Health Research Symposium 2024

Using Information Communication Technology (WhatsApp/WeChat) to Deliver Brief Motivational Interviewing (i-BMI) to Promote Smoking Cessation among Smokers with Chronic Diseases

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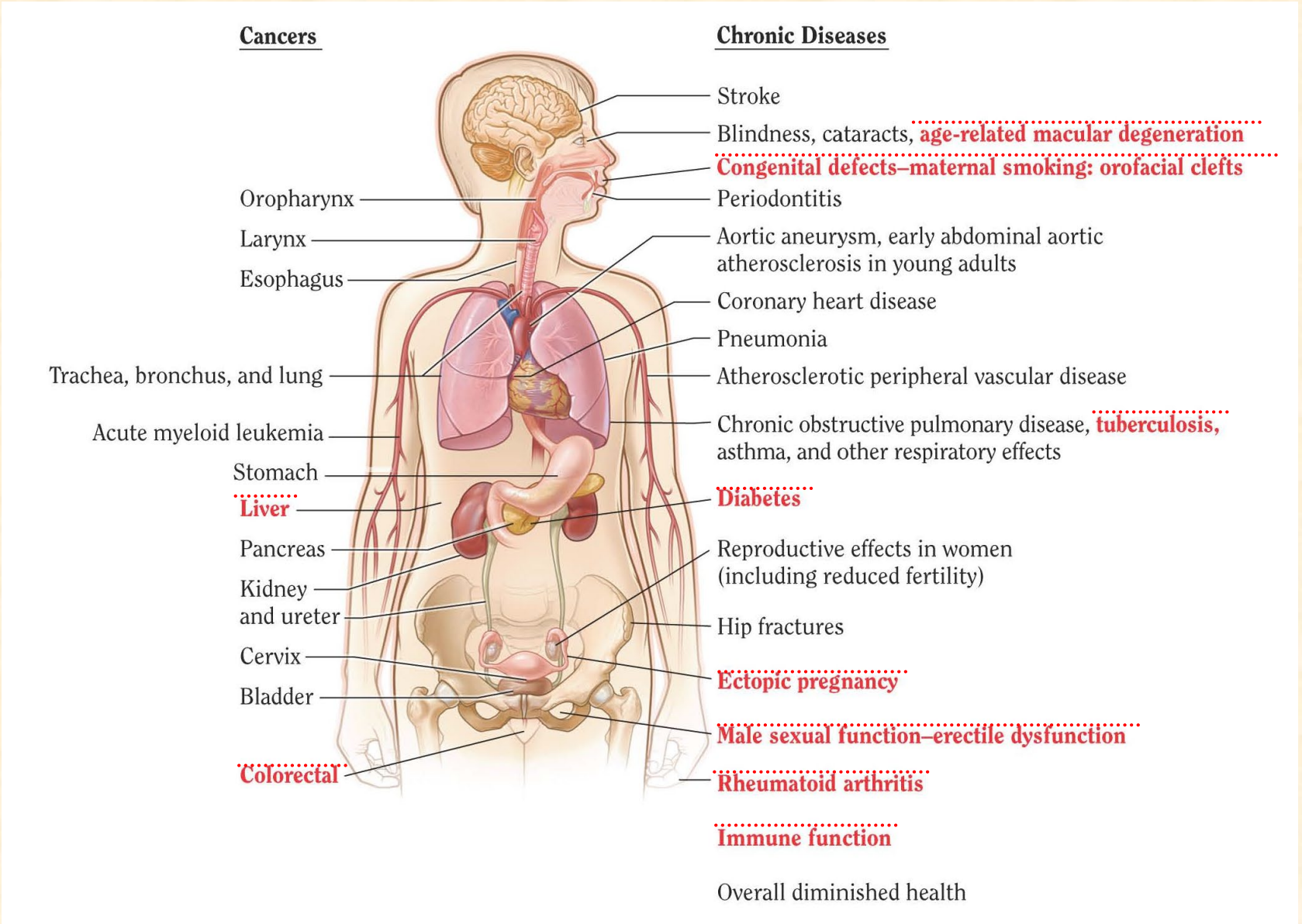
8 millions

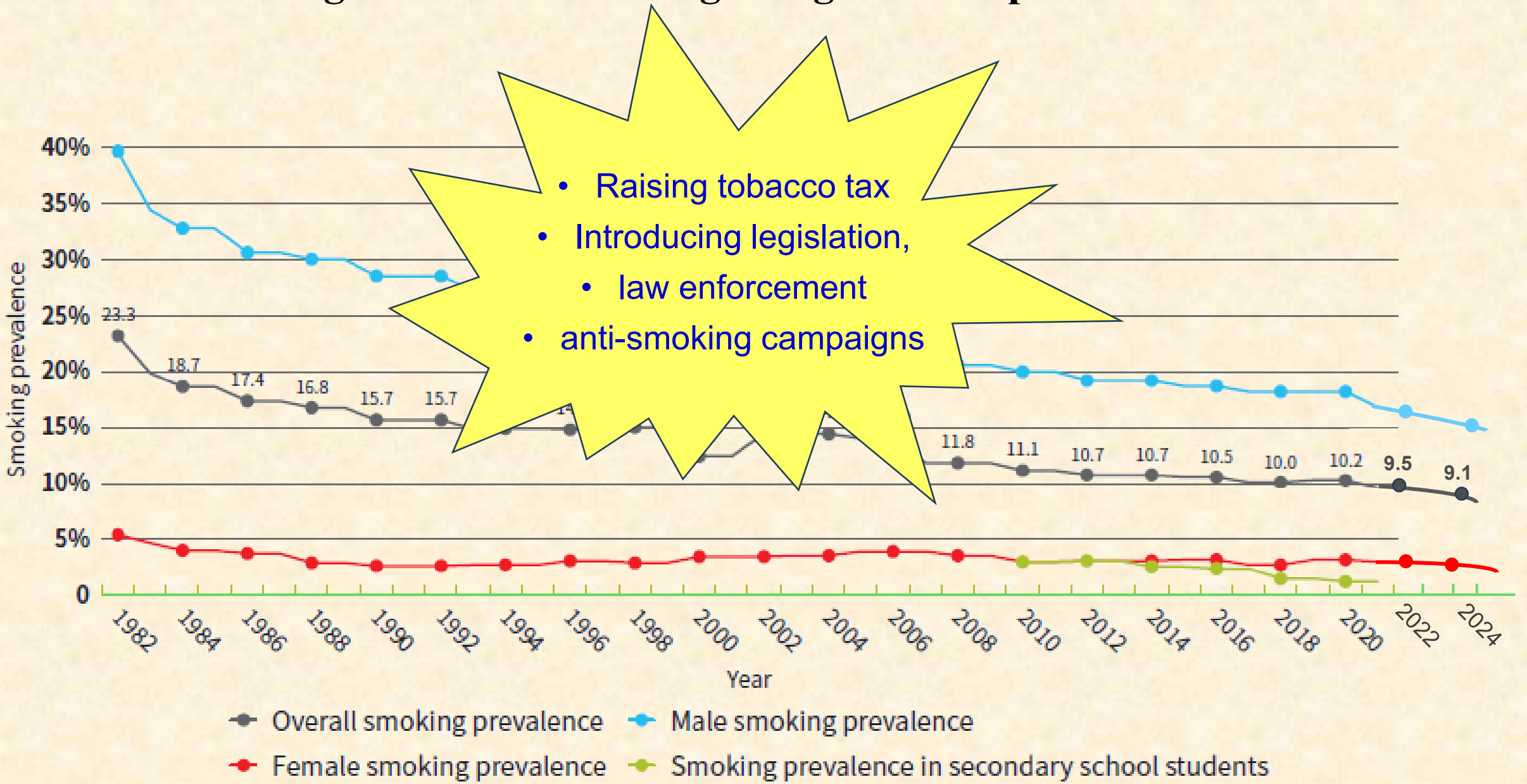
The health consequences causally linked to smoking



