



Research Article

Tobacco Harm Reduction: In Pursuit of Awareness and Training for Health Care Professionals

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Abstract

Cigarette smoking harms as to morbidity and mortality and relative costs constitute a real plague. It concerns not just health care providers but is also a function of the intrinsic complexity of tobacco addiction. The concept of risk reduction or alternative therapies and approaches still appears to be a taboo in the case of tobacco addiction and medical community is split in spite of the current stalemate of the fight against smoking.

Recent surveys conducted by 3 Italian Scientific Societies and a further one in 14 EU Countries (including Italy), are providing interesting insights on Physicians' opinion and practice regarding tobacco addiction, perceived health risk and harm reduction approaches.

The whole of this information suggests a strong training need for the medical class, encompassing all together the fight to smoking addiction not excluding a deep knowledge of digital smoke in the context of risk reduction management and differentiating between nicotine addiction and tobacco smoke harm. This would positively impact support interventions to cessation.

Physicians' better awareness of their role in fighting tobacco addiction within the fiduciary relationship doctor/patient, besides

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Citation: Beatrice F, Mason JR, Massaro G (2020) Tobacco Harm Reduction: In Pursuit of Awareness and Training for Health Care Professionals. J Community Med Public Health Care 7: 065.

Received: May 24, 2020; **Accepted:** June 01, 2020; **Published:** June 08, 2020

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strengthening the therapeutic alliance, could open the horizon to further progress toward cessation which remains the main goal. If cessation is not possible, a proper harm reduction approach, based on sound evidence and newly developed assessment methods, should be adopted in the 7 million heavy smokers who keep on dying each year.

Keywords: Digital Smoking; Nicotine Containing Alternatives; Physicians' Awareness and Training; Smoking Cessation; Tobacco Harm Reduction

Introduction

Cigarette smoking harms as to morbidity and mortality and relative costs are widely documented [1,2]. Such knowledge is further reinforced by continued WHO recommendations [3]. Furthermore, WHO data are showing that more than 1 million people are dying each year because of passive smoking; a significant share of cardiovascular diseases are due to passive smoking exposure and combustion products are responsible for such excess of diseases and deaths [4].

In spite of that, healthcare providers are showing several difficulties to properly reacting to a real global health emergency. Physicians, who pick up patients with tobacco related diseases for the first time, are often limiting their intervention in providing a generic recommendation to quit smoking. Taking care of patients with appropriate counseling or a more structured intervention focused on cessation are seldom adopted.

In doing the present commentary, we explored electronic literature databases, consisting of Ovid MEDLINE, Google Scholar, PubMed. The search was limited to United States/European English language and Italian articles (reviews, editorials, clinical studies, research articles, meta-analyses, monographies, guidelines, governmental policies and recommendations, surveys) published between 1st Jan 2000 and 1st May 2020. The following medical subject headings (MeSH) were used to search the databases: smoking; smoking cessation; nicotine addiction; combustion products; harm and risk reduction; tobacco harm reduction; physician's awareness and training; smoking surveys; nicotine containing alternatives; e-cigarettes; tobacco heated system; heat-not-burn products; digital smoking. 194 articles were initially identified. A title and abstract review were conducted by two of us (F.B. and G.M.), and 28 articles were identified for a full-text review, including a search of the references of all included articles.

Our main goal is to provide food for thought on how the novel digital technologies can find a proper place in the fight against smoking, on the basis of the risk reduction concept. Not doing so would turn into a sternness of the smokers' management reducing it to simply choosing between complete success (cessation) and failure, without any valuable proposal for smokers who are unwilling or unable to quit.

The issue of smoking as a real global health emergency concerns not just health care providers but is also a function of the intrinsic complexity of tobacco addiction. Quitting smoking is very difficult due to tobacco addiction, self-managed attempts to quit mainly fail and smokers basically tend to escape therapeutic proposals. This is confirmed, at least in Italy, by the low access to the territorial no-smoke centers [5-7].

Such scenario is worsened by the scientific evidence that a conspicuous portion of smokers is unable to quit even when they follow expert advice according to the relevant guidelines for cessation.

Most of the cessation failures are due to the poor admissibility of guidelines by smokers who are unable to follow the recommended steps and fail. In some cases, smokers, knowing that quitting is difficult, refuse any help in order to avoid failure frustration. In such cases, the sternness of the cessation choice constitutes an impassable obstacle. Directing toward digital smoking products is not solving the issue of nicotine addiction but could allow a significant reduction in the consumption of combustion products, even if with just a limited and not definitive health benefit. This could constitute a possible change compared to the certainty of failure.

