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Why do undergraduate medical students choose medical humanities? A cross-sectional study at an Italian University

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Abstract

Background Medical humanities can contribute positively to clinical practice and medical education. Therefore, in many countries, medical schools have been progressively incorporating medical humanities into their curriculum. In Italy, only a few medical schools offer a variety of medical humanities courses, often as elective. What induces Italian medical students to take a medical humanities course has not yet been explored. The aim of this study is to fill this gap by investigating whether academic performance, sociodemographic and psychological variables may influence student motivation.

Methods We conducted a cross-sectional study in a medical school and collected data from 260 medical students, from the 3rd to the 6th year of the degree course. The students who chose to take a course in Medical Humanities were compared with those who chose not to take such a course, analysing numeric variables (age, grade point average, psychometric scores) and categorical variables (gender, nationality, educational level, living conditions). Motivations were investigated by open-ended questions and categorized prior to analyses.

Results The two subgroups showed no significant differences in sociodemographic characteristics, except for age, which was lower for the students who chose to take a medical humanities course ($p < 0.001$). Among the psychometric scores, only the anxiety score differed significantly between the groups, being lower for the students who chose a medical humanities course ($p < 0.05$). Regarding academic performance, the number of examinations passed was similar between the groups, while the average grade was lower for the students taking the course ($p < 0.01$). Interest in the humanities and their educational potential were the main reasons for choosing to take a course in medical humanities (76.2%). Concurrent commitments and lack of time were the major obstacles to this choice (39%).

Conclusions Age, anxiety levels and academic performance seem to be inversely associated with the choice to take a medical humanities course. Considering the workload due to curricular activities when planning elective courses could increase student participation.

Keywords Medical Humanities, Medical Education, Visual Thinking Strategies, Narrative Medicine, Reflective Practice, Motivation, University Curriculum

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Background

The objective of a university degree course is to educate students, adequately preparing them for their future profession. Therefore, it is very important that university education keeps up with changes in the world of work. The evolving landscape of medical practice has raised the need for a holistic, person-centred approach to health care [1]. Consequently, medical education should adapt to these new needs, providing students not only with medical knowledge but also with specific personal and professional skills. As a result, several medical schools have begun to incorporate the arts and humanities into their curricula [2].

Medical Humanities (MH) can be defined as an interdisciplinary movement that draws on the methods and intervention strategies of different humanistic disciplines to pursue the objectives of medical education [3]. One goal of MH is to induce health professions students to think critically about their future job, with the aim of becoming more humane professionals [4]. MH aim to improve students' ability to address health, illness, and the daily experience of patients from a historical, social and cultural perspective, enabling them to improve their ability to listen to a patient story and to empathize functionally with the patient experience of suffering. Furthermore, the literature has shown that MH help students develop personal skills fundamental to their profession, such as empathy, and communication, observation and reasoning skills [5–10]. In addition, MH have been shown to contribute positively to the psychological well-being of medical professionals by reducing their stress levels [11]. In fact, medical practice can challenge the ideals and expectations of future doctors and undermine their mental health. Therefore, it is necessary to cultivate specific skills for students that promote their mental health, strengthen their professionalism and improve their sense of work in future medical practice [12].

Although the role of humanities in medical education seems crucial, it remains debated how to include humanities in the educational programs of medical schools [13]. In some countries, such as the United States, Canada, and the United Kingdom, many medical schools have included MH as compulsory courses in their curricula [14, 15]. In Italy, medical degree programs include only a few compulsory courses in humanistic disciplines, i.e. Bioethics, History of Medicine and Psychology [16]. Other humanities (e.g. Philosophy, Storytelling, Visual Arts) are usually not included as compulsory courses but can be included as elective courses. That is because Italian medical degree programs are defined by the Ministry of University and Research (MUR), at national level. The MUR sets up the core curriculum subjects, while universities have little decisional autonomy. Hence, the growing

interest in these disciplines in our country has led to the introduction of elective courses in MH in several medical faculties: Sapienza University of Rome, University of Milan, Alma Mater Studiorum of Bologna, University of L'Aquila, etc.

The introduction of MH in medical schools in the form of elective courses has led to focus on motivational aspects. Since students can freely choose which courses to take among the elective ones, it is interesting to understand what their motivations are and whether they can be somehow affected by personal or contextual factors.

