

# Gender disparity in addiction: an Italian epidemiological sketch

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## Abstract

**Introduction.** Gender disparity in different fields of addiction such as tobacco smoking, alcohol use, drugs of abuse consumption and doping practice has been investigated in Italian population.

**Methods.** We used the surveys and studies carried out for the above reported issues in recent years as revised by the "National Observatory on Tobacco smoke, Drugs of abuse, Alcohol and Doping" at Istituto Superiore di Sanità.

**Results.** Concerning tobacco habit, the trend of smoking women has been in constant decrease from a 19.7% in 2010 to a 16.9% in 2015, differently from men who passed from a 23.9% in 2010 to a 25.1% in 2015 with a slight increase in the habit. With respect to alcohol, in the last five years an increasing trend of consumption has been observed in 18-24 years old women, with 53% drinking women in the age range of 18-19 years overcoming the 50.4% general female population. Generally speaking, a one to four ratio can be underlined in the percentage of elderly women with a risky alcohol consumption with respect to men, while in case of adolescents and young adults gender disparity is not so pronounced. Drug abuse still remains a prevalent male phenomenon. However, an increase in cannabis users for both genders has been reported with a prevalence of "once in the life" around 20%, although more pronounced in females (+2.66 percentage points for females vs +0.93 percentage points in male). With respect to cocaine, the second most consumed drug, a reduction in consumption has been recently observed mainly in female population (-42.1%) than in men one (-27.5%). Finally, there are significant gender differences in doping attitude and/or in doping profiling. First of all, males seem to be more exposed to doping than females. The prohibited substances most frequently used by females athletes are "Diuretics and Masking Agents" (38.3% positive female vs 14% males) compared to males athletes who use mostly anabolic agents (20.1% males vs 11.2% females).

**Conclusions.** Results presented for the different fields of addiction show that a gender disparity is apparent and that females are less prone in having an addiction behaviour, although the young generation seems to increase that tendency.

## Key words

- gender disparity
- tobacco smoking
- drugs
- alcohol abuse
- doping
- addiction
- population based study
- Italy

## INTRODUCTION

Scientific research shows significant gender disparities with respect to the issue of addiction: starting from different abuse behaviours, different risk factors and specific vulnerabilities, up to the neurobiological and hormonal mechanisms, impulse control and response to withdrawal treatment [1, 2].

Conversely, gender differences that were observed in the previous decades of twentieth century, are diminishing as regards the consumption of substances. An example is cigarette smoking, whose trend in recent years is almost equal between women and men after

witnessing an increase in female smokers as among the other symbol of the sexual revolution of the last century [3, 4].

The data highlighted by the relevant literature shows greater female propensity to develop physical and psychological dependence on alcohol and nicotine also experiencing an increased craving than men, although men continue to be the largest consumers. The total consumption per capita in 2010 was on average 21.2 liters for men and 8.9 liters for women [5].

Other differences between men and women in the abuse of tobacco and alcohol are related to the causes



most involved in addiction and psychiatric co-morbidity. The female abuse is more often related to the presence of diseases such as anxiety, depression, stress, and addictions to substances for men are more influenced by the social context.

As for drug use and addiction behaviours statistical data reported by the WHO show that in Europe the gap between men and women in illegal psychotropic substances is gradually reducing. One example is the use of cannabis, for which can no longer notice the overwhelming prevalence in men [3, 4].

With respect to doping, it is important to underline that nowadays a significant number of women joined official and olympic competitions. Accordingly, doping to enhance female sport performances took importance from the two last decades of the past century. Gender differences regarding type of prohibited substances administered are apparent.

In this study we present data on Italian population collected and/ or revised by the "National Observatory on Tobacco smoke, Drugs of abuse, Alcohol and Doping" at Istituto Superiore di Sanità with respect to principal types of addiction.

With respect to smoking habit, harmful use of alcohol, consumption of psychotropic illegal drugs data from National Surveys carried out in the last five-six years will be shown and discussed.

Concerning doping practice, all the data from the "Reporting System Doping Antidoping" edited by the National Observatory on controls performed from 2003 on Italian nonprofessional athletes will be presented.

