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Use of nicotine replacement therapy sample (NRTS) and brief smoking cessation advice for recruiting smokers to smoking cessation services and motivating quit attempts

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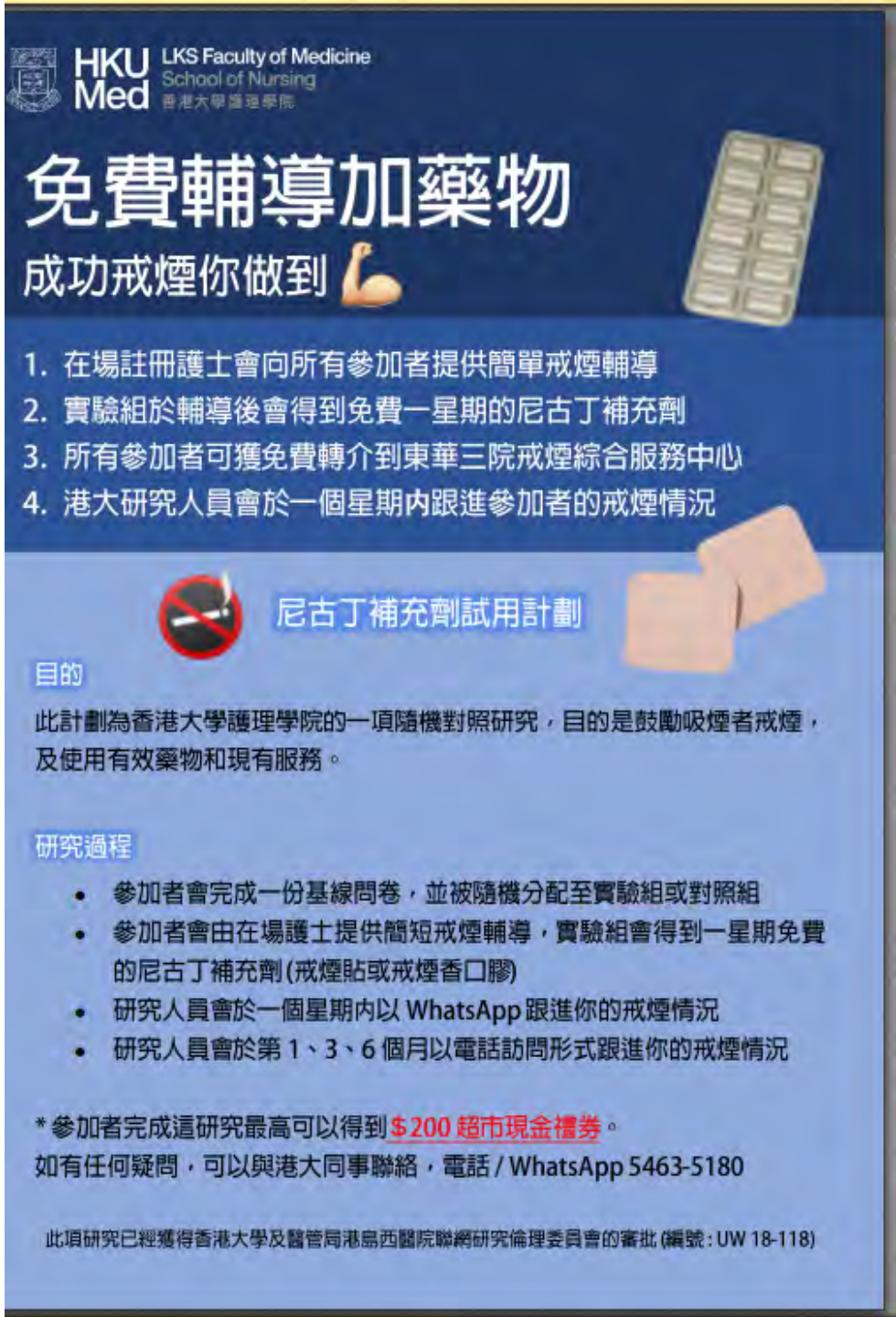

Introduction and Project Objectives

Introduction

- The existing SC services have difficulties to attract smokers to use, and lack resources and cost-effective methods to recruit smokers proactively;
- The provision of nicotine replacement therapy sample (NRTS) immediately after recruitment may reduce the financial and time cost to access NRT;
- NRTS is effective to increase subsequent phone calls to quitline, quit attempts, tobacco abstinence
- Settings: dental care, community, quitline, primary care clinics and public hospitals among smokers with or without motivation to quit.

The objectives of this study were:

- Deliver brief SC advice to the smokers who smoke at outdoor smoking hotspots;
- Promote the use of NRT for quit attempts with NRTS;
- Evaluate the effectiveness of NRTS on the use of any SC service, quit attempts and abstinence.

Research gaps

Limited research on NRTS and smokers' recruitment

- A literature search on the database of Cochrane and PubMed by using the words "smoking," "nicotine replacement therapy," and "recruitment" found only one clinical trial in exploring using NRT sampling for recruitment in Australia (Miller & Sedivy).

