# Female-male differences in health-related behaviours in the Italian university student population: Perspectives from the "Sportello Salute Giovani" Project

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**Summary.** This paper discusses the female-male differences in health status, health-related behaviours and self-perceived health of a large sample population of Italian university students enrolled in the "Sportello Salute Giovani" Project (SSGP). The *Italian Health Behaviours in School-aged Children* (HBSC) questionnaire was modified by a committee of university professors and experts of the Italian National Institute of Health in order to adapt it to the university age range. The final questionnaire consisted in 93 multiple choice questions and was distributed in 10 Italian universities. 8516 university students were included in the survey (67% were females). Significant differences were found between females and males in almost all the health-related behaviours explored in the study. A great difference was found in the nutritional habits, where females generally seem to pay more attention to healthy behaviours. However, females show to suffer more from stress, to have a lower level of acceptance of their own bodies and to have a lower level of self-perceived health. Males have a higher tendency for risky behaviour and need to become more aware of the importance of routine andrological examinations. It would be appropriate to develop and implement health promotion and disease prevention strategies that are specifically targeted in order to address the sex-specific differences that have been observed.

**Key words:** university students, Sportello Salute Giovani, health promotion.

*Differenze uomo-donna nei comportamenti correlati con la salute nella popolazione universitaria italiana: prospettive dal Progetto "Sportello Salute Giovani"*

**Riassunto.** Questo articolo analizza le principali differenze tra donne e uomini nelle condizioni di salute, nei comportamenti correlati con la salute e nella salute percepita in un ampio campione di studenti universitari italiani, che hanno partecipato al progetto "Sportello Salute Giovani" (SSGP). Come strumento di indagine, è stato utilizzato il questionario dello studio Italiano "Health Behaviours in School-aged Children" (HBSC), modificato da un panel di docenti universitari ed esperti dell'Istituto Superiore di Sanità italiano al fine di adeguarlo alla fascia d'età universitaria. Il questionario finale, che consisteva di 93 domande a risposta multipla, è stato distribuito in 7 università italiane. Sono stati inclusi nello studio 8516 studenti universitari (il 67% donne). Donne e uomini hanno mostrato significative differenze in quasi tutti i comportamenti correlati alla salute esplorati nello studio. Una sostanziale differenza è stata trovata nelle abitudini alimentari, dove le donne sembrano prestare – generalmente – maggiore attenzione ai comportamenti salutari. Tuttavia, le donne mostrano di soffrire di più lo stress, di avere una minore capacità di accettare il proprio corpo e di avere una bassa percezione del proprio livello di salute. Gli uomini hanno maggiore tendenza a sperimentare comportamenti rischiosi per la salute e minore consapevolezza dell'importanza di effettuare controlli andrologici. Sarebbe opportuno creare strategie di promozione della salute e di prevenzione delle malattie specificamente mirate per la popolazione femminile e maschile al fine di affrontare in modo specifico le differenze osservate nel progetto.

**Parole chiave:** studenti universitari, Sportello Salute Giovani, promozione della salute.

## Introduction

"Gender-specific medicine" is not a new speciality, but an important interdisciplinary dimension of medicine, which studies the influence of biological sex on human physiology, pathophysiology and pathology. In this way, the attention of the scientific and clinical world is drawn towards a better understanding of the best way to approach in the two sexes the symptoms, diagnostic pathways, test result interpretation, therapeutic options, and prevention plans for each disease/condition[1].

In this paper we discuss the main female-male specific differences resulting from the data collected in the "Sportello Salute Giovani" project (SSGP). The SSGP is a project that was made possible through the collaboration between the Faculty of Medicine and Surgery of the Catholic University of the Sacred Heart (Università Cattolica del Sacro Cuore) in Rome (Italy) and the Italian National Institute of Health (Istituto Superiore di Sanità). The project involved the constitution of several counselling centres within the campus of 2 large Italian universities and the formulation of a questionnaire that was distributed in 10 universities of 7 different regions of the country[2]. The project was ideated with three objectives: 1) to provide a help desk where students could obtain an initial medical and psychological consultation on health related issues; 2) to re-

direct the students with medical and/or psychological conditions to the appropriate health care facilities; 3) to collect information from a large sample population of university students on their health condition and health-related behaviours. This project was created with the intention of obtaining an epidemiological basis for the creation and analysis of future prevention strategies specific for the university student population[3].

