Effectiveness and acceptability of targeted text message reminders in colorectal cancer screening: a randomised controlled trial (M-TICS study)

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Abstract

Background: Mobile phone text message reminders to increase colorectal cancer (CRC) screening participation have shown moderate effects.

Objective: This study assessed effectiveness and acceptability of targeted text message reminders for those who picked up but did not return their screening kit at pharmacy within 14 days in a CRC screening program in Catalonia, Spain

Methods: We performed a randomised control trial in the screening hub of the metropolitan area of Barcelona that covers 502,348 adults aged 50-69 years. In total, 9,369 individuals were randomised in a 1:1 ratio to receive either a text message reminder or no reminder. Main primary outcome was FIT completion rate within 126 days from FIT kit pick-up (intention-to-treat-analysis). A telephone survey assessed acceptability and appropriateness of the intervention. Cost-effectiveness of adding a text message reminder to FIT completion was also performed.

Results: FIT completion rate was 77.7% in control arm and 82.6% in text message arm. Higher participation rates in intervention arm were reported independent of sex, age, socioeconomic level, and screening profiles. 89.2% of interviewees considered it important and useful to receive text message reminders to FIT completion, and 93.4% preferred text messages to postal letters.

Conclusions: Adding text message reminders to the standard procedure significantly increased FIT kit return rates and was considered acceptable and appropriate. The SMS plus letter reminder to complete and return the FIT kit was a cost-effective strategy. Clinical Trial: Registration Number NCT04343950 (04/09/2020) at clinicaltrials.gov

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Keywords: text message; mobile health; colorectal cancer screening; participation.

Introduction

Decreasing the burden of colorectal cancer (CRC) is a public health priority in most high-income countries [1]. In 2020, the incidence of CRC in Europe ranked third in men and second in women, with approximately 191,053 new cases in men and 150,366 in women, and it was the second cause of cancer death in men (87,185) and the third one in women (68,920) [2]. Although different screening strategies exist, CRC screening programmes using self-administered faecal occult blood test kits effectively reduce CRC mortality [3]. The Council of the European Union has recently published a new EU approach to cancer screening, replacing Council Recommendation 2003/878/EC. The new approach recommends quantitative FIT as the preferred test for colorectal cancer screening (2022/ C 473/01) [4]. Participation in colorectal screening programmes varies substantially throughout Europe, from 11.6% to 67.7% [5]. To boost participation, the European Quality Guidelines for quality assurance in colorectal cancer screening and diagnosis recommends a reminder letter mailed to all non-attenders and set that although more effective than other modalities, phone reminders may not be cost-effective 5. Moreover, new strategies and communication channels for improving participation among the target population of such programmes need to be investigated.

Health systems are transitioning to a networked society and adapting their communication systems to mobile technologies [7–9]. Mobile phone text messaging allows communication with large numbers of individuals at a relatively low cost, delivered almost instantly. It is a less intrusive method than a phone call and can be read whenever it is convenient for the receiver, without the need to install a mobile application. Text message reminders have shown effectiveness to increase mammography attendance in Breast Cancer Screening, and the European Commission Initiative for Breast Cancer now recommends its implementation in screening programs [10]. In CRC screening, text message reminders to improve participation have shown moderate effects [11–14].

Catalonia (Spain) launched their CRC screening programme in 2000, which provides free screening for men and women aged 50–69 years using a faecal immunochemical test (FIT). The programme is operated by eleven screening offices, most using a pharmacy-based model to distribute and collect the FIT kits [15]. Although global participation remains low, among individuals who pick up the FIT kit at the pharmacy, compliance with FIT completion is high (93.5%) [16]. However, a non-negligible percentage of individuals who collect the FIT kit at the pharmacy do not return it (6.5%). Opportunities for targeted interventions afforded by pharmacy-based CRC screening models have not yet been formally tested in randomised trials. Compared with solely mail-based screening models, pharmacy-based models provide additional screening behaviour data points, such as FIT pick up rates or return timings. These programme data can be interpreted using behaviour change

theory to classify participants by stages of adoption of CRC screening behaviour[17,18], which in turn can inform targeted text message interventions for these groups. Implementing a text message intervention targeting individuals who demonstrate concern for screening may optimise the return rate and indirectly increase the overall participation in CRC screening. This study assessed the effectiveness and acceptability of targeted text message reminders for individuals who picked up but did not return their FIT kit within 14 days. Furthermore, a simple cost-efecctiveness analysis of adding an SMS reminder to FIT completion was performed.

