Flavoured hookah and perioperative risk: Evil goes global

Sir,

Tobacco (cigarette/bidi) smoking is a recognised evil in anaesthesia practice due to its adverse effects on health and increased perioperative risks. Consequently, perioperative concerns of tobacco smoking have been elaborately discussed in literature.[1] Aware of the harmful effects of tobacco smoking, tobacco-free hookah (also known as flavoured hookah, waterpipe and shisha) is increasingly being promoted and used as a safer alternative despite its potential health hazards. However, adverse effects of hookah in anaesthesia practice have not been adequately addressed. This paper aims to discuss the harmful effects of flavoured hookah and its potential impact on perioperative course and outcomes.

Flavoured hookah involves waterpipe system and flavoured constituent shisha, heated with charcoal. The popularity of flavoured hookah among adolescents and young adults in India and other Asian countries has increased significantly in recent times[2] and has been termed as 'public health epidemic' in the western world. Various factors such as availability of multiple flavours, less harshness of smoke, no or less nicotine and importantly, wrong perception of less or no risk associated with its use, are promoting its usage.

Although nicotine is absent, smoke of flavoured hookah contains various toxicants such as carbon monoxide (CO), polycyclic aromatic hydrocarbons (PAH), volatile aldehydes and heavy metals.[3] Effects of these products include cardiovascular diseases (CO), lung diseases (volatile

aldehydes) and cancer (PAH and heavy metals). Similar to cigarettes, smoke from hookah can cause ciliary damage, increase viscosity of secretions, reduce muco-ciliary clearance and thus increase the risk of perioperative pulmonary complications. Hookah also disrupts respiratory epithelium, increases airway reactivity and can lead to perioperative bronchospasm or laryngospasm. High carboxyhaemoglobin levels increase the perioperative risk of myocardial ischemia or arrhythmias. The air quality found in hookah cafes is also hazardous with a significant level of particulate matter ($PM_{2.5}$)[3] which can exacerbate the risk of chronic bronchitis or asthma. Additional adverse effects include increased risk of communicable diseases due to sharing of single mouthpiece by users and potential for becoming permanent smokers or dual abuse (alcohol and hookah).

Considerations during anaesthesia include high perioperative risk of respiratory (tissue hypoxia from decreased blood oxygen content and leftward shift in oxygen-haemoglobin dissociation curve) and cardiac morbidity (ischemia, negative inotropy and arrhythmias), misinterpretation of peripheral oxygen saturation with conventional pulse oximeters (similar absorbances of carboxyhaemoglobin and oxyhaemoglobin at 660 nm), high carboxyhaemoglobin and low oxyhaemoglobin on arterial blood gas (ABG) analysis, need for modification of drug doses secondary to cytP450 enzyme induction by PAH, changing of CO_2 absorbent intraoperatively and need for FiO2 = 1 or hyperbaric oxygen to reduce carboxyhaemoglobin half-life.[4] In addition, preoperative evaluation should include chest X-ray, electrocardiogram, carboxyhaemoglobin levels[5] and ABG. Although no outcome relationship has been studied between flavoured hookah smoking and anaesthesia, increased perioperative risk is likely based on the described health hazards. In the absence of data, no recommendations currently are available regarding perioperative precautions, preoperative preparation, duration of abstinence prior to surgery and need for postponement of elective surgeries.

To conclude, awareness among general public about potential health risks from use of flavoured hookah is needed, especially the youth who constitute 35% of India's population[6] and are most vulnerable to its use. Since many individuals do not consider its use as smoking and are unaware of its harmful effects, they may not inform about this habit during pre-anaesthetic evaluation. Anaesthesiologists should also be aware of this increasing public health problem and its ramifications in the perioperative period. We would encourage anaesthesiologists to actively seek information from patients about its use, discuss associated concerns, educate patients about its harms and take necessary perioperative measures similar to tobacco smoking.

Financial support and sponsorship
Nil.

Conflicts of interest
There are no conflicts of interest.

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Submitted: 16-Jan-2020
Revised: 20-Feb-2020
Accepted: 27-May-2020
Published: 01-Jul-2020

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Access this article online

Quick response code

Website: www.ijaweb.org

DOI: 10.4103/ija.IJA_54_20

How to cite this article: Goyal A, Kamath S, Pallavi K, Krishnakumar M. Flavoured hookah and perioperative risk: Evil goes global. Indian J Anaesth 2020;64:642-4.