The university student population is a population that from a public health point of view presents several elements of interest. In fact, the young age of the studied population allows an early interception of several important health-related habits and behaviours. Secondly, when students go to university they are often leaving their family and home for the first time. This period of their life coincides with a period of great liberty and stress, in which the students take decisions and responsibilities on their own, sometimes becoming more exposed to some health risk factors. Thirdly, the context just described presents the opportunity to explore how the social and relational dynamics (which are deeply linked to biological sex) can influence health outcomes.

## Methods

In order to obtain information regarding health conditions, health-related behaviours and self-perceived health of the study population, a questionnaire was adapted from the internationally validated *Italian Health Behaviours in School-aged Children* (HBSC) questionnaire[4]. The HBSC questionnaire was modified by a committee of university professors and experts of the Italian National Institute of Health in order to adapt it to the university student population. The final questionnaire consisted in 93 multiple choice questions and was distributed in the class rooms during lessons of different faculties of the 7 universities involved. The questionnaires were filled-in on a voluntary basis, completely anonymous, self-administered and no information was collected as regards to faculty, university, or region of the student. Information was, however, collected as regards to sex and age. The distribution of the questionnaires took place between February 2012 and March 2013 and gathered information from a pool of 12 000 students from 18 to 30 years of age. The universities who were involved in the project can be seen in Table 1.

The questionnaire was structured into 6 sections: 1. nutritional habits; 2. physical activity and health promotion; 3. risky behaviours; 4. sexual behaviours and preconception health; 5. attitudes towards learning and technology use; 6. self-perceived health and satisfaction of life. The complete questionnaire is available online (www.iss.it/anna).

For each section the most relevant differences between sexes were shown. Differences related to sex and age class were evaluated through the chi squared test. The data was collected and inserted in an Epi-Info database and then analysed through SPSS (version 22). A p value < 0.05 was considered statistically significant.

## Results

The final study sample was composed of 8516 university students, of which 5,702 (67.0%) were females. The mean age of responders was 22.2 (Standard Deviation 2.0). A complete description of the study population is reported in another paper[4].

### Nutritional habits

49.1% of the females eats the recommended daily consumption of fruit, compared to only 33.8% of males (p < 0.05). In terms of vegetable consumption, 27.7% of females eats at least 2 portions of vegetables per day, while this is true for only 12.0% (p < 0.05) of the male population. 25.8% of females declare not to eat fast-foods and 11.0% eats fast-foods once a week, while only 17.9% of males does not eat fast foods and 16.7% declares to eat fast-foods once a week (p < 0.05). A high frequency of fast-food consumption (≥2 days/week) is reported more often in males compared to females (8.5% vs 3.3%, p < 0.05) (Table 2).

In terms of meal frequency and regularity, 84.9%

**Table 1.** Universities involved in the "Sportello Salute Giovani" Project.

| University | Region |
| --- | --- |
| Università Cattolica del Sacro Cuore | Lazio, Lombardia, Molise |
| Università degli Studi di Milano | Lombardia |
| Sapienza Università di Roma | Lazio |
| Università degli Studi di Tor Vergata | Lazio |
| Università degli Studi di Roma Tre | Lazio |
| LUMSA | Lazio |
| Università degli Studi di Padova | Veneto |
| Università degli Studi di Cagliari | Sardegna |
| Università degli Studi di Messina | Sicilia |
| Università Politecnica delle Marche | Marche |

of females declared to eat at least 3 meals per day, compared to only 79.1% of males (p < 0.05). 67.7% of females have breakfast every morning, compared to only 55.9% of males (p < 0.05).

