaires. Participants were classified as lost to follow-up if they did not return for their clinic visit after a maximum of three phone contacts.

The primary outcomes were changes in anxiety, emotional discomfort and stress experienced between baseline and follow-up, as well as preparedness for the symptoms of the abortion. Anxiety and emotional discomfort were evaluated using the Hospital Anxiety and Depression Scale (HADS) [23] which has been used in other studies on induced abortion [24,25] and Adler's 12-item emotional scale developed for abortion settings [26,27]. The HADS questionnaire contains 14 items, divided into 2 subscales of 7 items (each scoring 0–3) for measuring symptoms of anxiety and depression. Scores of >10 for each subscale are considered clinically significant [23]. Adler's emotional scale includes two negative emotional factors or subscales, each consisting of a subset of correlated emotions. Socially based negative emotions (SBNE) include guilt, shame and fear of disapproval. Internally based negative emotions (IBNE) relate to the unwanted pregnancy and the abortion and include regret, anxiety, depression, doubt and anger. Each item is scored from 1 to 5 according to strength of

Table 1
Examples of the text messages, scheduling and type mapped to specific intentions

Message text	Day and time of delivery	Message content	Intention
Hi there, the pills u took at the clinic may make u bleed. If u do, it can be light, normal or heavy. But don't worry if u don't bleed. The pills you take at home tomorrow will make you bleed. Make sure u have pads and painkillers (Ibuprofen is good. Aspirin is bad so no Disprin or Grandpa).	Day 1 (day of mifepristone); 18 h	Information on symptoms and how to manage them	Reduce anxiety Improve preparedness
Hello! Just a reminder to take the pills you were given, 24 - 48 hours (1-2 days) after u took the pills at the clinic. Put a pill in each cheek and 2 under the tongue, and let them dissolve (break down) there. Take them without water! U can drink 30 min after.	Day 2; 09 h00	Reminders on how to take misoprostol correctly	Reassure on actions to be taken
When u take them, bleeding may start after 20 minutes (but later is OK too). If u vomit within 30 minutes of taking the pills, go back to the clinic for more.	Day 2; 09 h04	Information on symptoms	Improve preparedness
Hey more info on the pills: if u get cramps, use heat or take pain killers. It can be pretty sore - don't be scared. U may feel sick, vomit, or get a runny tummy. It's not a problem.	Day 2; 18 h00	Information on symptoms and how to manage them	Reduce anxiety Improve preparedness
Remember bleeding can be heavy! It's only a problem if u soak more than 6 maxi pads in 2 hours. Call or go to the clinic immediately if that happens.	Day 2; 18 h04	Information on danger signs	Reduce anxiety Improve preparedness
Hi just a reminder that bleeding can be heavier than a normal period, and cramping can be worse. It's OK! Look after yourself:-) If you haven't started to bleed, don't worry. It's only a problem if bleeding didn't start within 2 days after you took the pills at home	Day 3; 18 h00	Information on symptoms	Reduce anxiety Improve preparedness Social support
Hi just a note that if you get a fever more than a day after you took the pills at home, and the fever lasts over 6 hours, please call or go to the clinic.	Day 5; 09 h00	Information on danger signs	Reassure on actions to be taken
Remember that after the pills, bleeding usually lasts a week, but it can go on for as long as a month (that's unusual though!).	Day 7; 09 h00	Information on symptoms	Reduce anxiety Improve preparedness
Hi hope you're good. You may still be spotting (a bit of bleeding or brown bits). If you're bleeding like a normal period or more, make sure you tell them this at your clinic appointment.	Day 13; 09 h00	Information on symptoms, possible incomplete abortion	Reduce anxiety Reassure on actions to be taken

emotion. The mean value for each subscale is reported here as advised by Adler (personal communication).

We also used the Impact of Event Scale-Revised (IES-R) which measures subjective stress related to a specific event [28,29] and which has been used in previous studies measuring postabortion emotional stress [24,25]. The IES-R contains three subscales of which we considered two appropriate for this study; the Impact of event intrusion subscale (IES-I) measures frequency of intrusive thoughts related to an event and the Impact of event avoidance subscale (IES-A) measures deliberate efforts not to think or talk about it (8 items per subscale, each scoring 0–4, maximum overall score for 16 items=64). Deriving cutoff scores from recommendations for the full 22-item scale [30] to the 16-item scale used here, summed overall scores greater than 24 for both IES-I and IES-A combined suggest clinically significant levels of stress.

