Increased Frequency of Health Anxiety in Health Science Students: a Cross Sectional Study in a Greek University

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ABSTRACT

Background: Ectopic Health Sciences students often experience higher level of stress due to clinical knowledge, and it has been reported that they frequently develop worries and symptoms of illness. These observations had lead to the hypothesis that studying health sciences may increase the risk for developing health anxiety. Objective: To investigate the correlation between studying health sciences and health anxiety risk in students of a Greek university. Methods: A cross-sectional study was conducted among health science and non-health science students from the University of Thessaly, Greece. The 14 item - Short Health Anxiety Inventory (SHAI) was used to measure students’ health anxiety. Univariable and multivariable logistic regression analyses were used to test the hypothesis. Results: The population sample consisted of 562 health science students and 204 agriculture and computer science students. The prevalence of health anxiety (SHAI score >14) was 18.1% (95% CI 15.4%-21.1%) while 8.3% (95% CI 6.4%-10.5%) of the participants suffered from clinical health anxiety (SHAI score >18). Health science students had higher SHAI scores compared to non-health science students. Multivariable analysis revealed an increased risk for health anxiety in health science students (OR: 2.01, 95% CI: 1.02-3.97, p=0.044). Health anxiety was also associated with sex (female) (p<0.008) and the presence of health anxiety in a family member (p<0.001). Conclusion: The current study identified studying health sciences as a determinant of health anxiety in students of a Greek university, after considering several confounding factors. This relatively neglected hypothesis should be further examined, preferably in a prospective cohort design.

Key-words: Health anxiety; health sciences students; SHAI; hypochondriasis

1. BACKGROUND

Health anxiety is characterized by excessive worry or fear of a serious illness which is often based on a misjudgment of symptoms and bodily sensations (1). In clinical health anxiety, these fears and beliefs are extreme related to the actual degree of threat and can result in distress or significant impairment in personal, family, social, educational, occupational or other important areas of functioning. Excessive health anxiety has been described with the term “Hypochondriasis” which covers both disease conviction and fear of a serious disease (2). It can be part of another syndrome, such as depression, or a primary disorder as well. Several symptoms which vary between the patients have been mentioned: abdominal pain, nausea, flatulence, dyspepsia, dyspnea, tachycardia, vision disorders, muscle weakness or even dyspareunia (3). However, the Diagnostic and Statistical Manual of Mental Disorders 5th Edition (DSM-5), has replaced the term hypochondriasis with two new terms namely: Somatic Symptom Disorder and Illness Anxiety Disorder (4).

The hypothesis that the risk for developing health anxiety is increased in medical students is old and its formulation was based on clinical teacher’s reports claiming that medical students frequently develop worries and symptoms of illness (5,6). Medical students experience a combination of stress and clinical knowledge which may cause them to overestimate the importance of insignificant symptoms and bodily sensations leading and tend to diagnose themselves with the diseases they are studying (7,8). Moreover, medical training is a demanding and stressful process which may have adverse im-
pacts on the student’s mental health including anxiety and depression (9). Health anxiety in medical students has been described with terms such as medical student’s disease, hypochondriasis of medical students, and medical studentitis (10).

The current state of knowledge regarding the association between studying health sciences and the prevalence of health anxiety is far from conclusive. The incidence rate of hypochondriasis has been found to be notably high among health science students although estimates vary due to heterogeneity of studies in regard to used instruments, location, education systems and other factors (11). Few analytical epidemiology studies incorporating comparison groups have shown an increased risk in health science students (12,13), while others report no association between field of study and prevalence of health anxiety (14,15). Furthermore some studies report a protective effect of medical education on health anxiety (16). To our knowledge, although the concept of the so-called “medical student’s disease” exist, for many decades the published body of research studies on the topic is relatively poor. Regarding to Greek medical and other health sciences students there is uncharted territory concerning health anxiety. Despite the controversial results of previous studies, the consolidated estimation of health anxiety prevalence in health science students during their education would be crucial for the identification and prevention of hypochondriac symptoms in this population because of their impact on their future clinical skills and performance.

