Tobacco and Cardiovascular Disease

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2023

BACKGROUND

- Approximately 22% of the world's population aged 15 and above are smokers.
- **Mortality and Disability:** Prolonged smoking is identified as a major cause of premature mortality and disability worldwide.
- **Annual Deaths:** Tobacco use results in more than 8 million deaths each year globally.
- **Direct Tobacco Use:** Approximately 7 million deaths are attributed to direct tobacco use.
- **Second-Hand Smoke:** Around 1.2 million deaths result from exposure to second-hand smoke.
- **Around 80% of smokers live in low- and middle-income countries (**populations that are targets of intensive tobacco industry marketing**)**.

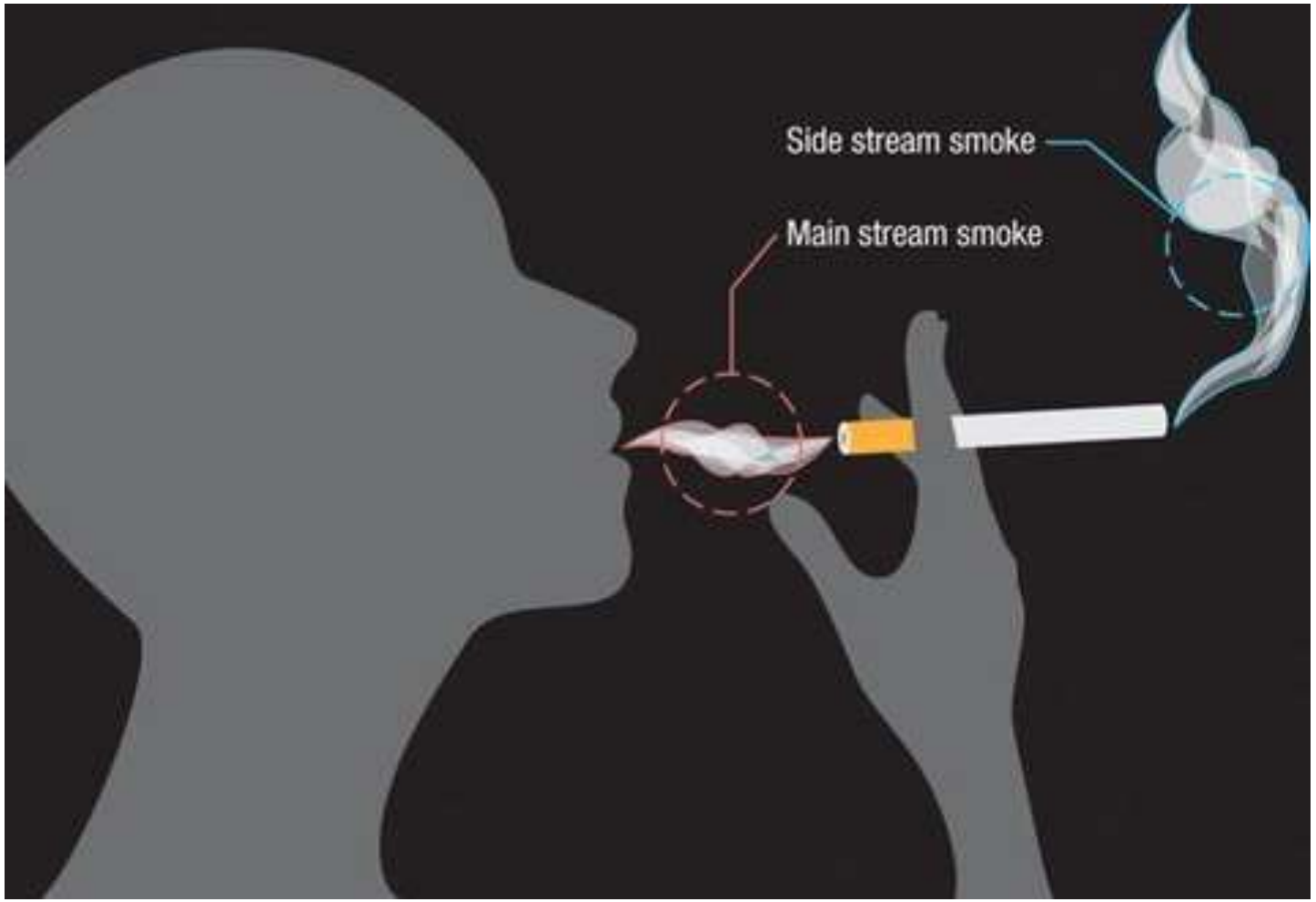
TOBACCO – A MAJOR CAUSE OF AVOIDABLE BURDEN OF DISEASE

