

Smoking during pregnancy – a challenge to practitioners

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REZUMAT

Fumatul în timpul sarcinii – o provocare pentru practicieni

Fumatul în timpul sarcinii este practicat de multe femei ai căror părinți erau fumători, ai căror soți sunt fumători, care fumau mai mult de 10 țigări pe zi înainte să devină gravide și de asemenea de femeile care au început să fumeze la o vârstă fragedă. Fumatul în timpul sarcinii este periculos atât pentru mamă cât și pentru copil. Riscurile expunerii la fumat, ca infertilitatea (atât primară cât și secundară), hemoragiile în timpul sarcinii, decolarea prematură de placenta normal inserată, placenta praevia, ruptură prematură de membrane, nașterea prematură, greutatea mică la naștere a nou-născutului, moartea subită trebuie luate în considerație. Astfel, trebuie intervenit eficient cu măsuri de renunțare la fumat în timpul sarcinii, pentru că multe femei nu sunt conștiente de pericolul expunerii copilului la fumul de țigară. Ajutorul medical de renunțare la fumat constă în imediata recomandare de stopare a fumatului, consiliere antifumat, terapie comportamentală și folosirea de materiale auto-ajutătoare educaționale.

Cuvinte cheie: fumat, femei, sarcină, renunțarea la fumat, efectele fumatului

ABSTRACT

Smoking during pregnancy is a common finding among women whose parents have been smokers, among those whose husbands are smokers, among women who smoked more than 10 cigarettes per day before they became pregnant, and women who started to smoke at an early age. Smoking while pregnant is dangerous to both mother and child. Smoking exposure risks such as infertility (both primary and secondary), bleeding during pregnancy, abruptio placentae, placenta praevia, premature rupture of membranes, premature birth, low birth weight newborns, sudden infant death syndrome are taken into consideration. Efficient smoking cessation interventions targeting pregnancy impose, as many women are not aware of dangers of tobacco exposure. Smoking cessation medical aid consists of immediate recommendation to stop smoking, counselling, behavioural therapy and self-helping educational materials.

Key words: tobacco, women, pregnancy, smoking cessation, effects of smoking

Despite continuous tobacco control measures implemented in the last decades, smoking habit is still a current practice for about one third of globe's population. Ignoring well known smoking induced mortality and morbidity, people continue to use various tobacco products, exposing their own health, as well as others, to numerous health hazards, among which dangers to gestational status and newborns are unacceptable.

Smoking rates in women

Smoking rates register great gender discrepancies in various world regions, according to geographic, cultural, age group, religious, etc. factors, with an overall males leadership (approximately 3/1 ratio), compared to women. Nowadays, 12% of women and 42% of men worldwide use tobacco¹. According to WHO, it is estimated that in 2025, 20% of women on the planet will be smokers and in poorer countries this percentage may reach 80 %¹. CDC data published in 2004 quote 1 of 5 women over 18 to be cigarette smokers¹ with highest rates among Indo-Americans and Alaska natives (29%),

followed by white (20%), Afro-Americans (17%) and Hispanics subpopulations. Actually, 22% of women between 18-44 years smoke, while only 8% of women over 65 do so^{2,3}.

Three out of 10 EU citizens aged 15 and over say they smoke: a quarter (26%) smoke daily and 5% occasionally. Most daily smokers are men, 25-54 year-olds and manual workers. The percentage of smokers is the highest in Greece (42%), followed by Bulgaria (39%), Latvia (37%), Romania, Hungary, Lithuania, the Czech Republic and Slovakia (all 36%)⁴.

Recent data show that young girls smoke as young men: 22% of high school and 9% of gymnasium female students have smoked at least one cigarette in the past 30 days⁵. In many countries smoking prevalence has increased gradually in the past decades. Yet, if in Australia in 1945 26% of women smoked, to increase percentage to 33% in 1976 and to equalize men in 1992^{6,7,8,9}, an opposite situation was encountered in Japan, where for a long time – between 1960-2000- smoking rates in females aged > 15 years maintained constantly to approximately 14%.

Very similar aspects are described in UK where smoking rate decreased from 42% (1960) to 26% (1998) – in women over 16 – as well as in USA with a smoking rate decline from 34% (1965) to 22% (1999)¹⁰.

