TOBACCO AND THE REPRODUCTIVE SYSTEM

Funding for Quit Tobacco International is provided by the U.S. National Institutes of Health, Fogarty International Centre (R01 TW05969-01, RO1TW007944-01).

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TOBACCO AND THE REPRODUCTIVE SYSTEM

I. GOAL OF MODULE: Provide students with knowledge and skills on tobacco issues in basic medical practice

II. TARGET AUDIENCE

a. Level of Student/Learner: 3rd semester students
b. Suggested Course or Subject: Department of Obstetrics & Gynecology

III. LEARNING OBJECTIVES

- To understand how smoking affects the process of reproduction in women and men
- To understand how smoking affects the menstrual cycle
- To understand how chewing tobacco affects fertility
- To understand how tobacco cessation can be beneficial in infertility
- To understand the effects of smoking on poor pregnancy outcomes
- To understand that smoking causes IUGR
- To understand the benefits of cessation and reduction on third trimester fetal growth and birth weight outcomes
- To understand the impact of second hand smoke on pregnancy, fetal growth, and pregnancy outcomes
- To understand the importance of avoiding exposure to secondhand smoke during pregnancy and postpartum.
- To understand the importance of smoke-free households

IV. CURRICULUM STANDARDS ADDRESSED:

The obstetrics and gynaecology curriculum has the broad goal of teaching undergraduate students the anatomy, physiology, and pathophysiology of the reproductive system and helping them gain the ability and develop skills to optimally manage common conditions affecting it. It has a total of 97 hours. Time from this slot can be used to teach this module.

- Students will be able to outline the anatomy, physiology, and pathophysiology of the reproductive system and the common conditions affecting it.
- They will be able to list the common causes of maternal and perinatal morbidity and mortality.
- Identify common gynaecological diseases and describe principles of their management.

V. MINI-LECTURES

MINI LECTURE 1: EFFECTS OF TOBACCO ON FERTILITY

CORE SLIDES

1. Smoking and Reproduction: Women
2. Smoking and Reproduction: Men
3. Smoking and Menstrual Cycle
4. Chewing Tobacco and Fertility
5. Tobacco cessation and Infertility

OPTIONAL SLIDES

1. Smoking and Assisted Reproduction
2. Smoking Cessation and IVF

MINI LECTURE 2: EFFECTS OF TOBACCO ON PREGNANCY

CORE SLIDES

1. Tobacco Use among Women: India
2. Smoking and Pregnant Women
3. Poor Early Pregnancy Outcomes
4. Smoking and Placental Disorders
5. In-utero Tobacco Smoke Exposure
6. Smoking and Birth Weight
7. Maternal Smoking and Birth Outcomes
8. Maternal Chewing and Birth Outcomes
9. Why Tobacco Cessation?

OPTIONAL SLIDES

1. Smoking And Intrauterine Growth Retardation (IUGR): Mechanism
2. Smoking and Pre-eclampsia

MINI LECTURE 3: SECONDHAND SMOKE (SHS) AND PREGNANCY

CORE SLIDES

1. SHS and Pregnancy
2. SHS and Fetal Growth
3. SHS and Pregnancy Outcomes
4. Why Avoid SHS?
5. Cessation in Pregnancy: For Whom?

VI. CASE DISCUSSION / CLINICAL SCENARIO AND SKILLS CHECKLIST

CASE SCENARIO

- Ask smoking status in the pregnant woman and the husband.
- Advise the pregnant woman and the husband about the harm of tobacco.

Overview

In this module, the students are trained to practice the following aspects in communication, e.g. exploration of patient's background, identity and lifestyle of a couple, exploration of complaint, experience of illness, patient's views, hopes, fears, and expectations of the pregnant woman. The students are also expected to be able to explore background, identity, and lifestyle of a pregnant woman and her husband. One of the most important lifestyle questions that need to be asked of the pregnant woman and the husband is about their smoking (and chewing) status.

Introduction

To control the tobacco epidemic, all parties should work together in a strategic and sustainable way, including health professionals. Simple advice from a physician has been shown to increase abstinence rates significantly (by 30%) compared to no advice. Likewise, nursing-led interventions for smoking cessation increase by 50% the chances of successfully quitting. To be able to give advice, doctors must ask every patient about tobacco use and SHS exposure.