- **Cardiovascular disease (CVD) is the world's leading cause of death.**
- **Tobacco is the single most preventable cause of CVDs.**
- Tobacco is the leading cause of premature death from CVD→25% of deaths at ages 35–69 years.
- Tobacco related deaths are projected to increase to 10 million annually by 2030 if current trends continue.

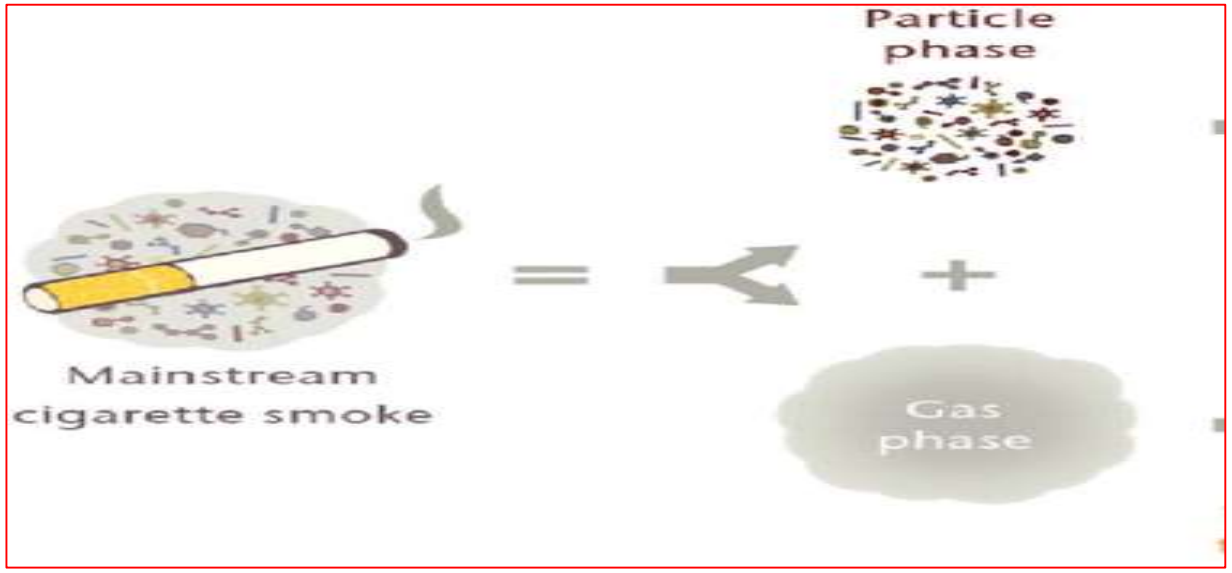
PATHOPHYSIOLOGY AND MECHANISMS

- Burning tobacco products *produce two forms of smoke*:

1. **Mainstream smoke**: is inhaled and exhaled by the smoker.
2. **Sidestream smoke**: comes from the burning end of the cigarette (more toxic than mainstream smoke)



PATHOPHYSIOLOGY AND MECHANISMS



- More than 7,000 chemicals in cigarette smoke→mediate the pathophysiology of CVD.
- Cigarette smoking is divided into two phases:

1. a particulate phase.
2. a gas phase.