Existing research only conducted in clinical settings

- Previous studies focused on settings such as primary care, dental care, etc.
- No research examined the **NRTS distribution at smoking hotspots**

The relationship between NRTS and cessation service use remains unclear

- Previous studies focused on the impact of NRTS on quitting outcomes
- More research are needed to explore **whether NRTS would increase recruitment and service use**

Previous efforts in hotspot promotion

Feasibility, Efficacy, and Cost Analysis of Promoting Smoking Cessation at Outdoor Smoking "Hotspots": A Pre-Post Study

Yee Tak Derek Cheung, PhD □, Tai Hing Lam, MD, William Ho Cheung Li, PhD, Man Ping Wang, PhD, Sophia Siu Chee Chan, PhD

Nicotine & Tobacco Research, Volume 20, Issue 12, December 2018, Pages 1519–1524, https://doi-org.eproxy.lib.hku.hk/10.1093/ntr/ntx147

- Of 3,080 smokers approached, 1,278 (41.5%) accepted the souvenir and 920 (29.9%) received brief advice.
- Of the 210 (6.8%) who consented to the follow-up, 24.5% were aged 15–29 and 46.4% were aged 30–49.
- Of the 151 smokers successfully contacted within 1 month after recruitment, 16 (10.6%; 1.3% of the 1,278 who received any form of intervention) reported abstinence, and their overall knowledge improved.

Selected hotspots in Hong Kong Island


Melbourne Plaza, Central


Theatre Lane, Central


Admiralty Centre, Admiralty


Shun Tak Centre, Sheung Wan


SOGO, Causeway Bay

Selected hotspots in Kowloon


Bus Terminal, Tsim Sha Tsui


Festival Walk, Kowloon Tong


Grand Plaza, Mong Kong


Shum Shui Po MTR station

Selected hotspots in New Territories


Kwai Fong MTR station


Shatin Centre


Tsuen Wan MTR station


Sheung Shui MTR station

Our pilot study

- The NRTS increased quit attempts at 1-month (14% vs. 10%; adjusted risk ratio = 1.25, 95% CI = 0.43 to 3.61) and 3-month follow-up (26% vs. 12%; adjusted risk ratio = 2.17, 95% CI = 0.89 to 5.27), but the differences were not significant.
- About 54% of the intervention group participants used the NRT sample by the first month.

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Original Investigation
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SRNT

Original Investigation

Delivery of a Nicotine Replacement Therapy Sample at Outdoor Smoking Hotspots for Promoting Quit Attempts: A Pilot Randomized Controlled Trial

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Abstract

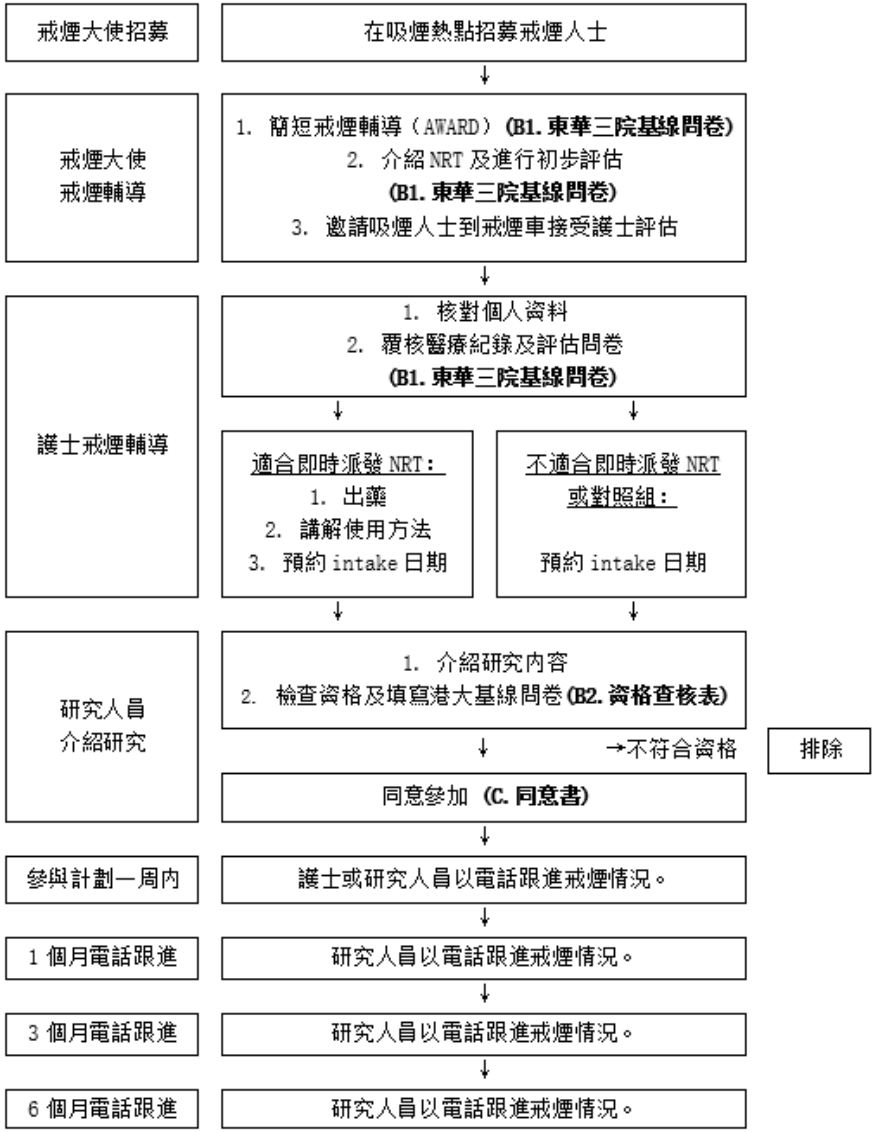
Introduction: Outdoor smoking hotspots are convenient venues for promoting smoking cessation. This randomized controlled trial aimed to obtain proof-of-concept evidence of the feasibility and preliminary effectiveness on quit attempts of delivering a 1-week free nicotine replacement therapy sample (NRTS) to smokers.