Methods

Design

A randomised controlled trial (RCT) was conducted between 30 June and 5 November 2021. This trial is part of the M-TICS Study, with the protocol previously published [19] according to the SPIRIT statement [20]. The intervention was compared with the standard screening procedure. Embedded in the trial was a process evaluation using a telephone questionnaire exploring the acceptability of the intervention on a sample of trial participants. The study received ethical approval from the Ethics Committee of the Bellvitge University Hospital (reference PR042/20).

Setting

The screening hub of the Catalan Institute of Oncology, part of the Catalan CRC screening programme (Spain). The hub covers a target population of 502,348 men and women aged 50–69 years (1 January 2020) from the Northern and Southern Metropolitan Areas of Barcelona. The hub identifies individuals due for screening from the Central Register of Insured Persons of the Catalan Health Service. All eligible individuals receive an invitation letter to pick up a FIT kit at any pharmacy participating in the CRC programme. In the sixth week, a reminder invitation letter is sent to non-respondents. Individuals who picked up but did not return their FIT kit after 30 days receive an additional reminder letter to complete and return it. Community pharmacies send completed FIT kits to their allocated laboratory to be processed. Individuals with positive FIT results are offered a diagnostic colonoscopy.

Participants and randomisation

The researchers designed an application using JavaScript's built-in Math.random function to select and randomise eligible individuals in a 1:1 ratio to the intervention or control arm. From 30 June 2021 onwards, the application randomised eligible individuals to the intervention daily until the target sample size was achieved. Individuals without a registered

mobile phone were excluded. Neither study participants nor investigators or data analysts were blinded to the intervention. However, the endpoint of this study did not require subjective judgment.

Intervention description

Individuals randomly assigned to the intervention arm received a text message reminder to return their FIT kit if they had not returned it 14 days after picking it up. Individuals randomly assigned to the control arm received no reminder. In both arms, participants still received the programme's standard reminder letter if they had not completed the FIT kit 30 days after picking it up.

Text messages were bidirectional (enabled two-way messaging) with fully automated delivery. The text of the message did not include individual data, and the telephone number of the screening office was provided to resolve any concerns.

Process evaluation

A subset of trial participants from both arms was recruited using a consecutive sampling between October and November 2021. Participants were invited to respond to a brief structured telephone survey two weeks after the intervention. All calls were made during office hours (8-15h). The questionnaire comprised nine items addressing the perceived acceptability and appropriateness of the intervention. Those who confirmed having received the reminder were also asked about the understandability of the text message.

Outcomes and baseline variables

The primary outcome of this study was the FIT completion rate within 30 days, 60 days, and 126 days from FIT pick-up date. Secondary outcome measures were user response time (time to FIT completion) and the number of FIT kits needed to complete a screening episode. Baseline variables were sex, age at the time of invitation, previous round screening behaviour (participant or not), and Catalan tertiles of deprivation score index (DS, based on the individual's primary healthcare area) [21].

Sample size

Calculations were made to detect differences in participation among intervention and control groups. We estimated that about 14,000 individuals would not complete the FIT kit annually within 14 days from pick up (66.4%),15% of individuals will not have a mobile phone registered, and 10% of phone numbers will be wrongly recorded. Using these estimates and considering a two-sided alpha of 5% and a power of 90%, we established that a sample of 10,174 individuals (5,087 individuals in each group) would be needed to

detect a 3% difference in participation between the intervention and control groups.

For the process evaluation survey, a sample size of 638 subjects was estimated by considering a population percentage of around 85% of text message appropriateness, with a 95% confidence and a precision of +/- 3 per cent point units. A replacement rate of 20% was anticipated.