64.6% of females do not consume energizing drinks compared to 54.5% of males. However, if we consider only the heavy consumers of energizing drinks (≥ 1 drinks/day) this percentage corresponds to 6.7% of females compared to only 4.5% of males (p < 0.05). On the other hand, the percentage of high-caffeine consumers (≥ 4 coffees/day) is significantly higher in males compared to females (14.7% vs 9.6%, p < 0.05).

*Physical activity*

The Body Mass Index is significantly different between sexes (p < 0.05). 19.4% of females were found to be underweight compared to only 2.3% of males, while only 6.5% of females was found to be overweight compared to 16.4% of males. The difference between males and females was smaller in the "normal range" and "obese" categories: 79.2% males were in the normal range compared to 73.1% of females, while 2.1% of males were obese compared to 1.0% of females (Figure 1).

The perception of body weight also differs from females to males: a higher percentage of females believe that their body weight is good compared to males (51.1% vs 39.2%). On the contrary, a higher percentage of males perceive themselves to be fit compared to females (26.0% vs 11.5%).

Again, males consider themselves a little underweight (12.8% vs 6.2%) while, regarding a little over-weight, the observed data are opposite (18.6% of males vs 27.8% of females – p < 0.05).

Only 6.0% of males declare to be on a diet compared to 13.5% females. In fact, 12.9% of males desire to increase their body weight compared to only 5.0% of females (p < 0.05).

30.5% of females resulted to be sedentary compared to 16.2% of males. Only 15.2% of females do physical activity 4 or more times per week compared to 26.8% of males (p < 0.05). In fact, a statistically significant difference was found between males and females also in the membership to a gym (33.4% of males vs 29.1% of females – p < 0.05), and an even larger difference was found in the percentage of students who did a physical activity at an agonistic level (21.4% of males vs 8.2% of females – p < 0.05).
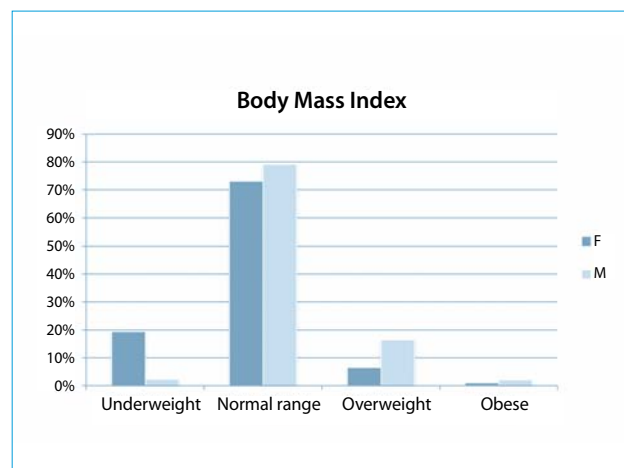


**Figure 1.** BMI according to sex.

**Table 2.** Nutritional habits according to sex.

| How often do you | eat fruit* | | | eat vegetables* | | | eat sweets* | | | drink energy drinks* | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Total % | Sex % (8,506) | | Total % | Sex % (8,504) | | Total % | Sex % (8,503) | | Total % | Sex % (8,475) | |
| | (8,507) | F | M | (8,505) | F | M | (8,504) | F | M | (8,476) | F | M |
| Never | 5.2 | 4.5 | 6.7 | 3.9 | 2.9 | 5.8 | 3.8 | 3.0 | 5.3 | 61.3 | 64.6 | 54.5 |
| Once a week | 12.1 | 10.7 | 14.9 | 9.5 | 7.4 | 13.9 | 20.4 | 19.4 | 22.5 | 21.0 | 18.9 | 25.1 |
| 2-4 days per week | 28.0 | 25.7 | 32.7 | 28.5 | 23.9 | 37.8 | 33.8 | 32.6 | 36.0 | 9.9 | 8.1 | 13.7 |
| 5-6 days per week | 10.7 | 10.0 | 11.3 | 16.0 | 15.9 | 16.1 | 12.1 | 12.0 | 12.4 | 1.8 | 1.7 | 2.2 |
| Once per day | 21.2 | 22.7 | 18.3 | 19.6 | 22.2 | 14.4 | 18.7 | 20.7 | 14.7 | 3.9 | 4.3 | 3.0 |
| More than once per day | 22.8 | 26.4 | 15.5 | 22.5 | 27.7 | 12.0 | 11.2 | 12.3 | 9.1 | 2.1 | 2.4 | 1.5 |

* p<0.05.