Student motivation is relevant for the quality of their learning experience [17]. Furthermore, student self-determined motivation (acting out of interest, curiosity) is associated with greater academic well-being, persistence, and achievement [18]. Many theories have been developed in the educational field to describe, explain and predict the direction, initiation, intensity and persistence of learning behaviours. The most cited theories of academic motivation include expectancy-value theory, social cognitive theory, self-determination theory, achievement goal theory and attribution theory [19].

Hattie et al. grouped various models of motivation by identifying personal, social and cognitive factors [20]. Fong emphasized the importance of contextualizing motivation, taking into account educational, social, future-oriented and sociocultural dynamics that may impact student motivation, such as in the context of the CoViD-19 pandemic [21, 22]. In the present study, we focused on the impact of demographic characteristics, psychological variables and school performance on student motivation.

Many studies have shown a strong correlation between mental health and academic motivation. The general well-being of students can influence their motivation, ability to concentrate, commitment to learning and social relationships [23, 24].

Academic achievement has been shown to bidirectionally influence learners' motivation [25]. Thus, prior academic achievement, which is cognitively represented in the self, helps reinforce motivation for new learning tasks. Among other factors, nonmodifiable factors (e.g. age, sex, and ethnicity) seem to affect the motivation of medical students [26].

Therefore, it is important to investigate what motivates students to take MH courses. To the best of our knowledge, previous studies have explored medical students' perspectives on MH in other countries, but not in Italy [27, 28]. Hence, our aim is twofold: first, to investigate why Italian undergraduate medical students choose to take a course in MH; and, second, to assess whether this choice is associated with demographic characteristics, psychological variables, and academic performance.

Methods

This study reporting conforms to the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) statement [29].

Context

According to the Bologna process, Italy has adopted the European Credit Transfer System (ECTS): under this system, university students obtain a certain number of ECTS credits for each exam they pass. At the end of the study course, they must have achieved 180 credits for a three-year degree (i.e. Bachelor of Science) and 120 credits for a master's degree, while short university courses require a lower number of credits. In Italian medical schools, courses are divided into compulsory and elective: however, even within the scope of elective courses, students are required to achieve a certain number of credits (8 ECTS). It is on the student to choose which courses to take, among several options. The elective courses available are not always the same and may vary in number and typology, from year to year. In addition, students may also acquire the 8 credits required for elective activities by attending occasional seminars and conferences, as an alternative to the elective courses. Usually, attending a seminar or conference allows up to 2 credits to be acquired. Students can take as many elective courses as they wish, even if they have already achieved the total number of credits required for elective activities.

At the University of L'Aquila, three elective courses in MH are available for undergraduate medical students as part of an MH educational pathway: a course on Visual Thinking Strategies (VTS) for 3rd-year students; a course on Narrative Medicine (NM) for 4th-year students and a course on Reflective Practices (RP) for 5th- and 6th-year students.

VTS is a method developed by Abigail Housen, a psychologist, and Philip Yenawine, an art educator. This well-known method is widely used to help students develop critical thinking, communication and observation skills [30, 31]. It has been successfully used within the context of medical education, also in Italy, where Ferrara et al. recently validated a new instrument to measure its effects [32].

NM is an approach to care based on narrative competence. The theorist of NM, Dr. Rita Charon, has suggested that narrative competence can be developed through education in literature, reflective writing, storytelling, and poetry [33]. In Italy, the use of Narrative Medicine was formalized in 2015, with the introduction of national guidelines, developed by the Italian Institute for Health (Istituto Superiore di Sanità) and the National Centre for Rare Diseases (Centro Nazionale Malattie Rare) [34].

The course on RP is not based on a specific method or approach, although it has been inspired by Schön's theory on reflective practice [35]. The objective of this course is to induce students to reflect on problems and issues relating to their future profession, with the help of philosophers and medical professionals.

