# Italian medical students quality of life: years 2005-2015

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**Abstract**

**Background.** *Quality of Life (QoL) is a concept used to indicate the general wellness of persons or societies. University students report a low quality of life and a worse perception of their health status, because of a situation of greater discomfort in which they live during the course of the study, especially in faculties with an important emotional burden, such as medical schools. The aim of the study was to evaluate the perceived health status of first year medical students.*

**Methods.** *We conducted a cross sectional study in the time span 2005-2015, administering the questionnaire Short Form 36 (SF-36) to first-year students of the School of Medicine of the University of Siena, Italy. In addition to demographic information such as gender and the age we investigated the region of residence, marital status, employment status, and smoking habits; height and weight were required to calculate the body mass index (BMI) to evaluate a possible physical discomfort connected with the perception of health status. The data from the questionnaires were organized and processed by software Stata® SE, version 12.1.*

**Results.** *1,104 questionnaires were collected. Medical students reported lower SF-36 scores, compared to the Italian population of the same age. Female gender and smoking habits influence negatively the score of several scales. Body Mass Index is positively correlated with the Physical Activity, while Age is negatively correlated with Social Activities.*

**Conclusions.** *The perceived quality of life of the Italian medical students is lower when compared to the general population. This confirms that the condition of student implies additional problems, as other studies reports. It would be better to improve it, developing students' resilience. It would be interesting to extend this research to students of other years, from other faculties and other locations, to gain a broader view about the QoL of the Italian students.*

## Introduction

Quality of life (QoL) is a concept used to indicate the general wellness of persons or societies, including wealth and employment elements, environment, physical and mental health, education, recreation and belonging to a social group (1). For some authors it is a concept that could be compared to the paradigm of "happiness" (2). If we accept that happiness is the relationship between the individual's expectations and their realization,

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QoL may be a reflection of happiness. QoL is a multidimensional construct involving internal and external factors (3, 4), and is susceptible to variability by the interaction of both. The result of this interaction leads to the perception of QoL of every person. QoL is particularly important among the university students, because it is in the university that the process of formation - professionally and personally chosen by every student - takes place.

Some studies showed that university students live in a situation of great discomfort due to a low quality of life and a low perception of their health status (5-7). This is due to the economic and social precarious situation in which the students live and the uncertainty about the future that increasingly accompanies their choice (7), because of the growing unemployment and job insecurity worldwide.

The problem seems to be significantly more experienced by females (5, 7-11), who often show depressive syndromes (12) during their studies. The perceived health status seems to get worse during the course of study also for males (8). The situation is more serious in faculties where there is an important emotional burden, such as in medical schools (9, 10): a previous study showed that almost 50% of medical students suffered from burn-out and almost 10% had suicide intentions (11).

Other studies in literature investigated the QoL of students in Italy: a multicentric study showed that Italian students have to deal with a lot of problems mainly related to the lack of scholarships, of support for housing and to the difficulty to achieve financial independence (12); another study compared physical activity with health related quality of life (13); but there is not a specific research which focuses on medical university students, especially for so long a period of time. The aim of our study has been therefore to describe the health related QoL of the university freshmen and to evaluate also a correlation with their lifestyles.

## Methods

We conducted a cross sectional study in the period 2005-2015, administering the questionnaire Short Form 36 (SF-36) to first-year students of the School of Medicine at the University of Siena, Italy.

The questionnaire was administered at the end of a lecture regarding the QoL; instructions on how to compile the questionnaire were provided. Anonymity was ensured and the decision to participate in the study was discretionary; a consent form was obtained from each participant.

The SF-36 is a generic questionnaire on QoL, made up of 36 items and 8 scales (PA - Physical Activity; PR - Physical Role; PP - Physical Pain; GH - General Health, VT - Vitality; SA - Social Activities; ER - Emotional Role; MH - Mental Health).

The questionnaire has been designed to provide, through the scores, a profile which could drive us to understand the differences in the mental and physical health status of a population (12).

The score for each scale ranges from 0 to 100: a high score implies a better QoL. The scales PA, PR, PP, SA and ER define the state of health as the absence of limitations or disabilities. In these scales the maximum possible score of 100 is reached when there are no limitations or disabilities. Scales GH, VT, MH are bipolar and span a much broader range of positive and negative health conditions. In these scales an intermediate score is reached when subjects do not report any limitation or disability, and the score of 100 is reached when the subjects report positive health conditions and consider their health very favorably (14).

In addition to demographic information such as gender and the age we asked the region of residence, marital status, employment status, and smoking habits; height and weight were required to calculate the body mass index (BMI) to evaluate a

possible physical discomfort connected to the perception of health status.