Learning Objectives

Upon the completion of this case scenario practice, students are expected to be able to:

1. Routinely ask and integrate assessment of smoking status of the pregnant woman and the husband.
2. Advise pregnant women to quit smoking.
3. Advise pregnant women to avoid second hand smoking.
4. Explain to the couple about the harmful effects of tobacco, especially to the pregnancy and the baby.
5. Advise patients with other reproductive problems to quit smoking.
6. Explain about the connection between tobacco use and other reproductive problems.

Asking the patients' smoking history

Research studies show that if doctors have a reminder to ask about smoking, e.g. smoking status is part of the vital signs, doctors are three times more likely to advise patients to quit. Simple advice from a physician has been shown to increase abstinence rates significantly (by 30%) compared to no advice.

There are several important factors that should be considered when we are asking the patients'smoking history, i.e. 1) asking the smoking status of all patients (including women and teenagers); 2) if patient does not smoke, they should be asked if they have ever smoked (because

even after quitting, a smoker can start again; 3) questions should be delivered in a non-critical manner; 4) evaluate the patients' smoking history as to how many cigarettes they smoke daily, do they use any other forms of tobacco; and 5) make a note on the patients' smoking status in the medical record. Women and children should not be excluded and they should also be asked about passive smoking.

Case Scenario

A 25 year old woman undergoing her 2nd pregnancy has come for her first ante-natal check-up. She is a manual laborer working at construction sites. On examination, she was found to be 12 weeks pregnant. She chews tobacco regularly. Her husband, also a manual laborer, smokes 2–3 packets of beedies daily.

Vital Signs
Blood Pressure: 118/78
Pulse: 72/min
Body Weight: 50 kg
Temperature: 97 F

Smoking Status

Smoking/smokeless tobacco use status of patient: Smoker Ex-Smoker Never Smoker (Circle one)
Smoking/smokeless tobacco use status of spouse: Smoker Ex-Smoker Never Smoker (Circle one)

Checklist for Case Scenario

S.No.	Aspects	Please tick if student has covered this aspect
	Ask	
	• Ask whether patient chews tobacco/is exposed to SHS	
	• Ask patient whether he/she smokes or not	
	• If the patient doesn't smoke, ask whether he/she ever smoked before	
	• If the patient smokes, ask how many cigarettes he/she takes per day	
	Advise	
	• Advise patient to quit chewing and avoid SHS	
	• Advise patient to quit smoking	
	• Personalize advice by using the tobacco user's health status/disease	

	Assess	
	• Assess patient's readiness to quit.	
	Assist	
	• Assist the patient to quit by giving him/her pamphlets, brochures	
	Arrange for Follow-up	
	• Arrange to follow up on tobacco use	

Points for Discussion

The doctor can advise the patient as follows: For every mother and father, their child is precious. Chewing tobacco is dangerous to the baby. The baby may be born with inadequate weight and can be prone to frequent illnesses after he/she is born. Therefore, you should quit chewing immediately. Smoking is also dangerous. This is true even if you don't smoke. Tobacco smoke can harm your baby if someone smokes in front of you, whether it is your husband or even your co-workers. Some chemical in tobacco smoke can shrink the blood vessels carrying nutrition to the baby. The baby will not get sufficient food and nutrition and cannot grow as it should. The baby's organs also will not develop properly. The baby can also get sick often, leading to frequent hospital visits and treatments, so there should be no smoking at home. You should advise your husband to avoid smoking at home.

If husband is a smoker, call husband in or ask the patient to bring her husband to meet the doctor during the next visit and discuss the harms of smoking to the unborn child.

FACT SHEET

The fact sheets are to be used by the tutor to supplement the discussion about the scenario. This fact sheet will address background information on tobacco that could be relevant to the scenario.

Tobacco effects on fertility

- The prevalence of infertility is higher, and the time it takes to conceive is longer in smokers compared to nonsmokers.[1]
- Men who smoke cigarettes have a lower sperm count and motility and increased abnormalities in sperm shape and function.[1]
- Smoking causes erectile dysfunction by several mechanisms, including adversely affecting intra-penile blood flow.[2]
- Cigarette smoke contains known reproductive toxicants and has been associated with adverse reproductive outcomes in women such as infertility, sub-fecundity, younger age at menopause, and menstrual disorders.[3]
- Endothelial function was found to be significantly impaired in smoking women in the mid-luteal phase, when compared with non-smoking women.[4]
- Nearly twice as many in vitro fertilization (IVF) attempts are required to conceive in smokers as in nonsmokers.[1]
- Female smokers require higher doses of gonadotropins to stimulate their ovaries, have lower peak estradiol levels, fewer oocytes, more missed cycles, lower implantation rates, and undergo more cycles with failed fertilization than nonsmokers.[1]