Preparedness outcomes included how well the information that was given or sent prepared women for the various abortion symptoms they experienced as well as their overall satisfaction with the abortion procedure. We used Likert-type scales of four levels (*No*, *not at all*, *No*, *not really*, *Yes*, *somewhat* and *Yes*, *very much*) to evaluate preparedness for pain, bleeding, side effects and abortion events as they occurred as well as overall satisfaction with the abortion. Secondary outcomes were the need for additional calls to the clinic prior to the scheduled follow-up visit and the duration and reason for additional calls.

Previous studies where no intervention was involved reported a decrease in mean anxiety of up to 50% from preabortion to 3 to 4 weeks postabortion [27,31]. Using an estimate that anxiety in women receiving standard abortion care might decrease by 20% from initial clinic visit to follow-up assessment, a sample size of 230 in each study group at baseline would provide 85% power to detect a decrease in anxiety of 35% or more for the intervention group compared to 20% in the control group, with loss to follow-up of 25%.

We analysed the primary outcomes by intention to treat followed by a per-protocol analysis in which seven participants in the intervention group who did not receive the intervention were excluded. To detect whether results were dependent on whether the MA procedure was successful, the intention-to-treat analysis was repeated excluding women receiving manual vacuum aspiration (MVA) at follow-up due to a failed procedure, persistent bleeding or by request of the woman herself. A priori subgroup analyses were carried out according to prespecified variables including study site, age, home language, education, prior abortion and difficulty or not with the decision to have abortion.

In analysis, Cronbach's alpha (α) was used to assess internal consistency of the psychosocial scales. Means and standard deviations were reported for continuous outcomes at baseline, follow-up and absolute differences from baseline to follow-up. Beta coefficients from linear regression models were used to estimate effect size for absolute differences. For IES-R scores which were measured only at follow-up, crude and adjusted analyses were performed where baseline covariates significantly differed between study groups. Differences in the effect of the intervention across the subgroups were assessed using an interaction term between treatment group and subgroup category in analysis of variance procedures. In analysing preparedness and satisfaction, we dichotomized scales into *Yes*, *very much* versus

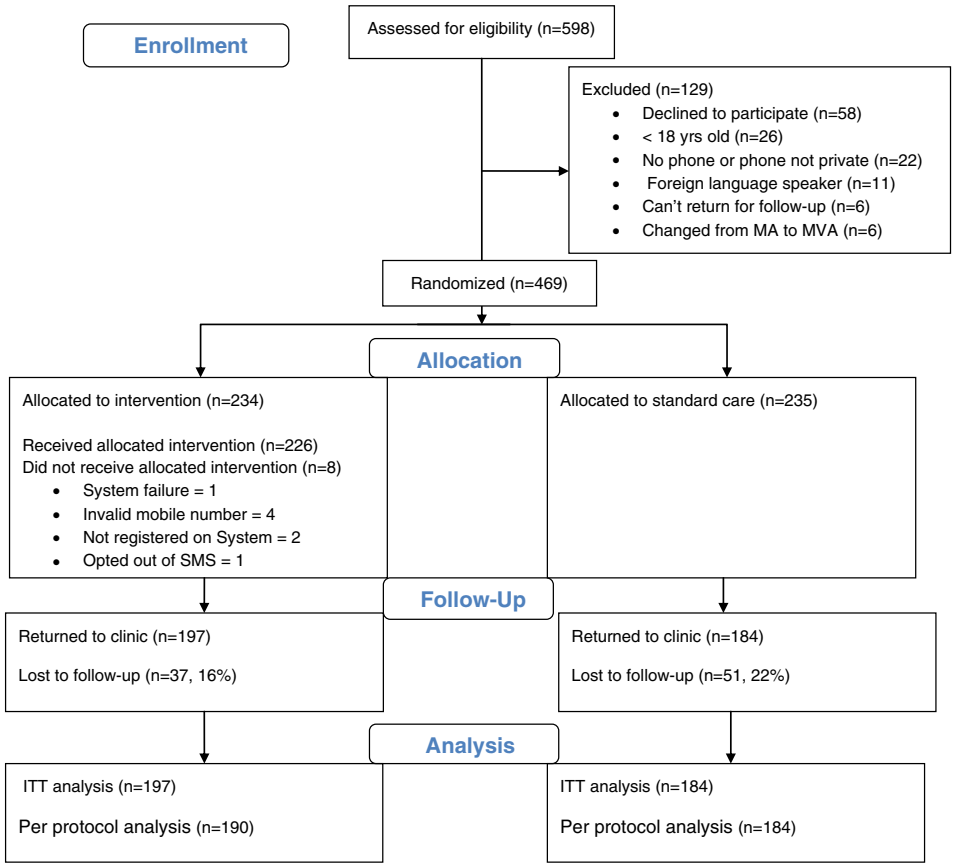

Fig. 1. Trial profile.