The VTS, MN and RP courses are part of an integrated course MH that was implemented for the first time in the academic year 2022–2023. The integrated course has been designed as a comprehensive educational pathway comprising the three courses (each with different training objectives and methodologies), each of which addresses a specific target group (3rd year, 4th year, or 5th and 6th year students). Although students must attend all three courses to complete the training pathway in MH, they may also decide to take the courses independently, not completing the pathway. This choice has been made in order not to preclude any student from taking one of the courses (e.g. for students transferring from another university or unable to attend all the courses for other reasons). However, students must respect the correspondence between specific course and course year, as each course is designed on the basis of the skills students develop through their curricular activities. This implies, for example, that 3rd year students may choose to take only the VTS course, 4th year students only the NM course, etc. The aims, structure and contents of the integrated course have been described elsewhere [36].

Study design and participants

We conducted a cross-sectional survey during the second semester of the academic year 2022–2023, between March 30th and May 10th. Participants included undergraduate medical students from the University of L'Aquila, in the centre of Italy. The recruitment of participants took place directly in the classroom, during the lectures of the compulsory courses. As some students may have been absent from class at the time of the first recruitment attempt, a second attempt was conducted one week later. Students attending the 1st and 2nd years of medical school were excluded, because all the courses in MH that are held at the University of L'Aquila are reserved for students from the 3rd to the 6th year. A total of 260 students were enrolled in the study and written consent was obtained. The study was performed in accordance with the Declaration of Helsinki. The ethical committee of the University of L'Aquila (named Internal Review Board) approved the study protocol.

Instruments and related measures

All eligible participants were asked to participate in the study and received written explanation of the purpose and methods of the study. Furthermore, all the

investigators were available for answering questions and providing details on the research project. Trained investigators administered the questionnaires only to those students who voluntarily gave written consent. The questionnaires were administered in the classrooms during curricular lessons, only to those students who had given their consent to participate. To ensure anonymity, a digital form was used to collect the data (Google Forms). All questionnaires were administered before the start of the MH courses.

For the data analysis, we considered the subjective motivations reported by the students, together with personal and contextual factors that could be associated with these motivations. Therefore, we collected participants' socio-demographic data, psychometric scores, and academic performance indicators. Demographic data included age, gender, educational level, year of study course, home status, health status, being in a relationship, having a part-time job and practising physical activities. To evaluate academic performance, we asked the students to indicate their Grade Point Average (GPA) and whether they had passed all the exams scheduled for the previous course year. The questionnaire for socio-demographic data and academic performance indicators is available as supplementary material.

To investigate the students' reasons for taking or not taking an MH course, we used open-ended questions (*Why did you choose to take an elective course on Medical Humanities?/ Why did you choose not to take an elective course on Medical Humanities?*). We decided not to use a defined number of answer options in order not to limit the students' possibilities of choice and expression.

The psychological characteristics of the participants were assessed by investigating anxiety symptoms, depressive mood tendencies, and stress. Anxiety symptoms were measured by using the Self-rating Anxiety Scale (SAS). The SAS is a 20-item self-report inventory developed by Zung to quantify somatic expressions of anxiety [37]. Each item is rated on a Likert scale, from 1 to 4, with five items needing a reverse score. This questionnaire has been widely used with different target populations, including Italian undergraduate medical students [38].

Depressive mood tendencies were measured by using the Beck Depression Inventory, second edition (BDI-II), which is a 21-item self-report inventory measuring the severity of depression in adolescents and adults [39]. The score for each item ranges from 0 to 3, with a maximum score of 63. The BDI-II enjoys great diffusion and has already been used in the context of medical schools, both with teachers and students [40, 41].

Stress was measured by using the 10-item version of the Perceived Stress Scale (PSS-10), a self-report questionnaire that measures the degree to which individuals

appraise situations in their lives as excessively uncontrollable and overloaded [42]. Each item is rated on a 5-point Likert scale, ranging from 0 to 4. The PSS-10 has already been used with undergraduate medical students [43, 44].

Statistical analyses

We performed descriptive analyses for all variables. Age, GPA, and SAS, BDI-II and PSS-10 scores are presented as medians and interquartile ranges (IQRs) because of their nonnormal distributions (Shapiro–Wilk test). Categorical variables are described as frequencies and percentages. Data were collected either from students who took an MH course (Taking an MH course, TMC) or from students who did not take such a course (Not taking an MH course, NTMC). To compare the two groups, we used the Wilcoxon Rank-sum test for continuous variables, and the Chi-squared test or Fisher's exact test for categorical variables. The statistical significance level for univariate analysis was set at 5% ($\alpha=0.05$).