Methods: This pilot parallel, single-blinded, two-group (1:1) randomized controlled trial proactively recruited adult smokers in outdoor smoking hotspots in Hong Kong. Smokers consuming at least 10 cigarettes per day and fit for NRT use were individually randomized to receive either a 1-week NRT gum/patch and brief advice lasting 10 minutes (NRTS, $n = 50$), or receive only brief advice (control, $n = 50$). The primary outcomes were any self-reported quit attempts (stop smoking for

Study Procedure

The current study had **4 major phases**:

- Training of smoking cessation ambassadors (SCAs) for the SC promotion
- Randomized controlled trial to examine the effectiveness of NRT sampling
- Follow-up of the recruited smokers
- Evaluation of the effectiveness of training, promotions, and use of NRTS



SCAs recruitment

- Targets: University students who showed interests in promoting smoking cessation.
- Two half-day training sessions (3 hours each) were organized on 24 and 26 September 2018, which trained 102 SCAs.
- Deliver and enhance SCAs' **knowledge** of the hazardous effects of smoking, and improve their **skills** for offering smoking cessation advice, particularly applicable for smokers' recruitment in smoking hotspots .
- We assessed training outcomes immediately after the training, and followed up the ambassadors 6 months after the training.

Photos of SCAs training workshops

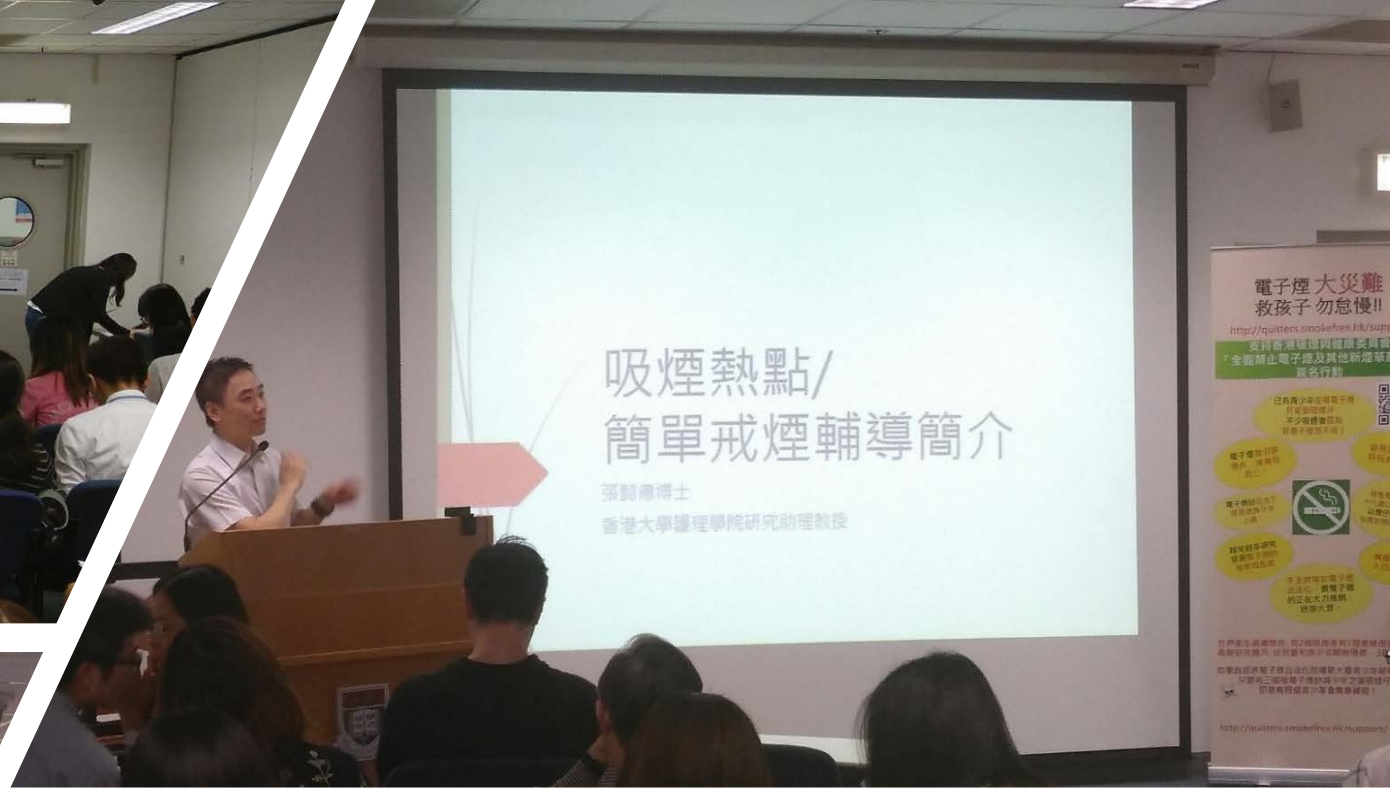
Speakers:

- Academia, physician, registered nurse, outreach coordinators

Contents:

- Knowledge and attitude towards smoking cessation and tobacco control
- Practice of delivering smoking cessation intervention
- Health promotion at smoking hotspots