## TOBACCO SMOKING

Tobacco is the only legal drug that kills many of its users. WHO has estimated that tobacco use (smoking and smokeless one) is currently responsible for the death of about six million people across the world each year with many of these deaths occurring prematurely.

The trend in Italy shows that there are 10.9 million smokers, 6.3 million former smokers and 35.1 million non smokers [3].

The smoking habit, which in the past was almost exclusively prerogative of the male population, because of the significant socio-cultural changes, is increasingly affecting women.

Although in the last fifty years, the phenomenon is steadily decreasing in the general population, it is interesting to observe the prevalence trend among women. In the decades of the twentieth century, the percentage of smoking women increased significantly until the '90s when it reached a peak of 25.9%; since then there has been a progressive decrease of the phenomenon, with a prevalence of female smokers in 2015 around a 16.9%.

In 2010, 70.4% women and 60.4% male respondents have never smoked. These percentages decreased during the 2011, where 54.3% males and 69.8% women did not smoke. Percentages did not change significantly in the following years and finally during 2015 where 74.8% women and 58.7% men declared they have never smoked.

With respect to smokers, in the last five years, a decreasing trend has been observed: 15-64 years old smok-

ing women decreased from 19.7% in 2010 to 16.9% in 2015, differently from men who passed from a 23.9 % in 2010 to a 25.1% in 2015 indicating a slight increase in the habit [3].

The highest percentage of smoker women fell in two ages groups: 25-44 years (23.7%) and 45-64 years (25%), while in case of men (32.9%) the group was that of 25- 44 years. This trend did not vary significantly along the years from 2010 to 2014.

Prevalence data for 2010 show that smokers are mostly men from Southern peninsula (26.4%) and women from central Italy (21.3%). Trend changed in 2011, when smoking men lived mainly in central Italy (31%) and women in the north (20.6%). In 2012 smoking men and women came mainly from southern Italy (respectively 26% and 20.9%) while in 2013 smokers were mainly men living in central Italy (28.5%) and women living in the South (16.9%). These percentages did not vary significantly in 2014 and 2015 (*Figure 1*).

The analysis of the five-year period shows that the critical period for both males and females to start smoking is adolescence and young adulthood between 15 and 20 years old. On average men started smoking before women, 17 vs 18 years, women begin around 18 years (the table to five years of age). Conversely, both men and women, on average quit smoking habit at the age of forty years.