Then, we built a logistic regression model to assess the association between the variables considered and the choice to take an MH course. For the regression model, we considered variables that resulted highly significant in the univariate analysis ($p<0.025$), as suggested by Hosmer and Lemeshow for small sample sizes [45]. We did not consider any other method of correcting for the statistical significance threshold (e.g. Bonferroni correction) for two reasons: firstly, our study was exploratory in nature, so a conservative approach was not advisable, as it would have led us to miss less significant effects; secondly, there was no need to control for the family-wise error rate, as we did not test null hypotheses of joint intersection [46].

The Variance Inflation Factor (VIF) was checked to exclude multicollinearity among predictors ($VIF<5$).

To explore motivations we used open-ended questions, categorized the answers using a content analysis approach, and analysed the frequencies of categories. The answers were analysed by two authors independently, who identified the reported response categories by consensus. Then, the same authors classified the answers, blind to each other. Any conflicts in the classification process were resolved by consensus.

Except for the variable 'motivation', there are no missing in the data, because the participants were required to answer all the questions. To perform all statistical analyses, we used the software R, version 4.3.2.

Results

Sociodemographic characteristics

Four hundred students were asked to participate in the survey, but only 260 completed the questionnaire. However, the sample includes all the students ($n=42$)

who took an MH course in the last academic year. The response rate varied by year of degree course: 54,76% of 3rd-year students, 40,70% of 4th-year students, 71,05% of 5th-year students and 97,75% of 6th-year students. The respondents were mainly female (65,4%) and their median age was 24 years. The majority of respondents were 5th and 6th year students (median age=25), although most of them did not choose to take an MH course (Fig. 1).

Table 1 summarizes the sociodemographic characteristics of the overall sample and the subgroups. No significant differences were found between the groups, except for age, which was greater in the NTMC group than in the TMC group ($p < 0.001$).

Motivations

Most of the responders reported only one motivation, while 12 responders (4,6%) reported two motivations (2 in the TMC group and 10 in the NTMC group). Students who chose to take an MH course reported motivations that we grouped into 6 categories, as shown in Table 2: the majority (40,5%) declared to be interested in humanities, 10 students (23,8%) declared to be curious about MH courses, and 5 students (11,9%) reported choosing MH to improve their personal and

professional skills (i.e. empathy, and communication and relation ability). The other students in the TMC group did not show a real interest in MH, as they reported taking an MH course because they needed credits (11,9%) or just because it was listed among the elective courses (2,4%). Only 2 students (4,8%) reported having received good feedback from other colleagues who had already attended the course in the previous academic year.

Among the students who did not choose to take an MH course, 61 (28%) reported that the reason was they did not need credits; 39% ($n = 85$) of the NTMC group reported they could not attend the course because of concurrent commitments or lack of time (Table 3). Only 5 students (2,3%) declared they were not interested in MH and the same percentage reported having received bad feedback from students who had already taken the course in the previous academic year. Nineteen students did not report any motivation: 2 within the TMC group and 17 within the NTMC group.

Tables 2 and 3 show the students' primary motivations. The secondary motivations reported by the students were all related to the need to acquire credits ('need for credits' for the TMC group/'no need for credits' in the NTMC group).

