Behavioral approaches to control noncommunicable diseases: lessons learned from global tobacco control

Abu S Abdullah  MBBS., MPH., PhD., FFPH(UK), FHKAM(HK)

Duke Global Health Institute
Duke University
&
Duke Kunshan University

E-mail: abu.abdullah@duke.edu
Outline

• Global overview of chronic NCDs
• Preventable behavioural risk factors to combat chronic diseases
• Give examples of interventions in tobacco use prevention and cessation
• Summarise potential strategies and barriers to target other chronic disease risk factors
• Discussion
WEST NILE!

SARS!!

MONKEY POX!!!
Chronic NCDs: a pandemic and a global problem
Preventing CHRONIC DISEASES
a vital investment
The epidemiologic transition

• What changes in **lifestyle** and **living conditions** accompany the epidemiological transition?

• Lifestyle transition
  - behaviors (e.g. smoking, sedentary habits)
  - nutritional transition (e.g. increase fat, decrease complex carbohydrates)

**Drivers are:** *industrialization, urbanization and globalization of world markets and mass media*
McDonalds – one of 580 outlets in China
The epidemiologic transition

• What are the results of epidemiologic transition?
Changing Global Disease Burden

1990

- Respiratory infectious Diseases
- Diarrheal Diseases
- Perinatal condition
- Major Depression
- Ischemic Heart Disease

2020

- Ischemic Heart Disease
- Major Depression
- Traffic Accidents
- Cerebrovascular Disease
- Chronic Obstructive Pulmonary disease

Source: WHO
CURRENT AND PROJECTED POPULATION PERCENTAGES FOR 2000, 2020 AND 2040

% population 65+

- S. Africa
- India
- Brazil
- China
- Russia
- Portugal
- U.S.

2000 • 2020 • 2040

S. Leeder 2003
Causes of chronic diseases

<table>
<thead>
<tr>
<th>UNDERLYING SOCIODEMOCRATIC, CULTURAL, POLITICAL AND ENVIRONMENTAL DETERMINANTS</th>
<th>COMMON MODIFIABLE RISK FACTORS</th>
<th>INTERMEDIATE RISK FACTORS</th>
<th>MAIN CHRONIC DISEASES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Globalization</td>
<td>Unhealthy diet</td>
<td>Raised blood pressure</td>
<td>Heart disease</td>
</tr>
<tr>
<td>Urbanization</td>
<td>Physical inactivity</td>
<td>Raised blood glucose</td>
<td>Stroke</td>
</tr>
<tr>
<td>Population ageing</td>
<td>Tobacco use</td>
<td>Abnormal blood lipids</td>
<td>Cancer</td>
</tr>
<tr>
<td></td>
<td>NON-MODIFIABLE RISK FACTORS</td>
<td>Overweight/obesity</td>
<td>Chronic respiratory diseases</td>
</tr>
<tr>
<td></td>
<td>Age</td>
<td></td>
<td>Diabetes</td>
</tr>
<tr>
<td></td>
<td>Heredity</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Should we address behavioral risk factors to combat Chronic disease?

- Modifiable risk factors account for ~50% of premature deaths in the US
- Spending on preventable diseases accounts for 70% of total health care spending
- Effective behavioral intervention is available
Multiple risk factors are common

- For example, nearly 60% of US adults have 2 or more behavioral risk factors

*Am J Preventive Medicine 2004*
Risk factor combination

• Among smokers
  - 46% overweight or obese
  - 61% inactive
  - 34% risky drinkers

• Among overweight or obese
  - 19% smoke
  - 62% inactive
  - 20% risky drinkers
Good news is that-

Many of the risk factors are modifiable

• For example, 80% of cases of CHD, 90% of type 2 diabetes cases, and one-third of cancers could be avoided by changing to a healthier diet, increasing physical activity and stopping smoking
Annex Table 15 Major burden of disease – leading 10 selected risk factors and leading 10 diseases and injuries, low mortality developing countries, 2000

Developing countries with low child and low adult mortality (AMR-B, EMR-B, SEAR-B, WPR-B)