1/2
死亡風險
(WHO, 2008)
2/3
年青時開始吸煙
(Doll, et al, 2004)


吸煙熱點/
簡單戒煙輔導簡介
張鈞彥博士
香港大學護理學院研究助理教授


請注意
Do's
• 留意安全
• 態度友善
• 適當距離
• 合適衣著
• 資料保密
• 注意天氣
Don't
• 單獨行動
• 數衍塞責
• 吸二手煙
• 死纏爛打
• 過份透露

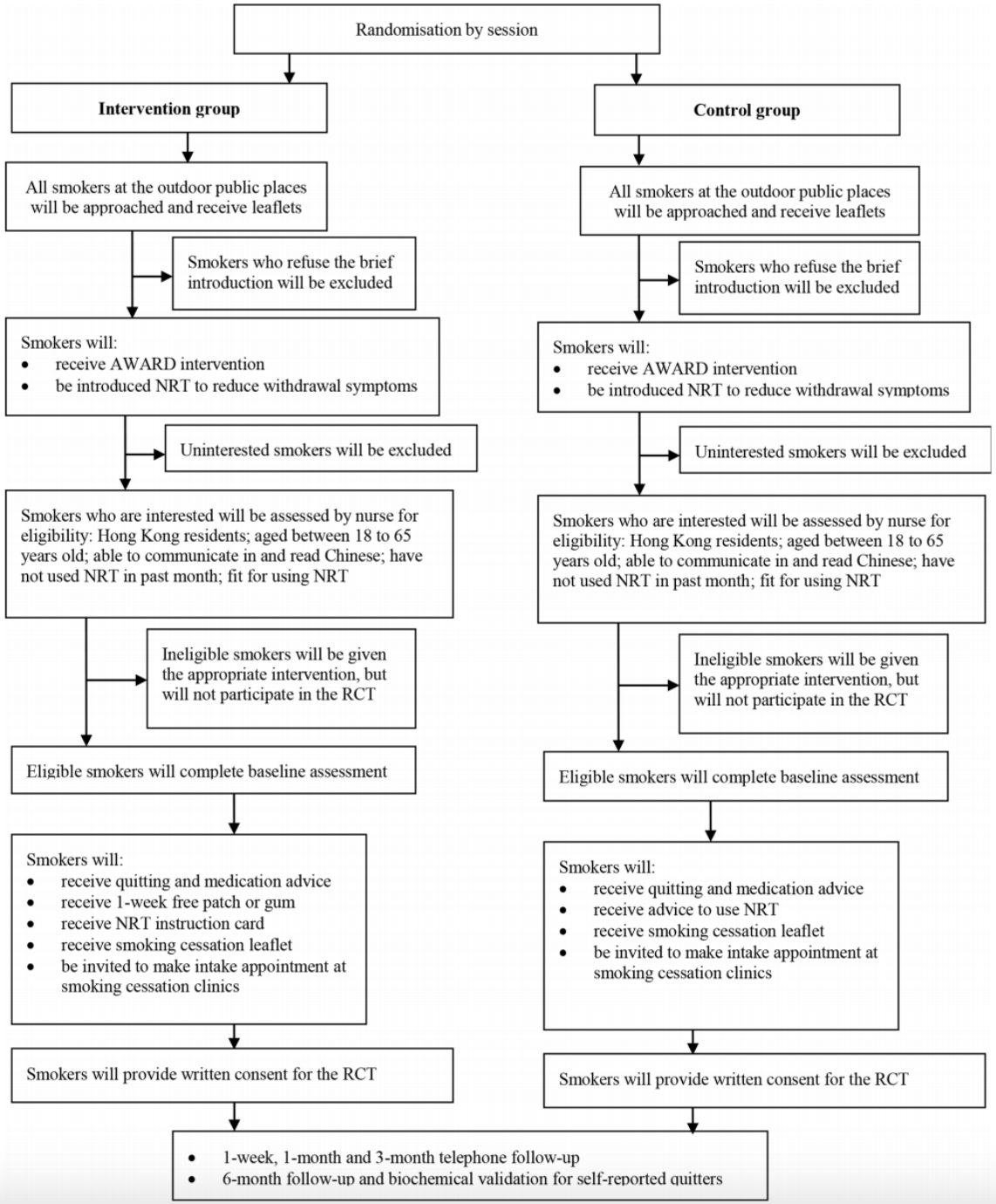
Nurse training

Contents:

Study introduction

NRT prescription

Service operation



Study method

Study design: pragmatic cluster randomized controlled trial (cRCT)
Study period: October 2018 to December 2019
Study setting: Outdoor smoking hotspots where the licensed smoking cessation truck can be parked nearby and many smokers can be approached. Half of the sessions were in the experimental group delivering SC advice and NRTS to the participants. Another half of the sessions were in the control group providing SC advice only
Participants and sample size: 825 smokers
Inclusion criteria: (1) aged 18 years or older, (2) have used tobacco products in the past month, (3) able to read and speak Chinese, (4) have not used NRT for the past month (5) no severe angina, serious cardiac arrhythmias, and hypertension, (6) have not suffered acute myocardial event in the past four weeks, (7) neither pregnant nor breastfeeding, (8) not under medication and treatment due to mental illness.
Primary outcomes: (1) the proportion of smokers who enroll in any SC service in Hong Kong within 1 month of the recruitment; and (2) the proportion of smokers who reported quit attempts at 1-month follow-up.