Life style instructions based on the management of risk profile is one tool of the medical paraphernalia but it does not aim at a definitive result, rather at a reduction of behaviors that interfere with certain pathologies: in case of hypercholesterolemia statins are placed side by side with dietary courses [8]. Similarly, for diabetic patients, hypoglycemic therapy should be combined with instructions on eating behavior or specific food assumption must be limited in allergic patients [9,10]. The risk reduction through methadone prescription is an indispensable and consolidated approach for heroin addiction [11]. Providing sterile syringes to IV drug users and condoms to those ones at risk of infectious diseases transmission is widely shared [12]. Lastly, oncological patients can, for several reasons, refuse first-line treatment and physicians should then offer a second-line option.

Yet the concept of risk reduction or alternative therapies and approaches still appears to be a taboo in the case of tobacco addiction and medical community is split in spite of the current stalemate of the fight against smoking. The new digital technologies, aimed to a significant reduction in delivering toxic products of combustion, are facing difficulties in being widely accepted. Thus, a rigorously applied precautionary principle ends up not allowing risk reduction strategies and therapeutic flexibility.

The same experts tend to confuse the fight against tobacco smoke with proposals to help hardened smokers. The feeling is that you need a cultural evolution as to the concept of risk reduction and its applicability but the medical class still appears divided despite the fight against smoking appears in a stall phase. And that the medical class cannot ignore the topic had been already anticipated by a 2015 scientific paper on collaboration between the Italian National Health Institute and the No Smoke Center San Giovanni Bosco Hospital of Turin [13].

Such a pilot study showed that a medical support managed by experts, following a specific protocol, allowed 53% of smokers resistant to cessation to exclusively switch to electronic smoking for at least 8 months, with a significant normalization of expired carbon monoxide values without significant changes of the main hematological nicotine

metabolites (hence ensuring a nicotine assumption similar to those ones who kept on smoking conventional cigarettes).

Discussion

But which is the physicians' opinion? There are interesting data generated by quite recent surveys on tobacco addiction, conducted by three Italian Scientific Societies:

SIMG – Italian Society of General Practitioners (401 interviewed Physicians), FADOI - Scientific Society of Internal Medicine (528 interviewed Physicians) and SIAPAV – Italian Society for Angiology and Vascular Medicine (146 interviewed Angiologists and 62 interviewed Vascular Surgeons), on a total sample of more than 1000 Italian Clinicians [14-16].

Even if the used questionnaires are not completely superimposable, and in some cases the interviewed physicians did not provide answers to all questions, some common results can be highlighted.

Seven percent of the interviewed physicians was smokers, 70% non-smokers and 20% previous smokers. As to the health care providers' behaviors on the management of smokers the surveys are showing that the smoking history is collected by 80-97% of physicians but just 9% is asking questions regarding passive smoking exposure. 76% of interviewed physicians recommend to patients to completely quit smoking (between 10% and 20% to reduce the number of daily cigarettes).

22-40% of physicians provide patients with instructions to cessation and the link between smoking and patient diseases is underlined by 46% of interviewed physicians.

SIAPAV survey was also focused on the level of patient's addiction, cessation strategies and pharmacological treatment. 54% of Angiologists is assessing the level of patient's addiction (but just 25% is using Fagerstrom test) and 60% is assessing with the patient the chance of quitting. Information and material on cessation are constantly provided in 20% of cases and just 25% of Angiologists is following up any measure taken. Patients are referred to No Smoke Centers often in 37% and never or seldom in 31% of cases. Nicotine replacement therapy is seldom advised (in 9% of cases). The most advised drug is bupropion (68% of cases). By the way, a pharmacological advice which is not integrated with a specific cessation path has got wide room for ineffectiveness [17].

In such a scenario, electronic cigarettes are not deemed as proper support for cessation. Risk reduced smoking devices knowledge is less than 60% of cases whilst Physicians who favors their use is no more than 12%. Risk reduced products scientific research knowledge (question addressed in just one survey) is very limited (only 19% of interviewed physicians) On the other hand, the physicians appear very favorable to an interest in the issue by Scientific Societies: more than 90% of cases.

In summary, the sensitiveness of both General Practitioners and Specialists to smoking issues is fair even if there is a discrepancy between individual health care providers and Scientific Societies in the level of interest to risk reduced smoking devices. Even though the smoking history is collected by the majority of physicians - together with the advice to quitting – the adherence to smoking addiction guidelines is still unsatisfactory.