US Surgeon General (2001) mention 178,000 women dead annually due to smoking related disorders among which cardiovascular burden is an important cause. Starting with 1987, lung cancer has taken leadership in women mortality¹¹.

Finally, the same *US Surgeon General* (2004) estimates increasing smoking cessation rates in white women from 19, 6% in 1965 to 47.4% in 1998 and respectively, from 14.5% to 37.4% in black women³.

Smoking rates during pregnancy

Smoking during pregnancy is a common finding among women whose parents have been smokers, among those whose husbands are smokers, among women who smoked more than 10 cigarettes per day before they became pregnant, and women who started to smoke at an early age^{12,13}.

The PRAMS (Pregnancy Risk Assessment Monitoring System) 1997 Report showed increased smoking intake in young women (20.4%) in the last trimester of pregnancy while 21-30% of American women stay smokers all 9 months^{14,15}. In Norway, prevalence of smoking among pregnant women who came to routine ultrasound examination at 18 weeks of pregnancy decreased from 34% in 1987 to 22% in 1994¹⁶. Also, half of pregnant teenagers in Norway and Sweden are daily smokers compared with 25-29% of mothers aged 25 or more^{15,17}. If we move to Denmark, percentage of mothers who smoked at some point in pregnancy declined significantly from 22% in 1997 to 16% in 2005¹⁸, so we can say things look better, but than going back to Spain we are facing the highest smoking prevalence and than if we look back again much lower figures in Jewish and Arabian women¹⁹.

A more optimistic situation is encountered in Japan, where only 9.9% of women smoke in pregnancy and a high proportion among them quit (61.9% in a sample of 16,414 future mothers)²⁰.

One of the greatest numbers of tobacco users regions in EU is Cantabria, where smoking prevalence in women prior to gestation was 39.4% in 2002, yet smoking cessation rate in the beginning of pregnancy is only 20.6%²¹.

According to Romanian Centre for Health Services and Politics in a joint initiative with Institute of Maternal and Infant Care and International Research Center in Canada, 22 % of women having delivered in Bucharest maternities have continued to smoke while gestating. Majority of these women (study was carried on a 3% sample of pregnant women registered annually in the Romanian capital) were educated and with a satisfactory socio-economic status and 80% of them were employed²².

A different situation can be encountered in Southern Iran, where water pipe, known to be a risk factor for low birth weight babies, is more popular. This is why 8% of rural pregnant women are using it, while 24% are exposed passively to it²³.

A BBC analysis found approximately 27% of women to smoke during pregnancy – even if aware of smoking risks to a wide spectrum of health problems including miscarriage, or respiratory disorders in newborns. Younger (16 – 24 years old) unemployed or manual workers women smoke more. Smoking rate in this group has risen from 41% in 1992 to 45%

in 1997. Researchers found that only one in 10 smokers women gave up tobacco use immediately before becoming pregnant²⁴.

Why do pregnant women smoke?

It seems smoking in pregnancy is either related to mood control (to relax, to calm down, enjoyment, out of boredom) either or simultaneously due to nicotine addiction. Pregnant women are more likely to smoke to control their mood if they are older and smokers of less than ten cigarettes per day.

But, when interviewed, they are more likely to give addiction as their reason for smoking, especially if they are older. Pregnant women are also more likely to smoke due to boredom if they are single, especially divorced or separated, if come from unskilled or semi-skilled occupational groups and if their husband or partner is unemployed²⁵.

To identify factors which differentiate women who smoke during pregnancy from those who do not, in developed countries, systematic literature review based solely on empirical original papers (with population-representative samples of pregnant women) was done. All studies concerned developed countries and were published between 1997 and 2006. Two parallel working blinded investigators selected the papers and identified 17 studies to correspond to research aims. They concluded correlates for smoking during pregnancy can be grouped according to biological, material/structural, psychosocial and behavioral factors. Also, they showed women of younger age, with a low social status, many children, without a partner or with a partner to be a smoker, and deficient prenatal care, are more likely to smoke than women in the respective reference groups²⁶.