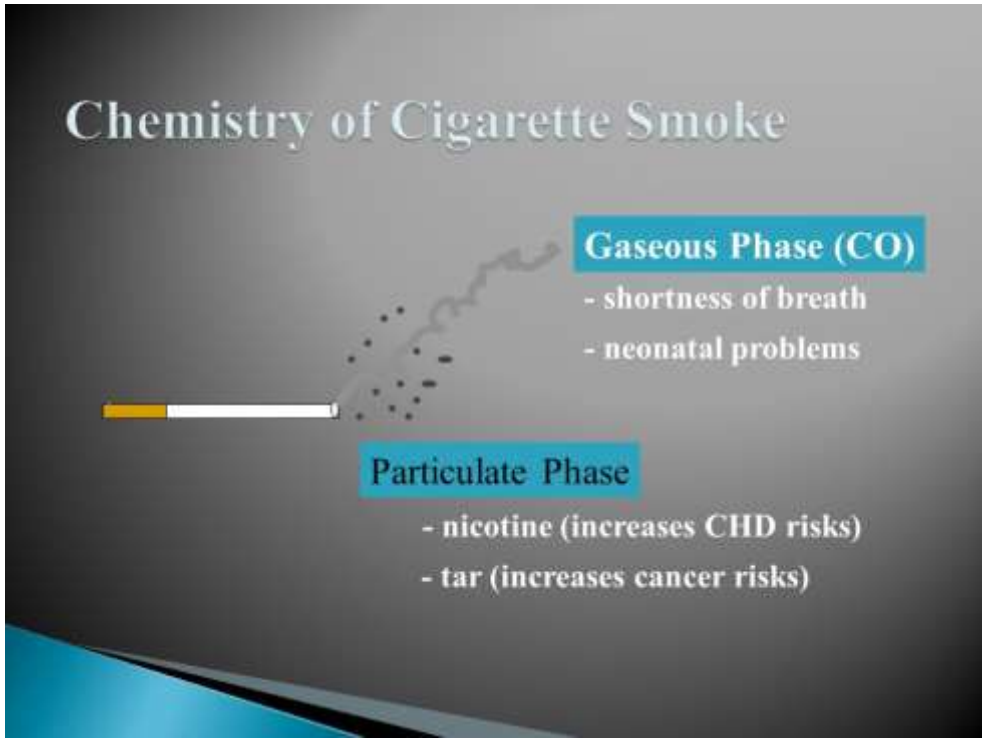
PATHOPHYSIOLOGY AND MECHANISMS

1. The particulate phase : contains nicotine and the total aerosol residue (tar)→together contribute to heart disease through the following pathway:

➢ Inflammation, impairment of the endothelium ↑enhanced formation of clots and reduced level of high-density lipoprotein (HDL) cholesterol .

2. The gas phase contains the poisonous gas carbon monoxide (CO), along with other gases.

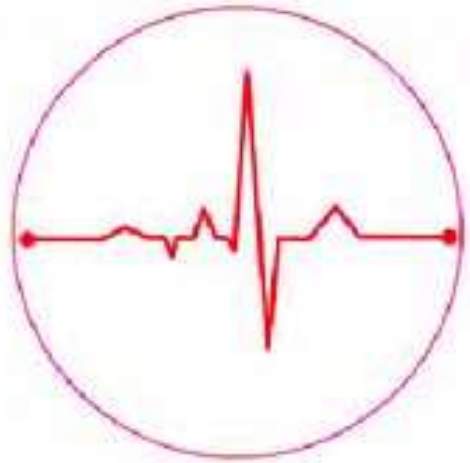
➢CO replaces oxygen in the blood→ reducing the availability of oxygen for the heart muscle and other body tissues.



Tar and chemicals

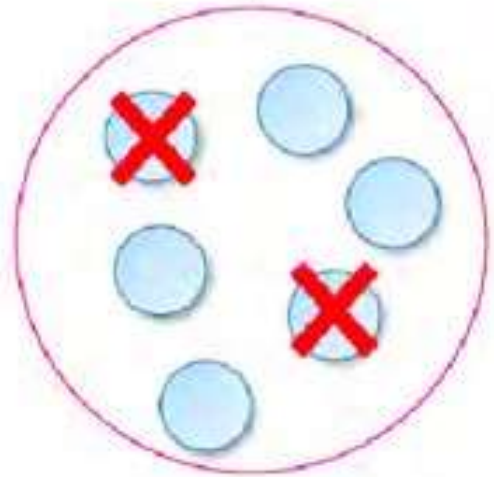
damages blood vessels;
adverse lipid profile;
thickens your blood