Objective

The aim of this study was to investigate if there is a relation between studying health sciences and health anxiety risk. More over the study aimed to estimate the prevalence of health anxiety in Greek health science students and to identify the potential determinants of hypochondriac symptoms in students.

2. MATERIALS AND METHODS

2.1 Design and Participants: A cross-sectional study was conducted, utilizing self-reported, fully structured questionnaires to collect information. The sampling method used was that of convenience sampling. Different departments of the University of Thessaly were chosen. Departments of “Medicine”, “Nursing” and “Medical Laboratories” were chosen as health-related studies departments, whereas departments of “Computer Science and Telecommunications” and “Agricultural Engineering Technologists” were chosen as a control group. Data collection was carried out during the first week of December 2019, after obtained permission from the Internal Committee for Research Ethics of the Medicine Department of the University of Thessaly (date of approval 02/12/2019; protocol n. 64). The completion of the questionnaires was done by the participants themselves after informing them about the purpose of the research. All necessary clarifications were provided. The participation of the students was voluntary and in accordance with principles and ethical rules of research. Students of all the semesters of each department were approached before lectures and each student was given 10 minutes to complete the questionnaire, anonymously.

2.2 Questionnaires and measures: The questionnaire that was used for data collection consisted of two parts as follows:

A form of individual characteristics of the students which included socio-demographic characteristics; studying characteristics, habits and performance; smoking and alcohol consumption habits; physical exercise; presence of health anxiety in a family member and presence of a serious illness.

The 14 item—Short Health Anxiety Inventory (SHAI) was used to measure health anxiety among study participants. The SHAI is a self-reported questionnaire to detect clinical and non-clinical health anxiety, developed by Salkovskis et. al (17). Each one of the 14 items of the SHAI consists of a group of 4 statements, which are scored from 0 to 3 in a total scale range between 0-42. Items concerning the Negative Consequences of being ill were not included. Based on the SHAI score, participants were characterized as normal (0-14), suffering from health anxiety (>14) and suffering from clinical (severe) health anxiety (>18) (18). In our study the Greek version of the Short Health Anxiety Inventory was used, which has shown good internal consistency in previous studies in Greek population (19).

2.3 Statistical analysis: The statistical analysis was performed by using IBM SPSS Statistics V22.0 software. The normality of the distribution of quantitative variables was determined by the Shapiro-Wilk test. For the quantitative variables, the median value and the corresponding interquartile range (IQR) are presented. Kruskal-Wallis (> 2 groups) and Mann-Whitney criteria were used to determine statistically significant differences between subgroups. Short Health Anxiety scores were compared between categories of independent qualitative variables. Outcome was also handled as a qualitative variable. Separate analyses were conducted with two binary outcomes (health anxiety/normal [SHAI cutoff:14], clinical health anxiety/Non clinical health anxiety [SHAI cutoff:17]). Univariable and multivariable logistic regression analyses were performed to determine risk factors. For logistic regression analysis all independent variables were transformed to dichotomous, except age and year of studies which were examined as continuous variables. Multivariable logistic regression analysis included all variables with a p<0.15 in univariable analysis. Odds ratios, 95% CI, and p-values were presented for each risk factor included in the analysis. For all analyses a p-value <0.05 were considered statistically significant.