Tobacco effects on pregnancy

- Smoking is strongly associated with an increased risk of spontaneous miscarriage.[1]
- Smoking during pregnancy increases the risk of perinatal mortality, lowers mean birth weight, increases the risk of spontaneous abortion, and has a significant influence on risks of premature delivery, placenta previa, and abruptio placentae.[5]
- The frequency of spontaneous abortion appears to be directly related to the number of cigarettes smoked.[5]
- In-utero exposure to maternal smoking was associated with reduced lung function, mainly deficits in small airway flows, and these appear to persist into childhood and adolescence.[6]
- Incidence of preeclampsia was found to be increased in snuff users (adjusted RR = 1.58) compared with tobacco nonusers.[7]
- Smoking reduces birth weight of offspring by about 170 to 200 g at birth compared with non-smokers and the reduced birth weight is primarily due to intrauterine growth retardation (IUGR).[5]
- The risk of a low birth weight baby is doubled among maternal smokers and the risk increases with the increasing number of cigarettes smoked.[8]
- There is no increase in risk of low birth weight for women who stop smoking early in pregnancy.[8]

- Smoking increases the SGA risk 2.5-fold and risk increases with numbers of cigarettes smoked.[8]
- The mechanism of IUGR: Nicotine and carbon monoxide trigger fetal carboxy-hemoglobin → reduces fluidity of blood, slows the oxygenation of the fetus → IUGR.[5,9]
- Maternal smoking during pregnancy is associated with pre-term birth and low birth weight, low birth weight for gestational age, a small head circumference, a small head circumference for gestational age, a low Apgar score at 5 min., stillbirths and neonatal deaths.[10]
- 20% low birth weight and 30% of SGA infants could be prevented if smoking in pregnancy was eliminated.[8]

Passive Smoking and Pregnancy

- An increase in the concentration of cotinine was observed in the amniotic fluid of non-smoking pregnant women chronically exposed to tobacco smoke.[11]
- ETS exposure adversely affects fetal growth with an elevated risk of low birth weight.[11,13]
- An elevated risk of female and male infertility, spontaneous abortion, and sudden infant death syndrome has been observed in epidemiologic studies on passive smoking.[13]
- ETS in the absence of maternal smoking significantly increased the risk of preterm birth.[12]
- A significant dose–response relation has been observed between ETS exposure and early pregnancy loss.[12]

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MINI LECTURE 1 [Tobacco Effects on Fertility]

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MINI LECTURE 3 [Second hand smoke and Pregnancy]

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2. INSTRUCTOR KEY RESOURCES/REFERENCES

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3. SUPPORT KEY REFERNCES

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4. INSTRUCTOR WEB-SITE RESOURCES

1. http://www.asrm.org
2.

5. SAMPLE EXAMINATION QUESTIONS

Short Answers

1. Discuss the various ways by which tobacco affects fertility.

2. What is the risk of IUGR associated with smoking? Describe the mechanism by which smoking leads to IUGR.

3. How does passive smoking affect pregnancy?

Multiple Choice Questions (Answers in blue font)

1. Reduced lung function, particularly deficits in small airway flows, is strongly associated with _____.

    a. Environmental tobacco smoke
    b. In utero exposure to maternal smoking
    c. Exposure to paternal smoking
    d. All of the above
    e. None of the above

2. Which of the following show a dose-response relation to number of cigarettes smoked?

    a. Spontaneous abortion
    b. Low birth weight
    c. Small for gestational age
    d. All of the above
    e. None of the above

3. Smoking reduces birth weight of offspring by about _____ at birth compared with non-smokers.

    a. 150 g
    b. 250 g
    c. 200 g
    d. 130 g
    e. 210 g

4. Low birth weight caused by smoking is primarily due to _____ and not _____.

a. Pre-maturity, IUGR
b. SGA, IUGR
c. IUGR, SGA
d. IUGR, pre-maturity
e. None of the above

5. Increased concentration of _____ was observed in the amniotic fluid of non-smoking pregnant women chronically exposed to tobacco smoke.

a. Nicotine
b. Carbon monoxide
c. Carboxy-hemoglobin
d. Nor-nicotine
e. Cotinine

6. Maternal smoking during pregnancy increases the risk of all except _____.

a. Pre-term labor
b. Neonatal deaths
c. Low APGAR score
d. Pre-eclampsia
e. Congenital anomalies