Nicotine



increases heart rate
and blood pressure

Carbon monoxide



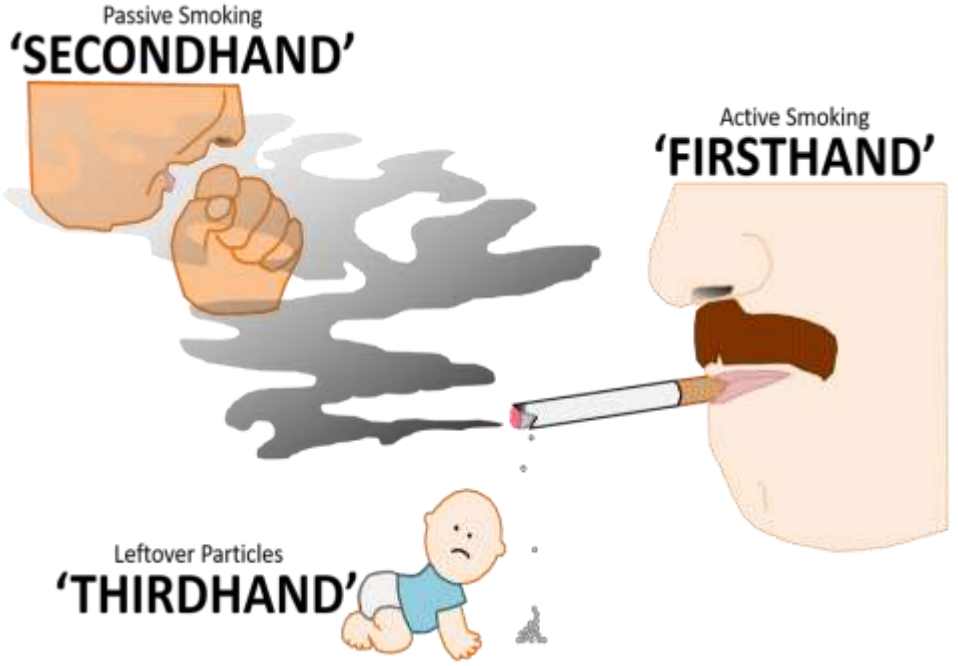
replaces oxygen

Cardiovascular diseases

FORMS OF TOBACCO USE

Tobacco is consumed worldwide in many forms other than cigarettes, both smoked and smokeless.

- **Firsthand smoke:**
- inhaled directly by a smoker
- **Secondhand Smoke:**
- AKA environmental tobacco smoke/Passive smoking.
- Secondhand smoke has physiological effects similar to those of active smoke.
- Exposure to second-hand smoke can cause coronary heart disease, increasing the risk of disease by approximately 25–30%
- **Thirdhand Smoke:**
- The lasting or residual nicotine and other chemicals left on indoor surfaces after tobacco smoke is finished.
- Third-hand smoke can get trapped in hair, skin, fabric, carpet, furniture, and toys.



SMOKELESS TOBACCO

- Smokeless tobacco is a tobacco product that is used by means other than smoking.
- **Chewing tobacco** is typically sold as loose leaves, twists, or plugs. Users place a portion of the tobacco between the cheek and gum, chewing it to release the flavor and nicotine.
- **Snuff** is a finely ground or powdered tobacco product. It is available in dry or moist forms. Dry snuff is sniffed or "snorted" into the nose, while moist snuff is placed between the lower lip or cheek and gum.
- **Snus** is a type of moist snuff that originated in Sweden. It comes in small pouches, and users place these pouches between the upper lip and gum. Unlike some other forms of smokeless tobacco, snus does not require spitting.
- Some smokeless tobacco products come in **dissolvable forms** such as lozenges, strips. These products are designed to dissolve in the mouth, releasing nicotine.

Moist snuff

Dry snuff

Snus

SMOKELESS TOBACCO

- Includes heavy metals (cadmium) and additives (liquorice or punk ash) affect the CVS adversely.
- Smokeless tobacco also cause heart disease by acutely elevating blood pressure and contributing to chronic hypertension.
- Smokeless tobacco use is increasing in many parts of the world, and in some countries (e.g. Bangladesh, India) it is more commonly used than smoked tobacco.
- Smokeless tobacco use is associated with various adverse health effects, including an increased risk of oral cancer, gum disease, and other oral health problems. Additionally, smokeless tobacco products deliver nicotine, which is an addictive substance.