Cost-effectiveness of adding an SMS to FIT completion

The intervention arm costs were estimated by calculating the cost of sending an SMS (0.05 €) to individuals who collected the FIT kit but had not completed it at 14 days, plus the cost of sending a letter (0.51 €) at 30 days for individuals who had not yet completed the FIT kit at this point in time. The costs for the control arm were estimated by calculating the cost of sending a reminder letter to individuals who had not yet responded at 30 days. Incremental costs were therefore determined as the difference between the cost for the intervention arm and the cost for the control arm. Participation in CRC cancer screening at 126 days was considered the unit of benefit (effectiveness) in each arm. Therefore, the effect on incremental participation was calculated as the difference in participation between the intervention arm and the comparator arm. The incremental cost-effectiveness ratio (ICER) was defined as the ratio of incremental cost to incremental effect.

Statistical analyses

Baseline characteristics of the control and intervention arms were compared to identify imbalances in covariates during randomisation. Continuous variables were analysed using Student's t-test and categorical variables using Chi-square tests. The primary study outcome (FIT completion rate within 30 days, 60 days, and 126 days from FIT pick up date was assessed on an intention-to-treat basis. Time-to-event analysis was conducted from the intervention date and FIT completion date. Time to FIT completion was described using Kaplan-Meier estimates, testing differences using the log-rank test. Associations of the assigned arm with FIT completion status were assessed using a Cox proportional hazards model adjusted for the potential confounders, including sex, age, previous screening, and DS index. Results were reported as hazard ratios (HRs) and 95% confidence intervals (CIs). Process evaluation survey responses were synthesised using descriptive statistics.

All statistical tests were two-tailed, with $P < .05$ considered significant. All the analyses were performed using STATA version 17.0 (Stata Corp LP, College Station, Texas).

Results

Characteristics of the study population

Between June and November 2021, a total of 10,369 individuals were enrolled in this study. One thousand individuals (9.6%) who had no mobile phone number registered were excluded from the trial. Of the 9,369 individuals included, 4,806 were randomly allocated to the control arm and 4,563 to the text message reminder arm. Text messages failed to be delivered in 100 (2.2%) individuals assigned to the intervention group but were still included in the intention-to-treat analysis. In addition, 11 individuals in the control arm and 15 in the intervention arm who returned the FIT kit between data extraction and text message delivery were also included (*Figure 1*).

The sample included 4,792 women (51.2%), the mean [SD] age was 57.6 [5.6] years, 5,584 (59.9%) individuals were from a low DS area, and 5,248 (56.0%) had a previous screening test. Baseline characteristics were similar in both groups (*Table 1*).

Table 1. Participants' baseline characteristics by trial arm

	Intervention	**Control**	***P value***	**Total**
	n (%)	**n (%)**		**n (%)**
Sex				
Female	2,310 (50.6)	2,482 (51.6)	*.32*	4,792 (51.2)
Male	2,253 (49.4)	2,324 (48.4)		4,577 (48.9)
Age, mean (SD), years	57.6 (5.6)	57.6 (5.6)	*.68*	57.6 (5.6)
Age groups, years				
50-59	3,084 (67.6)	3,219 (67.0)	*.50*	6,303 (67.3)
60-69	1,479 (32.4)	1,587 (33.0)		3,066 (32.7)
Deprivation Score				
1st tertile	2,696 (59.1)	2,888 (60.1)	*.53*	5,584 (59.6)
2nd tertile	1,078 (23.6)	1,124 (23.4)		2,202 (23.5)
3rd tertile	789 (17.3)	794 (16.5)		1,583 (16.9)
Previous screening				
No	2,018 (44.2)	2,103 (43.8)	*.65*	4,121 (44.0)
Yes	2,545 (55.8)	2,703 (56.2)		5,248 (56.0)
Total	**4,563**	**4,806**		**9,369**

FIT completion rates

At 30 days of FIT pick-up, a 10% absolute increase in the FIT completion rate was observed in individuals in the intervention arm compared to the control arm (64.2% vs 53.7%, respectively). After accounting for those in both arms who received the standard reminder letter for not returning the FIT kit within 30 days of picking up, the intervention arm

still showed an absolute FIT completion rate increase of 6.6% and 4.8% at 60 days and 126 days, respectively (*Table 2*). Subgroup analysis by sex, age, socioeconomic level, and screening profiles (previously screened/unscreened individuals) consistently showed higher participation rates in the intervention arm (Supplementary *Table*).

Table 2. FIT completion rate among individuals that pick up a FIT kit at the pharmacy and after 14 days have not returned it.