Regarding the intake of nutritional supplements, we found that about half of female students (51.1%) routinely use only vitamins in respect to 22.7% of males. Only 5.3% of females used a mixture of proteins/amino acids in comparison to 21.2% of males (p < 0.05).

A very small proportion of males (1.5%) and females (0.5%) admitted the use of doping substances (p < 0.05).

### Risky behaviours

Smoking is generally more common in males than in females (19.4% vs 18.2% – p < 0.01). Males smoke more frequently (27.6% vs 21.9% smokes daily – p < 0.01) and more cigarettes (18.7% vs 9.6% smokes 16/25 cigarettes – p < 0.01) than females.

The student's sex, however, did not result to be associated with the age of starting.

Males are also more likely than females to assume drugs (e.g. to smoke marijuana) at least once in the lifetime. In addition, more females never smoked marijuana in the last 12 months compared to males (68.4% vs 56.7%). More males smoked marijuana more than 40 times in the last year compared to females (9.4% vs 4.3).

Alcohol is another factor that underlines a slight but statistically significant difference in risky behaviours: males start to drink alcohol earlier than females, even if this difference decreases in time (14 years old: 18.1% vs 9.7% – p < 0.01; 15 years old: 21.1% vs 15.6% – p < 0.01). Drinking preferences (beer, wine/other alcoholic drinks or spirits) and consumption habits ac-

cording to sex are shown in Figure 2. Male students are also more likely than females to drive a vehicle after exceeding the allowed alcohol consumption (10.7% vs 1.7% – p < 0.01) or after drugs consumption (6.3% vs 0.8%– p < 0.01).

### Sexual behaviours

Sexual behaviours and associated risks are probably the widest differences found in the interview: even though around three quarters of both males and females declare to regularly have sexual intercourse (77.5% vs 72.2% – p < 0.01), males are more likely to have random sexual intercourses than females (27.0% vs 8.2% – p < 0.01). At the same time, males seem to be also more likely to start earlier than their female counterparts: 26.2% of female students vs 20.2% of males affirmed to have had their first sexual intercourse after 17 years of age. 18.5% of females and 13.3% of males answered to have not yet had their first sexual intercourse (p < 0.01). Sexually transmitted infections are low in both sexes, even if they could be under-diagnosed (Figure 3).

30.9% of females have never been to a gynaecological examination, while 63.7% of males has never been to an urological examination (p < 0.01). The percentage of males that declared to have had varicocele shows a linear trend in the growing age groups: 7.6% of the males between 18-21 years, 11.6% of those 22-24 years old and 13.5% of those 25-30 years old (p < 0.01).