An interesting approach is to check if there is any relationship between smoking during actual pregnancy and previous ones in multigravid smokers. These ones were almost 75% more likely than primigravid smokers to continue to smoke with no change in consumption pattern and a clear pro smoking behavior trend found with increasing pregnancy order. In an UK population-based study, multigravidae were more likely to smoke in pregnancy than women pregnant for the first time. If already smokers, they were much less likely to cut down their smoking once they found out they were pregnant, regardless of age. This suggests that in the multigravid group, the burden of smoking is much higher^{26,27}.

Health hazards of tobacco smoke exposure in pregnancy

Generally, cigarette smoking has been reported to damage reproductive function in many ways in both genders. If in men cigarette smoke is known to affect spermatozoa structure and function, sperm DNA and determine reduced fertilizing capacity of spermatozoa and embryos display lower implantation rates, in women, also, ovarian cycle (with accelerated ovarian ageing and ovarian performance) is often negatively influenced. The mostly incriminated harmful molecules are cadmium, polycyclic aromatic hydrocarbons and tobacco alkaloids such as nicotine and its metabolite cotinine.

Moreover, smoking while pregnant is dangerous to both mother and child. Besides other well known noxious effects on human fertility, gravidity and delivery, all chemical compounds in tobacco smoke are dangerous to fetus health as they can reach placenta and the baby. Particularly carbon monoxide,

nicotine and polycyclic aromatic hydrocarbons (PAH) are recognized to harm whether by fetal hypertension or increasing fetal heart rate, as nicotine in tobacco smoke crosses rapidly placenta. Also, carcinogenic effect of benzopyren or other PAH is quoted, thus higher fetal than mother's blood carboxihemoglobine level¹⁰.

Delayed intrauterine growth and low birth weight, in fact *small for gestational* – age newborns of pregnant smokers are described with a 170 grams average deficit, in a dose-response relationship pattern¹⁶. The more future mothers smoke, the smaller babies they will give birth and this is not referring only to underweight, but to other infant's dimensions such as: head, chest, and shoulders circumference or height²⁸. Other parameters described as risk factors are: mother's age over 30, previous low-birth newborns, smoking by the time of conception and heavy smoking (over 20 cigarettes / day).

Risk of spontaneous abortion is rather linked to maternal cigarette exposure leading to pregnancy' complications, than to any fetal abnormality¹⁶. Such complications are associated to great tobacco consumption especially in heavy smokers and endanger fetus safety: abruptio placentae, placenta praevia, bleeding during pregnancy, with consequent risk of prenatal mortality¹⁶.

Sudden infant death syndrome is twice more often encountered in smokers' offsprings, especially in younger multi-gravid mothers and in male infants²⁹.

Childhood cancer risk is a major threat to be considered, knowing that there is a 50% higher incidence in tobacco exposed babies and the risk is double for non-Hodgkin lymphoma, acute lymphoblastic leukemia, and Wilms' tumor³⁰.

Many other negative effects of smoking on child's normal growth and development have been described and deserve special attention when counseling pregnant smokers to quit. Not to mention but reduced duration of lactation¹⁶, early childhood asthma, wheezing, bronchiolitis, airway infectious diseases, or behavioral and intellectual impairment, smoking becomes a challenge no woman should afford during pregnancy. Also, prenatal exposure to tobacco smoke in otherwise healthy babies is linked with significant changes in brain physiology associated with basic perceptual skills that could place the infant at risk for later developmental problems, such as speech processing ability³¹.

Nevertheless, smoking is in the same time harmful for future mothers.

Tobacco use is known to maintain intrauterine infections and stimulate prostaglandin E production, which causes uterine muscle contractions. Cigarette consumption is also responsible for decreased collagen III level, so premature rupture of membranes is more probably to occur. 20% more women smoking 20 cigarettes /day may experience premature delivery. As well, previous non smokers having already a premature birth, are more likely to deliver again prematurely, if becoming smokers and continue to smoke in pregnancy. Finally, prematurity is quoted in case of chronic genital infections or cervical incompetence¹.

Smoking has been associated as well, in few studies, to risk of diabetes in pregnancy, as glucose intolerance may intervene. Gestational diabetes mellitus defined as glucose intolerance with onset or first recognized during pregnancy affects 1 to 15% of all pregnancies and 7.6% of pregnancies in Brazil. The prevalence of gestational diabetes mellitus varies in direct

proportion with the prevalence of type 2 diabetes and is increasing over time along with the prevalence of obesity³². Its onset is associated with increased rates of macrosomia which in turn increases the risk of cesarean section, shoulder dystocia and birth trauma. A long-term consequence of gestational diabetes for the mother is increased risk of progression to type 2 diabetes, later in life.

