

Tobacco and Cardiovascular Disease

A red heart-shaped ashtray is shown on a light-colored surface. Two lit cigarettes are placed inside the ashtray. One cigarette is positioned vertically, and the other is positioned horizontally. A third cigarette, which has been discarded, lies on the surface to the right of the ashtray, with a pile of ash and tobacco debris next to it.

Dr. Israa Al-Rawashdeh MD, MPH ,PhD
Faculty of Medicine
Mutah University
2024

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.
- Tobacco use results in more than 8 million deaths each year globally.
- Approximately 7 million deaths are attributed to direct tobacco use.
- 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).

SMOKING....

HELPS YOU

RELAX!



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.



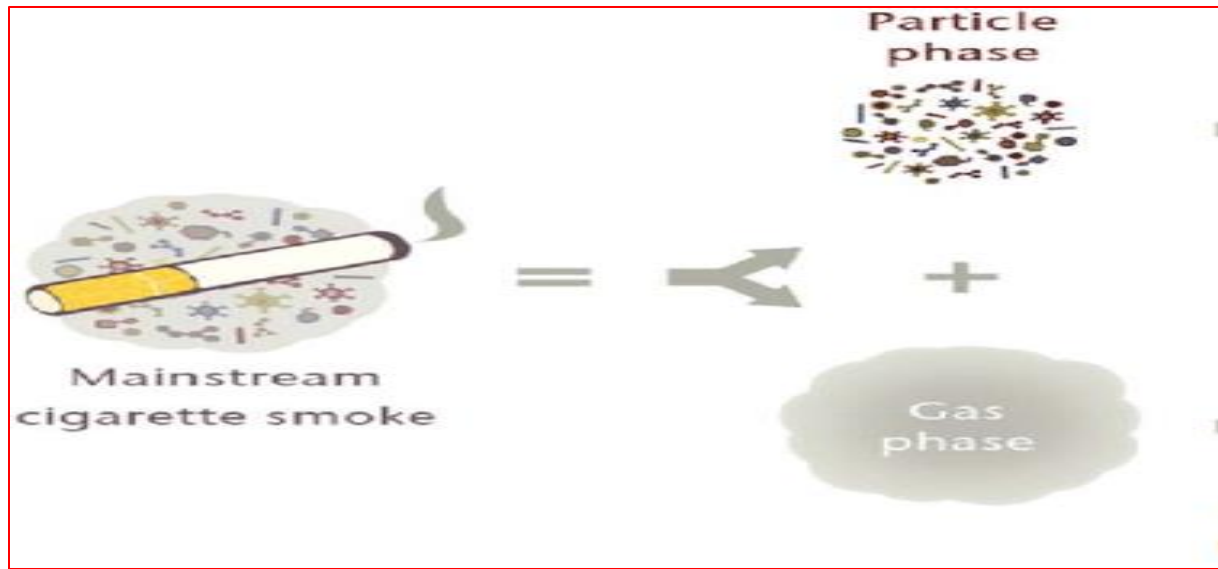
PATHOPHYSIOLOGY AND MECHANISMS

- 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.

Cigarette smoke contains a cocktail of over **7,000** toxic chemicals
60 of which are known to cause cancer