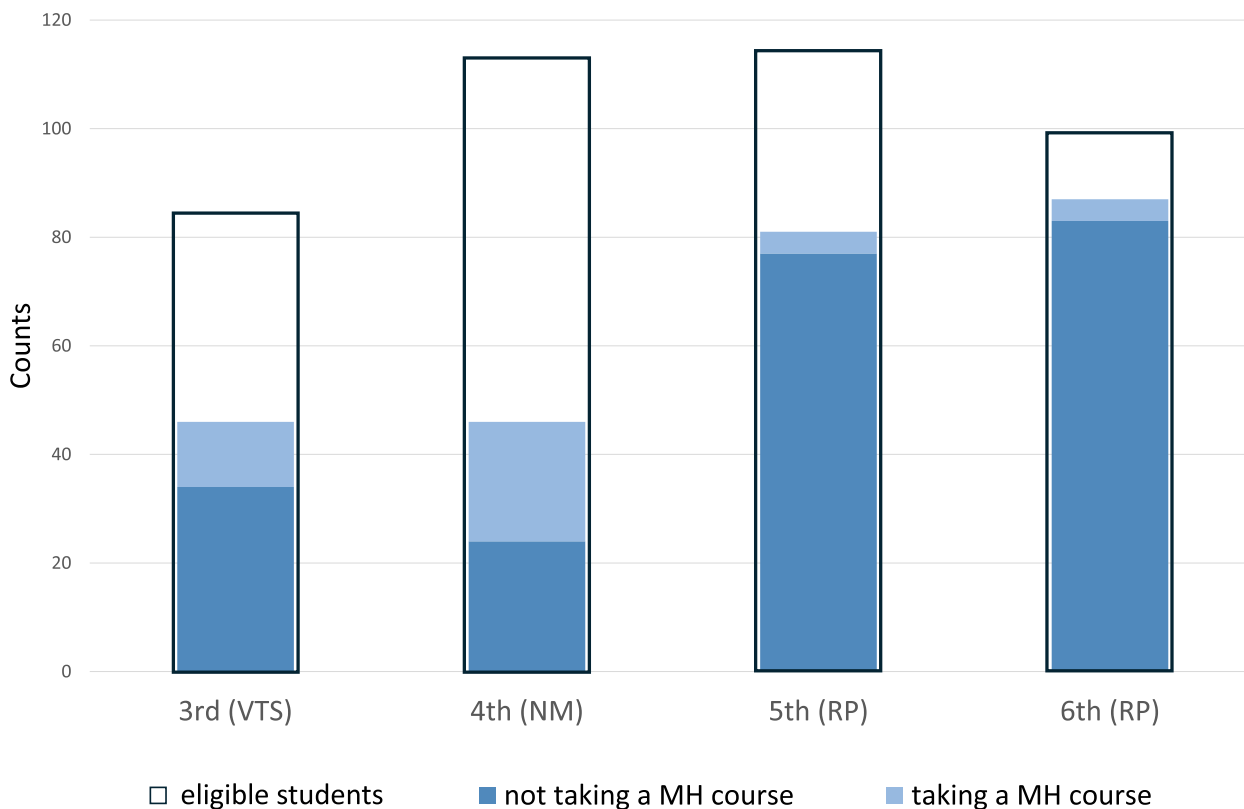


Fig. 1 Respondents by year of degree course

Table 1 Sociodemographic characteristics of the overall sample and the subgroups

	Overall sample n (%), median (IQR)	NTMC n (%), median (IQR)	TMC n (%), median (IQR)	NTMC vs TMC <i>p</i> -value
n	260 (100)	218 (83.8)	42 (16.2)	
Age (years)	24 (2)	24 (2)	23 (2)	<0.001***
Gender				
Female	170 (65.4)	146 (67)	24 (57.1)	0.221 ^a
Male	89 (34.2)	71 (32.6)	18 (42.9)	
Other	1 (0.4)	1 (0.5)	-	
Nationality				1
Italian	256 (98.5)	214 (98.2)	42 (100)	
Other	4 (1.5)	4 (1.8)	-	
Educational level				
Undergraduate	244 (93.8)	205 (94)	39 (92.9)	0.729 ^b
Bachelor degree	8 (3.1)	8 (3.7)	-	
Master degree	8 (3.1)	5 (2.3)	3 (7.1)	
Home status				
Not far away from home	40 (15.4)	33 (15.1)	7 (16.7)	0.986 ^c
Far away from home	220 (84.6)	185 (84.9)	35 (83.3)	
Commuter students	11 (4.2)	10 (4.6)	1 (2.4)	
Found accommodation	209 (80.4)	175 (80.3)	34 (81.0)	
In a relationship				0.985
Yes	152 (58.5)	128 (58.7)	24 (57.1)	
No	108 (41.5)	90 (41.3)	18 (42.9)	
Health status				
Ever suffered from a major disease	51 (19.6)	45 (20.6)	6 (14.3)	0.461
Still affected	33 (64.7)	31 (68.9)	2 (33.3)	0.313
Still in treatment	26 (51)	24 (53.3)	2 (33.3)	0.386
Type of disease				0.320
chronic	31 (60.8)	29 (64.4)	2 (33.3)	
acute/subacute	16 (31.4)	13 (28.9)	3 (50)	
Part-time job				0.559
Yes	24 (9.2)	19 (8.7)	5 (11.9)	
No	236 (90.8)	199 (91.3)	37 (88.1)	
Practicing physical activity				0.399 ^d
Never	20 (7.7)	18 (8.3)	2 (4.8)	
Occasionally	121 (46.5)	103 (47.2)	18 (42.9)	
Regularly	119 (45.8)	97 (44.5)	22 (52.4)	