The residence was made dichotomic, asking whether "in Tuscany" or "in other regions".

Marital status was divided in "single" and "married" or "widowed \ divorced"; the employment status were categorized in "workers" and "non-workers". The questionnaires were processed and collected in a single database containing the results of the demographic variables and the results of the questionnaire SF-36. The final score of each scale of the questionnaire SF-36 has been obtained using *Profisalute*, a spreadsheet made by the Laboratory of Planning and Organization of Health Services of the University of Siena (15).

Percentages, means and medians so far obtained were used for the creation of graphs and tables. Shapiro Wilk Test demonstrated the non-normal distribution of our data. So we decided to use the Mann - Whitney test to assess the relationship of socio-demographic variables with outcomes (eight domains); we used also Spearman correlation. The data from the questionnaires were organized and processed by software Stata® SE, version 12.1 (StataCorp, College Station, Texas, USA). The level of significance was set at $p < 0.05$.

## Results

We collected 1,104 questionnaires. The participation rate was not constant during the years: on average, the proportion of participants was almost 70% but in 2009 it fell to 23.3%, in 2010 to 21.2%, and in 2012 to 28.7%. Our sample was composed by 622 (56.3%) females and 482 (43.7%) males.

The mean age was 19.6 years (standard deviation 2.53), the median age was 19.0; the youngest student was 18 years old, the oldest 55. Tuscan students represented 43.8% of our sample; 99% resulted neither married

nor working; 1.73% had a degree yet. The 19.2% of the students were smokers and mean BMI was 21.42 (standard deviation 2.66). Females have a mean BMI of 20.5 (sd 2.1); males 22.62 (sd 2.6).

Table 1 shows the mean scores of the eight scales of SF-36 of each class of students from 2005 to 2015, and the mean scores of males, of females and the reference scores of the Italian population of the same age (Table 1).

Mann Whitney Test showed that gender determined statistically significant differences in several scales: Physical Activity ($p<0.001$), Physical Pain ($p<0.001$), General Health ($p=0.02$), Vitality ($p=0.002$), Social Activities ($p<0.001$), Emotional Role ($p=0.003$), Mental Health ($p<0.001$). As showed in Tab.1, females have worse performances than males. Smoking influences negatively the Physical Activity ($p=0.008$) and the General Health ($p=0.01$).

Spearman correlation showed a significant positive correlation between BMI and Physical Activity ($p=0.02$; rho= 0.06). Age was negatively correlated with Social Activities ($p<0.001$; rho= -0.101).

Residence did not have any influence on the SF-36 scores.

## Discussion and conclusions

The percentage of men and women in our sample is in line with the data collected during the *Seventh Eurostudent Research* (56% females and 44% males). *Eurostudent* is a European project with the aim of analyzing the socio-economic background and the living conditions of students, but it also investigates temporary international mobility. The higher proportion of females among college students is common also in other European countries, such as France, Great Britain and Spain (16).

Our students were younger than the other European students: in Italy, in fact, students