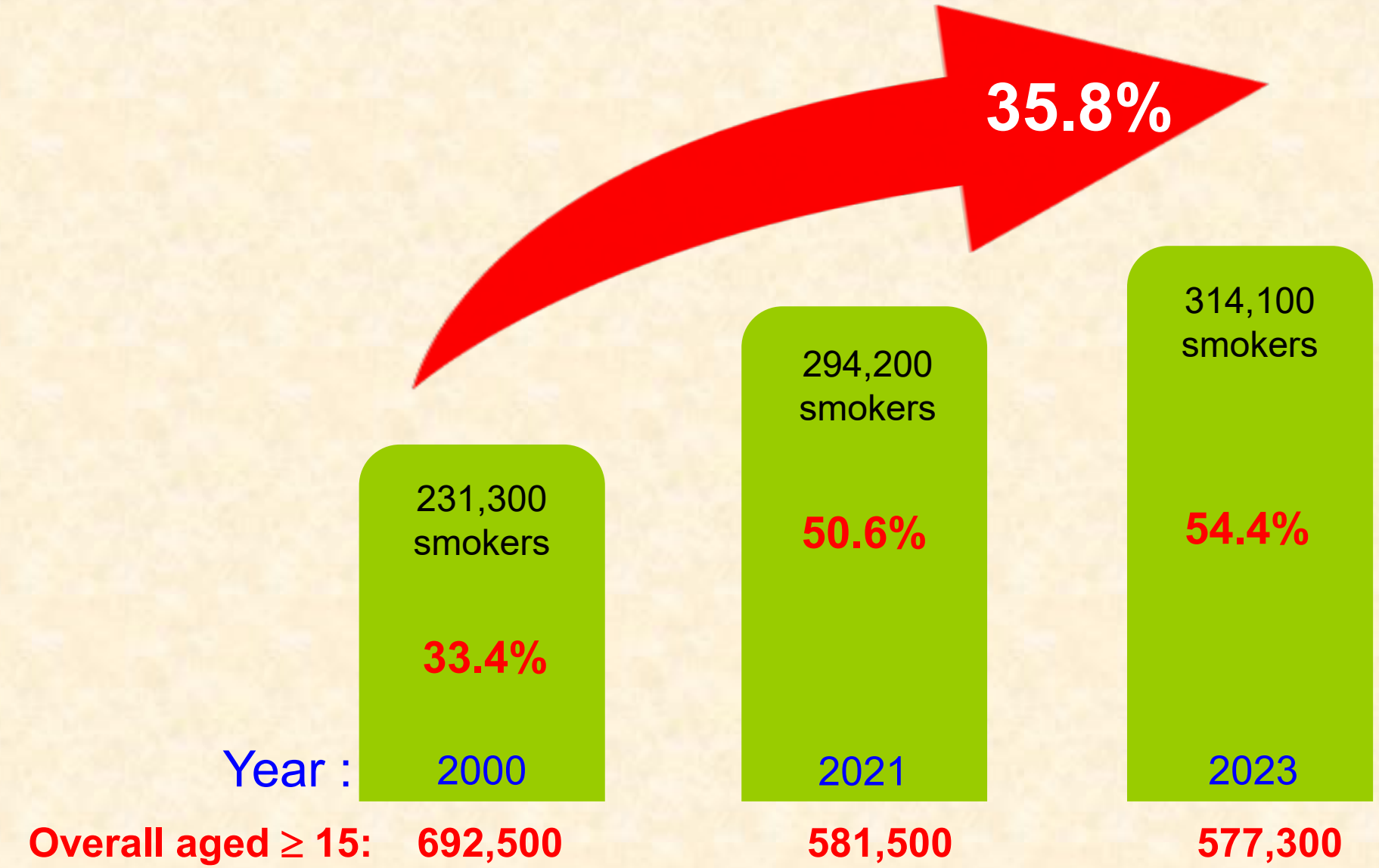
Source: USDHHS 2004, 2006, 2012.

Note: The condition in **red** is a new disease that has been causally linked to smoking in this report in 2014.

Smoking Prevalence in Hong Kong over the past 30 Years



Smoking Prevalence (aged 50 or above) in Hong Kong over the past 23 Years

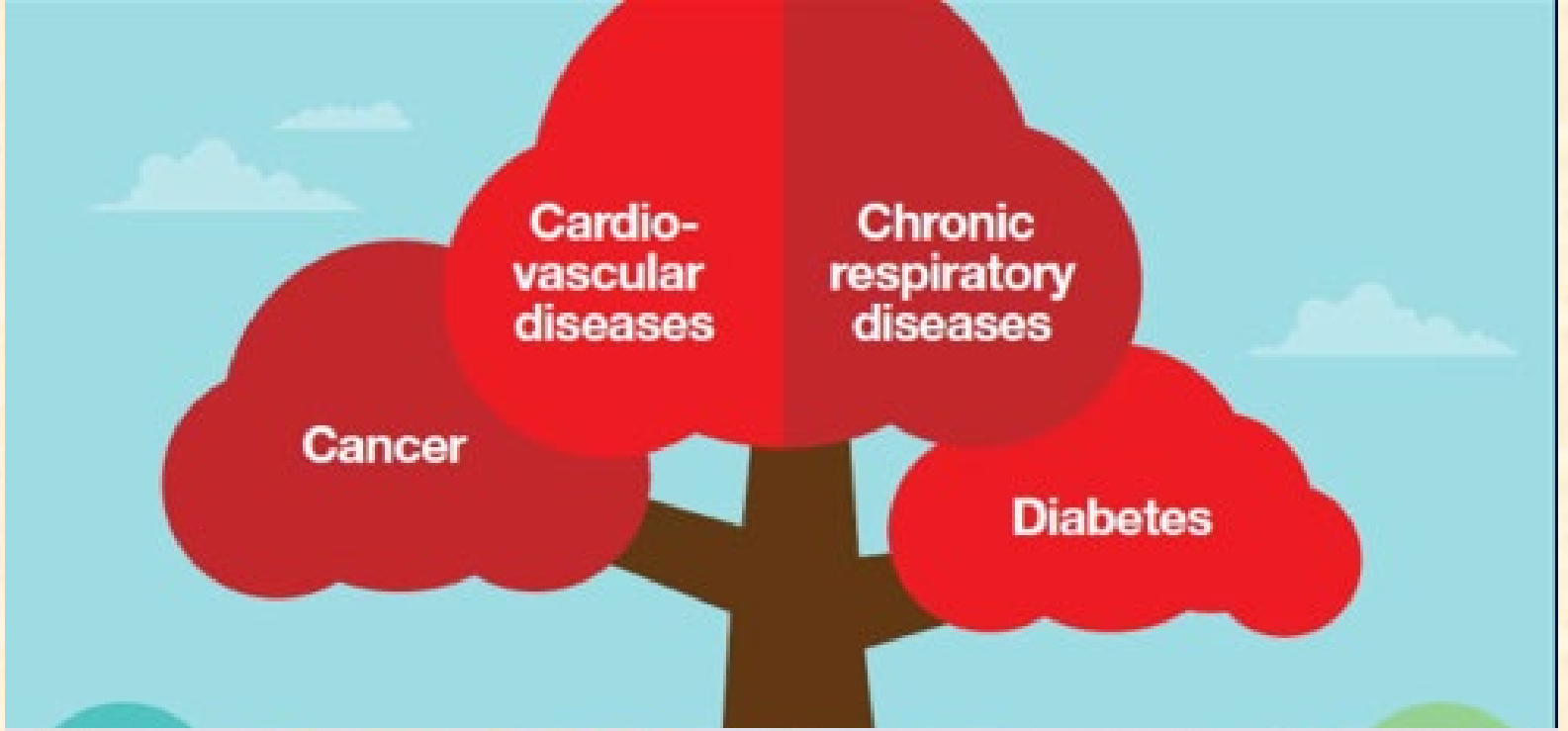


Daily conventional cigarette smokers by age started smoking

Survey year				2023	
Age group				≥15	
				Number of persons	
				No. ('000)	Percentage share in respective sex (%)
Type of smoker	Form of tobacco and related products	Sex	Age started smoking weekly		
Daily smokers	Conventional cigarettes	Male	<10	4.5	0.9
			10-19	294.0	60.2
			20-29	179.7	36.8
			≥30	10.3	2.1
			Overall	488.5	100.0
		Female	<10	[*7]	[*7]
			10-19	43.1	48.6
			20-29	40.6	45.8
			≥30	5.0	5.7
			Overall	88.8	100.0
		Both sexes	<10	4.5	0.8
			10-19	337.1	58.4
			20-29	220.4	38.2
			≥30	15.3	2.7
			Overall	577.3	100.0

