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Gender awareness among Italian medical students

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Summary. Gender differences may affect the health status and presentation of diseases, sometimes determining a different approach by doctors and potentially resulting in a different use of prevention and care services. The aim of this cross-sectional survey was to compare the attitudes towards gender and gender stereotyping among male and female students in an Italian university. Data has been collected through a questionnaire administered to all medical students admitted to the School of Medicine and Surgery, resulting in a total sample of 153 subjects. The questionnaire investigated the following topics: Gender sensitivity (GS), Gender role ideology toward patients (GRIP), and Gender role ideology toward doctors (GRID). The results showed significant differences between genders in the GRIP and GRID areas. Males showed a more stereotyped gender attitude toward doctors and patients, with a higher score than females in the GRID and GRIP sub-scales. Gender differences among medical students need to be considered in medical education.

Keywords. Gender, gender bias, medical education, medical students, stereotypes.

Introduction

Due to social and biological differences, women and men are different with regard to health risks, and they experience different responses from health systems, health-seeking behaviors and outcomes.[1] For physicians, achieving gender awareness means having both the knowledge and the ability to recognize and include gender among the essential determinants of health and disease in their everyday practices.[2,3] Gender awareness also means being conscious that stereotyped ideas and convictions regarding the behaviors, skills and needs of men and women are widespread in our society. Since gender-stereotyped thought contains an intrinsic risk of polarizing medical exams, gender awareness involves reflecting on one's own attitudes and prejudices regarding men and women on the part of both patients, doctors and other subjects.[4-7]

Furthermore, gender has an impact on medical communication, affecting the presentations of symptoms as well as the doctors' conduct and interpretations of patients' complaints and signs.[8] Physicians are more likely to interpret men's symptoms as organic and women's as psychosocial, thus raising questions of inequality and gender bias in healthcare.[9,10]

Although much evidence shows that they should be considered in clinical practice, gender issues are not spontaneously included in medical practice and education. Gender bias has a relevance to medical education, and a change in the values and norms regarding gender awareness is necessary.[11] Gender mainstreaming is needed to establish a gender perspective in medical education, which addresses gender awareness in future physicians. A gender-specific medical curriculum would be appropriate for gender-specific healthcare.[12]

In most countries and medical schools, gender issues have been included in study programs, even using web-based knowledge-sharing platform.[13] However, the introduction of gender-specific curricula in Italy has been limited; only recently, in 2019, the Italian Ministry of Health, with the support of the Reference Center for Gender Medicine of the Italian National Institute of Health, launched a "Plan for the application and dissemination of gender medicine". The plan aims to provide a coordinated and sustainable direction for the spread of gender medicine through the dissemination, training and indication of health practices based on gender differences.[14] Moreover, the introduction of gender medicine in the curricula of medical schools has been recommended only starting from the 2017/2018 academic year. Thus, the aim of the present study was to compare the attitudes towards gender and gender stereotyping among male and female medical students in an Italian university.

Materials and methods

Our study used a cross-sectional design. Data was collected using a paper questionnaire administrated to the medical students, who completed the questionnaire by themselves. After the administration, paper questionnaires were electronically transcribed into an Excel database and the accuracy of data transcription was double-checked by the Authors.

Study participants

The only eligibility criterion was to be a medical student currently in the third year of the School of Medicine and Surgery at the University Medical School of Polytechnic University of Marche Region. All the students satisfying the above criterion agreed to participate in the study. Participation was voluntary, and the questionnaires were returned anonymously, after the regular lesson/exam hours. The approval of an Ethics Committee and a written informed consent were not necessary, because the survey was conducted as part of the University's routine investigations and was a secondary data analysis, using data preliminarily recorded in the context of a quality improvement questionnaire about the teaching experience of students. A written informed consent was not obtained, because it would have generated a possible identifying link to the questionnaire, thus becoming a risk for potential ethical issues on a sensitive topic such as gender awareness. Moreover, ours is only a descriptive cross-sectional study, without any kind of intervention, like the multipurpose Italian Health Interview Survey carried out by the Italian National Institute of Statistics. Secondary analyses on this kind of data do not require any approval by an Ethics Committee.

The survey

Gender awareness was assessed using a questionnaire previously validated in Europe, the Nijmegen gender awareness in medicine scale (N-GAMS).[7,15] The questionnaire consisted of 33 questions, with a five-point-Likert scale for each response (where participants were asked for their opinions on various statements, with scores ranging from 1 = totally disagree to 5 = totally agree); the items of the questionnaire can be found in Annex 1. The N-GAMS questionnaire measures three dimensions of gender awareness regarding GS (Gender sensitivity), focusing on the students' behavior regarding gender issues in healthcare; GRIP (Gender role ideology toward patients) and GRID (Gender role ideology toward doctors), that represent the students' attitude toward female and male patients and doctors. A higher score in the GS scale means more gender sensitivity. A higher score in the sub-scales GRIP and GRID corresponds to a tendency to use gender stereotypes.