Table 1 – SF-36 mean scores and standard deviations (sd) per years and gender

| Class and number of participants | Physical Activity | Physical Role | Physical Pain | General Health | Vitality | Social Activities | Emotional Role | Mental Health |
|---|---|---|---|---|---|---|---|---|
| Class 2015 (154 students) | 96.13 (sd 6.5) | 87.17 (sd 23.26) | 78.85 (sd 17.8) | 72.58 (sd 15.1) | 57.92 (sd 17.04) | 73.05 (sd 21.04) | 63.85 (sd 38) | 70 (sd 15.9) |
| Class 2014 (128 students) | 96.75 (sd 6.7) | 87.1 (sd 23.47) | 78.50 (sd 17.7) | 75.06 (sd 15.3) | 61.05 (sd 15.5) | 73.73 (sd 20.5) | 56.51 (sd 37.5) | 69.47 (sd 15.3) |
| Class 2013 (125 students) | 96.68 (sd 6.8) | 87 (sd 23.67) | 78.33 (sd 17.8) | 75.33 (sd 15.3) | 60.9 (sd 15.6) | 74.1 (sd 20.5) | 56.8 (sd 37.8) | 69.6 (sd 15.2) |
| Class 2012 (48 students) | 97.6 (sd 3.71) | 88.54 (sd 19.2) | 77 (sd 15.12) | 69 (sd 21.1) | 55 (sd 12.5) | 66.66 (sd 21.1) | 59.72 (sd 37) | 68.4 (sd 17.03) |
| Class 2011 (115 students) | 96.73 (sd 7.7) | 84.13 (sd 27.7) | 81.03 (sd 18.9) | 69.0 (sd 14.14) | 52.08 (sd 15.8) | 66.98 (sd 20.7) | 56.5 (sd 40.5) | 64.61 (sd 16.9) |
| Class 2010 (40 students) | 97.75 (sd 3.5) | 87.5 (sd 20.41) | 77.8 (sd 16.07) | 71.12 (sd 19.1) | 56.3 (sd 12.2) | 69.06 (sd 19.1) | 61.66 (sd 35.8) | 70.3 (sd 15.9) |
| Class 2009 (39 students) | 96.28 (sd 5.4) | 86.84 (sd 21.54) | 81.2 (sd 15.5) | 71.51 (sd 13.2) | 57.3 (sd 17.6) | 74.36 (sd 22.7) | 73.11 (sd 26.4) | 67.38 (sd 18.2) |
| Class 2008 (130 students) | 95.5 (sd 6.8) | 80.19 (sd 27.4) | 77.9 (sd 17.5) | 74.77 (sd 14.5) | 59.58 (sd 16.7) | 70.28 (sd 20.7) | 53.33 (sd 37.9) | 67.38 (sd 16.6) |
| Class 2007 (101 students) | 96.15 (ds 5.8) | 83.91 (sd 23.3) | 79.67 (sd 17.1) | 73.41 (sd 13.5) | 62.55 (sd 14.86) | 70.29 (sd 21.3) | 58.4 (sd 36.9) | 70 (sd 12.8) |
| Class 2006 (122 students) | 95.61 (sd 6.2) | 81.40 (sd 23.3) | 77.5 (sd 17.4) | 72.5 (sd 13.7) | 62.66 (sd 15.33) | 68.3 (sd 23.2) | 53.99 (sd 36) | 69.5 (sd 17.4) |
| Class 2005 (102 students) | 97.25 (sd 6.1) | 84.06 (sd 26.04) | 75.6 (sd 18.91) | 74.21 (sd 15.6) | 63.82 (sd 16.9) | 68.6 (sd 22.5) | 60.7 (sd 37) | 68.1 (sd 18.4) |
| Overall 2005-15 | 96.4 (sd 6.4) | 84.84 (sd 24.5) | 78.4 (sd 17.6) | 73.04 (sd 15.2) | 59.4 (sd 16.1) | 70.7 (sd 21.4) | 58.2 (sd 37.4) | 68.65 (sd 16.3) |
| Means Males | 96.95 (sd 6.9) | 85.86 (sd 24.1) | 80.87 (sd 17.3) | 74.12 (sd 15.2) | 61.36 (sd 16.33) | 73.32 (sd 20.9) | 61.86 (sd 37) | 71.13 (sd 15.7) |
| Means Females | 96.03 (sd 5.9) | 84.05 (sd 25) | 76.6 (sd 17.6) | 72.2 (sd15.2) | 58.05 (sd 15.8) | 67.7 (sd 21.5) | 55.5 (sd 37.6) | 66.7 (sd 16.5) |
| Reference scores – Italian population between 18-24 years old | 96.90 | 89.70 | 90.90 | 81.80 | 73.30 | 85.30 | 83.60 | 76.20 |

usually continue their studies after the high school diploma, while in several other Countries students often decide to work and then to study (16). This phenomenon could explain also the low percentage of working students in our sample.

We identified a high percentage of resident students compared to other universities of central Italy (27%) (17). Smokers were instead less, compared to the regional data which showed that the 25.1% of persons between 18 and 19 years and 27.9% of persons between 20 and 24 years are smoker (18); and compared to European data (29% are smoker) (19).

The mean BMI was 21.4, which is a normal value according to CDC guidelines (20): probably our sample type, composed by students of the Faculty of Medicine, tends to have a lower percentage of smokers and overweight people; it could be that they are more aware of the health risks derived from smoking and obesity.

Females obtained SF-36 scores lower than males. This has already been found in a study conducted by Souza et al. using SF-36 among nursing students, showing that that female students had significantly lower scores than male students in Physical Activity, Physical Pain, Vitality, Social Activities, Emotional Role caused by emotional problems, mental health domains and in the mental component summary (21).

Another study conducted in Rio de Janeiro confirmed that females have lower scores in physical and psychological domains (22). Sabbah et al (23) showed that male students tend to report better scores in the SF-36 scales than female students. Females had, in fact, poorer PR, GH perception, VT and three mental health scales scores (SA, ER and MH) than males. Contrariwise, in two studies females were found to experience less psychological distress compared to male students (24) and were better than males in Overall QoL (25).

