Promotion and brief intervention of smoking cessation at smoking hotspots

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Acknowledgements

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• Hong Kong Council on Smoking and Health
• Smoking cessation research team, School of Nursing, HKU
• Research co-ordinator: Ms. Chelsia Cheung
• Training consultants: Ms. Anita Chan, Ms. Jessica Leung, Ms. Gina Lee
Indoor smoking ban and evolvement of smoking hotspots

- An extensive indoor smoking ban since 2007
- The ban led to increase in smoking in outdoor areas
- **Smoking hotspots**: Many smokers smoke together near some rubbish bins, which have a collector of cigarette butts
- Common hotspot locations: outdoor bus stops, exits of MTR stations, and entrances of buildings and shopping malls
Pilot study in 2009: Proactive smoking cessation promotion and intervention

• Briefly trained university students to promote smoking cessation
• Proactively approached the smokers at these hotspots
• Delivered brief smoking cessation advice (1 minute) with “AWARD”
  • Ask, Warn, Advise, Refer, Do-it-again
• Process and outcome evaluation:
  • How many smokers could be approached at smoking hotspots?
  • Acceptability of smokers?
• Process and findings published in *Journal of Cancer Education*
Pilot study in 2009: Findings

- From February 2009 to August 2009, outreach interventions were conducted at 10 hotspots for 40 hours.

Total number of people walking passed the hotspots = 5070

- Non-smoking passersby: 3833 (75.6%)
- Smokers: 1237 (24.4%)

Average no. of smokers at hotspots per hour = **30.7 (SD 19.4)**
Pilot study in 2009: Findings

Smokers at the hotspots n = **1237**
- Refused approach 486 (39%)
- Successfully approached 751 (61.0%)

Approached smokers n = **751**
- Refused leaflets 305 (40.6%)
- Received leaflets 446 (59.4%)

Smokers received the leaflet n = **446**
- Kept the leaflet, 189, 42%
- Threw the leaflet, 21, 5%
- Returned the leaflet, 6, 1%

Smokers received AWARD advice n = **413**
- Completed AWARD 235 (56.9%)
- Incomplete AWARD 178 (43.1%)
- Read the leaflet, 230, 52%

Average no. of smokers received AWARD per hour = **10.3**
Pilot study in 2009: Conclusions and improvements

- **Conclusions**
  - Large number of smokers could be approached
  - Over half of the approached smokers accepted brief advice, even though they were smoking

- **Improvements**
  - The promotion should be done in more hotspots
  - More smoking cessation ambassadors
  - More training for the ambassadors with evaluation
  - More attractive souvenir
  - Telephone follow-up can be provided to the smokers
  - Quitting outcomes and change of knowledge should be evaluated
  - More interventions can be provided (e.g. Advice on medications, booklet)
2015 hotspot smoking cessation promotion: Aims and targets

• Aims
  • Building capacity of smoking cessation
  • Promotion of smoking cessation at smoking hotspots
  • Proactive delivery of brief intervention at smoking hotspots
  • Evaluation of the feasibility, quitting outcomes, and the costs
2015 hotspot smoking cessation promotion: Aims and targets

- **Targets**
  - Train 10 university students to be outreach ambassadors;
  - Approach 1,700 smokers, and distribute souvenirs to 1,000 smokers at the 15 smoking hotspots;
  - Provide AWARD brief advice to 850 smokers, and 425 (50%) of them receive the complete intervention; and
  - Further contact 85 smokers (around 10% of the smokers who receive brief intervention) through telephone
## Process and evaluation

### Training of ambassadors
- Change of knowledge, attitude and confidence for smoking cessation

### Hotspot selection
- Explored the smoking hotspots with greatest number of smokers

### Hotspot intervention
- Characteristics of smokers at the hotspots (sex & estimated age group)
- Proportion of (1) being approached, (2) accepting the souvenir, (3) receiving the advice, (4) consenting to the follow-up

### Follow-up of smokers
- Characteristics of smokers who consented to the follow-up
- Quitting outcomes: (1) Self-reported abstinence in past 7 days at 6-month follow-up, (2) Smoking reduction by at least 50%, (3) Quit attempt (abstinence for >1 day)
- Attitude outcomes: (1) Intention to quit, (2) knowledge in smoking and health
- Cost analysis: Cost per smoker receiving the intervention and cost per quitter
Training of ambassadors

- Recruitment of university students via mass mail
- Training: Two half-day sessions (4 hours each)
- Curriculum
  - Study overview
  - Tobacco epidemic
  - Smoking cessation counseling skills
  - Specific skills in proactive approach
  - Pharmacotherapy (Nicotine replacement therapy)
  - Role play
- 40 university students participated
  - Female: 75%
  - Discipline: Nursing 50%, Science 17.5%, Social sciences 12.5%, Others 20.0%
  - Had experience of advising smokers to quit: 47.5%
  - Had experience of referring smokers to services: 0%
### Training results