	Intervention (n=4,563)	**Control (n=4,806)**	**Absolute difference in FIT completion rate**	***P value***
	n (%)	n (%)	Points (95% CI)	
Within 30 days	2,928 (64.2)	2,580 (53.7)	10.5 (8.5-12.5)	*<.001*
Within 60 days	3,587 (78.6)	3,461 (72)	6.6 (4.9-8.3)	*<.001*
Within 126 days	3,767 (82.6)	3,736 (77.7)	4.8 (3.2-6.4)	*<.002*

SupplementaryTable. FIT completion rate among intervention and control arms by sociodemographic characteristics.

	Intervention (n=4,563)		**Control (n=4,806)**		**Absolute difference in FIT completion rate**		***P-value***
	%	95% CI	%	95% CI	Points	95% CI	
Sex							
Female	85.1	83.5-86.5	79.1	77.4-80.7	6.0	3.8-8.1	<.001
Male	80.0	78.3-81.6	76.3	74.5-78.0	3.7	1.3-6.1	.003
Age groups, years							
50-59	81.5	80.1-82.9	75.6	74.1-77.1	5.9	3.9-7.9	<.001
60-69	84.7	82.8-86.5	82.0	80.1-83.9	2.7	0.05-5.3	.047
Deprivation Score							
1st tertile	82.4	80.9-83.8	78.0	76.4-79.5	4.4	2.6-9.2	<.001
2nd tertile	83.3	80.9-85.5	77.4	74.8-79.8	5.9	2.6-9.2	.001
3rd tertile	82.1	79.3-84.7	77.3	74.3-80.2	4.8	0.8-8.8	.02
Previous screening							
No	70.8	68.8-72.8	65.8	63.7-67.8	5.0	2.2-7.9	<.001
Yes	91.9	90.7-92.9	87.1	85.7-88.3	4.8	3.2-6.5	.001
Global	82.6	81.4-83.6	77.7	76.5-78.9	4.8	3.2-6.4	<.001

Time to FIT completion

The 90th percentile for FIT return time was reduced by seven days in the intervention arm (48 days) compared to the control arm (55 days). *Figure 2* displays the Kaplan-Meier curve on FIT completion by intervention showing that the time to FIT completion in the intervention arm was significantly shorter than in the control arm (*P* < *.001*).

The adjusted Cox proportional hazards regression model demonstrated that the intervention arm was a significant prognostic factor for FIT completion (HR: 1.21; 95% CI: 1.16-1.27). Furthermore, being a woman and having previously participated in the CRC screening programme significantly increased the probability of FIT completion for those in the intervention arm (*Table 3*).

Table 3. Cox Proportional Hazards Regression Model.

	FIT completion within 30 days	**FIT completion within 60 days**	**FIT completion within 126 days**
	Adjusted HR (95% CI)	Adjusted HR (95% CI)	Adjusted HR (95% CI)
Intervention			
Control	Ref.	Ref.	Ref.
SMS	1.27 (1.21-1.34)	1.23 (1.18-1.29)	1.21 (1.16-1.27)
Sex			
Male	Ref.	Ref.	Ref.
Female	1.12 (1.06-1.18)	1.10 (1.05-1.16)	1.10 (1.05-1.15)
Age groups, years			
50-59	Ref.	Ref.	Ref.
60-69	1.06 (1.00-1.12)	1.05 (1.00-1.10)	1.04 (0.99-1.09)
Deprivation Score			
1st tertile	Ref.	Ref.	Ref.
2nd tertile	1.02 (0.96-1.09)	0.99 (0.94-1.05)	1.00 (0.95-1.06)
3rd tertile	0.97 (0.90-1.04)	0.97 (0.91-1.04)	0.97 (0.91-1.03)
Previous screening			
No	Ref.	Ref.	Ref.
Yes	1.68 (1.59-1.78)	1.76 (1.68-1.85)	1.81 (1.72-1.90)

Number of FITs

The number of FITs used to complete a screening episode did not differ between the trial and control arms (*P* = .99). Of the 3,736 individuals in the control arm who completed screening, 3,568 (95.5%) used one FIT, and 168 (4.5%) required two FITs. Of the 3,736 individuals in the intervention arm who completed screening, 3,600 (95.6%) used one FIT,

and 167 (4.4%) required two FITs.