ELECTRONIC NICOTINE DELIVERY SYSTEMS (ENDS)

- Introduced in 2007.
- known as e-cigarettes-→ battery-operated devices that heat a solution, or e-liquid, to generate an aerosolized mixture containing flavoured liquids and nicotine inhaled by the user
- **Components of ENDS:**
- **Battery:** Provides power to the device.
- **Atomizer or Heating Element:** Heats the e-liquid and turns it into aerosol.
- **Cartridge or Tank:** Contains the e-liquid.
- **E-Liquid:** Usually consists of nicotine, flavorings, propylene glycol, and glycerin

ENDS

Association with Cardiovascular Events:

- **Short-Term Changes:** Using ENDS can lead to acute changes in the cardiovascular system, such as increased heart rate and arterial stiffness.

- Impact on Blood Vessels:

- **Vasoconstriction:** Nicotine can cause vasoconstriction, leading to narrowed blood vessels.
- **Reduced Blood Flow:** This can reduce blood flow to vital organs and tissues.

- Inflammatory Response:

- **Inflammation:** Some studies suggest that ENDS use may trigger an inflammatory response in the cardiovascular system, which is associated with cardiovascular disease.

- Interaction with Traditional Smoking:

- **Dual Use:** Individuals who use both traditional cigarettes and ENDS may experience compounded cardiovascular risks.
- **Synergistic Effects:** The combined exposure to toxicants from both sources may have synergistic effects on cardiovascular health.

ELECTRONIC NICOTINE DELIVERY SYSTEMS

- Non-users, including children and young people, are at risk of CVD through second-hand vaping.
- Still, long-term health effects of use of ENDS are unknown.

SOCIOECONOMIC DIMENSIONS OF TOBACCO-USE-RELATED CVS DISEASES

- Many socioeconomic factors modify the relationship between tobacco use and CVD.
- Examples:

➢Age (young male smokers are at higher risk of sudden death)

➢Gender (smoking women have more risk for coronary heart disease)

➢Ethnicity (South Asians→ greater risks)

- In most societies, smoking is more prevalent among the poor and disadvantaged groups

CARDIOVASCULAR BENEFITS OF TOBACCO USE CESSATION

- There is evidence for the cardiovascular benefits of tobacco cessation, particularly cigarette smoking.
- Smoking cessation benefits all users, irrespective of form, duration, and age.
- Cardiovascular benefits are consistent and achieved early after tobacco cessation.
- In general, smoking cessation has clearly been shown to prolong life, especially when it occurs early in life.

Time to Cardiovascular Benefit of Smoking Cessation after Last Cigarette

Within 20 minutes: Blood pressure decreases and body temperature and heart rate return to normal.

Within 12 hours, the carbon monoxide level in blood drops to normal.

Within 24 hours. Risk of myocardial infarction decreases.

Within 1 year. risk of coronary heart disease is half that of a person who smokes

At 5 years. Stroke risk is reduced to that of someone who has never smoked.

Within 15 years. Coronary heart disease risk is the same as a person who has never smoked.

PEOPLE OF ALL AGES WHO HAVE ALREADY DEVELOPED HEALTH PROBLEMS RELATED TO TOBACCO USE CAN STILL BENEFIT FROM QUITTING.

- **Benefits in comparison with those who continue to use tobacco**
- **Aged about 30:** gain almost 10 years of life expectancy
- **Aged about 40:** gain nine years of life expectancy
- **Aged about 50:** gain six years of life expectancy
- **Aged about 60:** gain three years of life expectancy
- After the onset of life-threatening disease: rapid benefit – people who quit tobacco after a myocardial infarction reduce their chances of death by between 36% and 46%.

Solutions: WHO FRAMEWORK CONVENTION ON TOBACCO CONTROL

- ***The First*** **Public Health** ***agreement*** **under WHO**
- **Aim ⇨ protect present and future generations from the consequences of tobacco**
- **Unique ⇨ introduced urgency into tobacco control; negotiated; binding international law; comprehensive approach.**

FCTC

WHO FRAMEWORK CONVENTION ON TOBACCO CONTROL

FCTC

اتفاقية منظمة الصحة العالمية الإطارية بشأن مكافحة التبغ

WHO recommends a four-steps strategy:

1 Ban advertising and expand public health information:

■ Forbid all forms of advertising and promotional distribution of tobacco products and sponsorship of sporting events, etc.