Many predisposing factors, such as advanced age, obesity, non-Caucasian ethnicity, and family history of type 2 diabetes have been associated with an increased risk of gestational diabetes³².

Smoking cessation interventions during pregnancy

If decision to have a baby is taken, any future mother should stop smoking as soon as possible. Motivation to this gesture is strongly sustained by endangering baby and mother's health together with pregnancy and delivery complications, if continuing tobacco exposure.

Each visit to the obstetrician, during pregnancy, should evaluate woman's smoking status and determine medical advice to quit smoking, accordingly. Most specialists in the field do not recommend pharmacological therapy, because of continuous nicotine absorption in fetal blood – especially from nicotine patches – yet nicotine substitutes are allowed in certain situations. Varenicline and bupropion are totally forbidden during pregnancy, while nicotine gum can be indicated in heavy smokers, as alternative to continuing tobacco use, in countries where regulatory bodies have relaxed medical legislation in this field.

In a study to compare efficacy of nicotine gum vs. placebo, women who used nicotine gum had the same smoking abstinence rates as the placebo group, but smoked fewer cigarettes/day³³. Safety of medication administered to pregnant smokers has been studied in several randomized clinical trials as Pollack or Wisborg studies^{34,35}. Nevertheless, data suggest more frequent side effects of nicotine substitutes when used in first 12 weeks of pregnancy compared to 2nd and 3rd trimester. Also, except situations under expert supervision when continuing smoking risks are higher than pharmacological therapy adverse effects, it is recommended to avoid medication, as long as nicotine substitution treatments expose women and fetus to yet insufficiently evaluated cessation therapy risks³⁵.

Most pregnant women, able to stop smoking succeed by their own will. When so, especially if during first gestation trimester, all mentioned risks above decrease significantly, approximately the same as for no smokers³⁴.

Smoking cessation medical aid is proved to be efficient and should imply the male partner as well. Usually, it consists of immediate recommendation to stop smoking, counseling, behavioral therapy and self-helping educational materials³⁵.

Smoking cessation rate during pregnancy

Smoking cessation rates during pregnancy vary considerably between different regions throughout the world. Reports from the USA indicate that more than one third of women that used to smoke quit smoking during pregnancy³⁶. Fortunately, the relapse rates in women who quit in pregnancy appear lower than those among quitters in the general population.