Recruitment procedure done by SCAs

Steps	建議對白
Opening speech ↓	“你好！我地係香港大學的學生！我地想了解下d人既吸煙習慣，可唔可以同你傾下計呀？”
Ask: ask the participants their smoking and quitting history. Invite the smokers to fill in the baseline questionnaire ↓	“你每日食幾多支煙架？”、“你通常起身之後幾耐先食第一支煙？”、“你有冇試過戒煙呀？”、“你當時用咩方法戒煙架？”
CO test ↓	“我地呢部機可以測試你呼氣裏面既一氧化碳水平，你有冇興趣試下？” “結果顯示你既一氧化碳水平係_____，係正常人既_____倍！”
Warn: warn smokers about the serious health hazards of active and passive smoking, emphasizing ‘1 in 2 smokers will be killed by smoking induced diseases’ ↓	**“喺兩個吸煙人士中，就會有一個因爲吸煙而提早過身！”**
Advice: advise them to quit smoking by emphasizing benefits and strategies of quitting **Refer:** provide the contact information of publicly available smoking cessation services provided by the University of Hong Kong, Department of Health, Hong Kong or Hong Kong Hospital Authority ↓	“你不如試下戒煙呀！ 東華三院有提供專業既戒煙服務，仲係免費既添！”
Introduce NRT ↓	“你有冇聽過戒煙貼、戒煙香口膠？佢地都係研究證明有效幫助戒煙既藥物。”
Invite for onsite nurse counseling Invite smokers to smoking cessation truck to receive nurse counseling ↓	“其實今日東華三院喺附近有流動戒煙車既服務，有護士幫你進行評估，同根據你既身體狀況即時幫你登記合適既戒煙服務。不如我地帶你去睇下！”

Recruitment procedure done by Nurses and research staff

戒煙車
護士
Nurses

Check personal information
Check medical record and evaluate eligibility
↓

Eligible	Not eligible or control group
Provide NRT Introduce usage method Make an appointment for intake ↓	Make an appointment for intake ↓

戒煙車
研究人員
Research Staff

Introduce this study
↓

“你好！我係香港大學護理學院戒煙研究小組的研究人員。我地依家同東華三院合辦緊一項研究，想睇下用尼古丁補充劑去戒煙既成效，等我地可以幫到更多人戒煙。完成我地既跟進研究最多可以有$200現金禮券，你有冇興趣參加？”

Check for eligibility
Fill in the checklist
↓

“多謝你呀！我有三條問題想問下你。1.喺過去一個星期裏面，你係咪每日都食10支煙或以上？ 2.你係咪可以閱讀中文？ 3.你喺過去一個月裏面係咪冇用過尼古丁替代療法？”

Sign consent form

“恭喜你符合資格參加呢個研究。所有參加者會被隨機分配到實驗組或對照組。你係屬於實驗組/對照組，今日在場護士爲你提供戒煙輔導，而你亦得到一星期免費的戒煙貼/香口膠。東華三院護士或者港大研究人員會喺一星期內以電話或WhatsApp跟進你既戒煙情況。研究人員亦都會喺第一、三同六個月打俾你跟進你既戒煙情況。當你成功完成每一次香港大學研究的電話跟進，你可以得到港幣$50現金禮券，禮券會經掛號郵件寄俾你。另外如果你喺第六個月既時候已經戒煙7日或以上，我們會邀請你測量一氧化碳及可的寧水平，成功完成測量後，你可以再得到港幣$50現金禮券。呢張係研究既同意書，你可以睇一睇，有咩問題都可以問我。如果你願意參加，可以喺格仔打tick，然後喺下面簽名。”

Photos of recruitment sessions with SC truck

Recruitment sessions at different locations with SC truck

Recruitment sessions in public housing estates

Promotion outcomes

Targets	Actual Outcomes	Target met or not
1. Train 40 university students and ex-smokers to be SCA	We recruited **102** university students and ex-smokers as SCAs	>100%
2. Deliver brief SC advice to 2,400 smokers, including 1,200 in Experimental group and 1,200 in Control group	We approached 9,224 smokers from Oct 2018 to Dec 2019. We delivered SC advice to **2,485** smokers, including **1,277** in Experimental group and **1,208** in Control group	>100%
Experimental group		
3. Provide NRT sample to 720 smokers (60% of all approached smokers) who also consent to the follow-up	We provided NRT sample to **830** smokers (out of 1277 of approached smokers, 65.0%), who consented to the follow-up by HKU or TWGHs	>100%
4. Motivate 288 smokers (40%) to use any smoking cessation (SC) services	Over the study period, **321** (321/830, 38.7%) reported they used any SC services	>100%
5. Motivate 144 smokers (20%) to attempt quitting	At 1-month follow-up, **214** (214/830, 25.8%) reported they attempted to quit	>100%
Control group		
6. Invite 360 smokers (30% of all approached smokers) to consent to the follow-up	We invited **597** smokers (out of the 1208 approached smokers, 49.4%) to receive onsite counseling and consent to further follow-up	>100%
7. Motivate 72 smokers (20%) to use any SC services	Over the study period, **267** (267/597, 44.7%) reported they used any SC services	>100%
8. Motivate 28 smokers (8%) smokers to attempt quitting	At 1-month follow-up, **153** (153/597, 25.6%) reported they attempted to quit	>100%
Both NRT and control group		
108 smokers report abstinence at 6-month follow-up	In the 834 RCT participants, **299** (35.9%) reported abstinence at 6-month follow-up	>100%

Smoking cessation ambassadors' (SCA) knowledge in smoking cessation, pre-, post-test and 6-month follow-up.