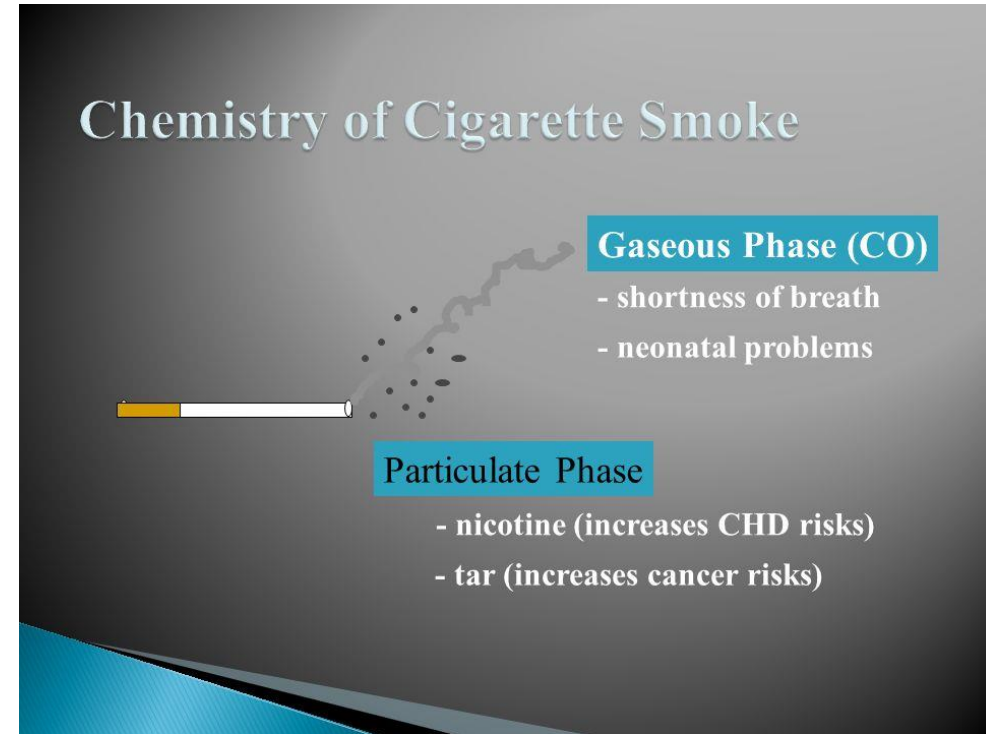
Newcross
HEALTHCARE

Source: American Lung Association
<http://www.lung.org/stop-smoking/smoking-facts/whats-in-a-cigarette.html>

The advertisement features a dark blue background with a lit cigarette at the bottom left. Various chemical formulas are scattered around the cigarette, including H_2 , N_2 , $C_{10}H_{16}$, Pb , CH_2O , $C_{20}H_{12}$, $C_3H_8O_2$, d^{+2} , C_6H_6 , C_4H_{10} , As , C_3H_6O , and NH_3 . The Newcross Healthcare logo is at the bottom center, and the source information is at the bottom right.

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.

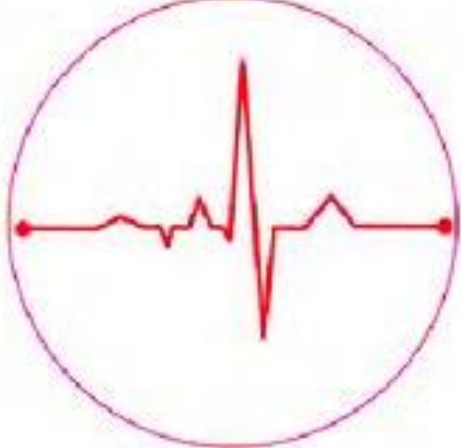


Tar and chemicals



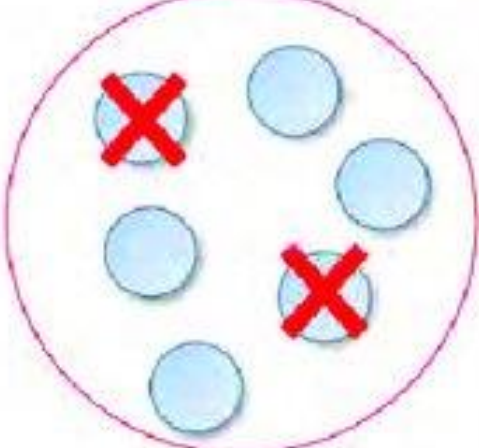
damages blood vessels;
adverse lipid profile;
thickens your blood