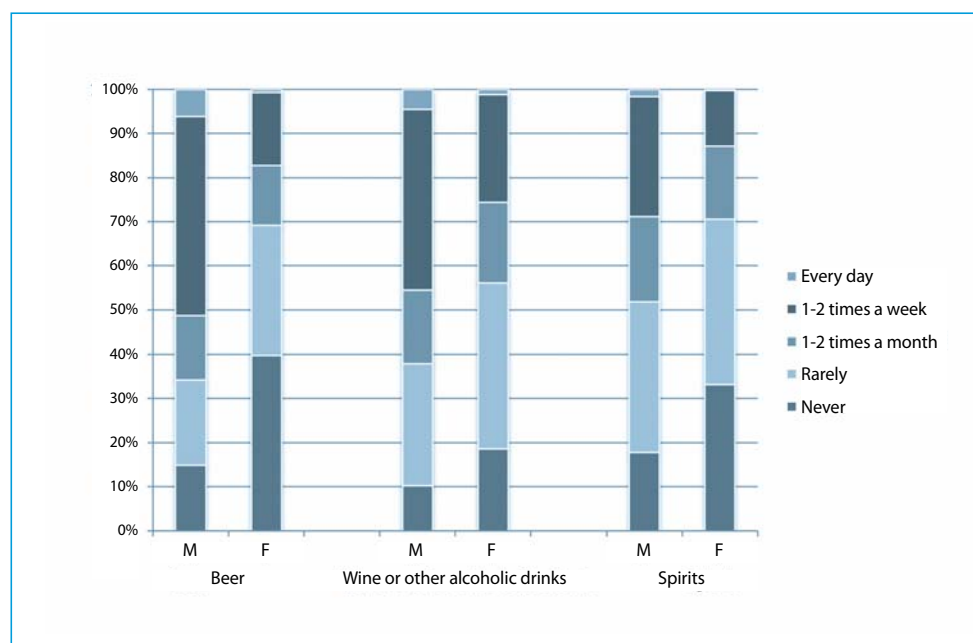The percentage of male students that declared having been vaccinated against mumps (21.3%) is signifi-



**Figure 2.** Drinking preferences and habits according to sex.

cantly higher (p < 0.01) among 18-21 years old (24.3%) compared to 22-24 year olds (19.8%) and 25-30 year olds (16.3%). At the same time, 50.8% and 56.2% of females reported having been vaccinated against rubella and measles, respectively, with significantly higher percentages in younger female students (p < 0.01).

### Study habits and technology

As regards to study habits, a higher percentage of females claimed feeling "under pressure" due to study reasons compared to males (27.7% vs 18.6% – p < 0.05). A high percentage of females compared to males also declared to prefer studying alone (24.9% vs 19.4% – p

< 0.05) and with the use of only books/notes (28.7% vs 20.5%, p < 0.05). In fact, a higher percentage of male students, compared to female students, declared to appreciate the use of digital technologies/internet for study purposes (20.9% vs 14.9% – p < 0.05) (Figure 4).

32.8% of males declared to spend more than 22-28 hours/week using a computer compared to only 18.3% of females (p < 0.05). As for the use of Internet, 31.0% of males spend more than 22-28 hours/week using internet compared to only 20.0% of females (p < 0.05). However, no relevant differences were found between males and females in the time spent using social networks, talking on phone or in the use of devices such as as smartphone/iPhone®/iPad®.
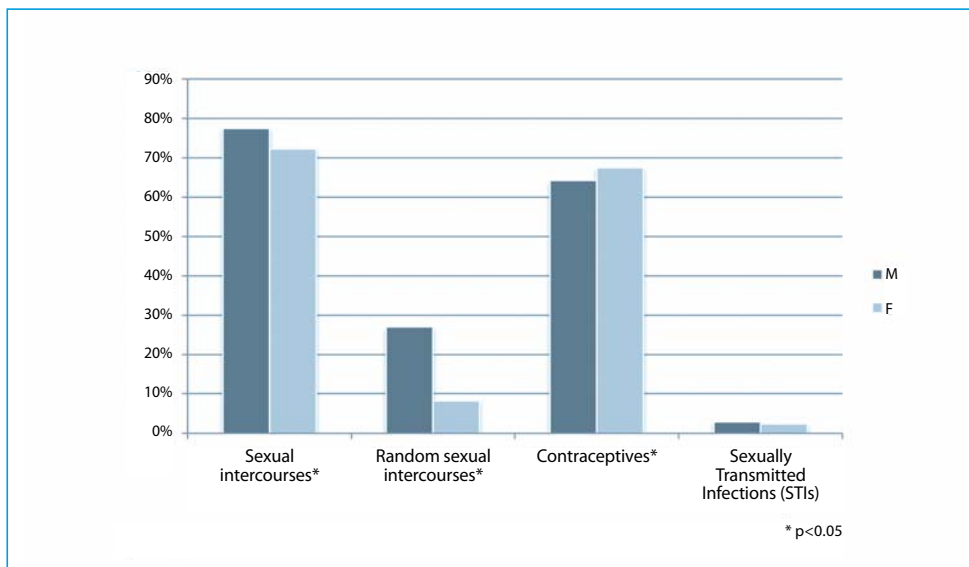