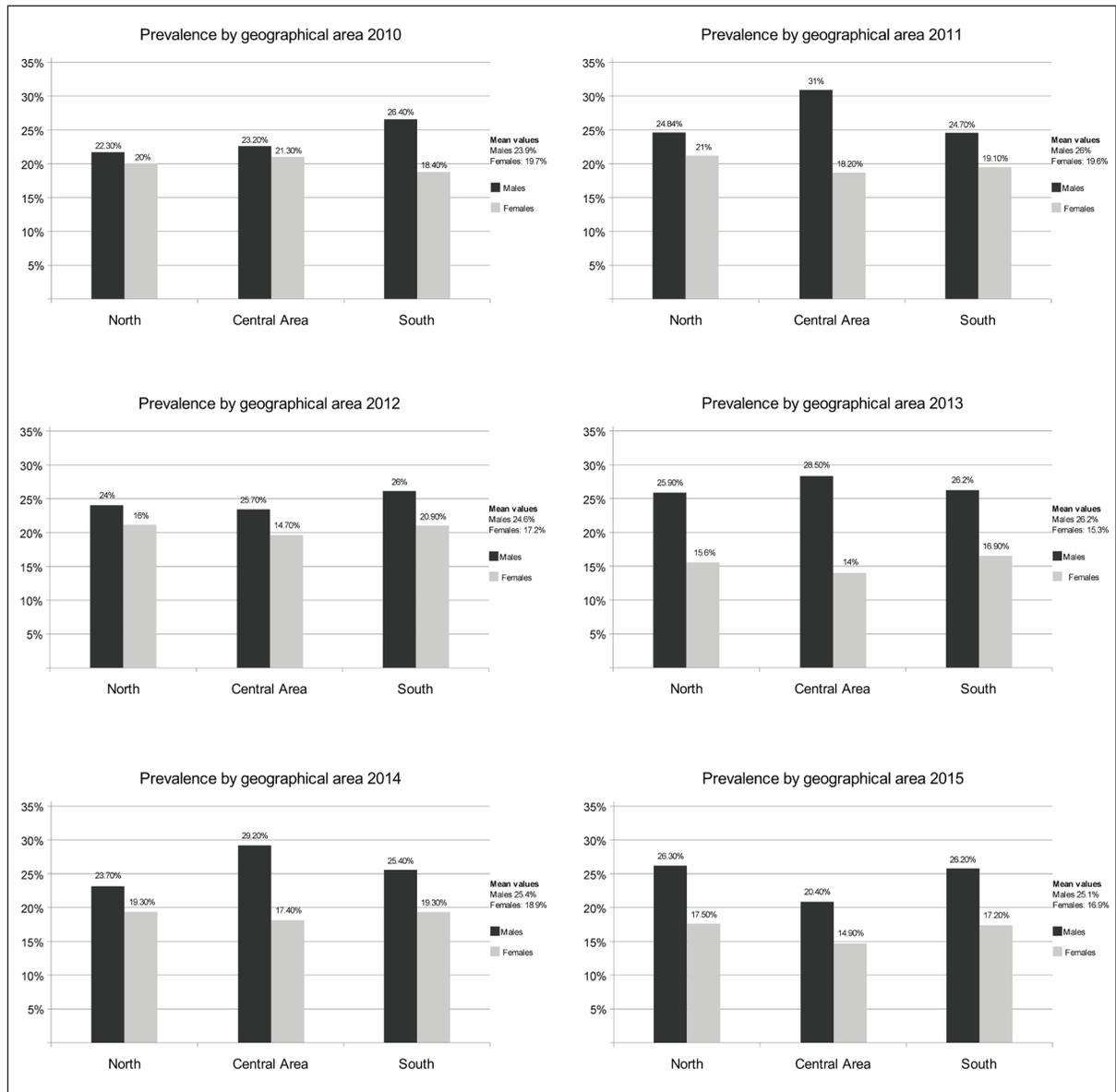
In the last five years period, "the influence of peers" has been the first reason to start smoking habit, both for males and females followed by the pleasure of the habit with other reasons (relatives, partners, curiosity) being negligible. With no gender differences, the majority of men (40.5%) and women (39.8%) quit smoking, due to the perception of harm caused by this form of addiction.

Since 2000, the "National Observatory on Tobacco smoke, Drugs of abuse, Alcohol and Doping" hosted an Antismoking helpline to help smokers in quitting habit. This is national free and anonymous service that provides consulting on issues related to tobacco smoking. Since 2013, the helpline number started to appear in the cigarette package raising the number of phone call more than one or two orders of magnitude and rendering the data interesting and representative of smokers population. The last five years data indicates that, apart from 2012, usually males calling the help line are almost the double than calling females (Supplemental Figure 1, available online as Supplementary materials).

In particular, a peak in phone calls was observed in 2014, but this peak was mainly due to calls from males and principally in the age-range 46-55 years. The same trend could be seen in 2015, meaning that the increased request of help is a male behaviour more than a female behaviour. Still women are less prone in asking professional help to quit smoking habit (Supplemental Figure 2, available online as Supplementary materials).

Over the last five years geographical area did not influence the gender differences in the phone calls and passing from northern Italy to central peninsula to the South, the gap between males and females resulted even more evident.

With respect to the sources of information on the



**Figure 1**  
Prevalence of smoking habit by geographical area, 2010-2015. Females vs males.

helpline (e.g. where the phone number was found), both men and women found the information mainly in newspapers and magazines, but starting from 2014, the main source became the cigarette package for both sexes [3].

Not only smokers called the helpline, but also relatives, non smokers or health professionals. Although the vast majority of calls was made by smokers (usually more males than females), in the category “relatives”, the phone calls came mainly from women with percentages equal or higher than 65%. Among non-smokers, males were always more than women, while for the category of health and social services works, gender differences varied completely from year to year without any significant trend (Supplemental Figure 3, available online as Supplementary materials).

A brief comment can be added regarding the electronic cigarette, whose use started in Italy around 2013.