<table>
<thead>
<tr>
<th>Risk factor</th>
<th>% DALYs</th>
<th>Disease or injury</th>
<th>% DALYs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alcohol</td>
<td>6.2</td>
<td>Unipolar depressive disorders</td>
<td>5.9</td>
</tr>
<tr>
<td>Blood pressure</td>
<td>5.0</td>
<td>Cerebrovascular disease</td>
<td>4.7</td>
</tr>
<tr>
<td>Tobacco</td>
<td>4.0</td>
<td>Lower respiratory infections</td>
<td>4.1</td>
</tr>
<tr>
<td>Underweight</td>
<td>3.1</td>
<td>Road traffic injury</td>
<td>4.1</td>
</tr>
<tr>
<td>Overweight</td>
<td>2.7</td>
<td>Chronic obstructive pulmonary disease</td>
<td>3.8</td>
</tr>
<tr>
<td>Cholesterol</td>
<td>2.1</td>
<td>Ischaemic heart disease</td>
<td>3.2</td>
</tr>
<tr>
<td>Low fruit and vegetable intake</td>
<td>1.9</td>
<td>Birth asphyxia/trauma</td>
<td>2.6</td>
</tr>
<tr>
<td>Indoor smoke from solid fuels</td>
<td>1.9</td>
<td>Tuberculosis</td>
<td>2.4</td>
</tr>
<tr>
<td>Iron deficiency</td>
<td>1.8</td>
<td>Alcohol use disorders</td>
<td>2.3</td>
</tr>
<tr>
<td>Unsafe water, sanitation and hygiene</td>
<td>1.7</td>
<td>Deafness</td>
<td>2.2</td>
</tr>
</tbody>
</table>

* Unsafe water, sanitation and hygiene disease burden is from diarrhoeal diseases.
## Noncommunicable Diseases

### 4 Diseases, 4 Modifiable Shared Risk Factors

<table>
<thead>
<tr>
<th></th>
<th>Tobacco Use</th>
<th>Unhealthy diets</th>
<th>Physical Inactivity</th>
<th>Harmful Use of Alcohol</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cardiovascular</td>
<td>🗄</td>
<td>🗄</td>
<td>🗄</td>
<td>🗄</td>
</tr>
<tr>
<td>Diabetes</td>
<td>🗄</td>
<td>🗄</td>
<td>🗄</td>
<td>🗄</td>
</tr>
<tr>
<td>Cancer</td>
<td>🗄</td>
<td>🗄</td>
<td>🗄</td>
<td>🗄</td>
</tr>
<tr>
<td>Chronic Respiratory</td>
<td>🗄</td>
<td>🗄</td>
<td></td>
<td>🗄</td>
</tr>
</tbody>
</table>
How do we prioritize the interventions to pursue?
The case of tobacco
Smoking Rates in Selected Countries

- **Men**
  - Developed countries = 35%
  - Developing countries = 50%
  - Prevalence declining at extremely slow rates

- **Women**
  - Developed countries = 22%
  - Developing countries = 9%
  - Prevalence declining in some countries (US, UK, Australia, Canada), but not in others (southern, central, eastern Europe)

*23% US²; 20%-30% Canada³.
Trend of Smoking Rate in adults in China

Prevalence of smoking in adults 15-69
How many disease conditions are caused by tobacco?
Smoking is The Leading Preventable Cause of Disease and Death

Cancer
- Lung (#1)*
- Oral cavity/pharynx
- Laryngeal
- Esophageal
- Stomach
- Pancreatic
- Kidney
- Bladder
- Cervical
- Leukemia

Cardiovascular
- Ischemic heart disease (#2)*
- Stroke – Vascular dementia
- Peripheral vascular disease
- Abdominal aortic aneurysm

Respiratory
- COPD (#3)*
- Pneumonia
- Poor asthma control

Other
- Adverse surgical outcomes/ wound healing
- Hip fractures
- Low bone density
- Cataract
- Peptic ulcer disease†

Reproductive
- Low birthweight
- Pregnancy complications
- Reduced fertility
- SIDS

*Top 3 smoking-attributable causes of death. †In patients who are Helicobacter pylori positive.
COPD = chronic obstructive pulmonary disease; SIDS = sudden infant death syndrome.
Risks Associated With Exposure to Secondhand Smoke