Yes, *somewhat*, *No*, *not really* and *No*, *not at all*. Logistic regression, crude and adjusted for baseline differences, was used to estimate odds ratios (ORs) with 95% confidence intervals (CIs) for outcomes.

3. Results

Of the 598 women approached, 58 declined to participate, and 71 were excluded due to ineligibility (Fig. 1). Randomisation allocated 234 to the intervention and 235 to the control group. Table 2 shows the characteristics of participants. Study groups were similar at baseline for most characteristics with the exception of the HADS score for anxiety and the IBNE score, which were higher in the intervention group (p=0.007 and 0.017, respectively).

Loss to follow-up was higher in SOC than in the SOC+messaging group at the second interview (p=0.102) (Fig. 1). For those returning to the clinic for follow-up, there were no significant differences between study groups for severity of pain (p=0.328) or bleeding experienced (p=0.193) during the abortion process.

Internal consistency of the measurement instruments (Cronbach's α) was 0.7 (baseline) and 0.8 (follow-up) for the HADS anxiety subscale and 0.8 (baseline) for the HADS depression subscale. For SBNE and IBNE, α was 0.7 and 0.8 (SBNE) and 0.7 and 0.8 (IBNE) at baseline and follow-up, respectively. For IES-R subscales for intrusion and avoidance, α was 0.8 and 0.9, respectively.

For the primary outcomes at follow-up, both study groups had lower mean scores for anxiety, SBNE and IBNE than at baseline. Intention-to-treat analysis showed that anxiety decreased more in the SOC+messaging group than in the SOC group (β=1.3; 95% CI=0.3 to 2.4; p=0.013). Differences in SBNE and IBNE between baseline and follow-up were not significant for the two study groups (Table 3). The per-protocol analysis had similar results. Crude IES-R scores for avoidance and intrusion were similar for both groups at follow-up: intervention versus control for avoidance (mean=13.1, SD=7.3 vs. Mean=14.4, SD=7.4, p=0.085) and for intrusion (mean=9.0, SD=8.1 vs. mean=9.5, SD=8.3, p=0.541). When avoidance scores were adjusted for baseline anxiety, these were significantly lower for the intervention group (β=−1.8, 95% CI=−3.2 to −0.4, p=0.015), but this was not so for adjusted intrusion scores (β=−1.4, 95% CI=−2.9 to 0.2, p=0.083).

The analysis was repeated excluding those receiving MVA at follow-up (3%), representing cases for whom the abortion was unsuccessful. Results showed similar small, but significant, decreases in anxiety for the intervention versus the control group between baseline and follow-up (β=1.5; 95% CI=0.5 to 2.6; p=0.004). Decreases in SBNE and IBNE

Table 2
Baseline characteristics of participants

Characteristic	SOC, *n=235*		SOC+mobile, [a] *n=234*		p Value*
Mean age in years (SD)	25.6 (5.4)		26.0 (5.6)		0.461
Home language, *n*(%)					0.446
isiXhosa	115	49%	104	44%	
Afrikaans	14	6%	22	9%	
English	80	34%	85	36%	
Other Language	26	11%	23	10%	
High school degree, *n*(%)	187	80%	180	77%	0.484
Full-time job/student, *n*(%)	180	77%	184	79%	0.845
Formal housing, *n*(%)	198	84%	196	84%	0.884
Mean gravidity prior to this pregnancy (SD)	1.1 (1.1)		1.2 (1.3)		0.207
Gestational age: 7–9 weeks, *n*(%)	108	46%	104	44%	0.742
Had previous abortion, *n*(%)	39	17%	34	15%	0.537
Married or in a stable relationship, *n*(%)	188	80%	187	80%	0.982
Wanted to have this abortion, *n*(%)	222	95%	224	96%	0.528
Difficult decision to have this TOP, *n*(%)	130	55%	134	57%	0.671
Support at home during MA process, *n*(%)	159	68%	157	67%	0.896
Mean score for SBNE (SD)	2.9 (1.2)		3.1 (1.2)		0.257
Mean score for IBNE: (SD)	2.6 (1.0)		2.9 (1.0)		0.021
Mean score for anxiety (SD)	10.2 (4.4)		11.3 (4.8)		0.007
Mean score for depression (SD)	8.4 (4.7)		9.1 (5.0)		0.149