Nicotine



increases heart rate
and blood pressure

Carbon monoxide



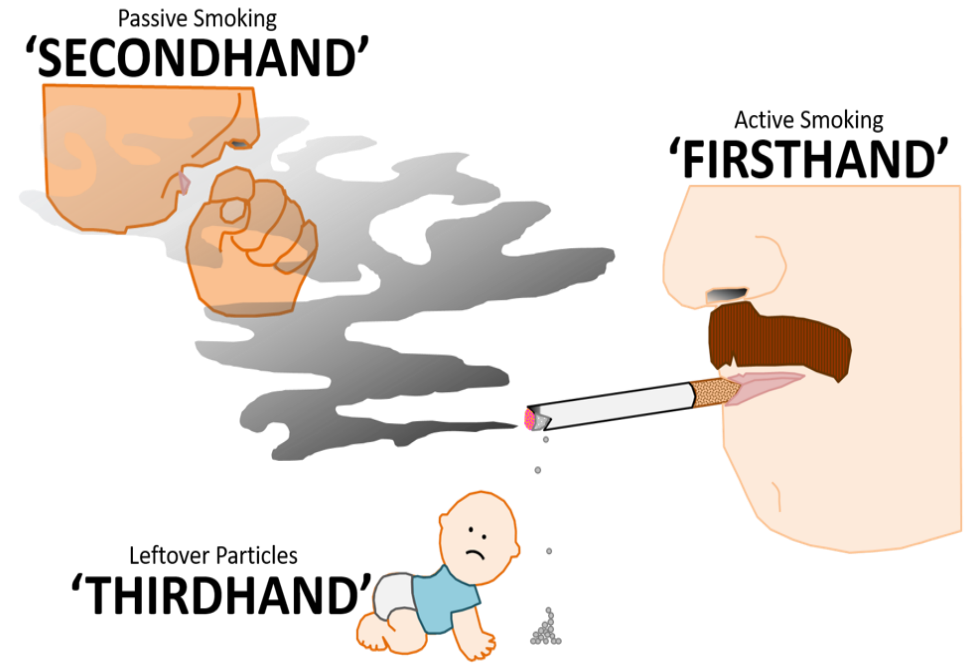
replaces oxygen

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.
- It poses health risks, especially to children, through skin contact, inhalation, and ingestion.
- Associated with respiratory issues, increased risk of cancer, and developmental problems.



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:**
 - Nicotine can cause vasoconstriction. This can reduce blood flow to vital organs and tissues.
- **Inflammatory Response:**
 - **Inflammation:** 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 increased 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.**



F C T C

WHO FRAMEWORK CONVENTION
ON TOBACCO CONTROL

F C T C

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)**.

- **Prevalence (Ages 15–49):**

- **Men:** 48% smoke any tobacco product; 41% smoke cigarettes, 12% use other forms (e.g., pipes, water pipes).

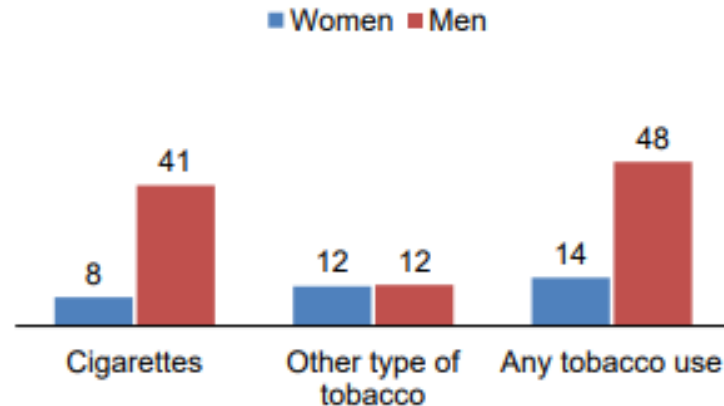
- **Women:** 8% smoke cigarettes, and 12% use other tobacco forms.