Items	Correctly answered, n (%) Pre-test (N=102)	Post-test (N=102)	p-value[2]	Follow-up (N=59)	p-value[4]
1. It is too late for a smoker to quit if he/she has been smoking for many years.[1]	96 (94.1)	101 (99.0)	0.63	56 (94.9)	1.00
2. Quitting in old ages is harmful. [1]	100 (98)	99 (97.1)	1.00	57 (96.6)	1.00
3. Secondhand smoke is less harmful than air pollution. [1]	96 (94.1)	97 (95.1)	1.00	55 (93.2)	1.00
4. 1 in 2 smokers will be killed by smoking.	**50 (49.0)**	**97 (95.1)**	**<0.001***	**52 (88.1)**	**<0.001***
5. Nicotine is addictive.	97 (95.1)	98 (96.1)	1.00	55 (93.2)	1.00
6. Nicotine patch and nicotine gum is addictive.[1]	**64 (62.7)**	**75 (74.3)**	**<0.001**	**52 (88.1)**	**<0.001**
7. Nicotine patch and nicotine gum can decrease withdrawal symptoms.	**74 (72.5)**	**87 (86.1)**	**0.01***	**48 (81.4)**	**0.82**
8. Nicotine patch and nicotine gum can raise smoke cessation rate.	**77 (75.5)**	**89 (88.1)**	**0.01***	**50 (84.7)**	**1.00**
9. Smoking low tar cigarettes is safe. [1]	81 (79.4)	92 (90.2)	**0.04**	49 (83.1)	1.00
10. Heat tobacco products are not harmful for health.[1]	101 (100)	102 (100)	1.00	56 (94.9)	0.50
11. E-cigarettes can raise smoke cessation rate. [1]	94 (93.1)	102 (100)	**0.02**	55 (93.2)	1.00
12. Will smoking lead to the following diseases or health problems? (All correct)					
i. Lung cancer	102 (100)	102 (100)	1.00	59 (100)	1.00
ii. Sudden death	**74 (72.5)**	**87 (85.3)**	**<0.001**	**56 (94.9)**	**<0.001**
iii. Coronary heart disease	94 (93.1)	102 (100)	0.02	59 (100)	0.13
iv. Stroke	**85 (83.3)**	**100 (98.0)**	**<0.001**	**57 (96.6)**	**0.04**
v. Respiratory diseases	101 (99.0)	102 (100)	1.00	58 (98.3)	1.00
vi. Male sexual function-erectile dysfunction	**78 (76.5)**	**102 (100)**	**<0.001**	**57 (96.6)**	**<0.001**
vii. Loss of skin elasticity and increased wrinkles	102 (100)	100 (98.0)	0.50	58 (98.3)	1.00
viii. Low birth weight	**76 (74.5)**	**91 (89.2)**	**<0.001**	**57 (96.6)**	**<0.001**
ix. Neonatal death	75 (73.5)	88 (87.1)	0.01	52 (88.1)	0.09
x. Osteoporosis	**53 (52.0)**	**70 (68.6)**	**<0.001**	**46 (78.0)**	**<0.001**
xi. Dysmenorrhea/ menstrual disorder	**56 (54.9)**	**79 (77.5)**	**<0.001***	**43 (72.9)**	**<0.001**
xii. Early menopause	**50 (49.0)**	**78 (76.5)**	**<0.001***	**45 (76.3)**	**<0.001**
Mean score[3]± SD	**17.5 (3.4)**	**20.7 (2.0)**	**<0.001[4]**	**20.2 (2.6)**	**0.03[4]**

[1] Incorrect statement.

[2] p-value of McNamar's test, comparing the pre- and post-test proportions of correct answers, unless specified.

[3] Mean score denoted participants average number of correctly answered items.

[4] p-value of McNemar's test, comparing the pre- and follow-up test mean score.

***Asymptotic p-value**

Comparisons of recruitment outcomes on the experimental group and the control group

Variables	Experimental n (column %)	Control n (column %)	p-value[1]
No. of sessions	124	120	
Recruitment outcomes (N, %)			
Total smokers approached	4965	4259	
Total smokers who received advice	1277 (25.7)	1208 (28.4)	
Total smokers who received further counselling by nurse	830 (16.7)	597 (14.0)	
Participants screened for RCT eligibility	798 (16.1)	590 (13.9)	
Eligible participants for RCT	552 (11.1)	404 (9.5)	
Participants who consented for RCT	482 (9.7)	352 (8.3)	
Recruitment outcomes per session (Mean, SD)			
Average No. of participants approached	40.0 (38.0)	35.5 (38.6)	0.20
Average No. of participants received advice	10.3 (11.5)	10.1 (12.0)	0.74
Average No. of participants received further counseling	**6.7 (4.7)**	**5.0 (3.8)**	**0.002**
Average No. of participants screened for RCT eligibility	**6.4 (6.6)**	**4.9 (4.3)**	**0.015**
Average No. of eligible participants for RCT	**4.5 (4.7)**	**3.4 (2.9)**	**0.025**
Average No. of participants who consented for RCT	**3.9 (3.1)**	**2.9 (2.4)**	**0.011**

