

ART AND SCIENCE IN CARDIOVASCULAR DISEASE

As the progress in technology and pharmaceutical domain resulted in effective solutions for transmissible diseases such as cholera or poliomyelitis which caused millions of deaths worldwide in the past, the importance of cardiovascular disease was brought into the spotlight. Many lifesaving interventions such the percutaneous angioplasties in acute myocardial infarction led to an important impact in the survival rates increasing longevity. Furthermore, the prevention of cardiovascular disease has proven to be both effective and cost-efficient. The 2016 “European Guidelines on Cardiovascular Disease Prevention in Clinical Practice” clearly states that stopping smoking is the most cost-effective strategy for cardiovascular disease prevention (1).

Smoking is pandemic, with a worldwide prevalence of 1 billion smokers in 2011 (2). Although the rate of smoking is declining in Europe, it remains very common and is increasing in women, adolescents and the socially disadvantaged (3). A recent study performed in 187 countries to estimate the prevalence of daily smoking by age and sex and the number of cigarettes per smoker per day from 1980 to 2012 showed that the prevalence of daily tobacco smoking decreased from 41.2% in 1980 to 31.1% in 2012 for men and from 10.6% to 6.2% for women (4). The prevalence declined at a faster rate from 1996 to 2006 compared with the subsequent period, but despite the decline in prevalence, the number of daily smokers increased from 721 million in 1980 to 967 million in 2012 in the context

of population growth (4).

From the economical point of view, data are also alarming. In a studied performed in 152 countries, representing 97% of world’s smokers, researchers found that diseases caused by smoking accounted for 5.7% of global health expenditures in 2012, while the total economic cost of smoking was equivalent to 1.8% of global gross domestic product (5). Furthermore, smoking caused 2.1 million deaths and 13.6 million years lost to disability among adults aged 30-69 (5). In total, smoking-attributable diseases accounted for 12% of all deaths among the world’s working-age population, with this proportion being highest in Europe and America where the tobacco epidemic is most advanced (5).

The statistics outlining the negative effect of tobacco consumption are plenty. A lifetime smoker has a 50% probability of dying due to smoking, and on average will lose 10 years of life (6). Smoking is responsible for 50% of all avoidable deaths in smokers, half of these due to cardiovascular disease (1), as smoking accounts for 36% of the risk attributable to a first myocardial infarction (7).

Is there any reasonable explanation for this pandemic of an apparently evidence-based proven lethal behavior? Maybe there is.

Looking back in history we see that the perception of smoking suffered important changes along the years reflecting the changing mentalities of the society, influenced by both discoveries in the medical field, political and industrial interests.

After its introduction to Europe by Christopher Columbus in 1492, tobacco conquered the world. It was believed to have miraculous powers as suggested by Robert Burton in his "The Anatomy of Melancholy" (1621): "Tobacco, divine, rare, superexcellent tobacco, which goes far beyond all panaceas, potable gold and philosopher's stone, a sovereign remedy to all diseases" (8). Books like "Panacea or the Universal Medicine, being Discovery of the Wonderful virtues of tobacco taken in Pipe with its Operation and use both in Physick and Chyrurgery" (1624) or "Tabacologia" describe various positive effects of tobacco. It was the "holy herb" of the mid-sixteenth century and the penicillin of the seventeenth century (8). The first to oppose the use of tobacco was King James I of England who declared it to be immoral and unhealthy in his "Counterblaste to Tobacco" from 1604 while in 1956 Auerbach documented the cardiopulmonary disorders and malignancies that resulted from the use of tobacco (8).

As the perception of smoking changed in society along the history so did the connotation attached to the artistic representation of smoking in art. Following the artistic representation of smoking we can indirectly track the evolution of society's perception toward a major cardiovascular risk factor.