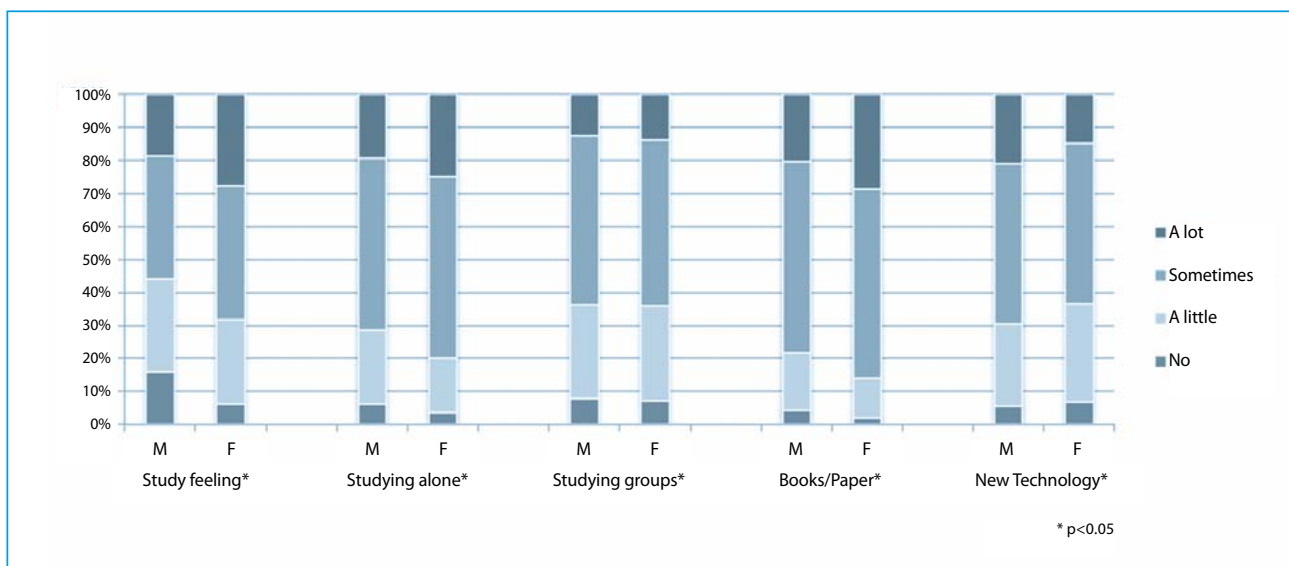**Figure 3.** Main features about sexual behaviour and reproductive health.



**Figure 4.** Study habits according to sex.

*Self-perceived health and satisfaction of life*

In this section, females showed to have a significantly lower self-perceived health and satisfaction of life. In fact, 80.8% of males declared to consider to have a good/very good health compared to females of 75.2%. The mean score in satisfaction of life was 7.55 out of 10 (SD 1.52) for males compared to 7.42 (SD 1.38) for females. Significant differences were also observed between female and males in the frequency of psychological and somatic symptoms (Figure 5).

### Discussion

Significant differences were found between females and males in almost all the health-related behaviours as well as in health. A great difference was found in the nutritional habits, where females generally seem to pay more attention to healthy behaviours. Females showed to eat more fruit and vegetables, to eat less fast foods and to have more regular habits in terms of meal frequency and breakfast consumption. Females also showed to have a lower percentage of high-caffeine consumption[5].