<table>
<thead>
<tr>
<th>Perceived effectiveness of the intervention (0 lowest; 10 highest)</th>
<th>Pre-test (N=40)</th>
<th>Post-test (N=38)</th>
<th>p-value (pair sample t-test)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>6.58</td>
<td>7.40</td>
<td>0.03</td>
</tr>
<tr>
<td>Perceived importance of the intervention (0 lowest; 10 highest)</td>
<td>7.00</td>
<td>7.68</td>
<td>0.04</td>
</tr>
<tr>
<td><strong>Self-efficacy (1 lowest; 4 highest)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Perceived confidence to advise smokers</td>
<td>2.89</td>
<td>3.09</td>
<td>0.01</td>
</tr>
<tr>
<td>Perceived importance to advise smokers</td>
<td>3.13</td>
<td>3.16</td>
<td>0.66</td>
</tr>
<tr>
<td>Perceived difficulty to advise smokers</td>
<td>2.82</td>
<td>2.57</td>
<td>0.10</td>
</tr>
</tbody>
</table>
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
Interventions

- Study period: January to August 2015
- 27 promotion sessions at 14 smoking hotspots
- Foot-in-the-door strategy: People who have first agreed to a small request are more likely to comply later with a larger request
  1. Delivered a tissue pack with quitting messages and information of cessation services
  2. Probed for smoking habit and history (e.g. 你食左煙幾耐？)
  3. Measured exhaled carbon monoxide with Smokerlyzer
  4. Brief advice (AWARD protocol)
  5. Delivered a 12-page self-help smoking cessation booklet (designed by Hong Kong Council on Smoking and Health)
  6. Invitation for telephone follow-up
Flowchart of approach, advice and follow-up

1. All people (n=74428)
   - Non-smokers (n=71332)

2. Approached smokers (n=3096)
   - Smokers refused souvenir (n=1811, 58.5%)
   - Smokers accepted souvenir (n=1285, 41.5%)

3. Smokers received brief advice (n=916, 71.3%)
   - Smokers refused brief advice (n=369, 28.7%)

4. Smokers received a partial smoking cessation advice (n=486, 53.1%)
   - Smokers provided name and mobile phone number for telephone follow-up (n=210, 22.9%)
   - Smokers refused telephone follow-up (n=706, 77.1%)

5. Smokers received a complete smoking cessation advice (n=430, 46.9%)
   - Smokers being successfully contacted at 7-day follow-up (n=126, 60.0%)
Promotion results by hotspots

- **Souvenir + Full AWARD**
- **Souvenir + Partial AWARD**
- **Souvenir only**
- **Refused souvenir**

Number of approached smokers

- Shatin Centre
- CWB - SOGO
- SW - Shun Tak
- TST Pier
- Sheung Shui MTR
- SSP MTR
- Central - IFC
- TW - Nam Fung
- KF MTR
- Central - Melbourne Plaza
- Admiralty
- KLT - Festival
- MOS Plaza
- MK - Grand Plaza
Promotion results by hotspots

- Shatin Centre: Red (54%), Blue (17%), Green (2%), Yellow (1%), White (19%)
- CWB - SOGO: Red (48%), Blue (13%), Green (1%), Yellow (1%), White (38%)
- SW - Shun Tak: Red (52%), Blue (12%), Green (1%), Yellow (1%), White (34%)
- TST Pier: Red (50%), Blue (15%), Green (1%), Yellow (1%), White (34%)
- Sheung Shui MTR: Red (48%), Blue (14%), Green (1%), Yellow (1%), White (36%)
- SSP MTR: Red (50%), Blue (15%), Green (1%), Yellow (1%), White (34%)
- Central - IFC: Red (52%), Blue (14%), Green (1%), Yellow (1%), White (34%)
- TW - Nam Fung: Red (48%), Blue (13%), Green (1%), Yellow (1%), White (38%)
- KF MTR: Red (48%), Blue (13%), Green (1%), Yellow (1%), White (38%)
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- MOS Plaza: Red (50%), Blue (15%), Green (1%), Yellow (1%), White (34%)
- MK - Grand Plaza: Red (50%), Blue (15%), Green (1%), Yellow (1%), White (34%)

Proportion of approached smokers (%)
## Socio-demographic characteristics
(Reported at 7-day telephone follow-up)