NTMC Students not taking an MH course, TMC Students taking an MH course

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

^a Female vs other modalities

^b Undergraduate vs graduate

^c Not far away/Found accommodation vs Commuter students

^d Regularly vs other modalities

Psychological scores

Depression and stress scores (BDI-II and PSS-10) were not significantly different between the groups, while anxiety scores (SAS) were significantly greater in the NTMC group than in the TMC group ($p < 0.05$). The resulting psychological scores are summarized in Table 4.

Academic performance

We considered two indicators of academic performance: grade point average and having passed all the exams of the previous years (Table 5). Grade point average was significantly greater in the NTMC group, than in the TMC group ($p = 0.005$).

Table 2 Reasons for taking a course in MH

Reasons for	TMC n (%)	VTS n (%)	NM n (%)	RP n (%)
n	42	12	22	8
Interest in humanities	17 (40.5)	3 (25)	8 (36.4)	6 (75)
Curiosity about the course	10 (23.8)	3 (25)	7 (31.8)	-
Need for credits	5 (11.9)	2 (16.7)	2 (9.1)	1 (12.5)
Improving skills	5 (11.9)	3 (25)	2 (9.1)	-
Recommended by other students	2 (4.8)	1 (8.3)	1 (4.5)	-
As it was listed among the elective courses	1 (2.4)	-	-	1 (12.5)
Doesn't answer	2 (4.8)	-	2 (9.1)	-

TMC Students taking an MH course, VTS Visual Thinking Strategies Group (3rd year students), NM Narrative Medicine group (4th year students), RP Reflective Practice group (5th and 6th year students)

Table 3 Reasons for not taking a course in MH

Reasons against	NTMC n (%)	VTS n (%)	NM n (%)	RP n (%)
n	218	32	24	162
No need for credits	61 (28)	9 (28.1)	6 (25)	46 (28.4)
Lack of time	47 (21.6)	13 (40.6)	9 (37.5)	25 (15.4)
Concurrent commitments	38 (17.4)	1 (3.1)	6 (25)	31 (19.1)
Not informed about the course	28 (12.8)	5 (15.6)	-	23 (14.2)
Already attended a MH course	8 (3.7)	3 (9.4)	-	5 (3.1)
Misunderstood the question	6 (2.7)	1 (3.1)	-	5 (3.1)
Doesn't know	6 (2.7)	-	-	6 (3.7)
Not interested in MH	5 (2.3)	-	-	5 (3.1)
Not recommended by other students	1 (0.5)	-	-	1 (0.6)
Forgot about	1 (0.5)	-	-	1 (0.6)
Doesn't answer	17 (7.8)	-	3 (12.5)	14 (8.6)

NTMC Students not taking an MH course, VTS Visual Thinking Strategies Group (3rd year students), NM Narrative Medicine group (4th year students), RP Reflective Practice group (5th and 6th year students)

Regarding the other indicator, there were no significant differences between the two groups in the percentage of students who had passed all the exams scheduled for the previous years.

Table 4 Psychological scores

	Overall sample median (IQR)	NTMC median (IQR)	TMC median (IQR)	NTMC vs TMC p-value
n	260	218	42	
Anxiety (SAS)	38 (12)	39 (12.75)	34.5 (9.5)	0.018*
Depression (BDI-II)	11 (13)	11.5 (14)	8.5 (10.75)	0.201
Stress (PSS-10)	20 (5.25)	20 (5)	19 (4)	0.149

NTMC Students not taking an MH course, TMC Students taking an MH course

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

The logistic regression model

Univariate analysis revealed highly significant differences ($p < 0.025$) between the TMC group and the NTMC group in three variables: age, anxiety and GPA. We used these variables as predictors for a logistic regression model, to investigate their association with the choice to take an MH course.