3. RESULTS

Sample Characteristics

From the 801 students approached during the conduct of the study, 766 agreed to participate (response rate 95.6%). No particular reason was given for non-participation. The population sample consisted of 340 medical students, 129 nursing students, 93 students of medical laboratories department, 127 students from the agricul-
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**Medicine Department (n=340)**

**Nursing Department (n=129)**

**Department of Medical Laboratories (n=93)**

**Agricultural Engineering Department (n=127)**

**Computer Science and Telecommunications Department (n=77)**

| Gender | Medicine Department (n=340) | Nursing Department (n=129) | Department of Medical Laboratories (n=93) | Agricultural Engineering Department (n=127) | Computer Science and Telecommunications Department (n=77) |
|--------|-----------------------------|-----------------------------|----------------------------------------|------------------------------------------|-------------------------------------------------|
|        | n   | %   | n   | %   | n   | %   | n   | %   | n   | %   |
| Gender |     |     |     |     |     |     |     |     |     |     |
| Male   | 146 | 42.90% | 17  | 13.20% | 15  | 16.10% | 78  | 61.40% | 60  | 77.90% |
| Female | 194 | 57.10% | 112 | 86.80% | 78  | 83.90% | 49  | 38.60% | 17  | 22.10% |
| Year of studies |     |     |     |     |     |     |     |     |     |     |
| 1      | 59  | 17.40% | 28  | 21.70% | 0   | 0.00%  | 32  | 25.20% | 29  | 37.70% |
| 2      | 65  | 19.10% | 40  | 31.00% | 34  | 37.00% | 61  | 48.00% | 15  | 19.50% |
| 3      | 70  | 20.60% | 2   | 1.60%  | 35  | 37.60% | 22  | 17.30% | 3   | 3.90%  |
| 4      | 72  | 21.20% | 2   | 1.60%  | 22  | 23.90% | 5   | 3.90%  | 28  | 36.40% |
| 5      | 39  | 11.50% | 53  | 41.10% | 1   | 1.10%  | 3   | 2.40%  | 1   | 1.30%  |
| 6      | 34  | 10.00% | 4   | 3.10%  | 0   | 0.00%  | 1   | 0.80%  | 0   | 0.00%  |
| 7+     | 1   | 0.30%  | 0   | 0.00%  | 0   | 0.00%  | 3   | 2.40%  | 1   | 1.30%  |
| Residence |     |     |     |     |     |     |     |     |     |     |
| Urban  | 287 | 85.70% | 91  | 71.10% | 58  | 62.40% | 55  | 43.30% | 39  | 50.60% |
| Suburban | 31  | 9.30%  | 19  | 14.80% | 19  | 20.40% | 34  | 26.80% | 26  | 33.80% |
| Rural  | 17  | 5.10%  | 18  | 14.10% | 16  | 17.20% | 38  | 29.90% | 12  | 15.60% |
| Education (Father) |     |     |     |     |     |     |     |     |     |     |
| Primary | 17  | 5.00%  | 25  | 19.40% | 14  | 15.10% | 21  | 16.70% | 8   | 10.50% |
| Secondary | 76  | 22.50% | 50  | 38.80% | 35  | 37.60% | 47  | 37.30% | 32  | 42.10% |
| Tertiary | 177 | 52.40% | 49  | 38.00% | 40  | 43.00% | 45  | 35.70% | 30  | 39.50% |
| Msc, PhD | 68  | 20.10% | 5   | 3.90%  | 4   | 4.30%  | 13  | 10.30% | 6   | 7.90%  |
| Education (Mother) |     |     |     |     |     |     |     |     |     |     |
| Primary | 7   | 2.10%  | 27  | 20.90% | 6   | 6.50%  | 9   | 7.10%  | 7   | 9.10%  |
| Secondary | 73  | 21.60% | 51  | 39.50% | 40  | 43.00% | 45  | 35.70% | 29  | 37.70% |
| Tertiary | 187 | 55.30% | 45  | 34.90% | 43  | 46.20% | 59  | 46.80% | 35  | 45.50% |
| Msc, PhD | 71  | 21.00% | 6   | 4.70%  | 4   | 4.30%  | 13  | 10.30% | 6   | 7.80%  |
| Average Grade |     |     |     |     |     |     |     |     |     |     |
| Not answered | 59  | 17.60% | 31  | 24.00% | 14  | 15.10% | 48  | 37.80% | 24  | 31.20% |
| 0-1000€ | 23  | 6.80%  | 43  | 33.30% | 23  | 24.70% | 19  | 15.00% | 14  | 18.20% |
| 1001€ - 2000€ | 94  | 28.00% | 38  | 29.50% | 36  | 38.70% | 39  | 30.70% | 23  | 29.90% |
| £ 2001€ - 3000€ | 98  | 29.20% | 13  | 10.10% | 13  | 14.00% | 10  | 7.90%  | 10  | 13.00% |
| >£ 3001€ | 62  | 18.50% | 4   | 3.10%  | 7   | 7.50%  | 11  | 8.70%  | 6   | 7.80%  |
| Smoking |     |     |     |     |     |     |     |     |     |     |
| never | 226 | 67.10% | 74  | 58.70% | 56  | 60.20% | 67  | 52.80% | 51  | 67.10% |
| former | 23  | 6.80%  | 13  | 10.30% | 7   | 7.50%  | 5   | 3.90%  | 5   | 6.60%  |
| occasionally | 48  | 14.20% | 18  | 14.30% | 20  | 21.50% | 25  | 19.70% | 9   | 11.80% |
| daily | 40  | 11.90% | 21  | 16.70% | 10  | 10.80% | 30  | 23.60% | 11  | 14.50% |
tural engineering department and 77 students from the computer science and telecommunications department. Mean age was 21 (SD: 3) for medical students, 23 (SD: 7) for nursing students, 22 (SD: 5) for agricultural students and 20 (SD:3) for computer science and telecommunications students. Table 1 summarizes the key characteristics of the population sample. Some differences in several variables are observed. Gender distribution was different between schools with health science students having higher frequencies of female participants, especially nursing students and medical laboratories students. Health science students reported more frequently urban permanent residence, higher parental education level and higher family income. A parameter strongly related to the department of study was the performance (average grade) on the completed courses, with health science student having better performance. Smoking habits, alcohol consumption and frequency of physical exercise were similar among participants studying different disciplines. Regarding the current year of studies it should be mentioned that studies in the Medical Department have a duration of six years while the sample from the Department of Medical Laboratories did not include freshmen since the department stopped accepting new students in 2019.