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>N=126, n (%)</th>
<th>All smokers from THS* 2015 (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>107 (84.9%)</td>
<td>83.9%</td>
</tr>
<tr>
<td>Age, years</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15-29</td>
<td>34 (27.0%)</td>
<td>11.5%</td>
</tr>
<tr>
<td>30-59</td>
<td>66 (52.3%)</td>
<td>67.1%</td>
</tr>
<tr>
<td>60 or above</td>
<td>12 (9.5%)</td>
<td>21.4%</td>
</tr>
<tr>
<td>Missing</td>
<td>14 (11.1%)</td>
<td></td>
</tr>
<tr>
<td>Employed</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>88 (69.8%)</td>
<td>79.0%</td>
</tr>
<tr>
<td>Education level</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primary</td>
<td>12 (9.5%)</td>
<td>NA</td>
</tr>
<tr>
<td>Secondary</td>
<td>65 (51.6%)</td>
<td></td>
</tr>
<tr>
<td>Tertiary or above</td>
<td>35 (27.8%)</td>
<td></td>
</tr>
<tr>
<td>Missing</td>
<td>14 (11.1%)</td>
<td></td>
</tr>
</tbody>
</table>

*Thematic Household Survey (2015, No. 59), Census and Statistics Department
# Smoking and quitting characteristics 
(Reported at 7-day telephone follow-up)

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>N=126, n (%)</th>
<th>All smokers from THS (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cigarette consumption</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No daily smoking</td>
<td>4 (3.2%)</td>
<td>6.6%</td>
</tr>
<tr>
<td>≤10</td>
<td>68 (54.0%)</td>
<td>52.3%</td>
</tr>
<tr>
<td>11-20</td>
<td>46 (36.5%)</td>
<td>39.0%</td>
</tr>
<tr>
<td>&gt;20</td>
<td>3 (2.4%)</td>
<td>2.2%</td>
</tr>
<tr>
<td>Missing</td>
<td>1 (0.8%)</td>
<td>-</td>
</tr>
<tr>
<td>Had intention to quit</td>
<td>91 (72.2%)</td>
<td>37.0%</td>
</tr>
<tr>
<td>Time of recent quit attempt</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Within 7 days</td>
<td>15 (11.9%)</td>
<td>30.8%</td>
</tr>
<tr>
<td>Within 30 days</td>
<td>9 (7.1%)</td>
<td></td>
</tr>
<tr>
<td>Within last year</td>
<td>13 (10.3%)</td>
<td></td>
</tr>
<tr>
<td>More than a year ago</td>
<td>37 (29.4%)</td>
<td></td>
</tr>
<tr>
<td>No previous attempt</td>
<td>51 (40.5%)</td>
<td>69.2%</td>
</tr>
<tr>
<td>Missing</td>
<td>1 (0.8%)</td>
<td></td>
</tr>
</tbody>
</table>
## Quitting outcomes

<table>
<thead>
<tr>
<th></th>
<th>1-month n (%) (N= 210)</th>
<th>3-month n (%) (N= 210)</th>
<th>6-month n (%) (N= 210)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Self-reported 7-day point prevalence quitting (A)</strong></td>
<td>12 (5.7)</td>
<td>14 (6.7)</td>
<td>16 (7.6)</td>
</tr>
<tr>
<td><strong>Biochemically validated quit rate</strong></td>
<td>NA</td>
<td>NA</td>
<td>2 (1.8)</td>
</tr>
<tr>
<td><strong>Self-reported smoking reduction by 50% or more (B)</strong></td>
<td>8 (3.8)</td>
<td>8 (3.8)</td>
<td>9 (4.3)</td>
</tr>
<tr>
<td><strong>Self-reported quitting and reduction (A+B)</strong></td>
<td>20 (9.5)</td>
<td>22 (10.5)</td>
<td>27 (11.9)</td>
</tr>
<tr>
<td><strong>Quit attempt</strong></td>
<td>18 (8.6)</td>
<td>21 (10.0)</td>
<td>26 (12.4)</td>
</tr>
<tr>
<td><strong>Have intention to quit</strong></td>
<td>75 (37.9)</td>
<td>70 (35.7)</td>
<td>66 (34.0)</td>
</tr>
</tbody>
</table>

*Assuming non-respondents did not change smoking behavior*
## Change of knowledge in smoking and health

<table>
<thead>
<tr>
<th></th>
<th>1-week</th>
<th>3-month</th>
<th>6-month</th>
<th>p-value$^\dagger$</th>
<th>p-value$^\dagger$</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Retention</strong></td>
<td>N (%) 126 (60%)</td>
<td>N (%) 103 (49.0%)</td>
<td>N (%) 109 (51.9%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. If smokers have been smoking for decades, it’s already too late to quit. (Incorrect statement)</td>
<td>93 (73.8)</td>
<td>59 (57.3)</td>
<td>0.02</td>
<td>56 (51.4)</td>
<td>0.02</td>
</tr>
<tr>
<td>Answered correctly</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Smoking low-tar cigarettes is a safe alternative of quitting smoking. (Incorrect statement)</td>
<td>51 (40.5)</td>
<td>46 (44.7)</td>
<td>0.36</td>
<td>63 (57.8)</td>
<td>0.03</td>
</tr>
<tr>
<td>Answered correctly</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Secondhand smoke is less harmful than outdoor air pollution. (Incorrect statement)</td>
<td>47 (37.3)</td>
<td>56 (54.4)</td>
<td>&lt;0.01</td>
<td>62 (56.9)</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>Answered correctly</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. One or more than one out of two smokers die prematurely because of smoking. (Correct statement)</td>
<td>64 (50.8)</td>
<td>67 (65.0)</td>
<td>0.02</td>
<td>66 (60.6)</td>
<td>0.06</td>
</tr>
<tr>
<td>Answered correctly</td>
<td></td>
<td></td>
<td></td>
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</tbody>
</table>