The model confirmed that age, SAS score, and GPA were inversely associated with the choice of taking an MH course (Table 6); this means that a decrease in age, GPA or SAS score was associated with an increase in odds of taking an MH course (respectively OR 0.72, $p = 0.004$; OR 0.71, $p = 0.004$; OR 0.95, $p = 0.014$).

Discussion

The main objective of our study was to understand why Italian medical students choose to take an elective course in medical humanities. An individual's motivations can be affected by subjective reasons (intrinsic factors), as well as personal and contextual (extrinsic) factors; therefore, we explored the subjective reasons reported by the students, as well as other extrinsic factors that we hypothesized might be somehow associated with the students' choice. As expected, the majority of students reported choosing to take an MH course because of interest in the humanistic subjects (40.5%) or curiosity about MH (23.8%). While students who chose to take an

Table 5 Indicators of academic performance

	Overall sample n (%), median (IQR)	NTMC n (%), median (IQR)	TMC n (%), median (IQR)	NTMC vs TMC p-value
n	260	218	42	
Grade point average	27.23 (1.7)	27.43 (1.50)	27 (2.95)	0.005**
Passed all required exams				0.303
Yes	121 (46.5)	105 (48.2)	16 (38.1)	
No	139 (53.5)	113 (51.8)	26 (61.9)	

NTMC Students not taking an MH course, TMC Students taking an MH course

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 6 Predictors of choosing a MH course

	OR	95% CI	p-value
Age (years)	0.72	0.57—0.89	0.004**
GPA	0.71	0.56—0.89	0.004**
Anxiety (SAS)	0.95	0.90—0.99	0.014*

OR Odds Ratio, CI Confidence Interval, GPA Grade Point Average, SAS Self-rating Anxiety Scale

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

MH course only because they needed credits represented only a small minority (11.9%).

Moreover, our research showed that some students believe MH can help them improve their personal and professional skills, especially empathy, and communication and relational ability. This is consistent with the results of a previous study by Makowska et al., which explored Polish medical students' expectations of MH courses [28]. The authors reported that study participants expected MH courses to prepare them to better interact and communicate with patients and colleagues.

To explore extrinsic factors, we compared students who chose to take an MH course with those who chose not to take such a course, to identify any differences. Among the sociodemographic features only age differed significantly between groups: the median age of the NTMC group was greater than that of the TMC group. This can be explained by the different distributions of 5th- and 6th-year students between the groups (Fig. 1). In fact, although participation in the survey was greater among students in the last two years (median age = 25), only few of them chose to take an MH course. As the reported reasons suggest, the choice of not taking the course is due in many cases to lack of time and to concurrent commitments (Table 3). These results are consistent with those of a qualitative study performed at three medical schools in Poland by Makowska et al. [47]. As this study showed, Polish medical students feel their curriculum is overloaded; therefore, they believe that taking an MH course can be time-consuming, with

poor time left for subjects that they consider more important. Furthermore, it must be considered that, in Italy, the time reserved for internship increases in the last two years of medical school. Consequently, 5th- and 6th-year students are busier than their colleagues in 1st-4th years, with less time available for taking elective courses. In addition, students in the last years are more likely to have already acquired the number of credits required for elective activities, as reported by 28% of the NTMC group. Note that only 2.3% of the NTMC group reported a lack of interest in humanistic disciplines. This result, along with the reported reasons for taking an MH course, suggests that medical students overall are interested in the humanities.

As extrinsic factors, we also considered psychological characteristics and academic performance. Previous studies on students' mental well-being showed that medical students generally have greater levels of anxiety, stress, and depressive tendencies than their peers [40, 44, 48]. Mental health problems seem to be associated with a greater study load and a consequent reduction in the time available to carry out other activities [49, 50]. This may explain why students who chose to take an MH course had lower levels of anxiety, depression, and stress than those who chose not to take it (Table 4). However, only anxiety was significantly different between the groups. This finding is consistent with those of a recent study showing that motivation is significantly lower in students with a high level of anxiety [51]. In fact, motivation and anxiety, as personal dispositions, are closely interconnected [52].