More females are underweight than males, while more males are overweight than females. It is possible that this could be greatly due to cultural factors that promote thinness in females and a greater muscle mass in males[6]. In fact, females tend to judge themselves as weighing too much more often than males, while males tend to see themselves as weighing too little more often than females. It is interesting that the perception of body weight in female and male groups is not in line with the general findings in these two groups in terms of body mass index. Less males are on

a diet than females and a higher percentage of males expressed the desire to increase their body weight. These findings all seem to show the probable influence of culture on this sphere.

Males also tend to have less healthy habits in regards to cigarette smoke and marijuana consumption. In fact, there is a slight, yet statistically significant higher percentage of males that smokes cigarettes, that are heavy smokers (16-25 cigarettes per day) and that have smoked marijuana more than 40 times in the last year. Males are also more likely to drive a vehicle after exceeding alcohol consumption or after consuming drugs[7].

As regards to sexual behaviour, females have their first sexual intercourse at an older age than males and showed a lower percentage of random sexual intercourses. It is interesting that a significant amount of females (18.5% ) and of males (13.3%) answered to have not yet had their first sexual intercourse (p < 0.01). The percentage of students that had contracted a sexually transmitted disease was low in both females and males. Females also showed to be more attentive as regards to the frequency of their medical examinations. This last difference could be related to biological, behavioural and cultural aspects[8].

Females showed to have a lower self-perceived health and satisfaction of life. In fact, females also declared to suffer more frequently from symptoms that can be related to organic and/or psychological factors. A higher percentage of females also stated feeling under pressure because of academic responsibilities[9].

A higher percentage of males prefer studying in company. Males also showed to have a higher appreciation of the use of technology for academic purposes. The difference between males and females was no longer significant when the use of technology was related
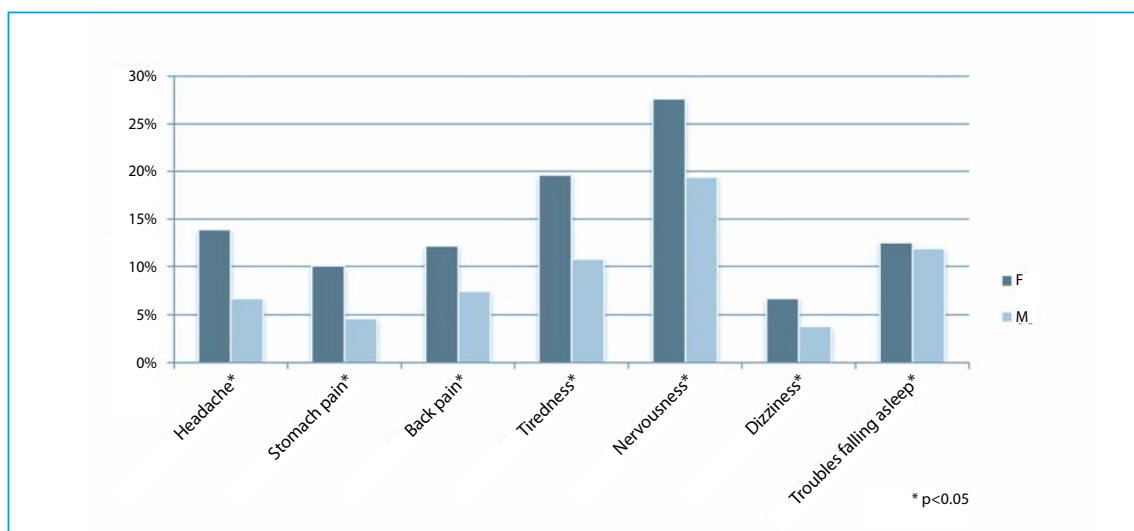


**Figure 5.** Self-perceived health – sex differences.

to social networks or to more "user-friendly" devices[10].

Based on the findings, female and male university students would benefit from health promotion and disease prevention campaigns that differ not only in the messages conveyed but also in the method of communication used[11].

Limits and strengths of the "Sportello Salute Giovani" project were reported elsewhere[2]. In this context, it could be useful to underline that the large sample size and the diverse geographical area involved, represent a good picture of the Italian university student population making it possible to highlight important differences between sexes.