In his chapter "Symbol and Images: Smoking in Art since the Seventeenth Century" from the "Smoke. A Global History of Smoking", Benno Tempel provides a brilliant illustration of the multiple changes in meaning associated with the artistic representation of smoking (9). In the seventeenth century the representation of smoking in art was associated with lower class society, drunkenness and social deviance

(10) as depicted by Dutch painters such as Gerard ter Borch and the Flemish artist David Teniers the Younger. In the eighteenth century, it depicted eroticism and pleasure as in the artworks by Antonia Guardi, Joseph Vernet and Jean Etienne Liotard depicting harem women smoking to emphasize their erotic passivity and boredom (9). In the nineteenth century, smoking pointed out social differences as it was exclusively the privilege of men (9). During the Romantic period smoking became tightly related to intellectualism, literature and creation as illustrated by the Edouard Manet's "Stephane Mallarme". The Impressionists painted smoking scenes as a part of the everyday life, with no additional meanings. Smoking regained the symbolic power in the postimpressionist era when artists like Edvard Munch used smoking to symbolize psychological problems as in his "Self-Portrait". In the 20th century smoking in art exhibited a wide variety of connotations ranging from social and economic status to the decrease of smoking attractiveness which was captured by artists like Mel Ramos and Tom Wesselmann who exploited the clichés of sex and cigarettes (9).

The representation of smoking in art had a great influence on the smoking phenomena in women. While initially smoking was unacceptable for women, the illustration of female smoking denoting prostitutes as painted by Henri Toulouse-Lautrec and Vincent van Gogh, after 1900 it gradually became a symbol of charm, the representation of women smoking in art making it a more social acceptable habit (9).

Wilson and colleagues (11) exemplified the important symbolic power of the representation of smoking in art along the years in their work "Might artworks from online-

museum collections contribute to medical education?” In January 2014, they identified artworks with tobacco smoking content by analyzing the Google Cultural Institute’s “Art Project” which comprised 309 art collections from 49 countries, namely 55,004 artworks by 8654 named artists (11). There were 356 artworks with smoking content spread over five centuries: 1600s (5.9%), 1700s (6.7%), 1800s (43.3%), 1900s (37.1%), and 2000s (7.0%). Paintings (at 66.0%), predominated over other forms such as photographs (18.8%) and drawings (10.7%) (11). They illustrated the different meanings of tobacco smoking by selecting 10 representative artworks. Smoking in art was attached to a wide variety of meanings ranging from immoral behaviors, drunkenness, sexual licentiousness, reflected the epidemic of female smoking, its association with alcohol, sensuality, sexuality, non-conformity, rebelliousness, mental disorders or glamour (11).

Another very interesting study performed by Wilson and colleagues (12) analyzed the artworks produced between 1950-1999 and exhibited in The National Portrait Gallery in London finding 53 portrayed smoking by identifiable individuals (5%) out of the 1063 artworks of the collection. They found that the rate of portrayal was highest in the 1950s (10%) and 1960s (11%) and declined sharply thereafter, smoking virtually disappearing from portraiture in the 1990s (12). As expected, men were more often represented than women with predominant occupations of writers, painters, artists, and politicians while there were no portrayals of smoking among scientists, engineers, mathematicians, astronomers, inventors, and doctors (12). Cigarettes were the dominant form of tobacco product (64% of portrayals), fol-

lowed by pipes (26%), and cigars (9%) (12).

Apart from the awareness induced by the evidence based medical effects of tobacco, the industry of media and entertainment had a great importance in the history of smoking, as tobacco use in movies and television is a subtle and powerful form of promotion (13).

The article “How the tobacco industry built its relationship with Hollywood” (13) brings into the spotlight secret internal tobacco industry documents. The declarations of important figures of the tobacco industry and correspondence with the movie industry help us understand the continuous siege we are intentionally exposed to increase the tobacco consumption.

As early as 1792, the tobacco industry realized that product placement in movies is “better than any commercial that has been run on television or any magazine, because the audience is totally unaware of any sponsor involvement” (13, 14). The tremendous power of smoking on screen is brilliantly exposed in a Philip Morris marketing plan from 1989: “We believe that most of the strong, positive images for cigarettes and smoking are created by cinema and television. We have seen the heroes smoking in “Wall Street”, “Crocodile Dundee”, and “Roger Rabbit”. Mickey Rourke, Mel Gibson and Goldie Hawn are forever seen, both on and off the screen, with a lighted cigarette. It is reasonable to assume that films and personalities have more influence on consumers than a static poster of the letters from a B&H pack hung on a washing line under a dark and stormy sky. If branded cigarette advertising is to take full advantage of these images, it should do more than simply achieve package recognition-it has to feed off and ex-

plot the image source” (13, 15). Moreover, documents from 1980 reveal that the tobacco industry required specific criteria for tobacco product placement in a film like “positive exposure”, that the stars are people “with whom we would want the product associated”, and if “we could work the product into the script” (13,16).