The few data at disposal show that among e-cigarette users around 63% are men and just around a 36% are women [3]. It can be concluded that as on case of helpline and the desire to start smoking, the use of e-cigarette to try quitting smoking habit is a prevalent male trend.

## ALCOHOL

Female addiction to alcohol is a widespread phenomenon which is increasing in recent years. It is estimated that the number of women with alcohol dependence is about a quarter of that of men.

Women develop alcohol dependence around 30-50 years of age, coinciding respectively with the full procreative activity and menopause. Differently, men seem to face the risk at a greater extent between 25 and 45 years of age, in full of working time frame.

Female harmful use of alcohol has been related to housewives who feel alone with their problems or women who, in addition to job career, have also to manage house and family and eventual pregnancies.

Unlike men, women addicted to alcohol drink secretly because of discriminatory society reaction, especially present in the Mediterranean areas and in Italy, that consider alcohol dependence as a stigma, more pronounced in case of women. In agreement with the Italian National Statistics Institute (ISTAT) reports for the years 2010-2014, on average 65% Italians have drunk at least once per year with 60% women and 80% men [6].

The abuse of alcohol is a very complex phenomenon which distinguish male and female behaviour. Official statistics for the last five years show that about 20% of alcoholics are women without considering the "underground" world that is not easily detectable, being confined in the private or hidden by high social disapproval.

In 2011, the alcohol abusers taken in charge at public health services were 58 122, confirming the decreasing trend in place since 2009 [7]. The females were 12 351 while males were 45 771, almost four times more than women. Women had a higher mean age than males (46.9 compared to 44.9), which supports the hypothesis of slight higher female seniority in alcohol dependence.

In 2012 the abusers attending services increased to 69 770, the maximum value in the last five years. The females were 15 339 vs 54 431 units with males to females ratio of 3.5. During the 2013-2014 data remained virtually stable.

Although figures point out a prevalent male abuse in case of alcohol, the progressive reduction in the number of teetotal women registered during the last five years and the spread of drinking among adolescents are significant indicators of an increase in exposure risk related to alcohol among women [6].

In the same five years period, the percentage of admissions of alcohol abuser women has tripled with respect to those of males that remains fairly stable. In this concern, it should be noted, that the female body has greater sensitivity and physiological vulnerability also due to female exclusive conditions such as pregnancy and lactation. The alcohol-related mortality in the age range between 30 and 34 years, it is 3 times higher in females than in males.

The peak of problematic alcohol drinking for women lies in Italy between 35 and 44 years range but drinking among adolescent females is increasing in recent years despite the fact that new female generation can theoretically receive more information regarding alcohol related health risks than elderly women who hardly have received a formal education on how to consume alcohol and how to avoid abuse.

In 2010, the population most at risk of non moderate alcohol consumption was that over 65 years of age with 10.7% females and 42.9% males. Thus, a great difference can be underlined in the percentage of elderly men with a risky alcohol consumption with respect to women. Conversely, in case of young adolescents (11-15 years range), who theoretically should not drink any alcohol, similar figures were reported for those who consumed at least one beverage per year: 12% females

vs 15.2% males. Then, in the range 18-19 years, consumption values became close to the average population: 59.8% females and 76% males [7].

In 2011, risky behaviours in the elderly still involved 10.9% women vs 43.0% men, in 11-17 years range 8.4% females vs 14.1% males. These data changed significantly in young adults of 18-24 years since risky behavior became a prevalent male tendency: 22.8% men vs 8.4% women [8].

In 2012 percentages in risky behaviour among the elderly, the young adults and the adolescent were almost identical to those of the previous year. In 2013 there was again a substantial stability in the gender percentages in risky drinking habit [6].

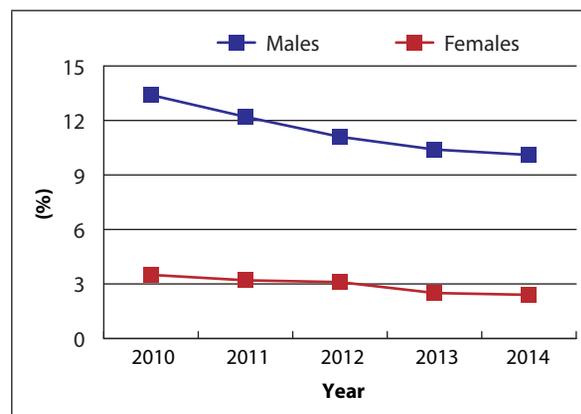
In 2014, the surprising result was that of women in the age range of 11-17 year, who doubled the percentage of harmful use of alcohol (from 8.4% to 17.3%).