Chronic smokers

Around 97.4% started smoking at ages younger than 30



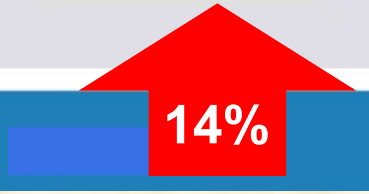
Almost **two-thirds** of non-communicable disease (NCD) deaths are linked to:

Tobacco use

Harmful use of alcohol

Unhealthy eating

Physical inactivity

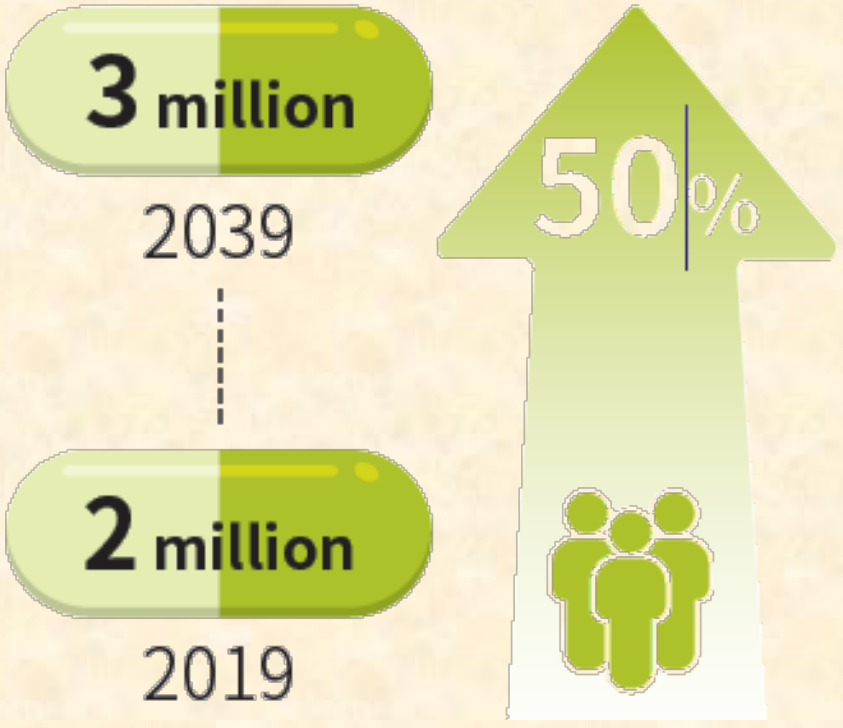


World Health Organization

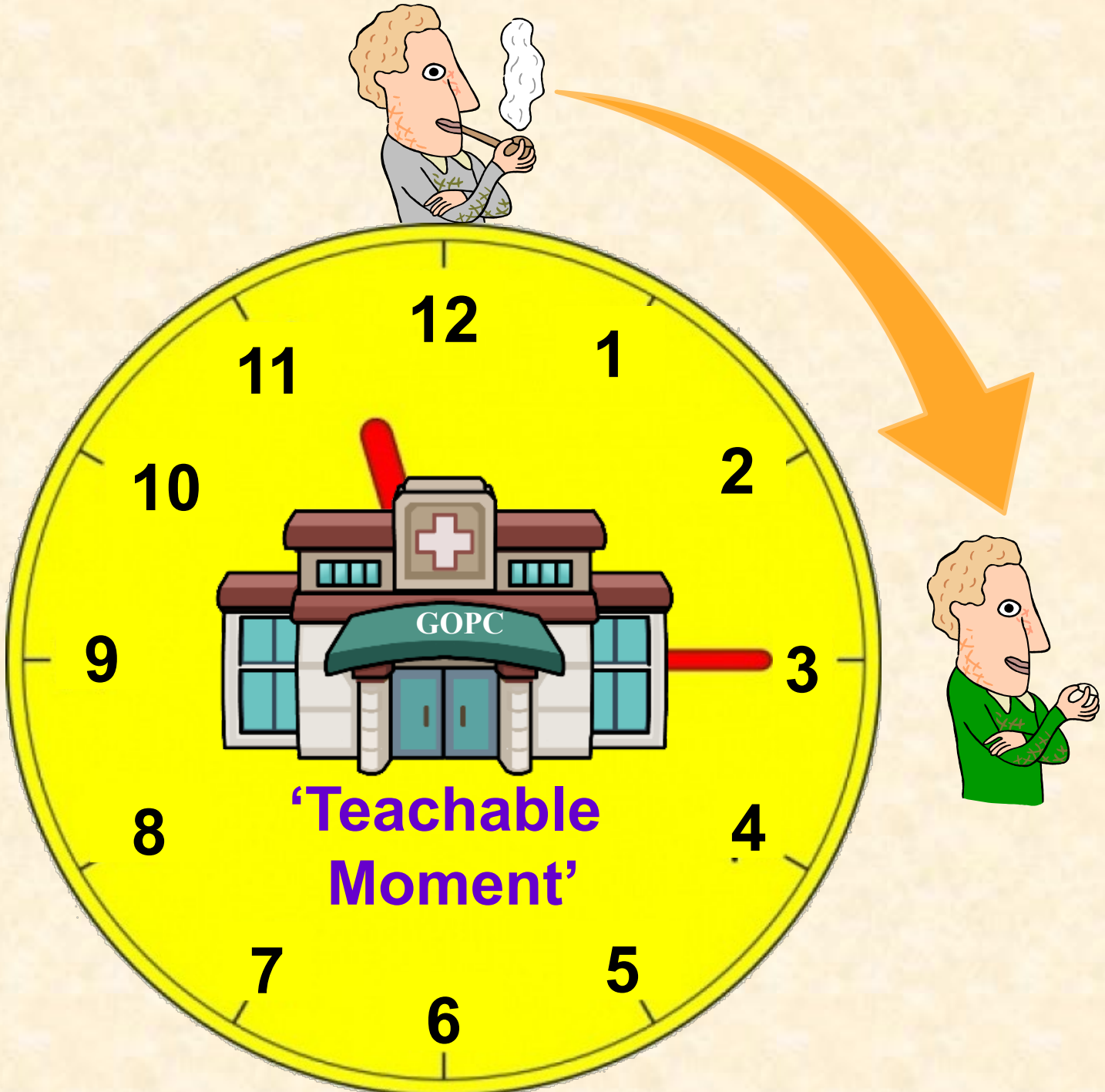
“As the population ages and the number of patients with chronic diseases increases, the healthcare system is now facing an enormous challenge.

If we do not sustain our efforts in tobacco control, the smoking prevalence would rebound and bring direct impact on the citizen’s health”

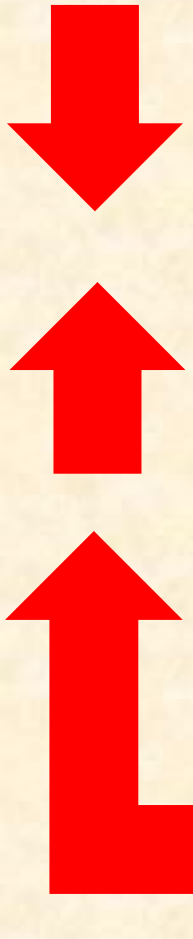
Professor Chung-mau LO, BBS, JP
Secretary for Health



Anticipated **Risk** in population with
Chronic disease


12
1
2
3
4
5
6
7
8
9
10
11
GOPC
‘Teachable Moment’

What are the consequences for smokers with NCDs continue to smoke?