### Table 1. Characteristics of Study Participants According to Department of Attendance

|                       | Never | 1-3 drinks/mo | 1-3 drinks/wk | 4-6 drinks/wk | 1-2 drinks/day | >3 drinks/day |
|-----------------------|-------|---------------|---------------|---------------|----------------|--------------|
| Alcohol consumption   |       |               |               |               |                |              |
| Never                 | 18    | 5.30%         | 57            | 15            | 9              | 1            |
| 1-3 drinks/mo         | 138   | 40.80%        | 73            | 37            | 47             | 28           |
| 1-3 drinks/wk         | 144   | 42.60%        | 31            | 42            | 41             | 26           |
| 4-6 drinks/wk         | 36    | 10.70%        | 7             | 7             | 20             | 10           |
| 1-2 drinks/day        | 2     | 0.60%         | 0             | 2             | 1              | 3            |
| >3 drinks/day         | 0     | 0.00%         | 0             | 1             | 3              | 2            |
| Physical exercise     |       |               |               |               |                |              |
| Never                 | 89    | 26.30%        | 40            | 21            | 32             | 21           |
| once a week           | 100   | 29.60%        | 46            | 30            | 38             | 20           |
| 2-3 times/week        | 85    | 25.10%        | 27            | 29            | 33             | 17           |
| >3 times/week         | 64    | 18.90%        | 16            | 13            | 24             | 18           |
| Family member with Health Anxiety |       |               |               |               |                |              |
| No                    | 205   | 61.00%        | 63            | 52            | 70             | 53           |
| Yes                   | 131   | 39.00%        | 66            | 40            | 55             | 24           |
| Diagnosed with Serious Illness |       |               |               |               |                |              |
| No                    | 295   | 87.80%        | 114           | 72            | 92             | 69           |
| Yes                   | 41    | 12.20%        | 14            | 19            | 9              | 8            |