In brief, an analysis of these data shows that teenage drinking is increasing as a legal alternative to drugs as a dis inhibiting substance, capable of strengthening the ease in relations, especially in case of young female, who seem not to care about the pleasure of taste. Furthermore, young women often do not consume just alcohol, but they associated it with: 1) other substances; 2) other addictions; 3) eating disorders; 4) identity disorders [9].

The age range where women drink more is between 35 and 45 years and the preferred alcoholic beverages are, in order, wine, beer, spirits aperitifs, bitters. Furthermore approximately 10% those women are the "binge drinkers" in solitude or among a group of peers (Figure 2).

Afterwards, in the mature age, it is likely that women are driven to drink more at this critical stage of life, where women are worried about loss of youth, reduction of fertility and the procreative capacity, a failure to carry out youth projects, the budgets of affective and family experiences unsatisfactorily lived.

The behaviour toward alcohol of women over 65 years is of particular concern, as this age group did not receive an education in his youth with respect to alcohol consumption. At this age, women drink the private context or at home, often continuing to keep hidden their habit for fear of social disapproval. This makes it even



**Figure 2**  
Prevalence of binge drinking, 2010-2014. Females vs males.

more difficult to detect problems caused by alcohol at this point [9].

## DRUGS OF ABUSE

From a careful interpretation on data concerning drugs of abuse consumption in the Italian population in the last years, two relevant factors emerge: the first is that in most cases female substances abuse concerns mainly an occasional use which, however, continues over time; the second is that women show a greater risk awareness regarding psychotropic drug use than men. In this concern, it has to be pointed out that even if cannabis consumption is more prevalent in men, an increase in young females consumption is evident. Similarly to that, the female use of stimulants and sedatives is rising. Cocaine abuse is a male habit, but the substantially low female abuse remains more or less constant along the years. The same for heroin: the exiguous number of female heroin abusers remain stable in the access to addiction health care services (Figure 3).

In recent years (starting from 2010), among the illicit drugs of abuse, the one most consumed by the Italian population has been cannabis with a prevalence of "once in the life" around 20% and around 4% in the last twelve months. When comparing the consumption of cannabis, differentiated by gender, an increase in cannabis users for both genders can be reported, although more pronounced in females (+2.66 percentage points for females vs +0.93 percentage points in males) [10].

Nevertheless, taking into account only the student population, in 2013 cannabis consumption increased by one percentage point compared to 2012 and this trend was caused by increased consumption in female population. Furthermore, cannabis consumption resulted directly related to age for both female students than for their male counterparts: the consumption prevalence increased from 6.8% in 15 years old females to 22.0% in 19 years old peers. Focusing on the 2014 consumption, there has been an increase in cannabis consumption both for females and males, with a greater

upward trend in women (2.8 percentage points: 16.8% in 2013 vs 19.6% in 2014) compared their male peers (1 percentage point; 26.3% in 2013 vs 27.3% in 2014). In the general population between 15 and 64 years, 32% had tried cannabis at least once in life with a prevalence reaching almost 40% when considering the age range 15-34 years. As for the frequency of intake in both genders occasional consumption of cannabis prevails, limited to 1-2 times over the last 12 months (44.1% females and 34.7% males) [11].