Nicotine Replacement Therapy or drugs – like varenicline – are under used whilst they should still find room in specific paths as per current guidelines on smoking cessation. Risk reduction approach for hard smokers is ignored in most of the cases and the referral to No Smoke Centers is quite poor.

A recent cross-sectional survey carried out in 14 European Countries [including Italy] has recently shown that the health care providers awareness of the risk reduction concept and of e-cigarettes/tobacco heated products is quite limited and, in some cases, also based on erroneous persuasions (e.g. on the nicotine role) [18].

256 Health Care Providers [median age = 30 years; mainly Italians (26,7%), Spanish (16,9%) and Portuguese (16,5%) completed an on-line survey between April and October 2018. Just 20,1% had received a specific training on cessation. 12,9% of completers were regular smokers and mainly using conventional cigarettes (69,7%) while 21,2% used e-cigarettes (e-cig). About one third of smokers was Italian. 9,4% of participants were past smokers. Such rates are clearly inferior compared to the general European population (28% of smokers) but much higher than those ones of USA health care providers.

The perceived health risk was significantly inferior for snus and e-cig compared to conventional cigarettes. Nicotine potential damage was over-estimated: 82,2% of respondents linked nicotine to any smoke related disease, 59,15% pointed it as an important cause of pulmonary tumors, 62,1% of other organs tumors and 72,7% as a cause of atherosclerosis.

As to e-cig, 53,1% believed that they have an inferior risk versus conventional cigarettes but with the same addiction potential [51,4%]. Most of interviewed physicians agreed on the addiction generated by e-cig [84,9%]. 44,1% considered e-cig safer than tobacco but an almost equal rate [37,7%] did not.

31,7% regarded e-cig an effective cessation device and 36,4% that e-cig can help in reducing the number of smoked cigarettes. Most of the interviewed people would not advice e-cig as a help to smoking cessation [63,9%] or as a strategy to reduce the number of cigarettes [46,6%].

Tobacco modified risk products were not known by 75,5% of interviewed physicians and 72,7% was unable to assess its risk in comparison to traditional smoking.

Most of the interviewed physicians considered nicotine containing alternatives (e-cig, snus, NRT) less harmful than keeping on smoking.

However, it is important to highlight that there still is a background confusion regarding the concepts of safety and less harmful. The notion of safety is a component of pharmacological paraphernalia and of safe care. It cannot be extended to tools such as digital devices: it will never be safe spirits and it cannot be a safe smoking product. In the case of spirit it is the quantity which makes it more or less harmful; as to digital smoke it is the content of delivered and inhaled substances, by a specific device, which makes it more or less harmful and the comparison should be always adopted in case of analogical smoking [19].

The whole of these information suggests a strong training need for the medical class, encompassing all together the fight to smoking addiction not excluding a deep knowledge of digital smoke in the context of risk reduction management.

The burst of (E-cigarette or Vaping Product use Associated Lung Injury – EVALI) in USA and its resizing until disappearance from the headlines is a valid example. Ongoing assessments are showing that deaths and hundreds of hospitalizations were linked to an improper use of e-cigs: the tanks were heedlessly filled in with oily liquids containing cannabis extracts, vitamin E acetate and other unknown and potentially lethal toxicants.

In spite of such dramatical evidences, The Center for Disease Control and Prevention (CDC) besides advising against purchases in not authorized sites always suggested, to smokers who had switched to digital smoking, not to switch back using conventional cigarettes [20]. This constant CDC recommendation is highly significant because suggests that legal electronic smoking is associated with inferior toxicity levels compared to tobacco smoke. But wrong information previously spread had a deep impact particularly in the fragile population of smokers. The wrong EVALI interpretation and the excesses of the American market have generated a further effect of not allowed measures in several American States. Sales of all products containing nicotine (and of products containing various flavoring – including menthol) were now prohibited, but without a consistent and scientifically sound approach [21]. Why in fact ban digital products that dispense nicotine and not traditional cigarettes that also dispense nicotine?

Also the fear that digital products can introduce young people to a noxious tobacco addiction is disproved by the fact that, in the USA, most young people using e-cig are already smokers or previous smokers of conventional cigarettes (60% of those ones who occasionally use e-cig and 89% of those ones who are customary users) [21].

It is important to consider that the enrollment in tobacco smoke or in using e-cigs is a component of the so-called experimental phase of childhood. The latter is affected by educational and cultural aspects and is strongly influenced by rules and communication.

This is demonstrated by the situation in the United Kingdom, where the experimentation of electronic smoke within young people widely differs from the numbers seen in USA [22]. This is due to the fact that in United Kingdom rules are clear and electronic smoke has been always communicated not as a kind of “safe smoke”, in the American way, but as a helping tool for heavy smokers [23].