[a] SOC+mobile=intervention group (standard of care+messages).
* p Value associated with *t* tests for comparison of means, chi-squared tests for proportions.

were again similar for both study groups. The SOC+messaging group IES avoidance score was lower when adjusted for baseline anxiety (β=−1.7; 95% CI=−3.1 to −0.2, p=0.025). The subgroup analysis showed no evidence for heterogeneity of the intervention across subpopulations except for education, with the intervention appearing more effective for those who had not completed high school than for those who had (p=0.047).

Outcomes measuring preparedness and acceptability of the abortion experience are shown in Table 4. Significantly more participants in the SOC+messaging group were very well prepared for the bleeding (OR=2.9; 95% CI=1.6 to 5.1), pain (OR=1.6; 95% CI=1.0 to 2.6) and other side effects (OR=1.8, 95% CI 1.1 to 2.9) experienced over the past 2 to 3 weeks related to the abortion and were able to understand very well what was happening during the abortion (OR=2.7; 95% CI=1.2 to 6.0). There were no significant differences between the study groups regarding expectations or satisfaction. Repeating the analysis excluding the 12 cases that had MVA at follow-up did not alter results for preparedness; neither did adjusting for anxiety at baseline alter these results. Further comparison between study groups of being unprepared for the abortion symptoms showed that fewer women felt unprepared for bleeding in the intervention group (SOC+messaging=1% vs. SOC=7%, p=0.003), and none in the intervention group versus five (4%) in the control group felt unprepared for the events as they occurred during the abortion.

Secondary outcomes showed no difference between study groups with 17 (9%) intervention and 18 (10%) control participants making calls to the clinic between their baseline and follow-up visit. The number of calls varied from one to five calls per participant calling in and was similar for both groups (data not shown) as was the reason given to make the call. For both groups, the most common reason to call was to talk about bleeding symptoms, followed by pain symptoms and requests to reschedule the follow-up appointment.

The messages were highly acceptable to the SOC+messaging participants. One hundred eighty-six over one hundred ninety (98%) said that the messages helped them through their abortion, and 188/190 (99%) said that they would recommend them to a friend. No adverse events were associated with the intervention, and only one participant stopped the messages early.

Table 3
Anxiety and negative emotions measured at baseline (BL) and follow-up (FU) clinic visits for the abortion

Primary outcome:	SOC group (*n*=184)			SOC+mobile group (*n*=197)			p Value
	Baseline mean (SD)	Follow-up mean (SD)	Absolute difference (BL-FU) mean (SD)	Baseline mean (SD)	Follow-up mean (SD)	Absolute difference (BL-FU) mean (SD)	
Anxiety	10.2 (4.3)	8.0 (5.1)	−2.3 (5.0)	11.4 (4.5)	7.8 (5.3)	−3.6 (5.3)	0.013
SBNE	2.9 (1.2)	2.4 (1.2)	−0.6 (1.3)	3.1 (1.2)	2.4 (1.2)	−0.7 (1.32)	0.310
IBNE	2.6 (1.0)	2.1 (1.1)	−0.5 (1.1)	2.9 (1.0)	2.1 (1.0)	−0.7 (1.0)	0.099

Abbreviations: BL, baseline; FU, follow-up.

Table 4
Experience and acceptability of abortion

Outcome measure	SOC group (*n*=184)	SOC+mobile group (*n*=197)	p Value[a]
	N (%)[b]	*N* (%)[b]	
The information prepared the participant for[b]			
Bleeding experienced	139 (75.5)	177 (89.9)	<0.001
Pain experienced	129 (70.1)	156 (79.2)	0.042
Side effects experienced	136 (73.9)	164 (83.3)	0.027
Events as they occurred during the abortion	163 (88.6)	188 (95.4)	0.016
Expectations coincided with actual experience of events	103 (56.0)	128 (65.0)	0.073
Satisfaction	108 (58.7)	131 (66.5)	0.116
Would recommend abortion method to a friend	120 (65.2)	143 (72.6)	0.121
Would have same procedure again	93 (50.5)	110 (55.8)	0.301

[a] p Values for chi-squared tests.
[b] Categories were "very much" versus "somewhat"+"not really"+"not at all".