■ Disseminate public health information – with special attention to youths, provide credible information about the health and other ill effects of smoking. ***Health warnings on all tobacco products .*** **media campaigns**

2 Use taxes and regulations to reduce consumption:

■ Increased taxation – this usually reduces demand for tobacco products.

■ Regulation to reduce public and workplace smoking –message that smoking is an undesirable activity.

WHO recommends a four-steps strategy:

3 Encourage cessation of tobacco use:

- Promote the production and sale of less harmful and less expensive ways of delivering nicotine through patches, tablets, inhalers or other means.
- Expand free smoking cessation services and products.

4 Build anti-tobacco partnerships:

- Fund transition to other employment for tobacco farmers and others who would lose income as a result of tobacco control.
- Mobilize civil society and other groups to promote the message: ‘Tobacco or Health’.

prevent tobacco industry lobbying

Smoking in Jordan

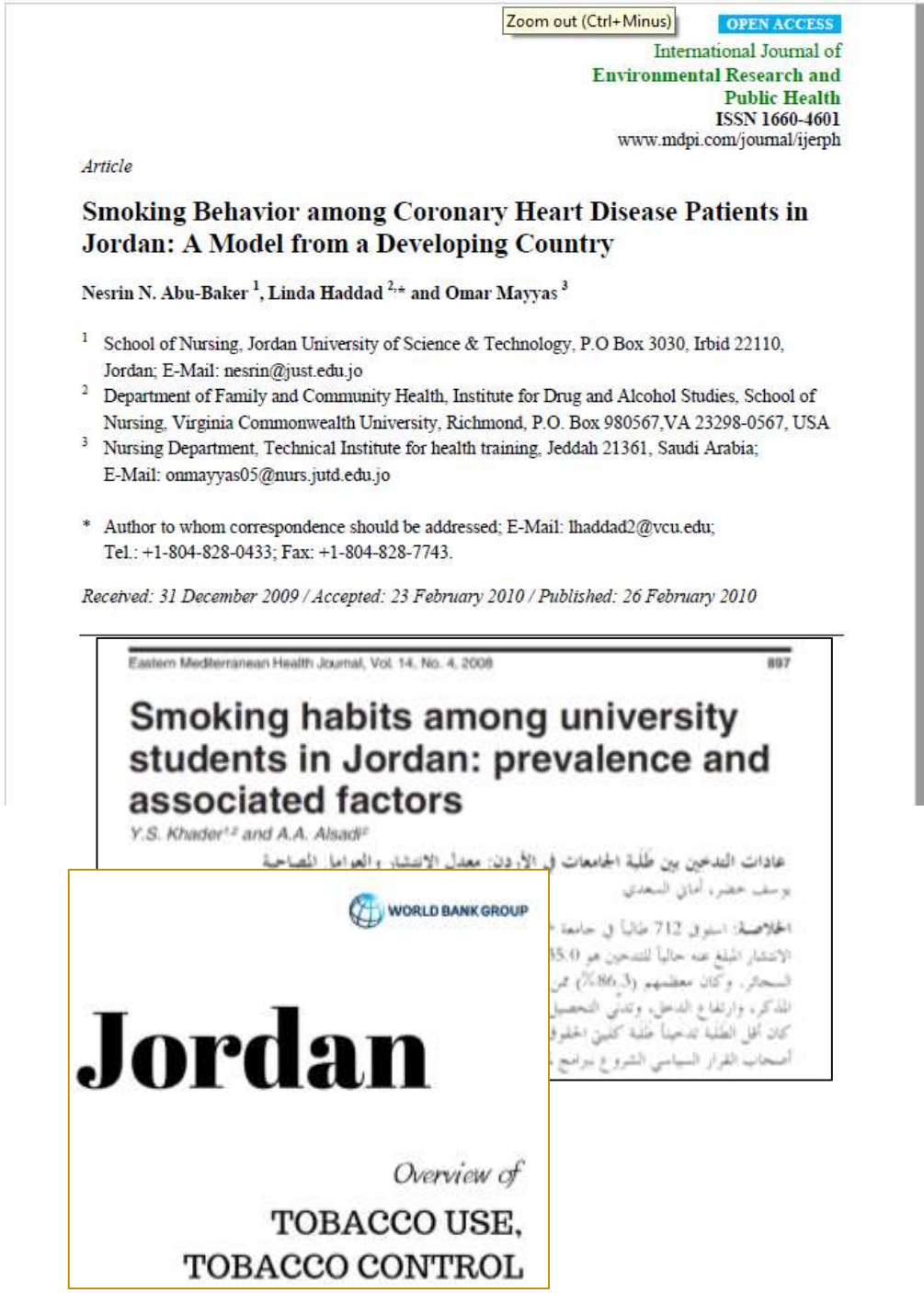
- Jordan is mentioned among the countries with high smoking prevalence and medium consumption (10-20 cigarettes per day per smoker.
- **42.2% of people (55.9% of men and 23.7% of women) aged 15 and above in Jordan smoke tobacco**.
- Among those who smoked tobacco, 35.2% smoked cigarettes, and 15.2% smoked water-pipe.
- Smoking cost the country 1 billion Jordanian dinars (JD) in 2012, including money spent on tobacco and smoking-related diseases, which amounted to approximately 5% of the gross domestic product.
- Jordan adopted the National tobacco control strategy for 2017-2019→based on WHO's strategy, a comprehensive set of tobacco control measures. The strategy seeks to decrease tobacco use by 30% by 2025