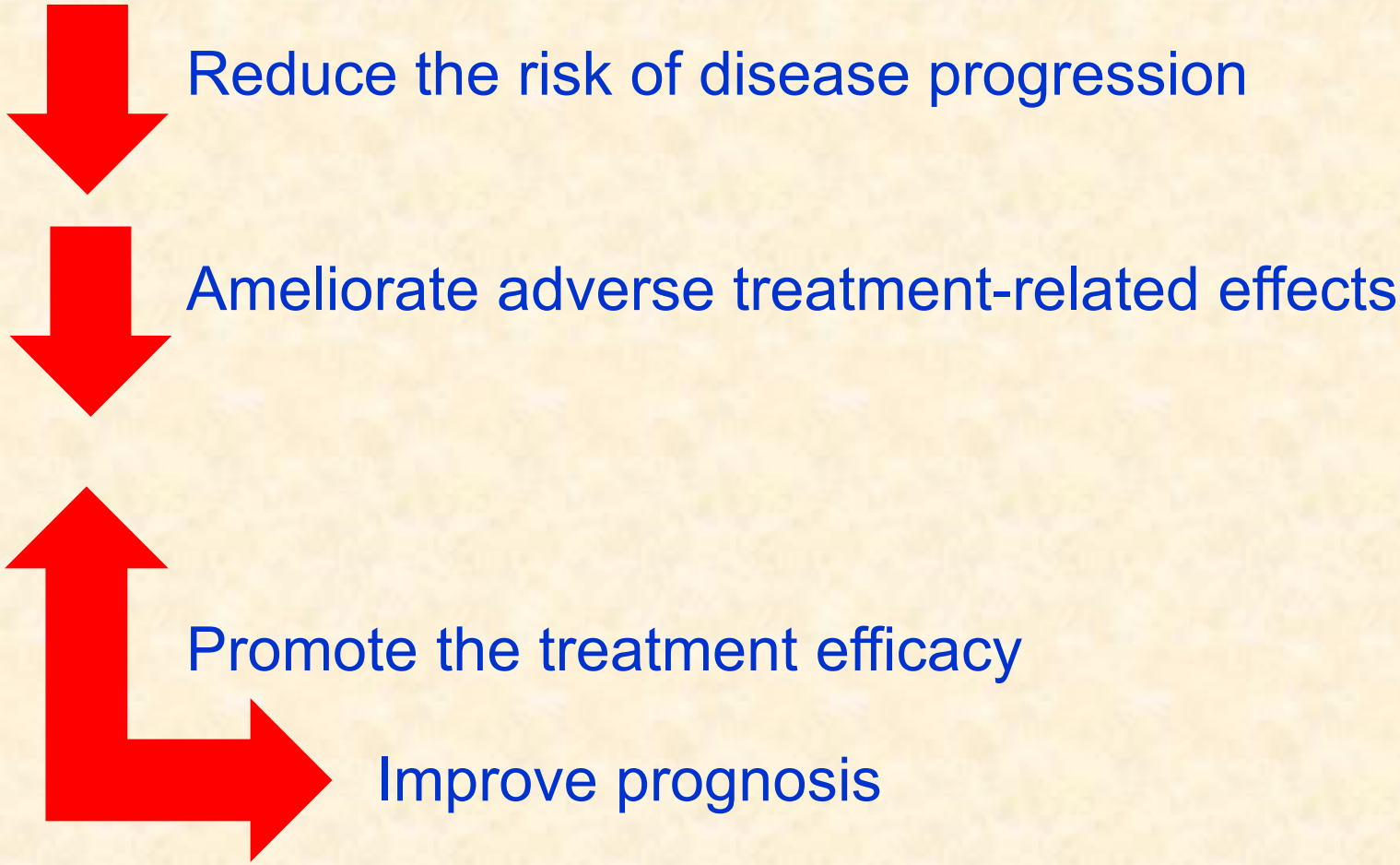
Reduce the efficacy of medical treatments

Increase the risk of treatment-related side effects

Multimorbidity

associated with increased rates of death, disability, adverse effects, use of healthcare resources, and impaired QOL

Advantages of quitting smoking after being diagnosed with NCDs



Conservative estimate of the annual tobacco-related disease cost in 2011 was $716 million which accounted for 0.3% of Gross Domestic Product.


Help !

What have we done so far?

- A RCT of stage-matched intervention for smoking cessation in **cardiac out-patients**
- A RCT of a tailored intervention compared to usual care on smoking **type 2 diabetic patients** to promote smoking cessation and improve glycaemic control
- A cluster RCT aimed at helping **cancer patients** quit smoking by increasing their risk perception between smoking and their own disease

What we have found out

- About:
- 68% of Hong Kong cardiac patients,
- 70% of smokers with DM, and
- 73% cancer patients recruited in outpatient clinics were in the pre-contemplation stage (i.e., had no intention to quit), even after receiving smoking cessation interventions.

Unhealthy Diet

Alcohol

Risk behaviours

Physical Inactivity

COMMUNITY SURVEY

Health-risk behavior

5,737 adults

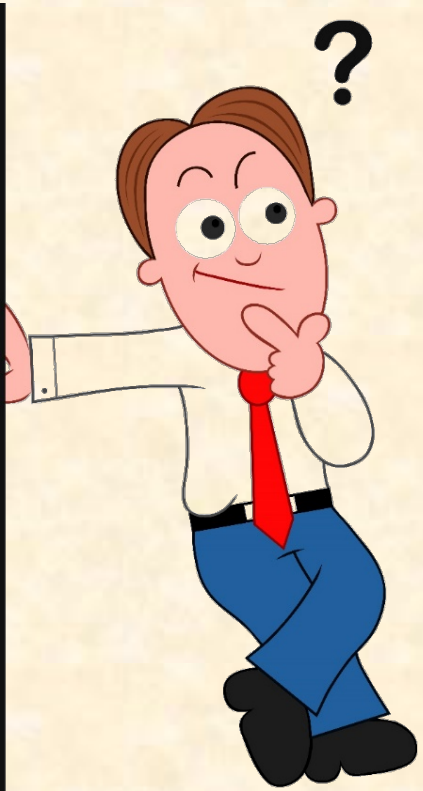
06/2021 – 08/2021

Results

Almost all smokers (97.6%; 687 of 704) had at least one additional health-risk behaviours, including alcohol misuse, unhealthy diet, or physical inactivity

challenges ?