### Health Anxiety Scores according to Participant’s Characteristics

Normality test for Short Health Anxiety Index scores revealed that the variable is not normally distributed among the population sample (Shapiro-Wilk test: p <0.001). Visual evaluation of the histogram showed that SHAI scores follow a right skewed distribution. Median SHAI score for all participants was 9 (IQR 6-13), with a minimum of 0 and a maximum of 33. Table 2 presents the SHAI scores according to variables of interest and the p-values for association calculated by Mann Whitney and Kruskal-Wallis tests. Participants of all the health science departments had higher SHAI scores compared to agriculture and computer science students. Within students studying health sciences the analysis did not document significant correlation with the department of study (Kruskal-Wallis, p=0.580) suggesting similar levels of anxiety in medical, nursing and medical laboratory students. The median SHAI score was 10 (IQR: 7-14) for all health science students grouped together and 7 (IQR:4-10) for students from the control group. As shown in Table 2, gender was also found to be significant correlated with health anxiety levels with females scoring higher on SHAI test (p<0,001). Increased health anxiety is also observed in students having better grades (p<0,001), those who reported having a family
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member with health anxiety (p<0.001) and those who reported having a serious medical condition (p=0.001). Kruskal- Wallis test did not reveal a significant association between SHAI score and year of studies. Linear regression analysis to identify potential association between age and SHAI scores also did not reveal a significant relationship (β= -0.013, p=0.730).

Association between prevalence of health anxiety and participant’s characteristics

The prevalence of health anxiety (SHAI score >14) was 18.1% (95% CI 15.4%-21.1%) while an 8.3% (95% CI 6.4%-10.5%) of the participants suffered from clinical health anxiety (SHAI score >18). The relation between health anxiety and potential risk factors was examined with regression analyses. Since no differences were observed in SHAI scores between participants from different health science disciplines, these individuals were grouped together as were the students attending non-health science departments. Thus, all analyses presented in this section concern the comparison of health science student with non-health science students.

Univariable logistic regression to identify risk factors revealed significant correlations between the risk for having health anxiety and studying health sciences [OR: 2.67, (95% CI: 1.57-4.51), p<0.001]. Other parameters that were statistically associated with health anxiety were gender, residence, performance (grade), and presence of health anxiety within the family. More detailed results are presented in Supplementary table 1. Similarly, when the determinants for the presence of clinical health anxiety were assessed studying health sciences was also associated with increased risk [OR: 2.96, (95% CI: 1.32-6.62), p= 0.008]. Residence, presence of health anxiety within the family and year of studies were also associated with increased risk (Supplementary table 2). Interestingly, the year of studies was associated only with clinical health anxiety. To further examine if this association is affected by the school of studies, we repeated the analysis stratifying for school of study. The relation between year of studies and hypochondriasis prevalence was statistically significant only in the stratum of medical students [OR 1.29 (95% CI: 1.04-1.61), p=0.022] while in other strata no significant association were found (data not shown).

