Comparison of cigarette and waterpipe smoking among pupils in the urban area of Sousse, Tunisia.
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Errors and Methodological Problems in Article Comparing Cigarette and Shisha (Narghile, Hookah, ««Waterpipe »») Smoking among Pupils in the Urban Area of Sousse, Tunisia.

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Dear Editor,

The first error in Dr Imed Harrabi and colleagues' article is geographical as our country, Tunisia, is not located in the "in the northeast of Africa" as stated by the authors [1]. Probably this error is a consequence of another one: the fact that ««waterpipe»» use would be « growing in popularity worldwide, essentially in the Eastern Mediterranean region »[1]. Indeed, the « Western Mediterranean Region » (Libya, Tunisia, etc.) is also affected by the shisha "epidemic" that the authors describe as having reached "worldwide" proportions. Obviously there is a serious contradiction. The geographical distribution of shisha use is something and the official ««waterpipe »» antismoking research -mainly led by the the US-American University of Beirut and the US-Syrian Centre for Tobacco Studies/US-SCTS (Wasim Maziak, co-author of the paper, is also director of the latter)-, undoubtedly based in the "Eastern Mediterranean", is something else.

Then, we have two other errors, of a methodological nature this time. The first one is that Harrabi et al [1] have forgotten to discuss their "self administered questionnaire to measure tobacco consumption by frequency of smoking, age of commencement and age of regular use". In fact, questionnaires used for such epidemiological surveys have not been established with the necessary scientific rigour [2, 3].

Declaring that a ""waterpipe"" questionnaire is "standardised" (corresponding US-SCTS reference in the authors' article) is not enough, particularly when such a tool has not been independently evaluated but rather imposed to the tobacco research community with no minimal scientific discussion [4].

The other error, of a methodological nature, this time, is to group under one universal entity (««waterpipe»», particularly in one word) different types of pipes which are actually used with different smoking products in different contexts. This error is in not only a scientific reductionism but also a nominalism that has fuelled a world confusion [2, 3, 4].

For instance, in our country, researchers have early understood the difference between pipes and products, the necessary quantification that the need to take into account anthropological details of utmost importance (type of charcoal, of smoking mixture (with or without glycerol; quantity), involved temperatures, the way the pipe is prepared, etc.)[2, 3, 4],

Harrabi et al have also used ""waterpipe"" to list a series of related (health) problems [1]. However, they have not realised that in our country, as in many others, there is not one sort of water pipe only but several ones. If we leave aside the old « arguila » that is not anymore in use in our country for decades now [5], we have the shisha (spelled « chicha » in French) under two configurations: traditional on one side and modern on the other. Both imply different smoking products and a different heating/burning system. In the former one, the most popular product has been, for a long time now, « Cheikh el beled » (a national brand) which is an unflavoured plain tobacco-molasses mixture ("moassel", i.e. "honeyed" in Arabic] with which the charcoal is in direct contact. This product is strong and it is one of the reasons for its exclusive use by males.

For two decades or so, it is also common to add jurak (pronounced « jirak » in our country) to the previous product. Jurak is a blackish paste (minced fruits and sugar are some of its main ingredients) which makes the above moassel even stronger. Its users commonly refer to a « buzz » perhaps due to a synergistic effect of nicotine and carbon monoxide although official advertised research is wading in other directions so that no study so far has clarified this phenomenon of utmost importance.

The other product in use in our country, not only by males but also, little by little, by women (although only for a few years - since our society remains conservative in many aspects) is also called moassel. However, it is a much more lighter flavoured tobacco-molasses mixture (in nicotine in particular) than «Cheikh el beled» or jurak. An important aspect is that unlike the two previous forms, the charcoal is not in direct contact but is separated by a pierced aluminium foil which serves as thermal screen whereby the smoking mixture is only heated (the temperature of the mixture does not go in excess of ca. 200°C)[2,3,4]. These are not secondary details in the light of the systematic comparison with cigarettes. Indeed, the tip of the tobacco rod in a cigarette can easily reach ca. 900°C. The consequences of these differences cannot be downplayed so easily. Shisha smoke, in its modern fashionable form, and unlike cigarettes, is mainly made up of water and glycerol (known to have no biological activity) and is far less

concentrated in chemicals (hundreds vs. thousands) than cigarette smoke. It is surprising that the authors did not pay attention to these facts even more that the latter have been highlighted by a Tunisian team in a respectable peer-reviewed journal [2, 3]. This means that such chemical differences are going to induce health effects that will be different, not only from those induced by cigarettes but also different in each case : plain unflavoured moassel with or no jurak with no thermal screen, flavoured moassel with thermal screen, etc. In these conditions, stating that "waterpipe smoke contains many of the same toxicants as cigarette smoke » [1] is not exact from a scientific standpoint. Most of Harrabi et al's references in this respect are mainly based on a smoking machine designed at the US-American University of Beirut which has been criticised for its biased underlying methodology [2, 3, 4].