- **Increases** risk of lung cancer by 20%–30%\(^1,2\)
- **Worsens** pre-existing lung disease, including asthma, COPD, and emphysema\(^2\)
- **Increases** children’s risk of asthma exacerbation, middle ear disease, and otitis media\(^2,3\)
- **Increased** risk of fatal and nonfatal cardiac events\(^4\)

Also, exposure to

- Thirdhand smoke
Survival Among Male UK Physicians Born 1900–1930: Smokers vs Nonsmokers

Global Health Impact of Tobacco

- Leading preventable cause of death worldwide
- Tobacco kills up to $\frac{1}{2}$ of its regular users
- Tobacco use is responsible for 1 in 10 deaths
- 5.4 million people die of tobacco each year
- If nothing changes, tobacco will kill 1 billion people in the 21st century (vs 100 million in the 20th century)

*World Health Organization Report on the Global Tobacco Epidemic, 2008*
Developing countries will suffer the most

2000: 4 million deaths/year

2030: 8-10 million deaths/year

Why does people smoke?
Why does anyone become regular smoker?
Why does anyone smoke cigarettes regularly?

Why does anyone become a regular adult smoker?
Commitment on youth smoking
有樣學樣

香港無犬子！一對手拖手的父子在小販

兇迎的深圳行人天橋上，悠閒地邊散步邊);

一題，大的嘴巴上叼着一根燃着的香煙，小的嘴巴上的香煙雖然

是裝模作樣，但看他的神情，卻是滿臉自得。

他看見我抽煙，便嚷著也要抽，唯有把一根塞到他嘴巴裏。

一週民父親發現對準父子倆的鏡頭時，遲疑了片刻後，便抽出兒

子口中的香煙，向搭訕的旁人解釋那一「大小不一」的一幕。

圖文：本報記者
Adding to these,……

aggressive promotional campaigns of tobacco industries ………
What Can be Done to Reduce Tobacco Use?

- Effective actions to reduce tobacco use are recommended by the Framework Convention on Tobacco Control (FCTC)

  A set of evidence-based policies to reduce tobacco use that countries agree to adopt

  Ratified by 169 countries

  FCTC Articles are translated into action steps in the WHO’s 2008 MPOWER report
Policies to Reduce Global Tobacco Use

- **M**onitor tobacco use and tobacco control policy
- **P**rotect people from tobacco smoke
- **O**ffer help to quit tobacco use
- **W**arn about the dangers of tobacco
- **E**nforce bans on tobacco advertising, promotion
- **R**aise taxes on tobacco

*MPOWER: WHO Report on the Global Tobacco Epidemic 2008*
The tobacco harm prevention pyramid

How can we promote tobacco use prevention and cessation?

- Pharmacotherapies
- Simple advice & support
- Assess stage of change
- Prevent public place smoking and prevent workplace smoking
- Prevent nicotine addiction in children

• Legislation • Legislation • Legislation
Examples of behavioral interventions to promote cessation
Smoking cessation in the clinical setting: SCHC

- Ruttonjee Hospital, Hong Kong SAR
- 3 evening sessions a week (6 - 9 pm)
- Counselling plus one week NRT: all free
Counseling

- Individualized
- ~30 minutes
- Trained counselors
- Problem-oriented
Evaluation of the clinic (First 17 months operation)

Quitting

• 7 day point prevalence @ 12 months
  Attenders  n = 841  Quit % = 39
  Intention to treat n = 1203  Quit % = 27

• Continuous cessation for 80% yr
  Attenders  n = 841  Quit % = 25
  Intention to treat n = 1203  Quit % = 18
<table>
<thead>
<tr>
<th>Adherence</th>
<th>Non-Adherence</th>
</tr>
</thead>
<tbody>
<tr>
<td>(N=170)</td>
<td>(N=725)</td>
</tr>
<tr>
<td>Quitting</td>
<td>Quitting</td>
</tr>
<tr>
<td>% (95% CI)</td>
<td>% (95% CI)</td>
</tr>
<tr>
<td>43 (35-50)</td>
<td>29 (26-32)</td>
</tr>
</tbody>
</table>

p < 0.001
2. Reactive approach for smoking cessation: Quitline

- Reactive (smoker or sig other initiate the calls)
- Free counselling
- 38 hours per week
- Low budget
Objectives

• To provide a telephone-based counselling service to smokers who are interested to quit smoking;
• To give advice to non-smokers who want to avoid second hand smoking;
• To give advice to non-smokers to help their friends/family members to quit smoking.
Services