$^\dagger$ p-value of McNemar’s test
# Cost analysis

<table>
<thead>
<tr>
<th>Item</th>
<th>Cost (HK$)</th>
<th>Cost (US$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Training (1 Chair professor, 2 nurses, 1 social worker, and 1 post doc fellow)</td>
<td>3,939</td>
<td>505</td>
</tr>
<tr>
<td>2. Recruitment manpower</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• A full time research assistant for 10 months</td>
<td>177,902</td>
<td>22,808</td>
</tr>
<tr>
<td>• 4 trained student ambassadors in each promotion session</td>
<td>24,040</td>
<td>3,082</td>
</tr>
<tr>
<td>(2 in a pair to provide intervention in each promotion session, 27 days x 4 persons x 4 hours)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Telephone follow up (210 subjects x 0.25 hour of each follow up)</td>
<td>2,925</td>
<td>375</td>
</tr>
<tr>
<td>4. Publicity items (Leaflets and souvenirs)</td>
<td>6,802</td>
<td>872</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>215,608</strong></td>
<td><strong>27,642</strong></td>
</tr>
</tbody>
</table>

- The average costs for a smoker to receive the brief advice (n=920), consent to follow-up (n=210), and quit successfully (n=16) at 6-month follow-up were **US$30, US$132, and US$1,728**, respectively.
- The cost for recruiting a smoker was comparable to that incurred by using social media (US$1 to US$173) (Topolovec-Vranic & Natarajan, 2016, Frandsen et al. 2014, Heffner et al. 2013)
## Project achievements – exceeded goals

- The findings have been accepted as publication in *Nicotine & Tobacco Research*
  

<table>
<thead>
<tr>
<th>Goals</th>
<th>Achievements</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Train 10 students to be ambassadors</td>
<td>• <strong>40 ambassadors</strong> were trained.</td>
</tr>
<tr>
<td></td>
<td>• Significant increase in perceived effectiveness on the promotion and</td>
</tr>
<tr>
<td></td>
<td>confidence to deliver brief advice</td>
</tr>
<tr>
<td>• Approach 1,700 smokers, and distribute souvenirs to 1,000 smokers</td>
<td>• <strong>3,096 smokers were approached</strong> and <strong>1,285 of them (41.5%) accepted our</strong></td>
</tr>
<tr>
<td>at the 15 smoking hotspots</td>
<td><strong>souvenirs</strong></td>
</tr>
<tr>
<td></td>
<td>• <strong>916 smokers received the advice</strong>, in which <strong>430 (46.9%) received the</strong></td>
</tr>
<tr>
<td></td>
<td><strong>complete AWARD advice</strong> (about 1 minute)</td>
</tr>
<tr>
<td>• Provide brief cessation advice (AWARD) to 850 smokers, in which</td>
<td>• <strong>210 smokers consented to the follow-up</strong>, and <strong>60.0% of them (n=126)</strong></td>
</tr>
<tr>
<td>425 (50%) of them receive the complete intervention</td>
<td><strong>were successfully contacted at 1-week follow-up.</strong></td>
</tr>
<tr>
<td>• Further contact 85 smokers (around 10% of the smokers who receive</td>
<td></td>
</tr>
<tr>
<td>brief intervention) through telephone</td>
<td></td>
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</tbody>
</table>
Limitations

• Uncontrollable factors on recruitment results:
  ➢ Weather, facilities nearby, number and capacity of ambassadors, extended smoke-free areas since 2007
  ➢ Other tobacco control measures

• Lack of incentive, social marketing in mass campaign, and cessation assistance

• Other impacts on smokers who refused follow-up were unknown
Implications for practice: Outreach recruitment in COSH Quit-to-Win Contests
Implications for practice: Development of further interventions and collaborations

Active referral

NRT sampling

Cut-down-to-quit intervention

Incentives for validated abstinence
Conclusions

- The promotion of smoking cessation at smoking hotspots was feasible and efficient to reach more smokers and motivate quitting.
- When new tobacco control measures are implemented, this proactive approach could be more effective.
- The approach is also feasible and important when no new tobacco control measures are available.
- Further studies on different interventions at hotspots are warranted.
References