In the light of the available sound science, only a few toxicants, among the thousands to be found in cigarette smoke, are common and these are in varying proportions: sometimes higher, sometimes lesser. Smoking patterns are also completely different in each case so that direct comparisons such as those based on consultations with the antismoking experts (e.g. "1 shisha equals 200 cigarettes") [6], are also unscientific.

Harrabi et al cite a German study (by Fromme et al.) on the harm caused to «non-smokers exposed to waterpipe smoke » [1]. However, they omit to add that this study was not only biased but unrealistic and unethical (Helsinki Declaration on protection of subjects in medical research). Indeed, it was based on four successive smoking sessions involving four smokers in an unventilated room; windows and doors closed; quick-lighting charcoal (not natural) still emitting hazardous particles at the beginning of each session; water not changed after each session; etc. In spite of such a surprising design, the German researchers came up with results that -after dividing the yields of toxicants by 4, the number of sessions- do not support Harrabi et al's claims [7].

One of Harrabi et al's objective seems to demonstrate that the « gateway » hypothesis (shisha smoking or the shisha experience leads to cigarette smoking) is true. They cite recent US articles that would show that ««waterpipe»» is a « strong[est] » predictor of current cigarette smoking ». In fact, the design of the corresponding surveys is very poor and the « tobacco questionnaire » used by Weglicki et al and Virginia Rice at Wayne University University (cited by Harrabi et al) was never disclosed and is expected to contain linguistic (including translation) bias (Arab-speaking communities there). Furthermore, it is amazing that Harrabi et al [1] do not cite an Australian study whose much more solid methodology (and large sample) contradicts the gateway' hypothesis [8].

From our follow-up of sound independent research on this issue, we believe that, as in the case of smokesless tobacco, direct evidence that shisha use triggers cigarette smoking, is totally lacking and that sound independent studies are needed. Indeed, even for common sense, the above gateway hypothesis (not to mention Harrabi et al's huge confidence intervals) is simply not consistent with what we know about tobacco smoking in our country, Tunisia.

The nicotine-equivalent of 10 cigarettes per day for a daily ««waterpipe»» smoker is not only in contradiction with the opinion of the US-SCTS and US-AUB experts [6], but is also based on a biased "metaanalysis" (by Neergaard et al) that pooled and compared studies in which the pipes and the smoking products were completely different [4].

Concerning ""waterpipe"" "addiction", at the core of Harrabi et al's paper, is not it amazing that the tobacco industry –unlike antismoking research centres- has not produced one single study on narghile ? Obviously it knows that it is much less addictive (if not at all in some instances) than cigarettes and therefore not lucrative.

Finally, we would like to stress other weak points:

1. In their "study design", Harrabi et al [1] have actually selected a sample of schoolchildren of Sousse in 2003. We have many reservations because by that time, flavoured moassel was not so common.
2. The great majority of the bibliographical references in Harrabi et al's paper are from the United States of America as if our researchers in Tunisia (from Maalej to Hsairi and from Ourari to Ben Saad), had not produced any relevant literature on this issue. This is a striking form of publication (bibliographical) bias [4, 7].
3. It is also amazing to see the authors cite the WHO report (whose main co-author is Wasim Maziak) without adding that it has been criticized for its numerous serious errors [4]. The first two sentences of the WHO report contain an error and a misquotation. In particular, this document states that in North Africa (therefore in Tunisia), "it is not uncommon" (sic) to see children smoking the narghile with their parents. As Tunisian researchers (one of them being the author of the critique of the WHO erroneous report) [4], we must say that we are very concerned with these facts and this situation.

We hope that from now on, the Editors of La Tunisie Medicale will keep a watchful eye on any manuscript on shisha smoking and that they will demand more scientific rigour. For some reasons, this issue has amazingly become highly sensitive.

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Comparison of cigarette and waterpipe smoking among pupils in the urban area of Sousse, Tunisia. Tunis Med. 2010 Jul; 88(7):470-3. (Reply)

Harrabi I, Maaloul JM, Gaha R, Kebaili R, Maziak W, Ghannem H

Dear Editor

After a profound and thorough reading of the letter to the editor, the general feeling is that it was more an exhibition of expanded knowledge about "chicha" typology and chemical composition (which is not at all our main focus in this study but seems to be the field of expertise of the authors that they can address in a separate paper if they want) rather than a relevant critics to what the study was supposed to answer.