PNEUMO 23TM

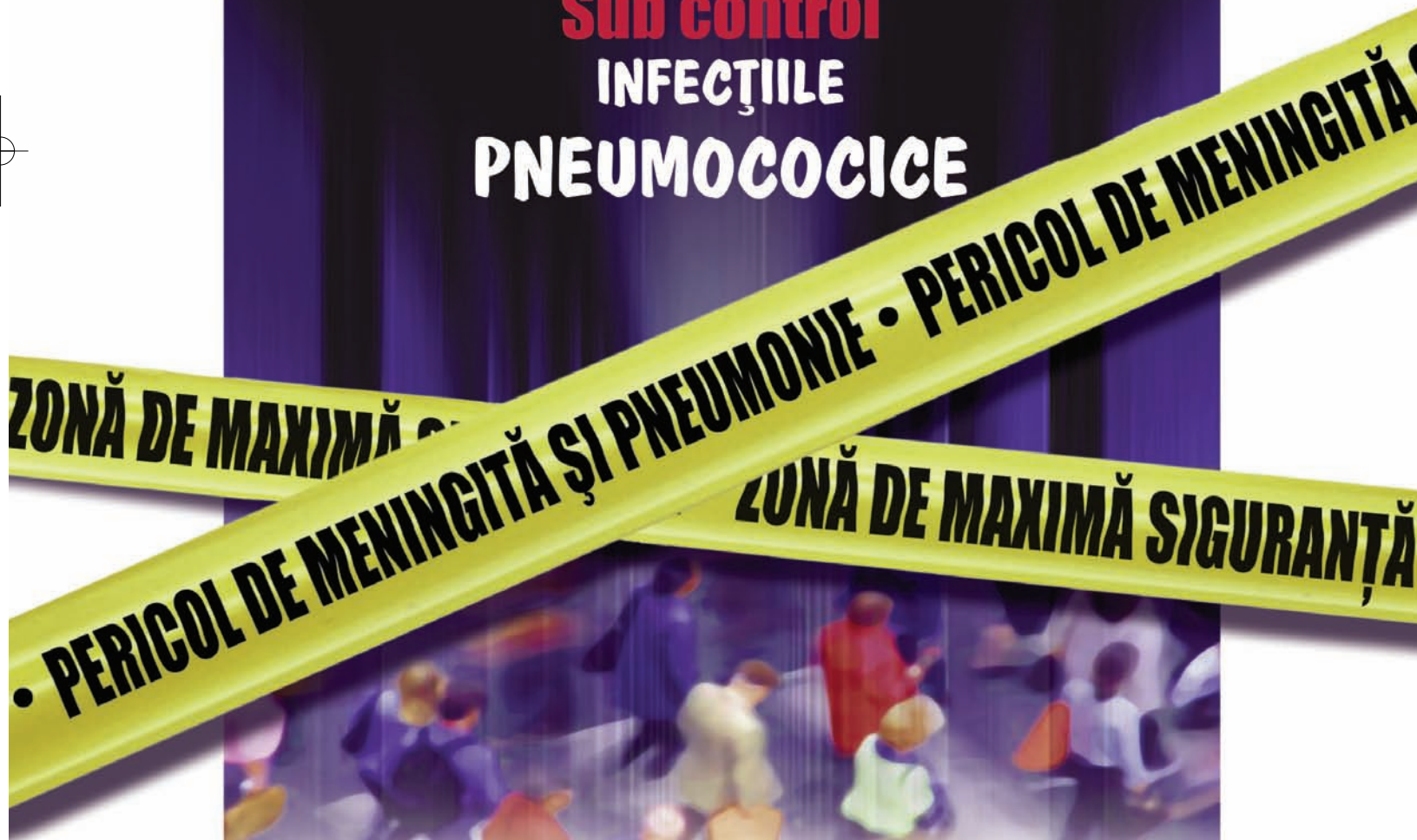
Vaccin pneumococic polizaharidic

- ✓ **Conține 23 de serotipuri de *S. pneumoniae***
- ✓ **Acoperă peste 90% din serotipurile responsabile pentru infecțiile pneumococice invazive¹**
- ✓ **Acoperă 88% din tulpinile rezistente la penicilină²**
- ✓ **Anticorpii persistă cel puțin 5 ani³**

Acoperire largă împotriva infecțiilor pneumococice

Recomandat începând cu vârsta de 2 ani

Sub control INFECȚIILE PNEUMOCOCICE



sanofi pasteur

Divizia de vaccinuri a grupului sanofi-aventis

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Fingerhut et al reported a one-year postpartum relapse rate of 66% among women who had quit in early pregnancy compared with a one-year relapse rate of 80% in the general population³⁷. In a German study, smoking cessation rates resulting in long-term abstinence were about three times higher during the year after child birth and the year before than in other years¹⁶. However, childbirth led to long-term abstinence from smoking in only a small minority of smoking mothers and fathers³⁸.

Conclusions

Even if data worldwide do not look very encouraging, in our experience, many pregnant smokers seem more willing to make quit attempts, once pregnancy confirmed. It is a valuable opportunity each doctor, whether smoking cessation expert or not, should fructify towards stopping smoking in pregnant women. Considering the fact that women become more motivated to refrain from smoking and attend more frequently a healthcare service during pregnancy, such occasions must be used to support smoke free mothers.

Smoking cessation should be delivered to pregnant women either by obstetrician, G.P. or any other health care worker. It would appear that a preconception and a postnatal smoking cessation program are also needed in order to reinforce this message and insure that pregnancies become smoke – free, remain smoke free throughout and that women remain smoke free postnatal. Any contact with a woman in the childbearing years must be viewed as an opportunity for health promotion, health education and positive behavior reinforcement, towards smoke free pregnancies^{27, 35}.

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