Tobacco Consumption: Bhavesh Modi, MD

Background Information

- Tobacco is consumed in different forms and by different methods across the globe.

- Tobacco is the leading preventable cause of death that has killed 100 million people in the twentieth century and could kill 1 billion people in the twenty-first century, according to WHO.

- Health professionals (physicians, dentists, nurses, and health workers) could play a major role to prevent illness and preterm deaths due to tobacco use.
Types of Tobacco Usage

- Smoking
- Smokeless
- Newer products

Smoking Tobacco

- Tobacco smoking is the act of burning dried or cured leaves of the tobacco plant and inhaling the smoke
  - Cigarette
  - Bidi
  - Kretak (clove cigarette)
  - Cigar
  - Pipe
  - Water pipe, hookah, shisha

Cigarettes

- Cigarettes are most addictive and most commonly used tobacco product across the globe

- Earlier cigarettes were made from scrap tobacco of cigars

- Invention of cigarette-making machine in 1880 followed by aggressive marketing led to dramatic increase in cigarette production, consumption, and global death toll related to smoking


---

Cigarettes

- Tobacco smoke contains thousands of chemicals and compounds, many of which cause cancer

- Tobacco companies have introduced products marketed with “mild,” “light,” “silver,” or “gold,” in a manner that implies they are “safer,” but research indicates that there is no completely safe form of tobacco

Bidis

- Bidis are slim, hand-rolled, unfiltered cigarettes consisting of about 0.2 grams of sun-dried and processed tobacco flakes, rolled in a tendu leaf (Diospyros elanoxylon) or temburni leaf and held together by cotton thread.

- Primarily an Indian product, most commonly used in South-East Asia, and now increasingly exported to high-income countries as a cheap and less hazardous alternative to cigarettes.
  - However, bidis produce three to five times higher nicotine, carbon monoxide, and tar compared to cigarettes.


Kreteks

- Kreteks—also known as clove cigarettes
  - Typically contain a mixture of cloves, tobacco, and other additives
  - Dominant form of cigarette found in Indonesia—now easily available in most countries
  - Aroma of cloves masks the irritant qualities of tobacco smoke and enables inhalation of large quantity of smoke
  - Deliver higher nicotine, carbon monoxide, and tar compared to cigarettes
  - No scientific evidence supporting less hazards by kreteks compared to cigarettes

Cigars

- Cigars are rolls of tobacco wrapped in reconstituted tobacco leaf, generally containing much higher quantity of tobacco than cigarettes

- The long aging and fermentation process produces high concentrations of carcinogenic compounds that are released upon combustion

- In addition to smoking-related health hazards, cigar users are additionally exposed to toxins through mouth absorption due to alkaline nature of tobacco


Pipes

- Pipes consists of a chamber (to place tobacco and light), stem, and mouthpiece

- Due to large quantity of tobacco put into the chamber, pipe users are exposed to smoke equivalent to many cigarettes in single session

Water Pipe, Hookah, Shisha

- Water pipes, hookas, and shishas operate by water filtration and indirect heat
- Originated from South and Middle-East Asia
- Flavored tobacco is burned in a smoking bowl covered with foil and coal
- The smoke is cooled by filtration through a basin of water and consumed through a hose and mouthpiece by single or multiple users


Water Pipe, Hookah, Shisha

- Due to large volume of tobacco and longer duration of water pipe sessions (30-60 minutes), users inhale more than 10 liters of smoke during each session
- Sharing of water pipes may additionally increase the risk of transmission of airborne infections (tuberculosis, flu) and other communicable diseases


© 2012 Johns Hopkins Bloomberg School of Public Health
Constituents of Tobacco Smoke

Poison gases
- Ammonia
- Butane
- Carbon monoxide
- Hydrogen cyanide
- Vinyl chloride
- Benzene
- Formaldehyde
- Polonium-210
- Lead

Cancer causing chemicals
- Arsenic
- Chromium
- Cadmium

Toxic metals

Surgeon General’s Reports

(2010) How Tobacco Smoke Causes Disease: The Biology and Behavioral Basis for Smoking-Attributable Disease

The Health Consequences of Active Smoking

Cancer
- Oral cavity
- Larynx
- Esophagus
- Trachea, bronchus, & lungs
- Acute myeloid leukemia
- Pancreas
- Cervix (women)
- Kidney & ureter
- Bladder

Chronic diseases
- Stroke
- Blindness & cataracts
- Periodontitis
- Aortic aneurysm
- Coronary heart disease
- Atherosclerotic peripheral vascular disease
- Pneumonia
- Chronic obstructive pulmonary disease, asthma, & other respiratory effects
- Hip fractures
- Reproductive effects in women (including reduced fertility)

What Is Secondhand Smoke (SHS)?