Our main objective was to undertake a descriptive epidemiologic study as clearly stated at the end of the introduction. Any text book of epidemiology would recognize that the major limits for such a descriptive study will be related to two issues:

• The sampling (type and procedure, size to give enough precision for parameters estimation)

• The tools used for measurement (questionnaire and its related bias of information)

None of these issues were seriously addressed by the authors.

Let us come to answer point by point all the issues raised by this letter to the editor.

1- According to the authors of this letter, our first error in this article is geographical as our country, Tunisia, is not located in the "in the northeast of Africa". To answer this, let us quote from Wikipedia, the free encyclopedia (http://en.wikipedia.org/wiki/ Geography_of_ Tunisia) that Tunisia is a country located in Northern Africa, bordering the Mediterranean Sea. Its geographic coordinates are 34°00?N for latitude and 9°00?E for longitude. We are then in the North and East of Africa, nothing of an error to report and start with. According to the World Health Organization's classification (WHO) that we also used in our paper both Tunisia and Syria belong to the Eastern Mediterranean Region (see http://www.emro.who.int/index.asp).

2- Self administered questionnaires about smoking status have been the main tool for epidemiological surveys of tobacco use for decades. The validity of youth's self-reported smoking status and level of consumption has been demonstrated in many previous studies (1-4). The questionnaire was by the way adapted from standard WHO tools (from the Global Youth Tobacco Survey: GYTS) used in multi center studies. The GYTS is a school-based survey designed to enhance the capacity of countries to monitor tobacco use among youth and to guide the implementation and evaluation of tobacco prevention and control programs (http://www.who.int/tobacco/surveillance/gyts/en/).

3- Concerning the criticism of the use of "waterpipe" in one word, we have clearly precised in the introduction that "Water pipe, also known as a hookah, narghile, or shisha-pipe" and we have used a figure to remove any confusion. On top of that, the aim of our study was been clearly cited as examining the prevalence of cigarette and waterpipe tobacco use among college students. So we weren't interested by what type of tobacco they consume or of the composition of different pipes.

4- Our study focused on the spread and patterns of waterpipe smoking (ever, current, regular), not on the specificities of the way the waterpipe is smoked. Still, available evidence from youth around the world demonstrated amazing similarity of how waterpipe is used (5, 6).

5- For the criticism about the different kinds of waterpipe and health related problems, in our paper we have just mentioned the harmful effects of waterpipe use from the literature. The best scientific evidence about the harmful effects of waterpipe smoking was based on a systematic review in a top epidemiology journal (International Journal of Epidemiology), which showed that waterpipe smoking more than doubles the risk of lung cancer, respiratory illness, and low birth weight (7). Then, we precised twice that "more research is needed" in this field. In fact, our descriptive study was mainly designed to determine the prevalence of waterpipe and cigarette smoking and not the consequences of their use.

6- The authors criticized a German study (8) cited in our article. They mentioned that this study is "not only biased but unrealistic and unethical" in their opinion. But, in this study, all participants were fully informed and some of them were even experts in the study of air pollution and its health consequences. All of them gave written informed consent (9). The study was carried out according to the recommendations of the Helsinki Declaration. So, the study had full ethical permission. Also, the editor of Food and Chemical Toxicology Journal stated that he "can find no evidence that the study was not conducted to appropriate ethical standards" (10).

7- Unlike the main author who relies on anecdotal evidence and letters he wrote rather than scientific research in this field that he has yet to lead and conduct, our discussed points about the harmful and addictive properties of waterpipe smoking is based on the best available evidence in top tier peer reviewed medical journals. As shown above, this literature supported the harmful and addictive properties of waterpipe smoking as well as the gateway hypothesis (5, 6).

8- It is finally our duty to point out that, like all previous activities of the main author of this letter in the field, we are afraid to say that his main interest seems not in science but in a kind of promoting the waterpipe and himself by using letters to the editor to knit a web of disingenuous literature in peer-

reviewed journals to create doubt. Suffice it to say that he leads a waterpipe promotional sites (sacred narghile; www.sacrednarghile.com/en/index.php), where one can actually be linked to waterpipe retailers and buy waterpipes and their accessories (by going to the item Links from the menu to the left, scrolling down until a link called the hookah culture http://www.hookahculture.com is reached and this leads to actual retailers to buy waterpipe).

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