

## LETTER to the EDITOR

# Important Clarifications about Peculiarities of Hookah Smoking and Lung Cancer in Kashmir

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### Dear Editor

Further to the recent publication of our study on Kashmiri hookah smoking and lung cancer in this journal (Koul et al., 2011), our attention was drawn to the need of clarifying some scientific aspects in order to clear up some confusion due, in particular, to some unfortunate misquotations.

We have mentioned the existence of a debate about the purported health effects of hookah smoking under its striking various forms and contexts of use across the world (there is not a single “waterpipe” model). We have provided examples of some controversial aspects (smoke chemistry, side-stream smoke, addiction, etc.) supported by references which, in spite of their relevance, proved to be unfortunately misplaced. We would also like to apologise for a typing error in the reference to the study most related (scientifically, culturally and geographically) to ours and most useful regarding the above mentioned controversy. The first name of the second author was unfortunately printed in full instead of his family name (Sajid et al., 2008).

We take this opportunity to emphasise a rather counter-intuitive finding in our study. Contrary to Sajid et al. (2008), the risk found for combined smokers (hookah plus cigarette) is smaller (OR=2.31) than among cigarette smokers (OR=3.49) alone or hookah users alone (OR=5.083)(table 1)(Koul et al, 2011). We would also like to clarify our statement that “when graded according to the severity of smoking, heavy smokers had a higher risk of lung cancer (table 2)” because the table does not clearly reflect this point (with 14.7% of cases being heavy smokers vs. 43.4% being medium smokers and 19.1% being light smokers) (Koul et al., 2011).

Concerning the process of changing water, we stressed that none of the participants changed the water after every session, with 89% of the cases and 76% of the controls changing water after more than 48 hours. We noted that the frequency of changing water was not associated with any increased risk of lung cancer. However, one may assume that if water was changed after each session, the findings might be completely different. Indeed, at the end of a session, the water gets saturated with toxic elements and therefore chemically stripped of its natural obstructing properties. For example, Egyptian scientists have early established that the performance of the water filter was higher than the cigarette one when considering such a toxic element as lead. Strikingly, this effect actually decreased between one smoking session and the next one.

Other Egyptian researchers concentrated on this fact and speculated in a WHO report that it could be due to a lack of hygiene as not all smokers would change the water after each session (WHO, 2007; Chaouachi, 2009). Finally, the tinned copper or brass material used in today’s Kashmiri hookah (vs. earthenware previously) may allow some chemical reactions between the metal and water when the latter is not changed. Such a switch in the nature of the used material could be a tentative explanation for the fact that while the incidence of lung cancer in Kashmir has kept low for a long period, it has been only recently witnessing a surge (Koul et al., 2010).

Let us now correct the unfortunate misquotations. In our statement that the carcinogenic potential of the smoke has been directly related to the working temperatures achieved during the smoking session and that Kashmiri hookah smoke could have a higher carcinogenic potential, the authors who actually stressed this relation were Sajid et al (2008) and not Knishkowsy and Amitai (2005). Hookah smoke is said to be purported to be a hazard to non-smokers. However, Steentoft et al. (2006) were inappropriately cited. Concerning the serious debate over statistics about cigarette environmental tobacco smoke (ETS) and their interpretation, Wolfram et al. (2003) were cited instead of Sajid et al (2008). In the following paragraph, Wynder et al (1965) had to be replaced with Zaga et al (2002) and the latter with Monn et al (2007) plus Sajid et al (2008) for the interpretation: “Water has been believed to act as an antioxidant against some short half life free radicals (Wynder et al., 1965). A more recent study also showed that hookah smoke is up to 3 times less concentrated than cigarette smoke as regards the particles, especially the ultrafine ones:  $74.4 \times 10^9$  for a 1000 ml hookah (machine) puff and  $9.24 \times 10^9$  for a 45 ml cigarette “puff” (Zaga et al., 2002).

In the following paragraph, Monn et al (2007) should be deleted and the Al-Mutairi et al (2006) reference replaced with Khater et al (2008): “There is also debate about the addiction potential of nicotine in hookah smokers with some researchers reporting that mild or moderate hookah smokers are not dependent (Monn et al., 2007) and that nicotine intake not being as high as in cigarette smokers (Salameh et al., 2008). A study on the potential health hazards associated with radioactivity in the smoking mixtures used in narghile found no differences with cigarettes.

In our introduction (Koul et al., 2011), the first sentence actually contains a misquotation about the origins of the hookah. The reason is that we uncritically

relied on the WHO report on hookah smoking which in fact proved to contain errors and erroneous statements; in particular a misquotation about Chattopadhyay (2000) whose article does not mention Africa. A comprehensive critique of that report was published. It highlights, among others, a much older origin (Ethiopia) actually supported by archaeological and chemical evidence (Carbon 14 datation)(Chaouachi, 2006). In the same vein, Tamim et al (2003) is to be replaced with the critique of the WHO report in the following statement: "Such a study helped in clearing up a growing confusion caused, among others, by the dismissal of early biomedical and anthropological research on the subject (Tamim et al., 2003)". The critique also helped in clearing up worldwide confusion disseminated by antismoking researchers in relation to the use of hookah by Arab women (Chaouachi, 2006). As for the "100 million" figure of daily hookah smokers in the world, a Saudi-Egyptian-French team has established the source of the confusion among the antismoking community (Khater et al, 2008) .

Concerning nicotine, we realised that the "36 times" cigarette equivalent is unfortunately a common error in the antismoking literature. In fact, a smoking session of the modern hookah physiologically translates, at the best, in the nicotine blood equivalent of one to two cigarettes (Chaouachi, 2006). Finally, it must be stressed that the temperature of the hookah tobacco-molasses mixture is neither 900°C (which is approximately that at the tip of a cigarette when smoke is drawn) nor 450°C (which is actually that of the charcoal; separated from the smoking mixture by aluminium foil in today' shisha setup). As previously said, this entails a very different (and much less complex) chemistry of smoke in both cases. This fact was established by Saudi researchers about two decades ago (Ben Saad et al., 2011, Chaouachi, 2011).

In conclusion, tobacco is dangerous and after making these necessary corrections, we realise that all aspects of tobacco use should be taken into account, not only the substance itself. Our study also shows that cancer prevention should rely on a powerful harm reduction approach that could help in saving the lives of millions. If hookah users (particularly the heavy ones smoking huge amounts of tobacco every day; unlike fashionable shisha users elsewhere in the world) cannot quit immediately, physicians should at least invite them to imperatively change water after each session and try decrease the time duration of each session. Users will easily understand that once the liquid gets saturated with toxic chemicals, its filtering action is seriously altered. Awareness should also be raised among local manufacturers so that they provide glass (or coconut or, if metal is unavoidable, waterproof material) for the hookah bases. Certainly the smoke will not be "harmless" but will presumably be less harmful.

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