

Intervention combining interactive communication technologies and nicotine replacement therapy sampling for proactively recruited smokers in smoking hotspots in Hong Kong:

preliminary analysis of a pragmatic randomized controlled trial

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Background & aim

- Instant messaging (IM)-based personalized behavioral support increases abstinence.¹
- Chatbot simulates human conversation and would reduce manpower and costs of IM intervention
- Nicotine replacement therapy sampling (NRT-S) reduces withdrawal symptoms and promotes quit attempts.²
- We assessed the effect of combining interactive communication technologies and NRT-S on SC.

Methods

- Study design:** two-arm, parallel, assessor-blinded, pragmatic randomized controlled trial.
- Participants and setting:** 664 smokers proactively recruited from outdoor smoking hotspots in Hong Kong.³
- Primary outcomes:** carbon monoxide-validated abstinence at 6-month and 12-month.
- Current status:** recruitment completed (Aug 2019-May 2020), ongoing follow-ups are expected to complete in May 2021.

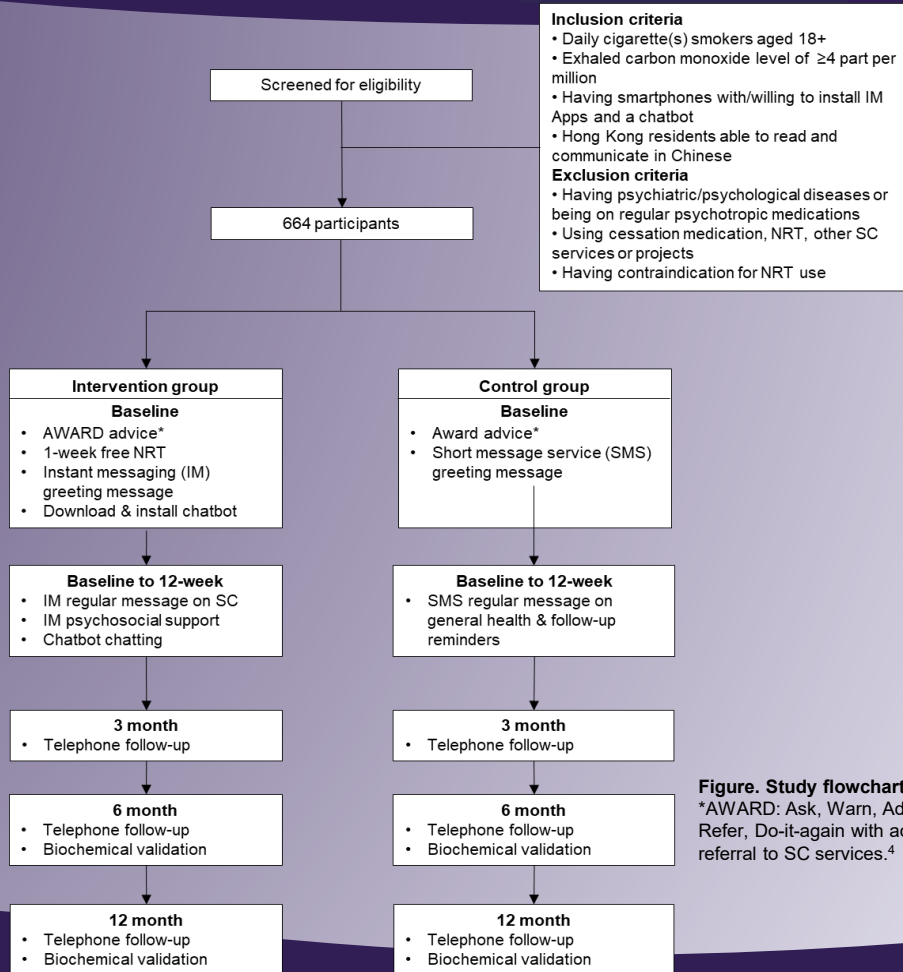


Figure. Study flowchart.
*AWARD: Ask, Warn, Advise, Refer, Do-it-again with active referral to SC services.⁴

Results

- 664 participants (332 each group, 74.4% male, 36.2% aged ≥40)
- 35.1% referred to SC services (Intervention 38.9%, Control 31.3%, $P=0.04$).
- **Intervention group:** 85.4% received 1-week NRT-S, 16.3% engaged in IM conversations, 10.8% used the chatbot with 524 interactions.

Table. Smoking and quitting-related behaviors, referral to smoking cessation (SC) services, and 1-week nicotine replacement therapy sampling (NRT-S)^a

		Intervention (n=332)	Control (n=332)	P
Number of cigarettes per day, mean (SD)		11.1 (6.8)	10.8 (5.7)	0.45
Time to first cigarette of the day (min)	>60	97 (29.3)	104 (31.3)	0.25
	31–60	57 (17.2)	40 (12.1)	
	6–30	89 (26.9)	87 (26.2)	
	≤5	88 (26.6)	101 (30.4)	
Cigarette dependence (Heaviness of Smoking Index, 0–6)^b	Low (0–2)	212 (64.1)	201 (60.5)	0.47
	Moderate (3–4)	113 (34.1)	127 (38.3)	
	High (5–6)	6 (1.8)	4 (1.2)	
Previous quit attempt	No	203 (61.3)	192 (57.8)	0.36
	Yes	128 (38.7)	140 (42.2)	
Readiness to quit	Within 7 days	84 (25.3)	75 (22.6)	0.10
	Within 30 days	92 (27.7)	70 (21.1)	
	Within 60 days	19 (5.7)	24 (7.2)	
	Undetermined	137 (41.3)	163 (49.1)	
Perceptions of quitting^c (0–10), mean (SD)	Importance	7.1 (2.1)	6.8 (2.1)	0.10
	Difficulty	7.3 (2.5)	7.0 (2.4)	0.09
	Confidence	5.9 (2.0)	5.7 (2.1)	0.16
Referral to SC services	No	203 (61.1)	228 (68.7)	0.04
	Yes	129 (38.9)	104 (31.3)	
1-week NRT-S^d	No	48 (14.6)	-	-
	Yes	281 (85.4)	-	

Data are n (%), otherwise as stated. ^a Sample sizes varied because of missing data on some variables.

^b Heaviness of Smoking Index, a 2-item score from multiple-choice response options (0–3) assessing number of cigarettes smoked per day and latency to smoke after waking, with greater scores indicating higher nicotine dependence.

^c Greater scores indicate higher levels of perceptions of quitting.

^d 1-week NRT-S was provided to the Intervention group.

Discussion and conclusions

• Strengths

- Proactive recruitment approach
- Long-term effects with biochemical validation

• Limitations

- Uncertain generalizability to populations including more female smokers
- Possible lower utilization of SC services, suboptimal adherence to NRT-S, and lower engagement with interactive communication technologies due to pragmatic design

- **Conclusions:** Preliminary analysis suggested that technology-enhanced combined interventions plus NRT-S are acceptable to community smokers in Hong Kong.

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