- **Daily Smoking:** 46% of men are daily smokers:

- 62% of daily smokers consume 15–24 cigarettes/day.
- 20% smoke 25+ cigarettes/day.

Figure 3.6 Use of tobacco among women and men

Percentage of ever-married women and all men age 15–49 who use tobacco products



- **Regional Patterns:**
- **Women:** Smoking ranges from 5% in Tafiela to 19% in Zarqa.
- **Men:** Smoking ranges from 38% in Ma'an and Tafiela to 56% in Irbid
- 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**

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

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

[Share](#) 1
 [Tweet](#) 1
 [googleplus](#) 0
 [in Share](#) 0
 [Email](#) 1

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 Health 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 Shafer, 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.

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.



Photo courtesy of hypnosischicago.com

- 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%).

Article

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

Nesrin N. Abu-Baker¹, Linda Haddad^{2*} and Omar Mayyas³

¹ School of Nursing, Jordan University of Science & Technology, P.O. Box 3030, Irbid 22110, Jordan; E-Mail: nesrin@just.edu.jo

² Department of Family and Community Health, Institute for Drug and Alcohol Studies, School of Nursing, Virginia Commonwealth University, Richmond, P.O. Box 980567, VA 23298-0567, USA

³ Nursing Department, Technical Institute for health training, Jeddah 21361, Saudi Arabia; E-Mail: onmayyas05@nurs.jutd.edu.jo

* Author to whom correspondence should be addressed; E-Mail: lhaddad2@vcu.edu; Tel.: +1-804-828-0433; Fax: +1-804-828-7743.

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

Y.S. Khader^{1,2} and A.A. Alsadi²

عادات التدخين بين طلبة الجامعات في الأردن: معدل الانتشار والعوامل المصاحبة
يوسف خضر، أماني السعدي



الخلاصة: استوفى 712 طالباً في جامعة شمال الأردن الانتشار المبلغ عنه حالياً للتدخين هو 35.0% (56.9% المسجائر. وكان معظمهم (86.3%) ممن يدخن يوم الذكور، وارتفاع الدخل، وتدني التحصيل الأكاديمي. كان أقل الطلبة تدخيناً طلبة كليتي الحقوق والشريعة أصحاب القرار السياسي الشروع ببرامج لمكافحة التدخين

Jordan

Overview of

TOBACCO USE,
TOBACCO CONTROL

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

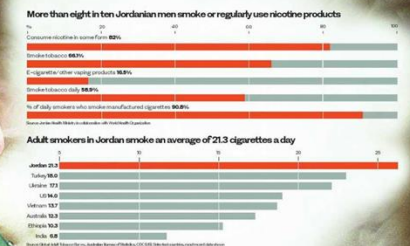
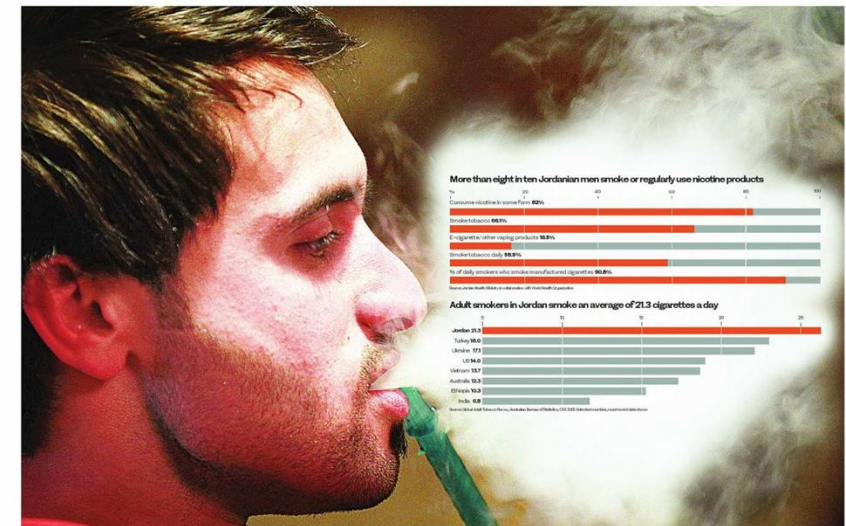
Exclusive: Health groups accuse firms of undue political influence as survey finds 80% of men use nicotine

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



With 9,000 people dying each day in the country due to smoking-related health complications, the issue has to become top priority.