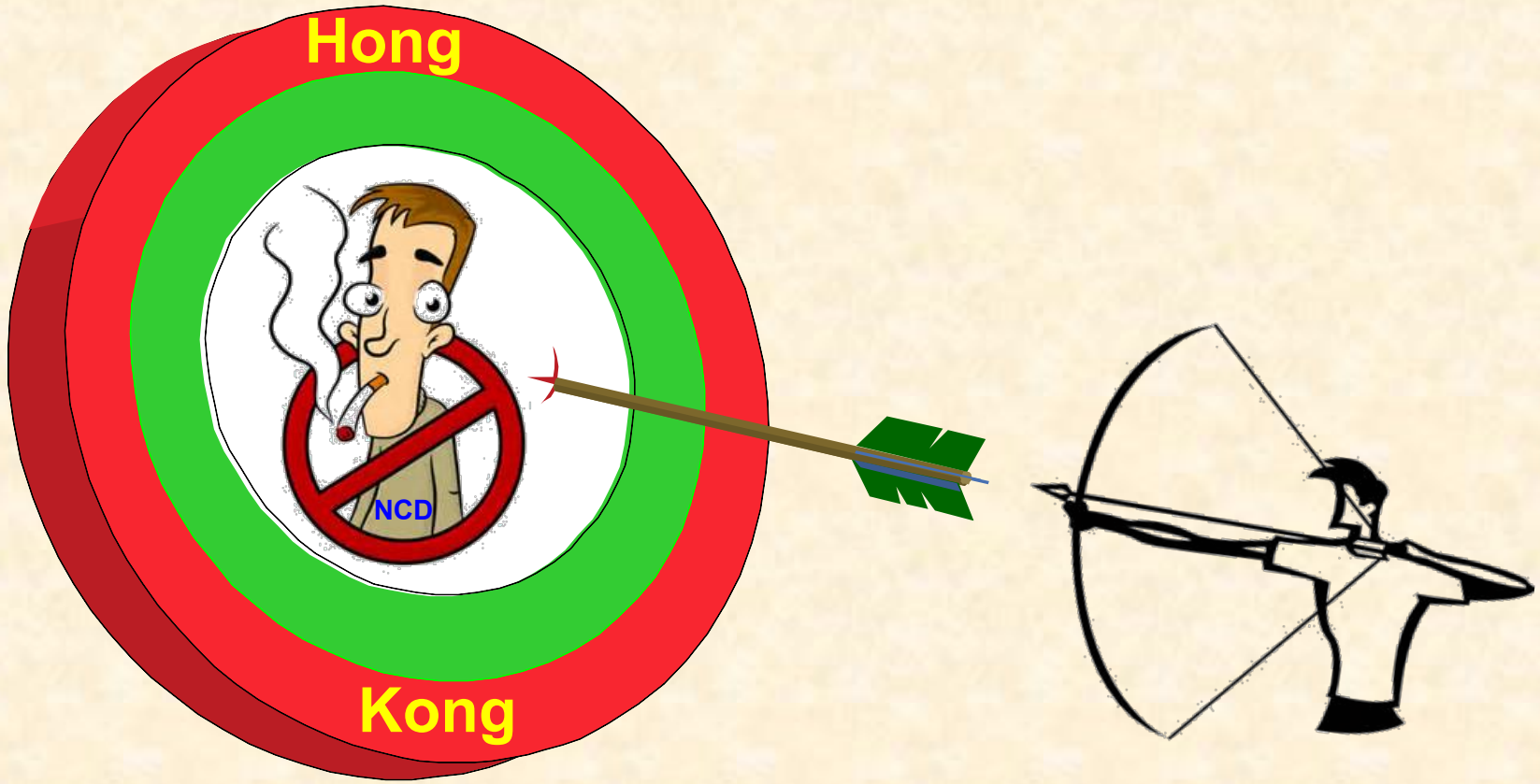

NCD




IDEA
Innovation
Strategy
Success
Attempting
behavioral
Process
Quitting
Smoking
Anxiety
Depression
without
Death
Strategies
Weight Gain
Effective
Discontinuing
Nicotine Replacement Therapy
Tobacco
Quit
Addictive
Smokers
Withdrawal
Nicotine
assistance
counseling
medications
Craving
Preventable
quitting
Difficult
cessation
Symptoms
Irritability
Smoking
Varenicline
percent
Prolonged

Aims of the Study

To determine the feasibility of using information communication technology to deliver brief motivational interviewing and instant messaging to help smokers with non-communicable diseases or chronic diseases quit smoking



Conceptual &Theoretical Framework

1) Motivational Interviewing

2) Self-determination theory

3) Foot-in-the door technique

1 Brief Motivational Interviewing

- MI was originally developed in the field of addictions and found to be transferable to other health-related behaviors including smoking cessation
- Traditional MI requires several sessions, and each takes more than 30 minutes, which is not feasible in a busy clinical setting
- Brief MI shares the same core as a regular MI in that individuals are advocates to motivate, initiate and continue behavioral changes.