4. Discussion

These results suggest that a timed text message programme can provide information preparing women for managing their abortion symptoms at home and reduce abortion-related anxiety and stress during this time. The messages guided women through the MA process using a supportive tone without overtly addressing negative emotions; this may account for the effectiveness of the intervention for anxiety, as compared to SBNE and IBNE which typically arise in relation to the unwanted pregnancy and abortion decision.

As with other previous studies assessing emotional experience during or as a consequence of abortion [24,27,31–34], anxiety and strength of negative emotions in this study were greater prior to the abortion than afterwards. Anxiety levels in both our study groups were slightly above clinically significant levels (> 10) at baseline and dropped to subclinical levels by follow-up. Similarly, postabortion stress and anxiety, particularly in the short term, has been shown to be strongly mediated by preabortion levels [33,34].

The small baseline differences between groups in this study for anxiety and IBNE scores were unlikely to result from failure of allocation concealment; although, we cannot exclude this possibility. Women were allocated to groups only after completion of the baseline emotional assessment and study fieldworkers were all well known and experienced. Stratifying by site showed similar anxiety and IBNE differences between groups at baseline for all sites; this was significant only at one NGO (p=0.054). To adjust for the baseline differences between study groups, we compared change in anxiety and emotions over the duration of the abortion process, rather than absolute values at follow-up. However, given the higher baseline anxiety in the intervention group, it is possible that this intervention benefits women who have high levels of preabortion anxiety, and this warrants further study.

Preparedness for managing the abortion symptoms at home was high in both groups, indicating good standard of care. The text message programme significantly improved the proportion of those very well prepared, by strengthening and extending support for women beyond the clinic environment and providing guidance in real time. The intervention did not have any significant impact on acceptability measures. It is worth noting, however, that combining our results for "somewhat satisfied" with "very satisfied" resulted in 92% (controls) and 96% (intervention group) reporting overall satisfaction with their procedure which compares favourably with reports from other countries where home use of misoprostol is practiced [4–7].

Despite improving preparedness, the intervention did not reduce the numbers of participants calling the clinic between baseline and follow-up with questions relating to their abortion. We did not examine associations with the need to call due to limited sample size; however, it is possible that women whose abortion symptoms deviated from the usual or expected course would need reassurance and that the intervention would not assist in these cases.

We had differential loss to follow-up with more nonreturnees in the SOC group (Fig. 1). It is possible this could have introduced bias into our results, as women not returning might have felt more comfortable managing their abortion symptoms at home, compared to those who returned for clinic follow-up. However, we determined that there were no significant differences between study groups for all baseline characteristics among nonreturnees.

This study adds to the growing body of evidence evaluating the use of mobile phones to strengthen and simplify MA provision. This evidence comes at an opportune time as MA services gradually expand into new areas in South Africa and other resource-limited settings, while at the same time there is increasing interest in the role of mobile phone interventions to strengthen health services. This mobile-based support was evaluated as an "enhanced care" intervention, rather than as a substitute for in-clinic care. However, it could conceivably be offered to women as a helpful adjunct to telemedicine abortion services or to those who have accessed abortion medication outside of the clinic environment such as through pharmacies. The messages had

a very high level of acceptability, are inexpensive (less than US$1 per woman) and can be set up so as to place no additional burden on healthcare workers. As such, this form of support has great potential especially where women have limited access to abortion-related support or where levels of stigma are high. In addition to infrastructural requirements, mHealth interventions to strengthen healthcare require that text messages be adapted to meet the audience's needs and cultural nuances. Given locally acceptable content, we expect that our findings should be generalizable to other countries where mobile phone network systems are reliable and phone privacy is not a major issue.

The study has various limitations. Firstly, there was a bias towards a better-resourced population than the national average: study participants had a higher level of education and employment than the general population; two thirds were recruited at NGO clinics where they had to pay for services (as opposed to public sector clinics where abortion services are free); and all study clinics were in an urban setting. The primary outcomes of anxiety and emotional discomfort are difficult to measure; however, the internal consistency of the instruments used in the study was good, with Cronbach's α values similar to those reported elsewhere [27,29,30]. The instruments measuring anxiety and emotional discomfort in the study have been validated in abortion settings elsewhere; however, these had not been validated previously for this particular study population.

In conclusion, text messages to women sent between their clinic visits for mifepristone and follow-up of early MA can provide information and lead to reduced anxiety and stress and can alert them to possible complications. Given a no-cost opt-out phone number that recipients could text to stop the messages, they are highly acceptable to recipients, and their privacy could be protected.

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