| Variable                  | n    | Median (IQR) SHAI Scores | p-value |
|---------------------------|------|--------------------------|---------|
| Gender***                 |      |                          |         |
| Male                      | 316  | 8 (5-11)                 | <0.001  |
| Female                    | 450  | 10 (7-14)                |         |
| Department***             |      |                          |         |
| Medical                   | 340  | 10 (7-14)                | <0.001  |
| Nursing                   | 129  | 9 (6-12)                 |         |
| Medical Laboratories      | 93   | 10 (7-14)                |         |
| Agricultural Engineering  | 127  | 8 (4-10)                 |         |
| Computer Science and Telecommunications | 77   | 6 (4-10)                |         |
| Year of Studies           |      |                          |         |
| 1                         | 148  | 8 (6-12)                 | 0.483   |
| 2                         | 215  | 9 (6-13)                 |         |
| 3                         | 132  | 10 (7-13)                |         |
| 4                         | 129  | 8.5 (6-13)               |         |
| 5                         | 97   | 10 (6-14)                |         |
| 6                         | 39   | 8 (5-13)                 |         |
| 7+                        | 5    | 4(3-9)                   |         |
| Performance (Grade)**     |      |                          |         |
| Good                      | 198  | 9 (5-11)                 | 0.001   |
| Very Good                 | 341  | 10 (7-14)                |         |
| Excellent                 | 79   | 10 (7-15)                |         |
| Residence                 |      |                          |         |
| Urban                     | 530  | 9 (6-13)                 | 0.178   |
| Suburban                  | 129  | 9 (5-12)                 |         |
| Rural                     | 101  | 9 (6-12)                 |         |
| Education (father)        |      |                          |         |
| Primary                   | 85   | 10 (5-14)                | 0.697   |
| Secondary                 | 240  | 9 (6-12)                 |         |
| Tertiary                  | 341  | 9 (6-13)                 |         |
| Msc, PhD                  | 96   | 10 (7-14)                |         |
| Education (mother)        |      |                          |         |
| Primary                   | 56   | 10 (5-14)                | 0.114   |
| Secondary                 | 238  | 9 (6-12)                 |         |
| Tertiary                  | 369  | 9 (6-13)                 |         |
| Msc, PhD                  | 100  | 9 (7-13)                 |         |
| Monthly Family Income     |      |                          |         |
| not answered              | 176  | 8 (5-12)                 | 0.127   |
| £ 1000€ - £ 2000€         | 122  | 9 (6-14)                 |         |
| £ 2001€ - £ 3000€         | 230  | 10 (6-13)                |         |
| >£ 3001€                  | 144  | 9 (6-14)                 |         |
| Smoking                   |      |                          |         |
| never                     | 474  | 9 (6-13)                 | 0.316   |
| former                    | 53   | 8.5 (6-13)               |         |
| Occasionally              | 120  | 10 (6-13)                |         |
| Daily                     | 112  | 8 (5-13)                 |         |
| Alcohol Consumption       |      |                          |         |
| Never                     | 64   | 8 (5-12)                 | 0.300   |
| 1-3 drinks/month          | 323  | 9 (6-13)                 |         |
| 1-3 drinks/week           | 284  | 9 (6-13)                 |         |
| 4-6 drinks/week           | 80   | 8 (5-13)                 |         |
| 1-2 drinks/day            | 5    | 11 (10-19)               |         |
| >3 drinks/ day            | 6    | 10 (9-11)                |         |
| Exercise                  |      |                          |         |
| never                     | 203  | 9 (6-14)                 | 0.087   |
| Once a week               | 234  | 10 (7-13)                |         |
| 2-3 times per week        | 191  | 9 (6-13)                 |         |
| >3 times per week         | 135  | 8 (5-12)                 |         |
To control for potential confounders multivariate logistic regression analysis was conducted. The model included all variables found to be associated with a \( p < 0.15 \). An exception was the variable “average grade”, which was not included in the analysis because it was very strongly correlated to studying health sciences \([\text{OR: } 11.58 (95\% \text{ CI: } 7.50-17.89), p < 0.001]\), and thus its potential confounding effect could not be controlled since the variable were not independent. In the analysis concerning health anxiety, 5 variables were included namely gender, studying health sciences, residence, family income and presence of health anxiety in family environment. Correspondingly, six independent variables (gender, studying health sciences, residence, presence of health anxiety in family environment, self-reported serious illness and year of studies) were considered in the multivariable analysis concerning clinical health anxiety. In table 3 and table 4 the results of the multivariate analysis are presented. Studying health sciences retains a statistically significant association with health anxiety, while increased risk is also observed for clinical health anxiety but the association was not statistically significant.