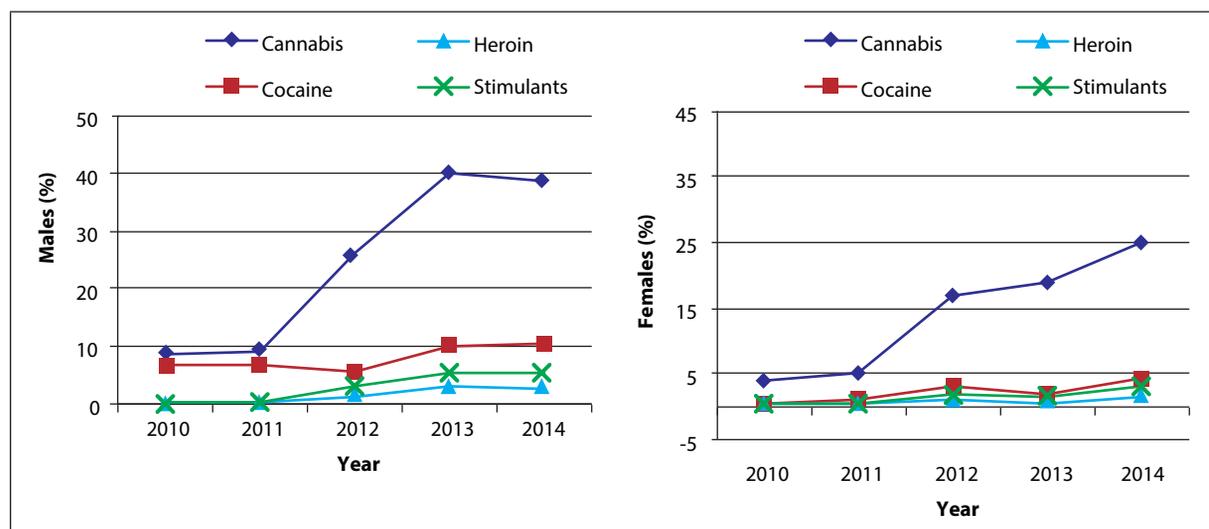
The trend in the number of cocaine and / or crack users (one or more times in the last 12 months) showed a decreasing trend starting from 2010, which continued up to 2014, even if with a very slight decrease trend.

After cannabis, cocaine is the most widely used illicit substance in Italy. It is estimated that nearly 3 million Italians (7.6%) have it used at least once in life and just over 430 thousand Italians (1.1%) have used it in the last year, half of those are aged 15-34 years.

The observed reduction in 2012 of cocaine or crack consumption seemed to affect more female population (-42.1%) than men one (-27.5%). In general population of 18-64 years, females account for 0.7% yearly consumers vs 1.4% males, a percentage that increased by two times among men aged 15-34 years (2.8% vs 0.8% females). As for the consumption of cannabis, in 2013 the students consumer of cocaine in the past year increased with the increasing age: from 0.8% at 15 year olds to 1.2% of 16 year olds reaching 2.5% at 19 years of age. In 2014, 2.2% Italian students report having used cocaine at least once in their lifetime and 1.6% reported use of the substance in the past year. The reduction in cocaine use among students respondents in 2014, compared to 2013, appears more pronounced in males (0.8 points) compared to the females (-0.2 points) [11].

Constant and continuous decline in heroin use has been observed in the last decades and also in the recent years remaining always below 1% consumption values.

According to reports on students population in 2014, heroin was consumed at least once in their lifetime



**Figure 3** Prevalence of drugs abuse consumption "once or more times in lifetime", 2010-2014. Females vs males.

from 0.35% Italian students, while 0.21% reported having consumed it during the year preceding the study, with a substantial decrease in comparison to previous years.

Among the students who consumed heroin in the last 12 months, 86.2% females and 57.9% males have experienced it once or twice in the last year. A more frequent consumption, from 10 to 19 times, appeared to be related to males than to their female peers (7.9% vs 3.5%), as well as regular consumption (20 times or more) resulted in 23.7% males and only 6.9% females [12].

The consumption of amphetamines-type substances (amphetamine, methamphetamine ecstasy, MDMA, etc.) has affected the last five years less than 2% of the respondent students, with an increased trend of consumption starting from 2011. In the recent years, the abuse once in a lifetime of these substances involved more than a half million Italians aged 15-64 (4.1%), with a prevalence of adult males. In the biennium 2013-2014, a slight increase (less than 1%) was observed for female consumers with a coincident drop in male users. In fact, the consumption of stimulants, one or more times in the last 12 months, has affected in the last four years less than 2% of the respondents students; of those, 74.6% females and 73.7% males reported having used these substances maximum one or two times. A more assiduous consumption of stimulants (20 or more times annually) was reported by 5.9% male and 5.3% female student population. Compared to 2013, the consumption of stimulants increased in 2014 for all the age groups studied, with 1.4% general use in the last year.