Participants' baseline demographic characteristics and smoking profile

Variables	Categories	Experimental N=482 N, %	Control N=352 N, %	Chi-square/t-test	p-value
Gender	Male	383 (79.5)	295 (83.8)		
	Female	99 (20.5)	57 (16.2)	2.53	0.11
Age, years	(Mean, SD)	40.54 (11.3)	41.33 (10.7)	2.52	0.32
Daily cigarette consumption	Over 30	24 (5.0)	14 (4.0)		
	21-30	55 (11.4)	32 (9.1)		
	11-20	70 (14.5)	69 (19.6)		
	1-10	307 (63.7)	228 (64.8)	4.49	0.21
FTND[4] Score	(Mean, SD)	4.2 (2.4)	4.3 (2.2)	-0.51	0.61
Exhaled carbon dioxide (ppm)	**(Mean, SD)**	**17.1 (10.1)**	**18.8 (11.5)**	**-2.22**	**0.027**
[1]Perceived importance of quitting	(Mean, SD)	8.9 (2.2)	8.9 (2.1)	-0.57	0.57
[2]Perceived difficulty of quitting	(Mean, SD)	8.8 (2.3)	8.8 (2.3)	-0.23	0.82
[3]Perceived confidence of quitting	(Mean, SD)	6.9 (2.2)	6.9 (2.3)	-0.48	0.63
Number of quit attempts in past	(Mean, SD)	2.0 (2.0)	2.1 (1.9)	-0.43	0.66
Intention to quit in next 30 days (0-10)	(Mean, SD)	7.1 (2.3)	7.2 (2.2)	-0.45	0.65
Quit day after one week of recruitment that need further follow-up		**161 (33.4)**	**54 (15.3)**		**<0.001***

[1]Rate on a scale of 0 to 10 (0, least important; 10, most important).
[2]Rate on a scale of 0 to 10 (0, least difficult; 10, most difficult).
[3]Rate on a scale of 0 to 10 (0, least confident; 10, most confident).
[4]FTND: Fagerstrom Test For Nicotine Dependence. Total score ranged from 0 to 10.
*p-value of Mann Whitney U test, comparing the proportions of participants in the experimental and control group.

Self-reported Quitting Outcomes, by Intention-to-Treat Analysis

- Note: All percentage were calculated assuming that the respondents who were lost to follow-up were smokers who had no quit attempt and did not use NRT (intention-to-treat). Quit attempt: No smoking for at least one day. Adjusted risk ratios were obtained from the model adjusting for age, gender, and daily consumption of cigarette. FU= follow-up; m=month; NRT=nicotine replacement therapy.

	Experimental (N, %) Total=482	Control (N, %) Total=352	Risk ratio (RR) (95%CI)	p value	Adjusted risk ratio (ARR) (95%CI)	p Value
Any quit attempts (primary outcome)						
1-m FU	214 (44.4)	153 (43.5)	1.02 (0.85-1.23)	0.82	1.02 (0.86-1.20)	0.86
Use of SC service (primary outcome)						
1-m FU	**156 (32.4)**	**158 (44.9)**	**0.72 (0.57-0.91)**	**0.006**	**0.75 (0.60-0.94)**	**0.014**
Self-reported abstinence in past 7 days (secondary outcome)						
6-m FU	104 (21.6)	92 (26.1)	0.83 (0.63-1.08)	0.16	0.82 (0.63-1.08)	0.16
Biochemical validation						
6-m FU	22 (4.6)	10 (2.8)	1.61 (0.88-2.93)	0.12	1.73 (0.95-3.14)	0.07

Use of NRT at 1-month and 3-month follow-up by intention-to-treat analysis.

- Note: #p-value of Mann Whitney U test or t-test, comparing the proportions of participants in the experimental and control group.
- *Only included participants who received NRT sample at recruitment from nurses or registered mails.

	Experimental (N=482, %)	Control (N=352, %)	p-Value#
Use of NRT and NRT sample at 1-month Follow-up			
Used NRT in the past month	192 (39.8)	121 (34.4)	0.12
Average days of using NRT (Mean, SD)	**8.21 (11.24)**	**6.54 (9.43)**	**0.004**
*Ever used the NRT sample	171 (171/384, 44.5)	Non-applicable	
*Used all NRT samples	113 (113/384, 29.4)	Non-applicable	
Purchased over-the-counter NRT	18 (3.7)	10 (2.8)	0.48
Any quit attempt with NRT	144 (29.9)	97 (27.6)	0.51
Prescribed NRT from TWGHs	93 (19.3)	51 (14.5)	0.07

Discussion

Summary of the findings

- Our smoking cessation training workshops increased the knowledge of tobacco harms and smoking cessation, and perceived efficacy of promoting smoking cessation.
- Recruitment outcome: We approached 9,224 smokers, delivered quitting advice to 2,485 smokers, delivered brief counselling to 1,427 smokers, and delivered NRTS to 364 smokers (intervention group only)
- Delivery of NRTS at smoking hotspots
  - Increased the recruitment of smokers to receive counseling from nurses, study consent and receive further intervention.
  - Reduced use of smoking cessation service
  - Did not alter quit attempt and tobacco abstinence.

Limitation

- The recruitment was influenced by the weather, facilities nearby, and availability of the SCAs, and parking space for the recruitment truck
- During the COVID-19 pandemic, follow-up and validation were difficult because of infection control and quarantine measures.