Acceptability and appropriateness of the intervention

Of the 646 individuals contacted by phone for the process evaluation survey, 415 (64.2%) were interviewed (including 211 individuals in the intervention arm and 204 individuals in the control arm). Most of the interviewed participants stated they would like to receive text message notifications from the screening programme, particularly if this was a reminder to complete and return their FIT (359/415, 86.5%). Most interviewees reported that receiving a text message reminder to complete and return their FIT was important and useful (339/380, 89.2%), and almost all participants stated that they would prefer to receive the reminder via text message rather than letter (355/380, 93.4%). When asked to confirm if they recently received a text message from the screening program, about 6 out of 10 respondents assigned to the intervention arm responded affirmatively (132/211). 100% of respondents who received the SMS reported that the content of the message and what they had to do was clear. In addition, almost all respondents reported having understood who was sending the text message (121/132, 91.7%) (*Table 4*).

Table 4. Acceptability and appropriateness of receiving an SMS notification from the screening programme.

	Intervention (n=211)		**Control (n=204)**		**All (n=415)**	
	n	%	n	%	n	%
*1. Would you like to receive any SMS notifications from the CRC screening programme? **						
Yes	184	87.2	170	83.3	354	85.3
No	0	0.0	5	2.5	5	1.2
Indiferent	27	12.8	29	14.2	56	13.5
*2. In particular, would you like to receive an SMS to remind you to return the FIT kit to the pharmacy?**						
Yes	186	88.2	170	83.3	356	85.8
No	25	11.8	31	15.2	56	13.5
Indiferent	0	0.0	3	1.5	3	0.7
3. Do you think it would be important to receive an SMS to remind you to return the test to the pharmacy?						
Yes	183	94.3	163	87.6	346	91.1
No	11	5.7	22	11.8	33	8.7
Indiferent	0	0.0	1	0.5	1	0.3
4. Do you think it would be useful to receive an SMS to remind you to return the test to the pharmacy?						
Yes	183	94.3	170	91.4	353	92.9
No	11	5.7	14	7.5	25	6.6
Indiferent	0	0.0	1	0.5	1	0.3
Missing	0	0.0	1	0.5	1	0.3
5. How would you prefer to be reminded to return the test by letter or SMS?						
SMS	176	90.7	158	84.9	334	87.9

Letter	7	3.6	13	7.0	20	5.3
Indiferent	9	4.6	12	6.5	21	5.5
No reminder	2	1.0	1	0.5	3	0.8
Do not know	0	0.0	2	1.1	2	0.5
6. Have you recently received a reminder to return the FIT kit at the pharmacy?						
Yes, an SMS	132	62.6	6	2.9	138	33.3
Yes, a letter	23	10.9	21	10.3	44	10.6
No	48	22.7	170	83.3	218	52.5
Don't remember	8	3.8	5	2.5	13	3.1
Missing	0	0.0	2	1.0	2	0.5
7. Was the content of the message you received clear? **						
Yes	132	100.0			137	33.0
No	0	0.0			0	0.0
Don't remember	0	0.0			1	0.2
*8. Did you understand what you had to do (was it clear what you had to do)?***						
Yes	132	100.0			137	33.0
No	0	0.0			0	0.0
Don't remember	0	0.0			1	0.2
*9. Was it clear who was sending you the message?***						
Yes	121	91.7			124	29.9
No	7	5.3			8	1.9
Don't remember	3	2.3			5	1.2
Missing	1	0.8			1	0.2

Cost-effectiveness of adding an SMS to FIT completion

The cost-effectiveness results are summarized in *Table 5.* As the effect (participation) was higher in the intervention arm, the ICER of the intervention arm compared to the standard reminder letter at 30 days was a reduction of 2.4 euros per participant gained.

Table 5. Cost-effectiveness results by trial arm

Trial arm	Non-participants at 14 days N	SMS Cost €	Non-participants at 30 days N	Letter Cost €	Participants at 126 days N	Total cost €	Cost per extra participant €
Only letter	4,806	None	2,226	1,135.3	3,736	1,135.3	
SMS + Letter	4,563	228.2	1,635	833.9	3,767	1,062.0	-2.4

Discussion

This two-arm RCT has shown that targeted text message reminders can be an effective and acceptable strategy to improve FIT completion rates in population-based CRC screening programmes, particularly those requiring participants to collect and return FIT kits at

community pharmacies.