Jordan smoking rates highest in world amid claims of big tobacco interference

Exclusive: Health groups accuse firms of undue political influence as survey finds 80% of men use nicotine

'Big tobacco wants our youth's lungs': rise of smoking in Jordan

- 35.0% of University students in Jordan are smokers (56.9% for males and 11.4% for females). About 80% use cigarettes.
- The majority (86.3%) of smokers smoked daily.
- *Male sex*, *higher income*, *lower academic attainment* and *higher number of friends or family members who smoke* were associated with increased prevalence of smoking.
- After CHD occurrence only 29.7% of the patients quit smoking, while 60.7% continued smoking, and 9.6% relapsed.
- The most frequent reasons given by smokers for not quitting smoking were ***"do not incline to stop smoking"*** (25.6%) and *"craving for a cigarette"* (25%).



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OPEN ACCESS

International Journal of Environmental Research and Public Health
ISSN 1660-4601
www.mdpi.com/journal/ijerph

Article

Smoking Behavior among Coronary Heart Disease Patients in Jordan: A Model from a Developing Country

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Received: 31 December 2009 / Accepted: 23 February 2010 / Published: 26 February 2010

Eastern Mediterranean Health Journal, Vol. 14, No. 4, 2008 897

Smoking habits among university students in Jordan: prevalence and associated factors

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عادات التدخين بين طلبة الجامعات في الأردن: معدل الانتشار والعوامل المصاحبة

WORLD BANK GROUP

Jordan

Overview of

TOBACCO USE,
TOBACCO CONTROL

Tobacco has so far claimed lives of 9,027 Jordanians in 2021 — Health Ministry

By Rayya Al Muheisen - Jun 06,2021 - Last updated at Jun 06,2021

AMMAN — Tobacco consumption has claimed the lives of 9,027 Jordanians so far this year, according to an infographic published on the Ministry of Health's social media platforms.

Smoking rates in Jordan are some of the highest in the world. More than eight out of 10 men smoke or regularly use nicotine products including e-cigarettes, according to a Health Ministry study carried out in collaboration with the World Heath Organisation (WHO).

"Smoking increases the risk of developing health conditions, some can be fatal and others can cause irreversible long-term damage. It also causes around seven out of every 10 cases of lung cancer," Abdel Rahman Shaher, a general physician, told The Jordan Times.

The study also showed that more than 66 per cent of Jordanian men and 17 per cent of Jordanian women are smokers. Additionally, the study showed that 78.8 per cent of adults are exposed to secondhand smoking.

Photo courtesy of hypnosischicago.com

The ministry also stated that 56 per cent of the tobacco-related deaths are among people below the age of 70.

The average monthly expenditure on cigarettes is over JD60 for each smoker, according to the study.

"The rates are dangerously high and a predictor of a future public health catastrophe," Health Minister Feras Al Hawari said, according to the statement.

http://jordantimes.com/news/local/tobacco-has-so-far-claimed-lives-9027-jordanians-2021-%E2%80%94-health-ministry

Thank you

Did you know?
Smoking is good for the environment because it kills human beings.