Also in case of tranquilizers and sedatives, an increasing trend among female students (+0.62 percentage points) and male (+0.18 percentage points) has been reported in 2014 with respect to the previous year. The use of tranquilizers and/or sedatives without medical prescription, among 15-19 years old students, is more prevalent in the female gender. Consumption at least once in life was indicated by 4.8% female students compared to 2.9% of the male students; use in the previous year from 2.8% females and 1.3% males, while prevalence in the last month amounted to 1.5% and 0.7%, respectively [12].

## DOPING PRACTICE

The practice of doping, meaning the use of non-allowed pharmacological substances and methods to enhance physical and psychological performance during a sport competition is assuming the aspect of a new addiction, since in recent years not only elite athletes, but also recreational non professional ones are prone to assume exogenous aids to improve personal competition results. Scientific research has also recently demonstrated the addictive effects of some doping agents such as some anabolic steroids, together with typical drugs of abuse (e.g. stimulants, narcotics) already present in the list of prohibited doping substances.

Doping practice in Italy is banned according to the World Antidoping Agency (WADA) Code, but also according to the national Law no. 376/2000 "Regulation of health standards in sports activities and the

fight against doping". The law 376/2000 institutes at the Italian Ministry of Health the "Committee for the Monitoring and Control of Doping and the Protection of Health in Sporting Activities" (Commissione per la vigilanza e il controllo sul doping e per la tutela della salute nelle attività sportive; CVD) with the purpose of undertaking several activities including anti-doping controls in non professional Italian athletes from all sport disciplines and to check the health of the athletes during and outside competitions. Since 2003, every year the Italian National Institute of Health (Istituto Superiore di Sanità; ISS), on behalf of the CVD, set up and elaborates the "Reporting System Doping Antidoping", a report related to the anti-doping activities of the CVD carried out during one year [13].

Overall, in the years between 2003 and 2014, 16 624 Italian non professional athletes belonging to different sport disciplines were subjected to doping control.

The first result related to CVD data analysis, shows that there are significant gender disparities in doping offence among no-elite athletes. In particular, females show a percentage of positive samples two times lower than those from males and this observation is not related to age differences between sexes (Supplemental Table 1, available online as Supplementary materials): as matter of fact, no statistically significant differences were observed when the athletes were tested for age (Supplemental Table 2, available online as Supplementary materials).

In the sport disciplines most monitored by CVD (more than 200 athletes per disciplines analysed from 2003 to 2014) females athletes showed the highest percentage of positive analytical results in rugby (12.5%) and in weightlifting (7%). However, the number of female rugby players monitored by CVD is exiguous (only 32 athletes), so that probably the highest percentage of positive analytical results is that of weightlifting females. These data seem to show that the sport disciplines in which the body image or the strength prevails do not reveal significant gender differences. As matter of fact, the highest percentage of positive analytical results between males result exactly in weightlifting athletes (8.3%). Nevertheless, females practicing cycling present a lower percentage of positive analytical results with respect to males (2.6% vs 6.7%). In this concern, cyclist males shows the second higher percentage of prohibited substances positive results following the weightlifting males athletes. This evidence seems to indicate that the motivations to doping are probably different between sexes and not only related to the type of sport (Table 1). Several psychological correlates (i.e., perfectionism, sport motivation, self-confidence and life satisfaction), social correlates (i.e., social network and contact with people who use sports drugs), type of sport (resistance sport vs non-resistance sport) and athlete participation in competitive sport (i.e., agonistics) or in non-competitive sport (i.e., amateurs) should play a role on the level of attitude towards doping. Hence, men and women may react differently to various deterrents and incentives [14]. Moreover, several studies have found differences between sports with regard to the percentage of positive tests results and the types



of substance used [15, 16], as well as in the estimated prevalence of doping [17, 18]. This may be caused by different physical demands within different sports [19]: as matter of fact the risk of doping appears to be highest in speed and power sports and lowest in motor skills demanding sports and females are at lower risk than males.

The kind of sport practiced probably influences not only the recourse to doping, but also the kind of prohibited substances used and this fact can be affected by gender differences.