Questionnaire validation

The questionnaire was translated into Italian by two different and independent native Italian speakers. Such Italian translations were then compared for inconsistencies. The new and original English versions were compared – to ensure that the concepts were transferred appropriately into the Italian version – also checked for inconsistencies, and revised in terms of grammar, correct word usage and order of items. We calculated the reliability scores of the Italian version relating to the three areas of the GS, GRIP and GRID questions with Cronbach's alpha (calculated for each area). The results obtained were area-GS ≤0.59 (9 items); area-GRIP ≤0.85 (10 items); area-GRID ≤0.76 (7 items). Considering a threshold value of 0.7, area-GS showed an uncertain reliability, while GRIP and GRID areas showed an acceptable reliability.

Data analysis

We used the analysis of variance (ANOVA) to compare the results between genders. The significance level used was $p < 0.05$. We used multiple linear regression models to analyze the relationship between socio-cultural variables and the results in the three areas of the questionnaire. We used a model with the socio-demographic variables of the students as independent variables and the result obtained in the three areas (GS, GRIP and GRID) as dependent variables. The significance level for variables to enter the linear regression models was set at ≤0.05. Standard post-estimation tests were used to assess the model's fit: F-statistics, Pseudo R2, and Hosmer-Lemeshow tests. We calculated Cohen's d for effect size to estimate the magnitude of difference between male and females. A Cohen's d >0.2 is considered as a difference not negligible (Sullivan et al., 2012). Analyses were performed with Stata 15.0 (Stata Corp., College Station, TX, 2007).

Results

In total, 153 students (57.5%, n = 88 females) participated in the study (Table 1). All students were of Caucasian ethnicity. The level of education of their parents was similar for male and female students, with 26.1% of the students' parents having primary level degrees (n = 40), 51.6% with intermediate level degrees, and 22.2% having a university degree, with no significant differences between male and female students. Conversely, more female (83.1%) than male students (67.7%) had working mothers (p = 0.033). About 11% of participants were an only child, and 32.0% had both brothers and sisters, with no significant difference between male and female students.

As for the choice of their general practitioner (GP), 33.9% of females preferred a GP of the same gender, versus 38.6% of males (p = 0.021); conversely, 25.6% of females had a female doctor, while only 2.86% (n = 1) of males had chosen a female general physician (p = 0.006). The results of the N-GAMS questionnaire (Table 2) showed significant differences in the analyses with ANOVA for the GRIP and GRID areas, while no signifi-

Table 1. Characteristics of participating medical students by gender (males n = 65 and females n = 88). Ancona, School of Medicine of the Polytechnic University of Marche Region

Characteristics	Males		Females		Total		p-value*
	%	n	%	n	%	n	
Age, mean (SD)	21.4 (1.06) years		21.9 (1.99) years		21.7 (1.65) years		NS
Highest education of mother							
Primary	27.7	18	25.0	22	26.1	40	NS
Intermediate	47.7	31	54.6	48	51.6	79	NS
University degree	24.6	16	20.4	18	22.2	34	NS
Highest education of father							
Primary	29.2	19	29.9	26	29.6	45	NS
Intermediate	43.1	28	46.0	41	44.7	68	NS
University degree	27.7	18	24.1	21	25.7	39	NS
Parents' working status							
Working mother	67.7	42	83.1	69	76.6	111	0.033
Working father	83.9	52	90.4	75	87.6	127	NS
Family composition							
Brothers only	30.8	20	26.1	23	28.1	43	NS
Sisters only	23.1	15	33.0	29	28.8	44	NS
Both brothers and sisters	33.8	22	30.7	27	32.0	49	NS
Only child	12.3	8	10.2	9	11.1	17	NS
Gender of general practitioner							
Male	97.1	34	74.4	32	84.6	66	0.006
Female	2.9	1	25.6	11	15.4	12	
Preference for general practitioner gender							
Male	38.6	17	16.1	10	25.5	27	0.021
Female	18.2	8	33.9	21	27.4	29	
Indifferent	43.2	19	30.6	31	47.2	50	
Missing	32.3	21	29.5	26	30.7	47	

n: number of subjects. P-values compare male and female students.

*P-value for the difference between means and proportion as appropriate.