The article (13) explains in detail and exemplifies with concrete situations how tobacco industry understood the value of placing and encouraging tobacco use in films. The strategies included placing products and tobacco signage in positive situations on screen, while keeping brands away from negative situations, writing favorable articles related to smoking, encouraging professional photographers to take pictures of actors smoking specific brands, paying and even offering free cigarettes to producers and famous celebrities to use a certain brand in real life and on the screen. It also specifies movies where smoking-related products were used - “Superman II”, “The Jazz Singer”, “Backroads”, “Cannonball Run”, “Pennies from Heaven”, “Blowout”, “Falcon’s Crest”, “Dallas”, “Knot’s Landing”, “Grease”, “Rocky II”, “Airplane”, “Little Shop of Horrors”, “Crocodile Dundee”, “Die Hard”, “Who Framed Roger Rabbit”, and “Field of Dreams (13, 17).

The intense activity of the tobacco industry reflected in the prevalence of smoking scenes in the movies. A random sample of top-grossing films from 1950 through 2002 indicated that the amount of smoking decreased from an average of 10.7 events per hour in 1950 to a low of 4.9 events per hour in 1980-1982 and then increased rapidly to 10.9 events per hour in 2002 (18).

Researchers pointed out that movies rarely depict the negative health outcomes related to smoking and contribute to in-

creased perceptions of smoking prevalence and association with benefit such as glamour, independence, rebelliousness, relaxation, stress relief, romance, socializing, celebrating, pensive thinking, and confiding in others (18).

In an analysis of how smokers were depicted in 100 popular films from 1940 to 1989 McIntosh and colleagues found that smokers were depicted as more romantically, more sexually active and more intelligent than nonsmokers showing that Hollywood’s depiction of smoking tends to ignore the negative consequences while depicting smokers a bit more positively than nonsmokers (19).

Under these circumstances of movies depicting an increased prevalence and benefits of smoking, the impact of movie industry upon youth became extensively studied.

In 2002 Sargent and colleagues provided empirical evidence that viewing movie depictions of tobacco use is associated with higher receptivity to smoking prior to trying the behavior (20).

Charlesworth and colleagues concluded in 2005 that smoking in the movies leads adolescents to hold more protobacco attitudes and beliefs, which is consistent with the observed dose-response relationship between exposure to smoking in the movies and initiation of adolescent smoking (18). The images of smoking in movies both normalize the behavior and downplay the negative health effects associated with smoking, encouraging more tolerant, neutral, or nonchalant attitudes about smoking, establishing the perception that smoking is normal, prevalent, and even desirable in society, especially among adults (18). Although teens generally acknowledge the long-term health risks associated with

smoking, they immediately experience the perceived short-term benefits of smoking, such as looking tough or sexy or fitting in with their peers, which reinforces and motivates adolescent smoking (18).

It is argued that according to a population-attributable risk calculation movies account for almost 390 000 new adolescent regular smokers in the United States annually (21) which is nearly equal to the 400 000 (22) active smokers that die every year.

In 2016, the first meta-analysis of longitudinal studies of the association between exposure to smoking imagery in movies among young people and the risk of be-

coming a smoker show that the most exposed young people are more than 40% more likely to become smokers than the least exposed (23).

There is a tight connection between art and science in the society's perception of smoking. The artistic representation of smoking is associated with a wide variety of connotations along the centuries ranging from poverty, decadence, elegance, intellectuality, romance, to destruction and death. The movie on the other hand, mainly due to the tobacco industry interests, tends to associate smoking with favorable stereotypes while omitting it's the negative effects with deleterious impact on the youth.

Cătălina Arsenescu Georgescu, Carmen Elena Pleșoianu
"Grigore T. Popa"
University of Medicine and Pharmacy Iasi
"Prof. Dr. George I. M. Georgescu"
Institute of Cardiovascular Diseases Iasi

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