Passive smoking- the dangerous Second hand threatens to human health: An overview

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ABSTRACT

Smoking is the greatest avoidable cause of disease and death. According to the World Health Organization (WHO), 1.1 billion people worldwide regularly smoke tobacco products. Non-smokers are at risk because of inhalation of passive smoke, also known as environmental tobacco smoke (ETS). Exposure to passive smoking (ETS) is harmful to the health of human being particularly hazardous to children. More and more research is showing the negative effects of passive smoking on health. Researchers found significant dose-dependent associations between passive smoking and chronic obstructive pulmonary disease, stroke, ischemic heart disease, and all forms of cancer, and all respiratory and circulatory diseases. The home is the place where children are most exposed to second hand smoke; where they spend much of their early life in the presence of their parents. Every day more than 15 million children are exposed to smoke in their homes. 1998 study using ultrasound imaging to measure atherosclerosis in the carotid arteries found that passive smoking increased the thickness of the inner lining of the arteries by 20%. This indicates that passive smoking can increase the progression of atherosclerosis. Children are very sensitive to the effects, due to the fact that their bodies are still growing and developing and they breathe faster than adults and therefore may inhale more smoke. Children who live in homes where parents smoke have high levels (more than five times) of cotinine (a biological marker of secondhand smoke exposure) than children who have nonsmoking parents. Also children with childhood ETS exposure were more likely to become smokers in adolescent or in adulthood.

Key words: Environmental tobacco smoke ETS, Toxicology, Cotinine, Second hand smoke SHS
INTRODUCTION

Passive smoking refers to inhalation or exposure to environmental tobacco smoke (ETS) or secondhand smoke (SHS). This secondhand smoke remains in the environment for a longer period, even after extinguishing the cigarette or other tobacco products. The form of smoke that forms from the tobacco is very dangerous to non-smokers than it is to smokers. For this reason, smokers not only put themselves at serious risk for health problems but they also put the people around them at risk for serious health problems. The effects of passive smoking can occur rapidly or it can occur slowly. The rapid effects of passive smoking are mostly eye irritation, nasal irritation, headache, and cough. People could start suffering from these rapid effects in as little as 15 minutes. The slower effects of passive smoking are usually the more permanent and are more dangerous effects to take place in the human body.

HARMFUL EFFECTS

Tobacco smoke contains more than 4000 compounds, out of which 200 are toxic and 60 are known to have carcinogenic effects. Scientific studies conducted on environmental tobacco smoke confirm that it also consists of many carcinogens (cancer causing compounds) and toxins. ETS is the most common agent, responsible for causing indoor pollution. Second-hand smoke causes many of the same diseases as direct smoking, including cardiovascular diseases, lung cancer, and diseases (National Research Council. Environmental tobacco smoke) these diseases include:

CANCER

Passive smoking involves exposure to same carcinogens and toxic substances that are present in smoke produced by active smoking which causes lung cancer. More than 50 studies of passive smoking and lung cancer risk in never-smokers, especially spouses of smokers, have been published during last 30 years. Most showed an increased risk especially for person with higher exposures. Serious passive smoking effects include increasing the risk of breast cancer by about 70 percent, among women who are in the pre-menopausal stages (IARC, 2004).

EFFECT ON CHILDREN

Smoking during pregnancy is harmful to developing baby. When a pregnant woman is exposed to passive smoking, harmful substances absorbed in to mother’s bloodstream can cross the placenta and affect her unborn child. Placenta doesn’t filter out harmful substances. Passive smoking increases the risk of miscarriage, stillbirth, prematurity, Low birth weight and sudden infant death syndrome. Children exposed to environmental tobacco smoke are 40% more likely to suffer from asthma symptoms than children who are not exposed. Respiratory infections characterized by wheezing, breathlessness, cough and phlegm are increased in children whose parent smoke. Children of people who smoke have an increased risk of meningococcal disease, which can sometimes cause death or disability.

HEART DISEASES

Passive smoking increases the risk of heart disease. There is consistent evidence that people who do not smoke, who live in a smoky household, have higher risks of coronary heart disease than those who do not. It makes the blood more ‘sticky’ and likely to clot, thereby leading to increased risk of various health conditions, including heart attack and stroke. There is evidence that passive smoking can cause levels of antioxidant vitamins in the blood to reduce (Criqui et al. 1980). Just 30 minutes of exposure to passive smoking can affect blood vessels to regulate blood flow, to a similar degree to that seen in people who smoke. Long-term exposure to passive smoking may lead to the development of atherosclerosis (narrowing of the arteries).

REPRODUCTIVE PROBLEMS

Spending time in a smoker’s company can significantly reduce a woman's chance of conceiving. A woman who lives with a 20-or-more-a-day smoker has her chance of becoming pregnant lowered by 34%. Conception will be even harder for a woman who smokes and is exposed to passive smoke. Middle-aged men who are heavily exposed to second-hand smoke have nearly twice the risk of impotence (Surgeon General of the United States, 1972).