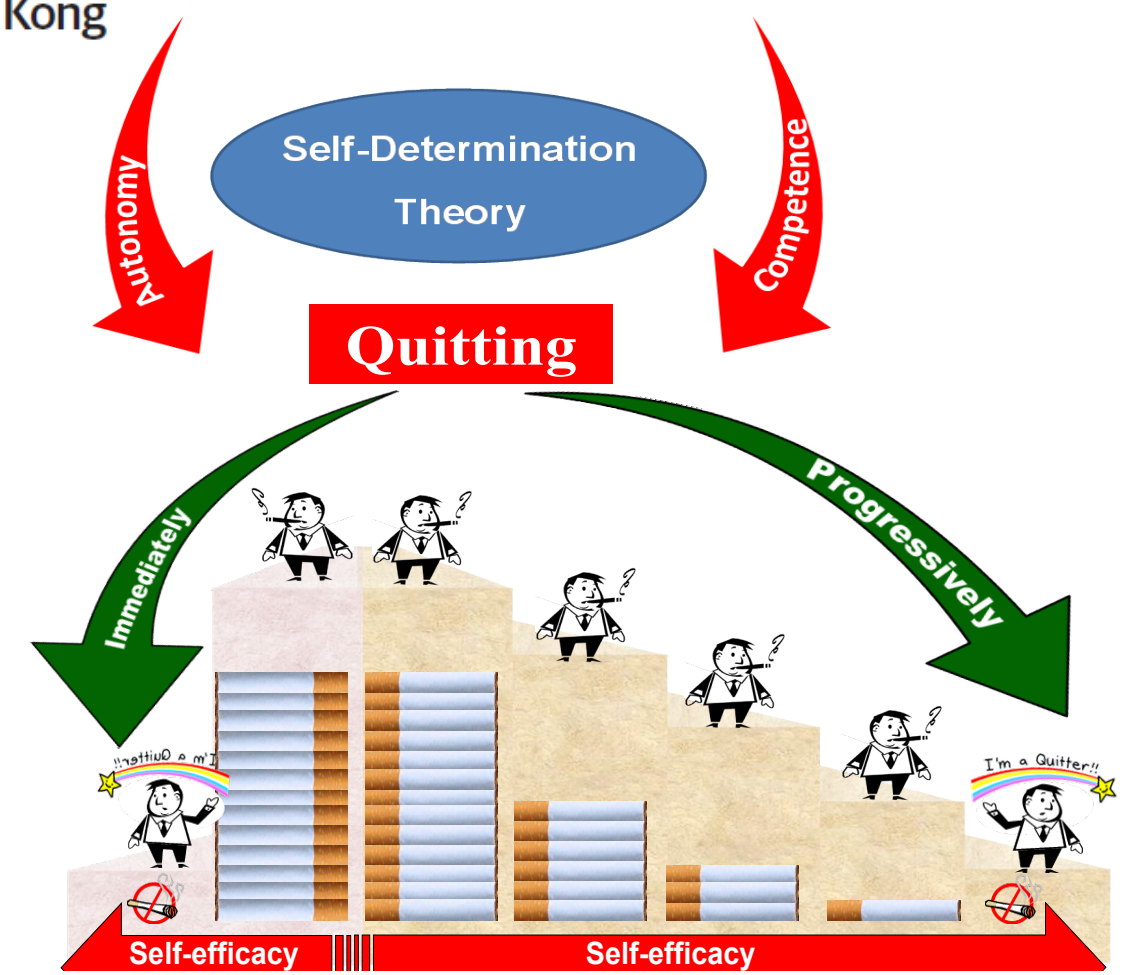
2 Self-determination Theory

JAMA Internal Medicine | Original Investigation

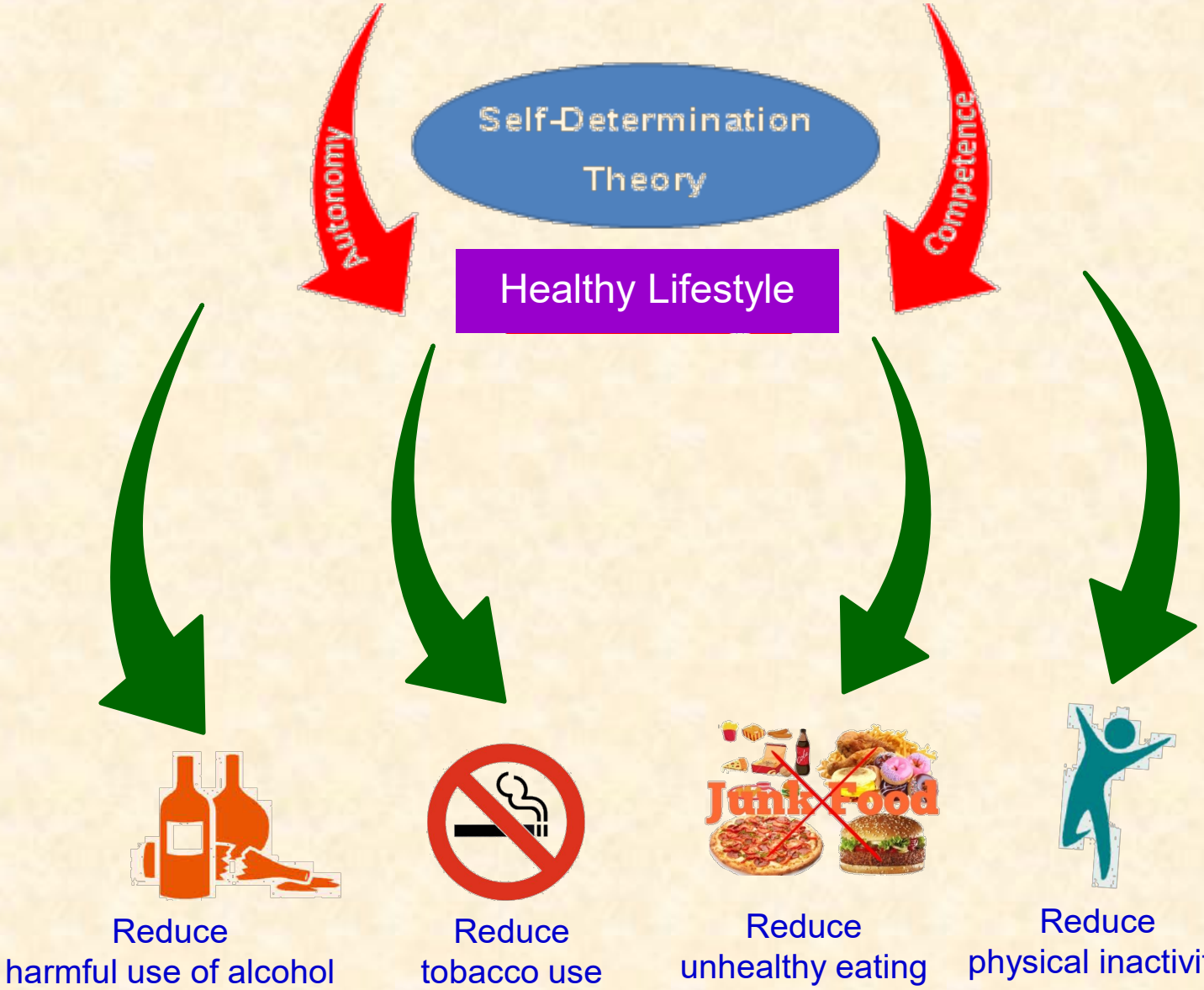
Effectiveness of a Brief Self-determination Theory–Based Smoking Cessation Intervention for Smokers at Emergency Departments in Hong Kong

A Randomized Clinical Trial

William Ho Cheung Li, PhD, RN, FAAN; Ka Yan Ho, PhD, RN; Man Ping Wang, PhD, RN, FAAN; Derek Yee Tak Cheung, PhD, RN; Katherine Ka Wai Lam, PhD, RN; Wei Xia, PhD, RN; Kai Yeung Cheung, DN, RN; Carlos King Ho Wong, PhD; Sophia Siu Chee Chan, PhD, RN, FAAN; Tai Hing Lam, MBBS, MD(HK), MSc(Lond), FAFOM RACP, FFPH, FFOM(Lond), FHKAM, FRCP(Edin)



2 Self-determination Theory



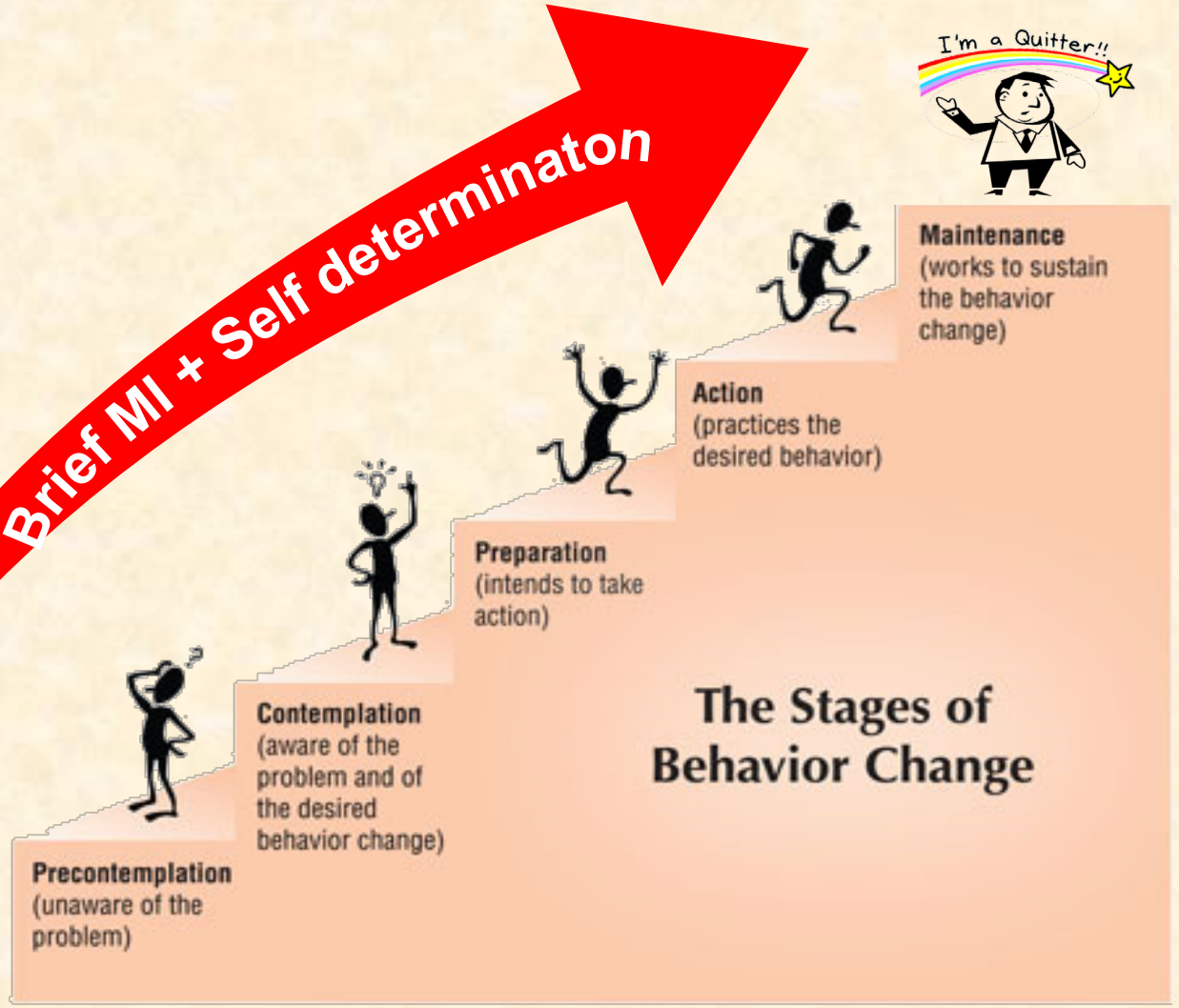
3 Foot-in-the door technique

Foot-in-the-door Technique:

Individuals who are initially induced to comply with a smaller and easier request are more likely to then comply with and achieve a larger request.

Conceptual &Theoretical Framework

1 + 2 + 3



- — Mobile Applications (APPS)
  - ❖ to deliver health information

- — WhatsApp/WeChat
  - ❖ to deliver brief motivational interviewing, advice and support

or

Rationales of using ICT

- Recommend by WHO, a good strategy to promote health

- Using WhatsApp/WeChat: can offer quick, real-time interactions and continuing professional advice and support for subjects to manage their health-related lifestyle.

- More flexible, efficient and time-saving than face-to-face meetings to deliver a brief MI,

- A systematic review of the use of mobile phone–based interventions for smoking cessation showed that smokers who received instant messages via mobile phone were more likely to attain smoking abstinence than those who used traditional face-to-face cessation services.