Implications

- With sufficient onsite counseling and subsequent follow-up, no adverse events were reported.
- The control group did not receive NRTS, but onsite enrolment and appointment booking could have motivated them to make appointment and obtain NRT from SC clinics.
- As we showed NRTS increased recruitment and it did not alter quitting outcomes, such promotion strategy potentially save healthcare cost in cessation delivery. Further health economic study is warranted.
- Smokers receiving NRTS have 3 pathways to quit:
  - Used all NRTS and then continued to use NRT and the service
  - Used NRTS but discontinued to use
  - Did not use any NRTS
- Our collaborator TWGHs has been allocating resources in promoting smoking cessation at hotspots and delivering NRTS as a method for smoking cessation. The current “mail-to-quit” program by TWGHs also delivers 1–2-week NRT to smokers without face-to-face intervention and facilitates similar health communication as our trial.

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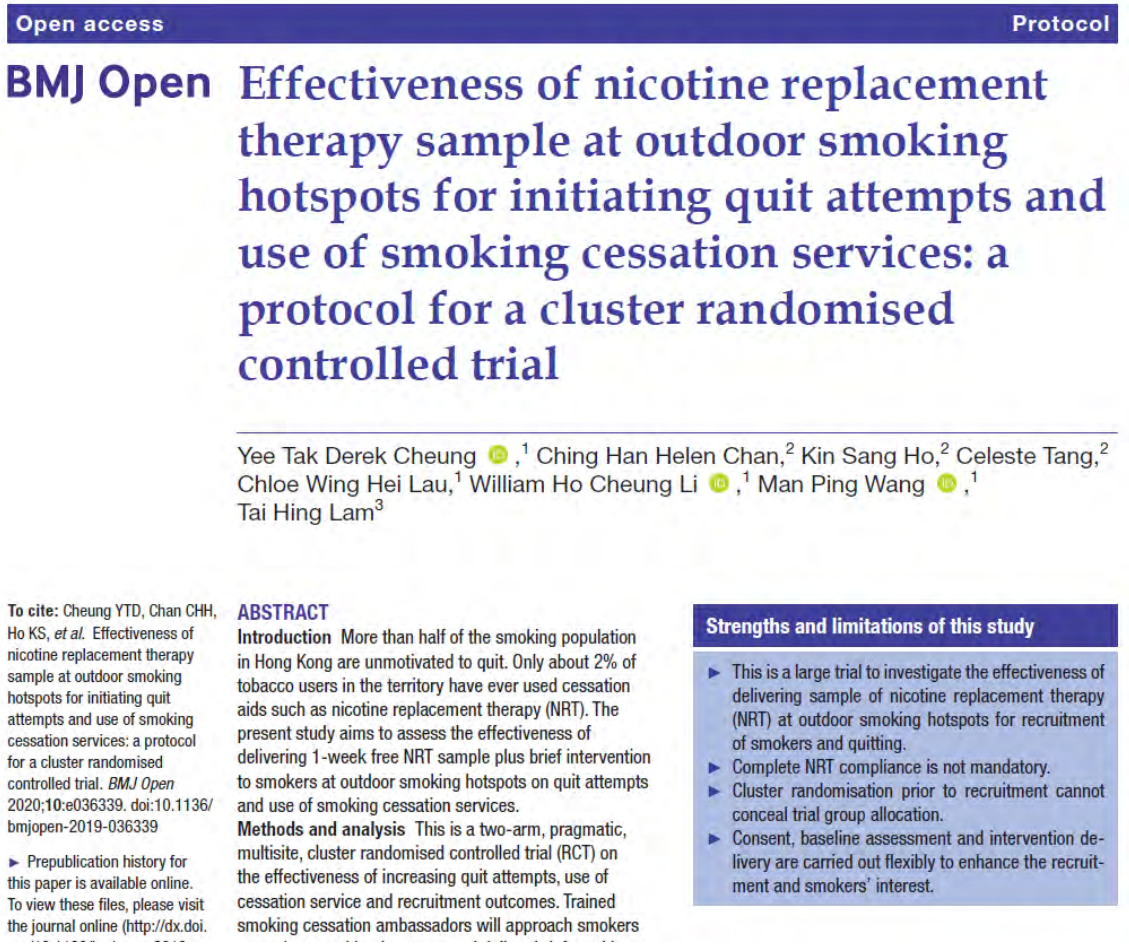

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Effectiveness of nicotine replacement therapy sample at outdoor smoking hotspots for initiating quit attempts and use of smoking cessation services: a protocol for a cluster randomised controlled trial

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ABSTRACT

Introduction More than half of the smoking population in Hong Kong are unmotivated to quit. Only about 2% of tobacco users in the territory have ever used cessation aids such as nicotine replacement therapy (NRT). The present study aims to assess the effectiveness of delivering 1-week free NRT sample plus brief intervention to smokers at outdoor smoking hotspots on quit attempts and use of smoking cessation services.

Methods and analysis This is a two-arm, pragmatic, multisite, cluster randomised controlled trial (RCT) on the effectiveness of increasing quit attempts, use of cessation service and recruitment outcomes. Trained smoking cessation ambassadors will approach smokers

Strengths and limitations of this study

- ► This is a large trial to investigate the effectiveness of delivering sample of nicotine replacement therapy (NRT) at outdoor smoking hotspots for recruitment of smokers and quitting.
- ► Complete NRT compliance is not mandatory.
- ► Cluster randomisation prior to recruitment cannot conceal trial group allocation.
- ► Consent, baseline assessment and intervention delivery are carried out flexibly to enhance the recruitment and smokers' interest.

Thank you!

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