PREVENTION OF ETS

Environmental tobacco smoke can be evaluated either by directly measuring tobacco smoke pollutants found in the air or by using biomarkers, an indirect measure of exposure. Carbon monoxide monitored through breath, nicotine, cotinine, thiocyanates, and proteins are the most specific biological markers of tobacco smoke exposure. Biochemical tests are a much more reliable biomarker of second-hand smoke exposure than surveys. A 2007 study in the Addictive Behaviors Journal found a positive correlation between second-hand tobacco smoke exposure and concentrations of nicotine and/or biomarkers of nicotine in the body. Significant biological levels of
nicotine from second-hand smoke exposure were equivalent to nicotine levels from active smoking and levels that are associated with behavior changes due to nicotine consumption (Cox DR. Regression models and life tables).

**COTININE**
Cotinine, the metabolite of nicotine, is a biomarker of second-hand smoke exposure. Typically, cotinine is measured in the blood, saliva, and urine. Hair analysis has recently become a new, noninvasive measurement technique. Cotinine accumulates in hair during hair growth, which results in a measure of long-term, cumulative exposure to tobacco smoke. Urinary cotinine levels have been a reliable biomarker of tobacco exposure and have been used as a reference in many epidemiological studies. However, cotinine levels found in the urine only reflect exposure over the preceding 48 hours. Cotinine levels of the skin, such as the hair and nails, reflect tobacco exposure over the previous three months and are a more reliable biomarker.

**CARBON MONOXIDE (CO)**
Carbon monoxide monitored via breath is also a reliable biomarker of second-hand smoke exposure as well as tobacco use. With high sensitivity and specificity, it not only provides an accurate measure, but the test is also noninvasive, highly reproducible, and low in cost. Breath CO monitoring measures the concentration of CO in an exhalation in parts per million, and this can be directly correlated to the blood CO concentration (carboxyhemoglobin). Breath CO monitors can also be used by emergency services to identify patients who are suspected of having CO poisoning.

**CONCLUSION**
Passive smoking or second hand smoking is very dangerous to human being. There is sufficient evidence that shows passive smoking causes lung cancer in humans. In this population of nonsmoking women aged 50-79 years, those married to current or former cigarette smokers had an elevated risk of death from ischemic heart disease compared with wives of never smokers. Furthermore, the only two deaths attributable to lung cancer, bronchitis, emphysema, asthma, or chronic obstructive pulmonary disease in nonsmoking women were in women married to current or former smokers. In February 1991 Justice Trevor Morling of Federal court of Australia delivered a landmark ruling on passive smoking. "There is compelling scientific evidence that cigarette smoke causes lung cancer in non smokers and there is overwhelming evidence that passive smoking causes some people to experience attacks of asthma.'

**PUBLIC AWARENESS AND SUPPORT**
China has banned its officials from smoking in public places like schools, offices, and hospitals, according to an official government circular. The move follows a string of controls imposed on Communist Party officials which include restrictions on visiting clubs and spas that offer sexual services, ordering extravagant meals and expensive wines in restaurants and accepting expensive gifts. The officials have been asked to "take the lead" in implementing government ban on smoking in public places. The order comes amid complaints that arrogant and powerful officials are the only ones seen smoking in places where it is banned. "Smoking remains a relatively universal phenomenon in public venues. Some officials smoke in public places, which not only spoils the environment and is a risk to public health, but tarnishes the image of the Party and government offices and leaders and has a negative influence," the circular said. Sale of tobacco products and advertisements will no longer be allowed in Party and government offices. The circular said notices about the smoking ban must be displayed in meeting rooms, reception offices, passageways, cafeterias and rest rooms. There are about 300 million smokers in China, which is the world’s largest cigarette producer and consumer. At least 740 million non-smokers, including children, are regularly exposed to passive smoking. China has been widely criticized for not fully implementing the Framework Convention on Tobacco Control (FCTC) of the World Health Organization, which it signed in 2003. There is no ban on smoking in many indoor.

**SUMMARY OF RESEARCH**
Not only the smoking is harmful to human being but passive smoking is equally or even more dangerous than active smoking. Researches prove that passive smoking causes cancer. Passive smoking artery damage partially heals Damage to the lining of arteries of young adults caused by passive smoking partially heals 2 years after the exposure to smoke, but the artery lining is still not as healthy as the arteries of people who had never been exposed to smoke. Passive smoking has been consistently linked to an increased risk for coronary heart disease and may be responsible for more than 30 cardiovascular deaths annually in the US alone, the researchers note (Tong, EK; Glantz, SA, 2007-10-16). Secondhand smoke is a serious health risk to children. The developing lungs of young children are also affected by exposure to secondhand smoke. Infants and young children whose parents smoke are among the most seriously affected by exposure to secondhand smoke, being at increased risk of lower respiratory tract infections such as pneumonia and bronchitis.
FUTURE ISSUES
Smoking is banned in public places but peoples are not aware of harmful effect of passive smoking. Even there have been a number of cases in Australia in which compensation has been awarded due to discomfort or disease caused by ETS. In 2001 a lady had an asthma attack when cigarette smoke drifted in to non smoking area where she was sitting (Tobacco institute of Australia limited vs. Australian federation of consumer organization).

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