Our intervention increased the FIT completion rate by 4.8 percentage points at 126 days compared to the control arm. Implementing a targeted text message reminder in addition to the standard screening procedure would represent an increase of 0.6 percentage points in overall participation in the programme, given that around 9% of invitees pick up but do not return a FIT within 14 days [16]. According to the estimates of one death prevented out of 647 participating individuals over 25 years of screening [22], increasing this percentage point of screening participation rate in the about 13 million target population in Spain could save the lives of an additional 121 individuals over 25 years. Even without increasing participation, replacing letters with text messages can have a positive effect in reducing costs for the screening programme.

The text message intervention, compared to the control intervention, has additionally resulted in a reduction of seven days in the user's response time to complete the screening of a part of the invitees. This is a crucial result, as the effectiveness of CRC screening is based on the periodic testing by FIT; thus, ensuring a 24-month time sequence between invitations is essential to ensure the benefits of screening [6]. In programmes where people take the test at home, providing a short user response time to complete the test is particularly relevant.

Although the intervention did not reduce the proportion of participants using more than one kit, the results showed that current rates were maintained. In addition, most of the participants who took part in our process evaluation survey reported that receiving a text message reminder prompting them to complete and return their FIT was important and useful, with almost all our survey respondents indicating that they preferred this communication channel to the standard postal reminder letters.

Our study’s main strengths include a randomised design and prospective data collection, combining effectiveness and acceptability data. One key limitation of the present study is that it was not possible to differentiate the effect of adding a targeted reminder to the standard screening procedure from the effect of delivering this reminder via text message. Another limitation was that the intervention was limited to people with a recorded mobile phone number with the screening programme. Although the percentage of individuals with a recorded mobile phone number with the programme was very high, it is still important to note that people who do not own a mobile phone may be the most vulnerable and with the most difficulties in accessing health services.

To the best of our knowledge, this is the first intervention study to test text message reminders specifically targeting population subgroups of a screening program. Two studies conducted in the national screening programs in England and Israel tested different text message reminders, which led to a marginal increase in gFOBT/FIT usage by 0.6% points [14] and 0.7–1.8% points, respectively [23], but these were delivered to the total population of non-participants. Combining a range of targeted interventions addressed to several specific population subgroups instead of all non-participants would have the potential to further increase overall participation with its related potential benefits.

The increase in FIT completion rates among the individuals who received the text message intervention was observed regardless of sex, age group, socioeconomic level, or whether individuals had been previously screened. Even though participation rates in CRC screening programmes are lower in men and people of lower socioeconomic status [24–26], our results show that adding a targeted text message reminder for people who can be classed as being at a more advanced stage of screening behaviour adoption contributes to improving participation rates even among those who are less likely to participate.

CRC screening programmes have traditionally communicated with their target population by letter. However, making better use of available mobile technology is essential for improving cancer screening programmes and optimising economic resources, as well as reducing the ecological footprint of population-based screening. Our study has shown high levels of perceived acceptability and appropriateness among our study participants, who also indicated that they would prefer to receive notifications from the CRC screening programme via text message rather than a postal letter. Further studies should evaluate the feasibility of using text message reminders alone rather than as an additional intervention to the standard reminder letters. This could help determine the potential for text message reminders to replace letter-based reminders as the standard procedure for reminders in specific populations.

Conclusions

Our findings support the use of more than one reminder at different time points to optimise FIT kit return rates in FIT-based screening programmes. Moreover, our results may contribute to efforts to tailor them to specific population subgroups. Therefore, this is an excellent opportunity to implement strategies that use digital technologies, such as sending SMS in screening programs. Although traditionally, the target population received invitations

by post, the need to establish other means of communication is becoming increasingly evident. Switching the communication method of a screening program from paper to SMS will reduce both costs and ecological footprint.

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Conflicts of Interest

The authors declare funding from ISCIII, no financial relationships with any organisations that might have an interest in the submitted work in the previous three years, and no other relationships or activities that could appear to have influenced the submitted work.

Ethics approval and consent to participate

The M-TICS study was approved by the Ethics Committee of the Bellvitge University Hospital (approval number PR042/20), waiving the requirement to obtain the participant's signature as part of the consent process, as the intervention was a minor variation on the invitation practice. The study has been performed under Good Clinical Practice and the Declaration of Helsinki. The CRC screening programme follows general public health and data protection regulations [27–29] and accomplishes specific protocols based on the existing guidelines [30].