Spotlight



Jordan's smoking epidemic

Amid reports of high rates of tobacco use, the government has banned all forms of smoking in closed public spaces

Douad Kattab Amman

Zelna, a 32-year-old Jordanian national, is very particular about protecting herself in the COVID-19 era. She washes her hands regularly, wears a face mask and observes social distancing.

But as she sat with her friends in an upscale shisha cafe in Amman's Abdoun neighborhood recently, she was unaware of the fact that she was inhaling 6,000 chemicals every time she drew flavored tobacco smoke through water.

"I tried to kick the habit many times, but meeting friends at cafes forced me to return to it," Zelna told Arab News. That aspect of her social life has just come to a stop.

On July 1, Jordan extended a ban on all forms of smoking in closed public spaces, citing the fight against the pandemic.

"In order to protect the health and safety of citizens, especially given the COVID-19 pandemic and its aftermath, smoking of all forms (cigarettes, e-cigarettes and shisha) is banned in all closed public spaces," the Health Ministry said.

On June 23, London-based newspaper The Guardian published results of a study by the World Health Organization (WHO) and the Jordanian Health Ministry that showed the Kingdom had surpassed Indonesia to have the highest smoking rates in the world. The study showed that more than eight out of 10 Jordanian men smoke or regularly use nicotine products, including e-cigarettes, and that 66 percent of Jordanian men and more than 17 percent of Jordanian women are smokers.

Of the first quarter of 2020, the total spend on smoking reached 1.6 billion Jordanian dinars (\$2.26 billion) — about 6 percent of the country's gross domestic product — with every Jordanian spending on average 115 dinars on cigarettes per year.

On the social level, it is easy to see how popular smoking is in the country. Ads target the Jordanian public across all platforms, including social media.

One of them reads: "Smoke the arghil (water pipe) while driving or have it ordered to your house. Comes ready with red hot coals. Only for 80."

Jordan has had a ban on smoking cigarettes in public places since 2008, but it has not been successfully implemented.

Before the latest ban that covers e-cigarettes and shisha, many Jordanians were unaware that smoking in public places is a criminal offense that comes with a fine of 100 dinars and up to a month's imprisonment.

Ayman, a resident of Amman's Al-Walid neighborhood, has been smoking for three years because everyone around him is a smoker.

Is he aware of the 2008 law? "I've never heard of it and no one is implementing it," he said.

There was a reason for the lack of implementation over the years, said economic expert Mazen Marji.

"The Jordanian government has a stake in the widespread habit of smoking because it profits even more from it than cigarette companies do. It collects 75 percent taxes on cigarettes, which amounts to 1 billion dinars," he said.

However, Mohammad Al-Shuqri, director of Jordanian Anti-Smoker's Society, said that when it researched the cost ratio of

smoking, it concluded that for every dinar earned as revenue from cigarette sales tax, Jordan spends 12 times as much on treating smoking-related diseases.

The country annually loses 4 billion dinars in medical expenses, and 95 percent of people with lung cancer are smokers, he said.

"Their absence also hurts the economy because it lowers productivity,"

Smoking a traditional water pipe is popular in Jordan's cafes, shisha bars and hotels, and also on the beach in the city of Aqaba on the Red Sea. AFP

"We criticize citizens on their lack of awareness of the dangers of smoking but let us first look at the faulty government policies on tobacco," Malkawi wrote in one of his columns.