We expected that students with better academic performance would be more likely to choose activities that have been shown to improve their personal and professional skills. It is known that students' motivation is strongly positively correlated with their academic performance. However, contrary to our expectations, we found that the GPA was significantly greater for those students who chose not to take an MH course. This can be explained by the findings of a recent study by Wu

et al., showing that extrinsic motivation had no significant association with students' academic performance [53]. Note that the percentage of students who had passed all the exams related to previous courses did not differ significantly between groups (Table 5).

The logistic regression model confirmed that age, anxiety, and GPA were negatively associated with the odds of a student choosing an MH course; this means that students who were younger, had worse academic performance, and showed lower anxiety levels were more likely to choose an elective MH course.

Another aspect to reflect on is the distribution of students in the TMC group by year of degree course. Consider that Medical Humanities courses at the University of L'Aquila are differentiated by year of degree course: VTS classes are intended for 3rd-year students, NM classes are intended for 4th-year students, and RP classes are intended for 5th- and 6th-year students. More than half of the students who chose to take an MH course were enrolled in the 4th year of medical school. This may indicate that Narrative Medicine is more attractive than other humanistic disciplines or may be due to other factors related to the specific subgroup. Further investigations could better explain these results. It should be noted that RP was first introduced as an elective course last year, so we expect participation in the course to increase in the coming years.

Study limitations and future research

Our study has some limitations. Firstly, it has a cross-sectional design, hence it does not allow causal inferences to be made. Secondly, the sample was unbalanced, because the study participants enrolled in the 5th and 6th years of medicine far outnumbered those enrolled in the 3rd and 4th years. Furthermore, the sample is quite small and not representative of all Italian medical students, since the study was conducted in only one medical school. These limitations could be addressed in future research, using different sampling methods and involving other medical schools that offer elective courses in medical humanities.

Interestingly, we found that having concurrent commitments and lacking time were major barriers to taking an elective course in MH. Further research should explore which activities Italian medical students consider priorities for their training and whether they believe that MH should be included in curricular activities. Furthermore, it would be interesting to understand whether anxiety can somehow influence these beliefs.

Conclusions

Among the study participants, the choice to take an elective course in medical humanities was mainly dictated by the interest in these disciplines and their

educational potential. This choice seems to be associated with lower anxiety levels and poorer academic performance. On the other hand, having concurrent commitments and lacking time represent the major obstacles to take this choice. When planning elective courses in medical humanities, considering the workload due to curricular activities could increase student participation. Future research should focus on the role of anxiety and academic pressure in determining student choices and behaviours.

Abbreviations

MH	Medical Humanities
MUR	Ministero dell'Università e della Ricerca
VTS	Visual Thinking Strategies
NM	Narrative Medicine
RP	Reflective Practices
CNMR	Centro Nazionale Malattie Rare
GPA	Grade Point Average
SAS	Self-rating Anxiety Scale
BDI-II	Beck Depression Inventory, second edition
PSS-10	Perceived Stress Scale, 10-item version
IQRs	Interquartile Ranges
TMC	(Students) Taking a Medical Humanities Course
NTMC	(Students) Not Taking a Medical Humanities Course
VIF	Variance Inflation Factor

Supplementary Information

The online version contains supplementary material available at <https://doi.org/10.1186/s12909-024-06293-2>.

Supplementary Material 1. Ad-hoc Questionnaire (Socio-demographic features).

Acknowledgements

The authors would like to acknowledge Prof. Rita Roncone, for helping in administering the questionnaires, and Dr. Riccardo Mastrantonio, for the support provided in every step of the study.

Authors' contribution

All authors conceptualized the research project; F.T., A.I., A.F., V.F., S.R. collected the data; V.C. and F.T. analyzed the data; F.T. and A.I. wrote the original draft; L.F., S.N., V.C., L.G., F.T. reviewed and edited the draft. All authors read and approved the final manuscript.

Funding

The study received no funding.

Data availability

The datasets used for the statistical analysis are available from the corresponding author on reasonable request.

Declarations

Ethics approval and consent to participate

Ethics approval was obtained from the Internal Review Board of the University of L'Aquila (approval number 19/2023). The study was performed in accordance with the Declaration of Helsinki. Informed consent was obtained from all participants of the study.

Consent for publication

Not applicable.

Competing interests

The authors declare no competing interests.

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Received: 10 April 2024 Accepted: 4 November 2024

Published online: 13 November 2024

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