Smoking status resulted to influence significantly Physical Activity (p=0.008) and General Health (p=0.01): in fact smokers had lower scores. Sabbah et al (23) had similar results on smokers which had lower scores than no smokers. A study conducted in Teheran demonstrated that male gender, and not smoking, remained significantly associated with a higher Physical Component Score (26).

Age was negatively correlated with Social Activities (p<0.001; rho= -0.101): this aspect was similar to another study which showed that the SA and VT dimension of the SF-36 is negatively associated with age (23).

In contrast with other studies (5, 9, 27), we did not find significant differences in the perception of the health status between students living in Tuscany and students coming from other regions: probably the integration in the Siena reality did not lead to a negative perception of their health.

Comparing our results with the data of the study conducted on the Italian population in 1997 (12, 14), as reported in Table 1, we found that the scores of the various scales for the corresponding age group obtained in our sample were lower. This confirms that the condition of student implies more problems than the scientific literature reports (5-7). Similarly, in New Zealand, Henning et al. confirmed that the medical student group scored lower than the general population reference group on the physical health, psychological health, and environment quality of life domains (28).

As Tempski et al. affirm, medical education is characterized by moments of crisis. The first is the initial phase, the adaptation that requires a change in lifestyle and study method. The second crisis occurs in the intermediate phase, when students have contact with reality, and with a higher study load. The final phase of medical school is characterized by many demands, requirements, and responsibilities, in addition to insecurities that typify the end of the program. Students reported that their

QoL in medical school is worse than their QoL perceived in other contexts of their life (29-31).

The most important limitation of our study has been the not constant number of administered questionnaires in the years, due to technical problems, but we do not think that this aspect could have changed the overall results. In the years with a lower percentage of participation, students attended lessons in a building very far away from the computer lab in which the study was carried out and the little time requested to move away, to pass the test and then to return to the class significantly reduced the participation rate.

Our study shows a perception of health of the Italian medical students lower than the general population. A lot of variables conditioned the scores of the SF-36: females and older or smoking persons have lower scores; better BMI is instead connected with a higher Physical Activity score. It would certainly be interesting to extend this research to students of other years of the medical curriculum, of other faculties and of other cities to see whether the findings from our study reflect the quality of life of young Italian students or reflects only the characteristics of a limited group of them.

### Riassunto

### *La Qualità della vita degli studenti di medicina italiani: anni 2005-2015*

**Introduzione.** La qualità della vita è un concetto utilizzato per indicare il benessere generale delle persone o società. Gli studenti universitari riportano una bassa qualità della vita e una percezione peggiore del loro stato di salute, a causa di una situazione di maggiore disagio in cui vivono durante glI studi, soprattutto in facoltà con un importante carico emotivo, quali le scuole mediche. Lo scopo del nostro studio è stato quello di valutare lo stato di salute percepito dagli studenti di medicina del primo anno.

**Metodi.** Abbiamo condotto uno studio trasversale negli anni 2005-2015, somministrando il questionario Short Form 36 (SF-36) agli studenti del primo anno del corso di laurea in Medicina e Chirurgia dell'Università degli Studi di Siena, Italia. Oltre alle informazioni demografiche come sesso ed età abbiamo chiesto loro la regione di residenza, stato civile, stato di occupazione, e l'abitudine tabagica; altezza e peso sono stati richiesti per calcolare l'indice di massa corporea (BMI) per valutare una possibile correlazione tra questo e la percezione dello stato di salute. I dati dei questionari sono stati organizzati ed elaborati tramite il software Stata® SE, versione 12.1

**Risultati.** 1104 questionari sono stati raccolti. Gli studenti di medicina hanno riportato più bassi punteggi dell'SF-36, rispetto alla popolazione italiana della stessa età. Il sesso femminile e il fumo influenzano negativamente il punteggio in diverse scale. L'indice di massa corporea è correlato positivamente con l'attività fisica, mentre l'età è negativamente correlata con le attività sociali.

**Conclusioni.** La qualità della vita percepita degli studenti di medicina italiani è inferiore rispetto alla popolazione generale. Ciò conferma che la condizione di studente comporta più problemi come confermato da altri studi. Sarebbe opportuno migliorarla, sviluppando la resilienza degli studenti. Sarebbe interessante estendere questa ricerca a studenti di altri anni, di altre facoltà e altre città per avere una visione più ampia della qualità della vita degli studenti italiani.

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