Data availability

Data underlying reported findings have been deposited in the Universitat de Barcelona Digital Repository and are publicly available [31].

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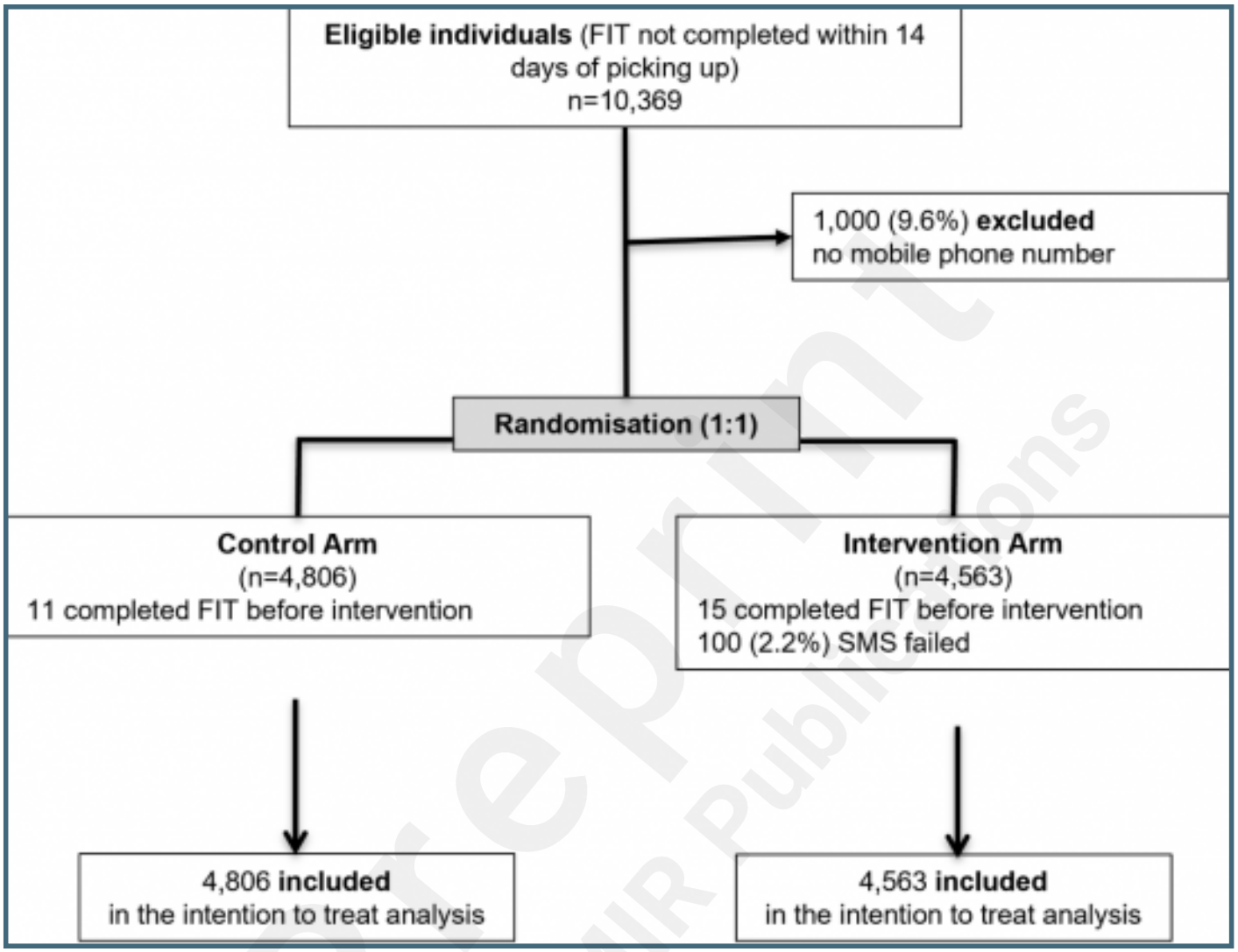
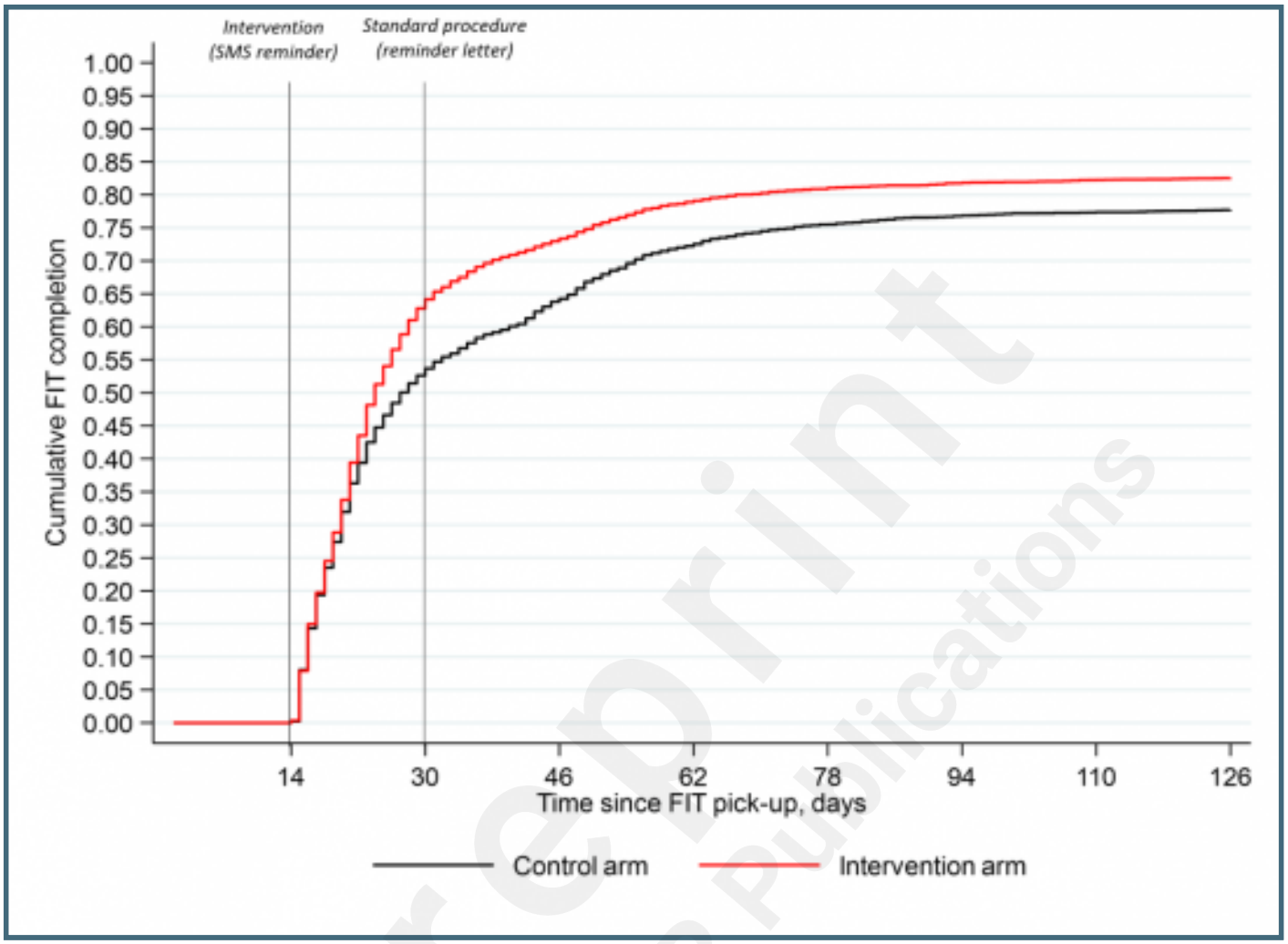
Supplementary Files

Figures

The CONSORT Flow diagram of reminder intervention to complete the IT in a colorectal cancer screening programme.



Kaplan-Meier Curves on the time to FIT completion since pick-up by intervention and control arm.



CONSORT (or other) checklists

CONSORT 2010 checklist of information to include when reporting a randomised trial.
URL: http://asset.jmir.pub/assets/4dee94189fd0fb4cf7f179d56f61a95d.pdf