Sampling Method

60 subjects

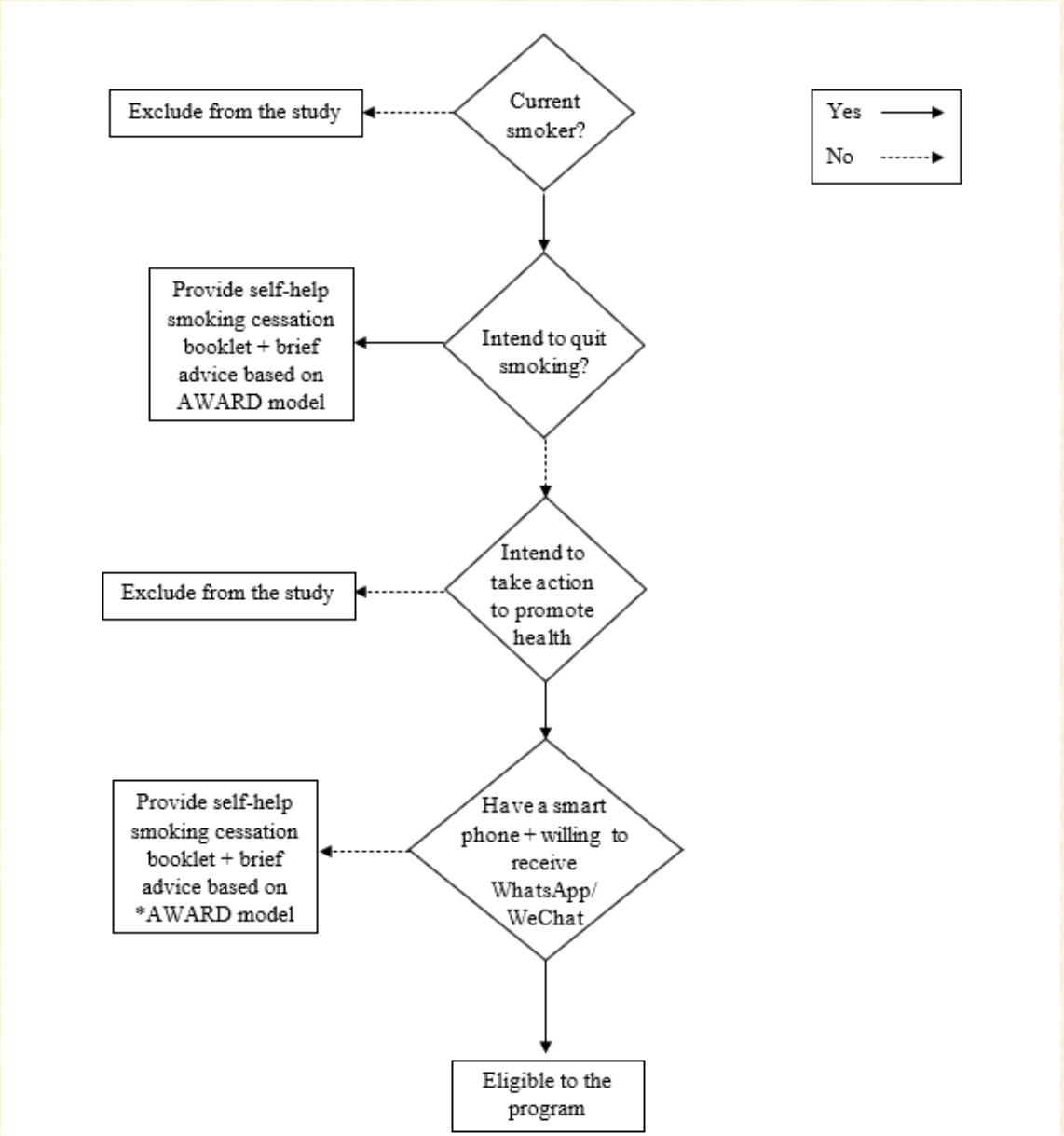
Intervention Group

Control Group

Recruitment:

Inclusion/Exclusion Criteria

- aged 18 years or above
- having a medical follow-up in a SOPC
- Can speak Cantonese and read Chinese
- Owing a smartphone and able to use instant messaging
- smoking at least two cigarettes per day over the past 30 days
- Have been diagnosed with NCD(s)



*AWARD: (a) Ask about smoking history, (b) Warn about the high risk, 'one in two smokers will be killed by smoking,' (c) Advise to quit now, (d) Refer smokers to a smoking cessation clinic, and (e) Do it again: repeat the intervention

Intervention

Intervention group

At the time of recruitment

- receive a self-help smoking cessation booklet
- Ask the subjects about the priority of engaging in any desirable health-related lifestyle practice
- State a targeted goal in which the subjects perceive as the easiest to achieve
- A face-to-face brief MI (~ 5 minutes) will be given

Follow-up booster intervention

- Receive personalized brief MI vis WhatsApp /WeChat, usually not less than once every 2 to 3 days and no more than 2 times per day for the first 6 months
- Assess the readiness to quit smoking at 3-month follow-up. If subjects have an intention to quit, personalised brief MI messages on smoking cessation will be given via WhatsApp/WeChat
- From 6-12 months, minimal messages by merely following the subjects' progress of behavioral changes and responding to their questions

Control group

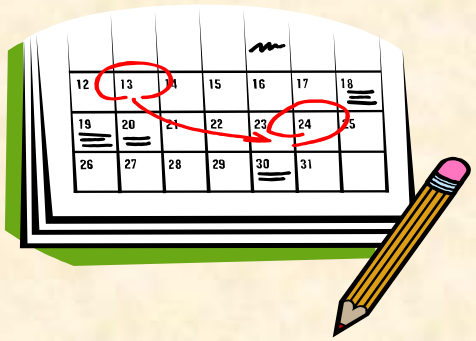
At the time of recruitment

- receive a self-help smoking cessation booklet
- Ask the subjects about the priority of engaging in any desirable health-related lifestyle practice
- State a targeted goal in which the subjects perceive as the easiest to achieve

Follow-up

- Receive follow-up telephone calls at 1, 3, 6 and 12 months, as in the intervention group

Data Collection



18-month Project

Data

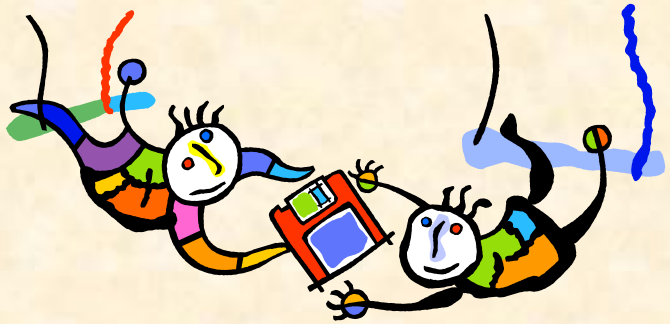
Baseline

1-month

3-month

6-month

12- month



OUTCOMES

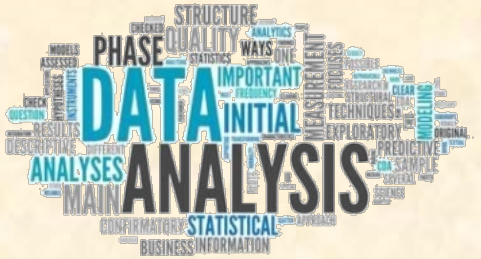
Primary

- Feasibility of the study
- Biochemically validated abstinence at 12 months

Secondary

- Self-reported 7-day point prevalence of abstinence at 6 and12 months
- Behavioral change indicated by subjects at 6, and 12 months

- ***Descriptive statistics*** –



Calculate the frequency and proportion of categorical variables and the mean and standard deviations for continuous variables

- ***Intention to treat was applied*** –

Participants who were lost to follow-up as smokers who had not undergone any reduction in their cigarette consumption compared with baseline

- ***Generalized estimating equation model (GEE)***–

Biochemically validated abstinence rates at 12months, and all other outcomes at 6 and 12: to calculate the adjusted odds ratios (AORs) after adjusting for the baseline demographic and clinical characteristics that showed a significant difference.