Mainstream Smoke (MS):
The smoke drawn through the mouthpiece of the cigarette when puffs are taken

Sidestream Smoke (SS):
The smoke emitted from the smoldering cigarette between puffs

Secondhand Smoke (SHS):
Combination of SS and exhaled MS
Hirayama’s Study

Surgeon General’s Report, 2006

Smokeless Tobacco

- Smokeless tobacco is consumed without burning either orally or nasally
  - Chewing tobacco, gutkha
  - Snuff, snus
  - Dissolvable products


Chewing Tobacco

- An oral, smokeless tobacco product placed in the mouth, cheek, or inner lips for sucking or chewing
- Known as “spit” tobacco
- Used worldwide and available in different forms
  - Plug
  - Loose-leaf
  - Chimo
  - Toombak
  - Gutkha
  - Pan masala or betel quid with tobacco

Images source: iStockphoto.com
Gutkha

- Flavored mixture of areca nuts, slaked lime with tobacco, and other ingredients
- Major category of chewing tobacco manufactured in Indian subcontinent, widely used in Asia Pacific region and has spread to Europe and US through migratory population
- Due to wider availability and ease of use without getting attention, Gutkha has attracted smokers who want to quit, young children, and women


Snuff, Snus

- Tobacco is fire-cured and processed into fine particles and sold as dry powdered snuff or moist snuff
- Snuff is held in the mouth between cheeks or lips and gum—dry snuff may be also inhaled through the nostrils

Snuff, Snus

- Also known as
  - Snus
  - Khaini
  - Shammaah
  - Naswa

- Commonly used in Scandinavia, US, and South Asia, however available worldwide

Dissolvable Smokeless Tobacco (DSTs)

- DSTs contain tobacco and other constituents that dissolve in the mouth to deliver nicotine through oral mucosal absorption

- Most DSTs are manufactured by established cigarette brands and marketed as an alternative for smokers at venues where smoking is prohibited in high-income countries

- No scientific evidence about safety of new DST products—in fact, they may potentially increase number of tobacco users including children
Tobacco Consumption: Bhavesh Modi, MD

Health Impact of Smokeless Tobacco

- Smokeless tobacco products are not a safe alternative or substitute to smoking tobacco
- Smokeless tobacco products contain many carcinogens, heavy metals, and other toxins found in cigarettes that result in many similar diseases as caused by smoking
- Additionally, smokeless tobacco products increase burden of head and neck cancers and diseases of mouth and teeth

Health Impact of Smokeless Tobacco

- Cancer of mouth, tongue, throat, esophagus, stomach, pancreas
- Increased risk of heart disease, heart attacks, CV stroke
- Reproductive health—preeclampsia, preterm birth, low birth weight of baby
- Oral and dental diseases—leukoplakia (precancerous lesion), receding gums, bone loss around the roots of the teeth, abrasion of teeth, tooth loss, stained teeth, bad breath
- Addiction to nicotine—nicotine dependence, dual use of smoking and smokeless tobacco
Newer Tobacco Products

- Many companies are coming out with different, innovative products like nicotine lollipops, lip balms, nicotine water, e-cigarette:
  - To bypass tobacco control regulations and
  - To attract existing smokers and potential new clients including children

- These products are marketed as “safe” alternative and “quit smoking tools,” however most of them could be potentially hazardous like other tobacco products and could be first step towards nicotine addiction for children

Electronic Cigarette (E-Cigarette)

- Electronic (E) cigarette is the electronic nicotine delivery system (ENDS) that uses a battery to convert nicotine-containing liquid into a vapor to inhale

- E-cigarettes consist of a cartridge, atomizer, and body

Source: adapted by CTL from http://www.smokefree.in/smokefree-e-cig-anatomy
Electronic Cigarettes

- Systematically marketed as an alternative to cigarettes for smoking in public places or as a cessation aid or both

- In addition to delivery of nicotine, e-cigarettes deliver a highly toxic substance (diethylene glycol), carcinogens (nitrosamines), and other hazardous chemicals*

*Source: www.health.harvard.edu/blog/electronic-cigarettes-help-or-hazard-201109223395

Electronic Cigarettes

- Long-term health hazards of e-cigarettes are not known, however short-term use produces immediate adverse physiologic effects similar to tobacco smoking

- Recent study confirmed the presence of toxic and cancer-causing volatile organic compounds (VOCs) and ultrafine particles in the indoor environment due to use of e-cigarettes which can harm innocent bystanders through “passive vaping” similar to “passive smoking”

Thank You!