You must differentiate between nicotine addiction and tobacco smoke harm. A cigarette is generating addiction due to nicotine assumption but the harm is mainly due substances generated by combustion. The concept of risk reduction with the digital smoke use does not have the purpose of vanquishing the nicotine addiction but simply to reduce combustion harms in heavy smokers resistant to cessation: such setting needs to be definitively clarified.

The Public Health and the Royal College of Physicians in Great Britain have issued several and very detailed documents showing that nicotine harms are less than those ones of combustion and that nicotine, a substance which is widely used worldwide, should not be demonized, within specific use limits [23-25].

There also are data showing that second-hand vaping would not involve manifested risks to the health of non-smokers as it is for tobacco smoke. Such evidences should not mistakenly be interpreted in favor of a free and indiscriminate use of digital smoke but as an indication supporting the adoption of risk reduction policies in a population of smokers who are unable to quit.

FDA as well is stating that the e-cig, in closed environments, can expose non-smokers to particulates and to nicotine but at levels significantly reduced in comparison to conventional cigarettes. But this is a question regarding adherence to bans and not a hurdle to the electronic smoking use in smokers resistant to cessation. There should be no questions, by anyone, on the support to an utter ban to any kind of smoke (combustion or digital) in public places and to principles which are focused on the non-smokers' maximum protection. You should simply keep separate the heavy smokers helping policies, where the harm contribution of digital smoke is surely less than conventional smoke.

Sarewits D., in 2015, had already caught such an issue in a commentary published in *Nature* journal. He had stressed that asking a series of questions about the toxicity of electronic smoking compared to the certainties about cigarette smoking was a question that was, after all, laughable [26].

Adoption of aggressive fiscal policies against tobacco can be a good deterrent tool for consumption, however they are limited by being enforcement measures which are poorly working in smokers resistant to cessation and not decisive in the management of addiction.

Nicotine has surely a role, even if partial, in cardiovascular diseases due to smoking, but not in pulmonary and tumoral diseases. It is not by chance that nicotine is the drug mostly used worldwide and recommended by all guidelines as a support to cigarette smoking cessation.

The question about which is the most suitable way of its administration is still open. A recent study showed that the rate of smokers remaining free from smoking after one year of switching to e-cig is significantly higher than that of those ones who received NRT [27]. There also are recent and promising evidences regarding the use of digital smoking within cessation paths which would otherwise have failed even adhering to current guidelines [28].

Furthermore, in a recent study, a 6-steps risk assessment method has been developed for comparing the cumulative exposure to toxicants generated by conventional cigarettes versus Tobacco Heated Products. The method was applied to 8 carcinogens released both by conventional and digital smoke, showing the cumulative exposure to be 10- to 25-fold lower using Tobacco Heated Products instead of cigarettes. Such a change indicates a substantially smaller reduction in expected life span, based on available dose-response information in smokers [29].

Applying such method could have a significant impact on health policies and clinical practice in order to assess whether available scientific data are weak or sufficiently robust and then take evidence-based decisions.

Conclusion

In conclusion one of the most pressing issue in the public health management is that 7 million heavy smokers keep on dying each year and in spite of all the attention and good will of different governments such digit is not declining: a significant proportion of fragile world population appears left to its own addiction and is dying mostly by tobacco combustion.

It is also clear that the medical class is showing room for improvement as to different proposals in the fight to tobacco addiction and there is a clear need for specific training so that health care providers gain deeper knowledge of scientific evidences. This would positively impact support interventions to cessation.

Physicians' knowledge and understanding combustion and nicotine addiction consequences would be also useful and it is also essential clarifying the various and available digital smoking products: open and closed systems, supply power, products quality (both of devices and liquids), heated tobacco.

In many cases of failure of the cessation proposal, digital smoking can avoid smokers' persistence of cigarette smoking. The smoker's choice for digital smoking with a non-dual switch is an important change with a view to greater attention to his/her own health.

Such an approach, if supported by objectiveness and transparency within the fiduciary relationship doctor/patient, besides strengthening the therapeutic alliance, could open the horizon to further progress toward cessation which remains the main goal.

Finally, poor preparation of doctors as to digital smoke has got a negative impact on smokers because the latter interfaces just with the commercial world, for any question and clarification on the issue.

Being tobacco smoking an addiction, also a risk reduction procedure cannot be supported uniquely by a technological commercial approach: most of e-cig use is dual not by chance and also such issue should deserve a full awareness by health care providers.

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