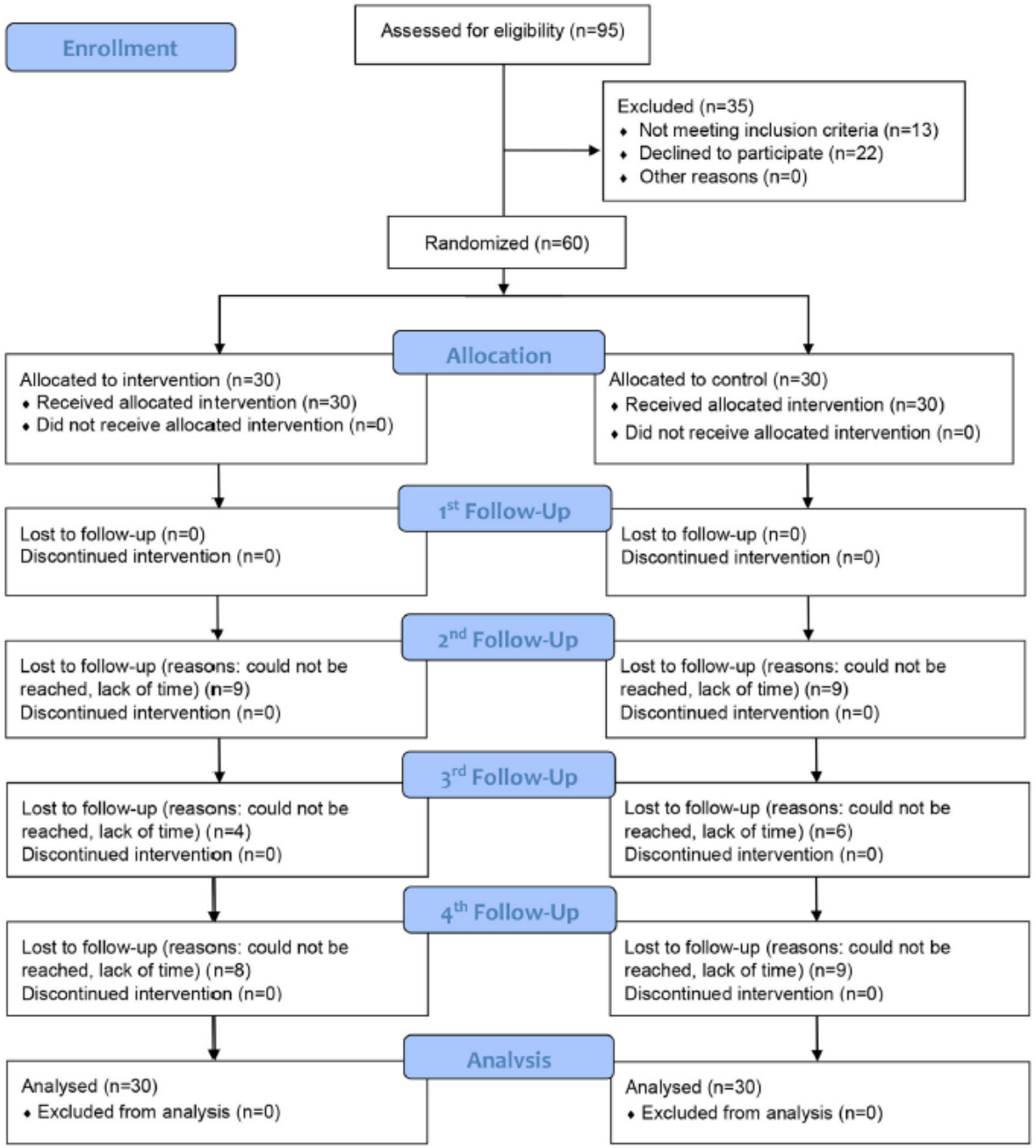
RESULTS

Feasibility

More than 90% of participants owned a smartphone and could use an instant messaging application

- Response rate: 73.2%
- Retention rates:
  - ➢ at 6-month: 83.3
  - ➢ at 12-month: 71.7%

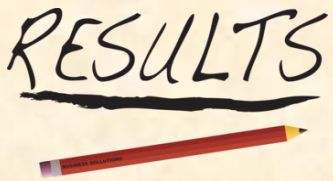
CONSORT Flowchart



RESULTS

Demographic characteristics and smoking characteristics

	N (%)		P-value
	Intervention group ($n = 30$)	Control group ($n = 30$)	
Age, mean (SD), years	44.3 (10.2)	48.1 (12.0)	0.22
Sex			
Male	25(83.3)	26(86.7)	0.72
Female	5(16.7)	4(13.3)	
Educational attainment			
Primary or below	4(13.3)	5(16.7)	0.94
Secondary	22(73.3)	21(70.0)	
Tertiary	4(13.3)	4(13.3)	
Marital status			
Single	12(40.0)	11(36.7)	0.79
Married	18(60.0)	19(63.3)	
Employment status			
Employed	24(80.0)	21(70.0)	0.37
Unemployed or retired	6(20.0)	9(30.0)	
Diagnosis			
Cardiovascular diseases	6(20.0)	8(26.7)	0.64
Cancer	1(3.3)	0(0)	
Chronic respiratory diseases	6(20.0)	3(10.0)	
Diabetes	2(6.7)	3(10.0)	
Multiple chronic diseases	15(50.0)	16(53.5)	
Years of smoking, mean (SD), years	23.1 (9.7)	26.9 (12.3)	0.18
Daily cigarette consumption	13.5 (7.0)	13.5 (7.7)	0.97
Nicotine dependency by the FTND			
Mild, 0–3	2(6.7)	4(13.3)	0.54
Moderate, 4–5	10(33.3)	7(23.3)	
Severe, 6–10	18(60.0)	19(63.3)	
Previous quit attempts			
Yes	4(13.3)	4(13.3)	1.0
No	26(86.7)	26(86.7)	



The outcomes of participants in the intervention and control groups

Variable	N (%)			GEE model			
	Intervention group ($n = 30$)	Control group ($n = 30$)	*P*-value	Crude ORs (95% CI)	*P*-value	Adjusted ORs[a] (95% CI)	*P*-value
Biochemically validated 7-day PPA							
12 months	5 (16.7)	2 (6.7)	0.23	3.39 (0.57–20.10)	0.23	2.4 (0.43-13.75)	0.32
Self-reported 7-day PPA							
6 months	4 (13.3)	1 (3.3)	0.35	4.46 (0.47–42.51)	0.19	6.23 (0.62-62.94)	0.12
12 months	5 (16.7)	2 (6.7)	0.23	3.39 (0.57–20.10)	0.23	2.4 (0.43-13.75)	0.32
Self-reported behavior change							
6 months	12 (40.0)	9 (30.0)	0.54	1.43 (0.46-4.42)	0.54	1.28 (0.31-5.27)	0.74
12 months	17 (56.7)	15 (50.0)	0.61	1.31 (0.47-3.62)	0.61	1.09 (0.35-3.40)	0.88

Discussion

- The research is original and helps to clarify the potential efficacy and feasibility of a general health promotion approach that uses instant messaging to deliver brief MI to help smokers with NCDs quit smoking.

- Results revealed that the abstinence rate of the participants in the intervention group was double that of the participants in the control group.

Potential IMPACTS

Save more lives

- Smoking could kill two-third of smokers
- potentially protect the general public from tobacco hazards, creating a better environment (smoke-free) for our next generation.

Save more money

- reduce the economic burden that smoking and the non-communicable diseases it causes place on the healthcare system.

Inform **policies** regarding smoking cessation among chronic smokers and thereby **boosting sustainable development**

Conclusion

- This study suggested the feasibility and potential efficacy of using information communication technology to deliver brief MI and instant messaging to help smokers with NCDs quit smoking.
- Findings from this study support a fully powered RCT of using this innovative strategy to provide rigorous empirical scrutiny of the efficacy of such an approach.

Acknowledgement

Special thanks to:
Health and Medical Research Fund, Health Bureau, Hong Kong SAR Government for their support of this study.