*Quitline service offers:*

- Smoking cessation counseling - stage matched;
- Health information on smoking;
- Smoking cessation information packs;
- Follow up interview and evaluation.
The Smoking Cessation Quitline

- Quitline manned by counsellors
- 5554 callers over 15 months
- 1120 smokers

654 contact information

- Quit rates at 6 mths (7 day abstinence)
  - Available follow up 20%
  - Intention to treat 12%
Abdullah AS et al. Which smokers use the smoking cessation Quitline in Hong Kong and how effective is the Quitline? Tobacco Control 2004; 13: 415-421
3. Proactive approach for smoking cessation: Tel based counseling

- Randomized controlled trials on proactive telephone counseling targeted at smoking parents of young children
Objectives

The purposes of this study is-

- To examine whether telephone counseling based on the transtheoretical model of behavior change together with educational materials could help smoking parents of young children to quit.
Results

- 952 smoker fathers and mothers

- Quit rate at 6 months (7 day abstinence)
  Intervention group: 17.6%
  Control group: 10.5%  \( (P<0.005) \)
Evidence Vs Advocacy

- Evidence from these initial work was used to promote territory wide and regional
  - Smoking cessation service
  - Research
  - Education
  - Policy formulation
Smoking Cessation in Hong Kong: a Call to Quit Smoking

Dr. Abu Abdullah has made great strides in developing programmes to help smokers quit. He says Hong Kong was late in developing programmes to help smokers quit, months after its 20 clients, compared to other programmes internationally. Seventy-seven per cent of their clients are now, although women dominate the 21 to 30 age group.

"Since smoking is still socially desirable, if you smoke in front of somebody nobody minds or cares so that just encourages smokers. But it is starting to change and it will change more with this new policy," he says.

Dr. Abu Abdullah (left) and Prof. Li King Lee (right) discuss smoking cessation strategies.
Global Tobacco Use Prevention and Cessation Initiative:

Networking with China, Bangladesh, India, Vietnam, Japan, S Korea, Thailand and ......
China


China

Leaders and experts in the capacity building workshop.
The project kick off ceremony in Zhejiang University.
China

CHWs to promote SHS exposure risk reduction


China

*Healthcare system-based approach to address NCD risk factor reduction*

- System change in the Chinese pediatric setting and pediatrician capacity building
中国临床控制二手烟研讨会
CEASE—China Seminar
HK

- Chan SC, Lam TH, Leung YD, Abdullah AS. A randomised controlled trial of a smoking reduction plus NRT intervention for smokers not willing to quit smoking.

*Addiction, 2011; 106(6): 1155-63*
Bangladesh

• Working with local partners to generate local evidence for policy change and intervention delivery

Kingdom of Saudi Arabia


*Saudi Med Journal 2013; 34:202-203*
But, barriers exists in many countries!!
Possible barriers?-1

• Economic factors (lack of priority in resource allocation)
• Lack of awareness/interests
• Low perception of risks
• Lack of policies that promote cessation
• Lack of training programs

Abdullah and Husten, *Thorax* 2004
Possible barriers? - 2

- Smoking behaviour of service providers
- Poor healthcare systems
- Lack of infrastructure
- Industry action

Abdullah and Husten, *Thorax* 2004
Lessons Learned

• Promotion of smoking cessation is feasible and effective; and should be tested for local replication

• Lessons learned in one population could be pilot tested in another

• Lessons learned from tobacco use cessation could be tested for physical inactivity, harmful use of alcohol and unhealthy diets prevention
Discussion questions

• What are the opportunities and challenges to applying lessons learned from tobacco use prevention and cessation to other behavioral risk factors?

• Is there an evaluation base supporting the application across risk factors?
Challenges in Addressing the Problem

• Limited understanding of “what works”

• Institutional (& workforce) capacity constraints

• Lack of coordination across sectors

• Lower level of investment on prevention than in addressing the disease

• Socio-cultural and religious issues
There is a need ......
Whole system approach to address chronic diseases

NEED:

• Government commitment: policy, regulations, system change
• Population/community-based programs
• International support: capacity building, resources
• Framework convention for ??obesity control (FCOC)…….?alcohol control
Thank You