"This has become a powerful industry, especially because it brings 1 billion dinars a year to the government coffers. Cigarette companies are a powerful lobby around the world and they impact governmental decision-making."

Cigarette lobbies, however, are not the only forces at work in Jordan to prevent smoking from losing popularity.

In 2014, the Health Ministry made valiant attempts to enforce the public health law and stop the use of shisha in cafes, but the pushback from cafe owners and investors proved to be too strong.

Eventually a compromise was reached, with a health warning stamp on premises that goes largely unnoticed by the public.

When Arab News spoke to a cross-section of Jordanians on why anti-smoking campaigns failed, he attributed it predominantly to the absence of rigorous implementation of the law, with community pressure and the low price of cigarettes following close behind.

"In Jordan, prices are low and so everyone can buy cigarettes often without making a dent in their budget. This is a huge factor that encourages smoking," said Malkawi.

Marji pointed to the possibility of an increase in smuggling if the cost of cigarettes goes up. "The government will have to fight that as well," he said.

Princess Dana Mirved, a Jordanian humanitarian and health activist, has spoken on this issue, pointing to smoking's annual cost to her country's public health.

Shrewen pointed to the high mortality rate from smoking-related diseases.

"Eight million people die every year worldwide from diseases related to smoking. This is a much higher figure than the rate of fatalities due to the coronavirus until now, yet smoking is still to be listed as a pandemic in the Arab world," he said.

Firas Al-Hawari, head of the lung unit and the intensive care unit at the King Hussein Cancer Center, said: "The smoking averages in Jordan are a warning that we're approaching a pandemic of non-communicable diseases. With 50,000 people dying each year in the country due to smoking-related health complications, the WHO has a warning that we're approaching a pandemic of non-communicable diseases. The problem is getting worse due to e-cigarettes."

Referring to Jordan's non-implementation of the WHO's Framework Convention on Tobacco Control, which the country endorsed in 2004, he did not mince words.

It is the failure of government officials over the years to tackle the tobacco scourge that has made "Jordan No. 1 worldwide."

Twitter: @daoudkattab Reported and researched by Mohammad Erab, Mohammad Abu Hajar and Mohammed Sharruk



INNUMBERS

6% Share of Jordan's GDP spent on smoking in 2019.

9k Annual deaths blamed on smoking-related complications.

\$2.26bn Total spent on smoking in Jordan in 2019.





مركز اعتماد مؤسسات التعليم العالي وضمان جودتها
Accreditation and Quality Assurance Commission for Higher Education Institutions

المادة (15): مكافحة التبغ والتدخين

تلتزم الجامعة بمكافحة التبغ والتدخين من خلال الإجراءات الآتية:

1. توفير الرسائل والنشرات التوعوية ونشرها للعاملين والطلبة من خلال الوسائل المتاحة وعلى جميع وسائل التواصل الاجتماعي التي تستخدمها الجامعة.
2. تركيب أجهزة إنذار لكشف التدخين في مباني الجامعة.
3. توفير أماكن خاصة للتدخين ضمن الحرم الجامعي.
4. تفعيل الرقابة على التدخين داخل مباني الجامعة.
5. تطوير أسس وتعليمات خاصة بمكافحة التدخين وتحديد العقوبات الرادعة على الطلبة والعاملين عند مخالفتهم لها.

المادة (16): الترتيبات التيسيرية لذوي الاحتياجات الخاصة

تلتزم الجامعة بما جاء في دليل توفير الترتيبات التيسيرية المعقولة والأشكال الميسرة وإمكانية الوصول في مؤسسات التعليم العالي الصادر عن المجلس الأعلى لحقوق الأشخاص ذوي الإعاقة والمتوفر على موقع المجلس الأعلى لحقوق الأشخاص ذوي الإعاقة من خلال الرابط التالي (<https://www.hcd.gov.jo/Default/Ar>).

Thank you