The prohibited substances most frequently used by females athletes are “Diuretics and Masking Agents” (38.3% positive female vs 14% males) compared to males athletes which use mostly anabolic agents (20.1% males vs 11.2% females) (Table 1). It is reasonable to think that the motivations to doping in females is different than in males: probably diuretics and stimulants are used to obtain the control of the body weight or for a recreational use, while males athletes desire to enhance athletic performance mostly in the endurance and power sports, increasing the muscle mass. However, anabolic steroids are used also to respond to non-sporting motivations, e.g. to increase muscle mass to enhance physical appearance [20]. For example, several review studies (albeit predominantly North American) suggest between 3% and 12% of adolescent males [21, 22] using anabolic agents for physical appearance at some point. Use by females is reported to be lower, around 1-2% admitting using steroids [21]. In a research project funded by WADA in 2008, it has been observed that student athletes considered some substances to be masculine (steroids) and others to be feminine (weight loss supplements), stating that women refuse steroids not to appear too muscularly defined or to be accused of homosexuality [23] [24]. Whereas the results of the CVD data analysis point out

several gender differences in the use of doping agent, in some cases there are also similarities: e.g. in the case of cannabis. This is the prohibited substance most used by males athletes (22.5%), and the second by females (19.6%) (Table 1). Traditionally, cannabis use in sport is considered a misadventure for the athletes found “not negative” to doping controls: indeed, this substance can only indirectly improve performance – it can have a euphoric effect, reducing anxiety and increasing the sociability of a player who may be particularly nervous before an important match, but it is used rarely for doping purpose by athletes. Most probably, athletes use cannabis for recreational purposes – it’s the most used drug of abuse as above reported-, and this substance is detectable in urine several days after its consumption. Since many athletes claimed passive exposure to escape the accuse of doping and lose prize of eventual competition, from May 2013 WADA increased the threshold level for the reporting of cannabis use from 15 ng/ml urine to 150 ng/ml urine (with a decision limit to 175 ng/ml urine) [25].

In conclusion, regarding to non-professional Italian athletes, this study proved that there are significant gender differences in doping attitude and/or in doping profiling. First of all, males seem to be more exposed to doping than females and this evidence can be related both to the practiced sport and to the greater propensity to the risk in gaining competitions.

#### Contributions of authorship

Adele Minutillo contributed mainly to the conception and design of the work, analysis and interpretation of the data, writing of the article and the approval of the final version. Roberta Pacifici contributed to the analysis and interpretation of the data, the writing of the article and the approval of the final version. Giulia Scaravelli contributed to the analysis and interpretation

**Table 1**

Groups of doping prohibited substances and their diffusion between athletes (males and females): absolute value and percentages

Prohibited substances	Total (n.)	Total (%)	Males (n.)	Males (%)	Females (n.)	Females (%)
S1. Anabolic agents	132	18.8	120	20.1	12	11.2
S2. Peptide hormones, growth factors, related substances and mimetics	70	9.9	69	11.5	1	0.9
S3. Beta-2 agonists	26	3.7	23	3.8	3	2.8
S4. Hormone and metabolic modulators	1	0.1	1	0.2	0	0.0
S5. Diuretics and masking agents	125	17.7	84	14.0	41	38.3
S6. Stimulants	123	17.4	103	17.2	20	18.7
S7. Narcotics	3	0.4	2	0.3	1	0.9
S8. Cannabinoids	156	22.1	135	22.5	21	19.6
S9. Glucocorticosteroids	56	7.9	48	8.0	8	7.5
P2. Beta-blockers	11	1.6	11	1.8	0	0.0
Local anesthetics	1	0.1	1	0.2	0	0.0
Total	704	100	597	100	107	100

of the data, the writing of the article and the approval of the final version. Roberto De Luca contributed to the data collection, the interpretation of the data and the approval of the final version of the article. Ilaria Palmi contributed to the analysis and interpretation of the data, the writing of the article and the approval of the final version. Luisa Mastrobattista contributed to the analysis of the data, the critical review with important intellectual contributions and to the approval of the final version of the article. Paolo Berretta contributed to the conception and design of the work, the interpretation of the data, the writing of the article and the approval of the final version.

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