### Conclusions

The knowledge of the stratification by female-male across all the explored dimensions demonstrates many differences in the female and male university student population. Females tend to have healthier eating habits and less risky health behaviours. However, females also show to suffer more from stress, to have a lower level of acceptance of their own bodies and to have a lower level of self-perceived health. Males have a higher tendency for risky health behaviour and need to become more aware of the importance of routine andrological examinations. It would be appropriate to develop and implement educational, health promotion and disease prevention strategies that are specifically targeted for the female and male population in order to address the sex-specific differences that have been observed.

### Key messages

- Female and male students have shown to be very different in their health status, health-related behaviours and self-perceived health.

- Female university students seem to make healthier nutritional choices than male students.

- Female university students show to suffer more from stress, to have a lower level of acceptance of their own bodies and to have a lower level of self-perceived health than male students.

- Male students have a higher tendency for risky behaviour than female students and need to become more aware of the importance of routine andrological examinations.

- Female and male university students would benefit from educational, health promotion and disease prevention campaigns that differ not only in the messages conveyed but also in the method of communication used.

### References

1. Baggio G. From gender medicine to gender-specific medicine. Ital J Gender-Specific Med 2015; 1: 3-5.
2. de Waure C, Poscia A, Virdis A, Di Pietro ML, Ricciardi W. Study population, questionnaire, data management and sample description. Ann Ist Super Sanità 2015; 51(2): 96-8. doi: 10.4415/ANN_15_02_04
3. Di Pietro ML, Bellantone R, Pacifici R, Ricciardi W. The "Sportello Salute Giovani" project: Habits , lifestyles, risk behaviours of Italian University students and future perspectives. Preface. Ann Ist Super Sanità. 2015; 51(2): 93-5. doi: 10.4415/ANN_15_02_03.
4. Cavallo F, Giacchi M, Vieno A, et al. Studio HBSC in Italia (Health Behavior in School-aged children): rapporto sui dati 2010. Roma: Istituto Superiore di Sanità; 2013 [http://www.iss.it/publ/index.php?lang=1&id=2685&tipo=5]
5. Teleman AA, de Waure C, Soffiani V, Poscia A, Di Pietro ML. Nutritional habits in Italian university students. Ann Ist Super Sanità 2015; 51(2): 99-105. doi: 10.4415/ANN_15_02_05.
6. Teleman AA, de Waure C, Soffiani V, Poscia A, Di Pietro ML. Physical activity and health promotion in Italian university students. Ann Ist Super Sanità 2015; 51(2): 106-10. doi: 10.4415/ANN_15_02_06.
7. Poscia A, Parente P, Frisicale EM, Teleman AA, de Waure C, Di Pietro ML, Di Pietro ML. Risky behaviours among university students in Italy. Ann Ist Super Sanità 2015; 51(2): 111-5. doi: 10.4415/ANN_15_02_07.
8. Poscia A, La Milia DI, Lohmeyer F, Teleman AA, de Waure C, Ricciardi W. Sexual behaviours and preconception health in Italian university students. Ann Ist Super Sanità 2015; 51(2): 116-20. doi: 10.4415/ANN_15_02_08.
9. de Waure C, Soffiani V, Virdis A, Poscia A, Di Pietro ML. Italian university students' self-perceived health and satisfaction of life. Ann Ist Super Sanità 2015; 51(2): 121-5. doi: 10.4415/ANN_15_02_09.
10. Poscia A, Frisicale EM, Parente P, de Waure C, La Milia DI, Di Pietro ML. Study habits and technology use in Italian university students. Ann Ist Super Sanità 2015; 51(2): 126-30. doi: 10.4415/ANN_15_02_10.
11. Miller VM. Why are sex and gender important to basic physiology and translational and individualized medicine? Am J Physiol Heart Circ Physiol 2014; 306(6): H781-H788. doi:10.1152/ajpheart.00994.2013.

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