### 4. DISCUSSION

The results of the current study support the hypothesis that health science students are more likely to suffer from health anxiety than students of other disciplines. This increased risk was observed not only in medical students, but also in nursing and medical laboratory students.

Previous studies on the topic have produced conflicting findings. Moss-Morris et. al (12), compared 92 first-year and 85 third-year medical students to 82 law students and reported that medical students scored higher on disease perception and on disease distress. Afifi et al. (13), also reported higher fears of disease in medical students \( (n=195) \) compared to non-medical students \( (n=200) \), although caution is suggested since this finding was not statistically significant. However, in contrast to our findings, several studies suggest that there is not significant different prevalence of clinical health anxiety (hypochondriasis) between medical and non-medical students. Waterman et. al report no significant differences in health anxiety between 103 medical students, 107 non-medical students and 78 law students, all at the third year of studies (7). A larger cross sectional study of 214 medical students and 816 law students concluded that studying medicine does not seem to affect health anxiety levels (14). Similarly, an older investigation of 60 medical and 60 law students reported no difference in the prevalence of hypochondriacal fears, beliefs, and attitudes (20). Furthermore, there are studies directly contradicting the examined hypothesis. A cross sectional study consisting of 449 medical students and 485 non-medical students conducted in London, UK, reported that medical training reduces the risk of health anxiety [16], as did a study of 80 medical students and 100 law students conducted in Norway (21).

It is evident, that varying findings on the examined hypothesis exist in the current literature, while our literature search identified relatively few studies. The results of our study differ from the majority of previous researches. The reasons for this apparent disagreement can be sought in the heterogeneity of the published studies in terms of research methodology, psychometric scales used and control groups selected. Most of the previous...
studies incorporated law students as control groups while in our study we recruited computer science and agricultural science students. Both approaches have limitations and ideally, the control groups should consist of students representative of all non-health science students. Medical and law students may share some personality traits that could be associated with increased anxiety. Type A personality which has been associated with anxiety symptoms (22), is more prevalent in medical students (23). The selection of individuals studying computer and agricultural sciences as a control group could also have introduced socioeconomic and life-style related confounders, other than the factors considered in our multivariable analysis. Moreover, differences in the social-cultural environment in the study settings could explain the different findings between studies.

In our study we measured health anxiety by using the Short Heath Anxiety Inventory a scale that been shown to have acceptable Cronbach’s alpha scores, construct validity, sensitivity to treatment (24). Caution is suggested regarding the cutoff values used to define health anxiety and clinical health anxiety. We adopted cutoff scores proposed by Rode et. al. (18), who report that “a cut-off point of 18 or higher in the short form reliably and exclusively identified people fulfilling DSM-IV diagnostic criteria for hypochondriasis”, while individuals scoring 15–17 “were three standard deviations above the norms for nonclinical controls”. However different cutoff values have been used by other research teams and cutoff values should be further investigated (24).

Our results also suggest an increasing risk for severe health anxiety with years of study. The fact that this association was strong and statistically significant only in medical students is an additional element that underlies that studying medicine may play a role in the risk for developing health anxiety. Previous investigations have found higher health anxiety at entering the clinical years and a decrease later (7,25). The results of the present study combined with the fact that the potential association of studying health sciences with health anxiety is relatively uninvestigated, underline the need of further research on the topic. More specifically, in the current literature there is a lack of cohort studies recruiting students at the beginning of their studies and prospectively record the incidence of health anxiety. This type of studies will clarify if the effect (health anxiety) occurs after the presumed cause (school of studies) and exclude the possibility of reverse causality, which is a known limitation of cross-sectional designs. Additionally, more representative controls are needed and the diversity of findings from different setting should be further elucidated.

5. CONCLUSIONS
Concluding, the current study identified studying health sciences as a determinant of health anxiety in students of a Greek university, after considering several confounding factors. This relatively neglected hypothesis should be further examined.

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