Table 2. Distribution of the scores obtained in the sub-scales GS, GRID and GRIP by gender of medical students, and results of the ANOVA one-way testing. Ancona, School of Medicine of the Polytechnic University of Marche Region

	Males	SD	Females	SD	p	F	p	age-sq	Cohen's d
GS	2.65	0.46	2.7	0.44	NS		NS		
GRID	1.74	0.81	1.5	0.47	0.022	5.36	<0.05	0.03	0.38
GRIP	2.04	0.77	1.78	0.69	0.032	4.69	<0.05	0.04	0.36

GS: Gender sensitivity, GRID: Gender role ideology towards doctors, GRIP: Gender role ideology towards patients, p: p-value.

cant differences were found on the axis of gender sensitivity (GS). Male students scored higher than their female counterparts in the GRID and GRIP sub-scales, indicating that males had more stereotyped gender attitudes toward doctors (mean GRID score in males was 1.74 vs 1.50 in females, p = 0.022), and patients (GRIP in males: 2.04 vs 1.78 in females, p = 0.032).

Our multiple linear regression analysis did not show any particular association between socio-cultural variables and the results obtained in the GS and GRID subscales of the questionnaire. However, in the GRIP subject-scale a strong inverse correlation (beta, -4.12, p <0.05) between the GRIP score and having a working mother was found, after adjusting for gender, number of brothers, number of sisters, educational degrees of parents and working father.

Discussion

GS area

The GS part of the questionnaire did not show significant differences between male and female medical students with regard to gender awareness in healthcare. The reason may be due to the poor internal validity/reliability that was demonstrated for the GS, since Cronbach's alpha calculated for this area resulted to be ≤0.59. This could have caused a misclassification of the differences we are measuring between males and females, resulting in a non-statistically significant difference between the two groups.

GRID and GRIP areas

Our results showed significant gender differences in the GRIP and GRID areas of the questionnaire. Male students scored higher than females, showing that they had more gender-stereotyped behaviors toward doctors and patients, while female students tended to disagree with stereotyped statements. Female students stated more clearly that they disagreed with patients and doctors gender stereotypes. The answers of male students were more neutral. Despite the common conceptions about gender underlying the attitudes towards both patients and doctors, the students' gender stereotyping of patients was more pronounced than that of doctors, perhaps because students already identified themselves with the latter "group", and therefore they avoided judging doctors according to gender preconceptions. As in previous studies which used N-GAMS among medical students, male students held stronger gender stereotypes towards patients than females.[3,15,16] This is consistent with other authors' findings, namely that physicians consider gender more important in their relationships with patients than with students, colleagues, and staff.[3,6]

Gender awareness is a necessary prerequisite for gender-specific healthcare, in fact N-GAMS scores offer an insight into the attitudes of students.[2,3] The fact that males agreed with the stereotyped statements proposed in the GRIP and GRID sections of the questionnaires on one hand shows that they believed in gender differences, but on the other it assumes that they perceived a hierarchy in the differences, i.e. the characteristics of the male gender were described as superior and more desirable than those of the female gender. Male students held stronger gender stereotypes than female students, which is consistent with other research findings.[17]

Moreover, the fact that male students showed stronger gender stereotypes than their female colleagues is a result that appears to be in line with a previous Dutch study conducted among medical students[3] using the N-GAMS tool, and with other surveys that compared stereotyped gender behavior between men and women.[6]

Focusing on the sub-scales, the GRIP showed a strong inverse correlation between scores and having a working mother, after adjusting for gender, number of brothers and/or sisters, educational degree of parents, and working father. So, having a working mother seemed to be significantly related to the perceptions toward patients, with less stereotyped answers in those having a working mother. The reason may be due to the different model proposed in contrast with stereotyped gender roles, where the male parent has a regular job outside the home, while the mother acts mainly as a housewife.

The GRID section of the questionnaire showed more stereotyped gender attitude towards doctors by male students, when compared with their female counterparts. Similarly to what emerged from previous studies on this subject from the perspective of male students, male doctors appeared to be more efficient and competent, while female doctors appeared to be too emotionally involved with their patients – as also shown by other authors – and therefore too likely to take into consideration the way a patient lives with their disease.[6] Interestingly, this stereotype is perceived as a feature of non-efficiency, while many authors have shown how the different communication style of – or the patient-centered approach by – female physicians may improve the clinical outcomes.[18] Indeed, some authors showed how female physicians were observed to communicate differently with their patients, engaging in more preventive activities, thus resulting in higher patient satisfaction scores.[19] This aspect is more complex than it may appear at first sight: in fact, a critical review of the studies on the argument showed how also the patients' approach to their physician is affected by gender, with the patients of female doctors talking more overall, making more positive statements and disclosing more their psychosocial information. Indeed, such review found that even though male and female physicians did not differ

in the biomedical information they provided to their patients, the patients of female physicians provided them with more biomedical information than their male counterparts.[20]

The fact that the communication style of female doctors is more patient-centered is widely studied by several authors,[21] and the presence of a gender-related bias in the treatment of patients is by now a well-known concept, widely acknowledged in the literature.[4,7] In general, the fact that men tend to agree more often with gender stereotypes in the GRIP and GRID sections of the questionnaire may be explained by the fact that they express a more positive attitude toward men, which has also been observed by other authors.[15]

Our results show that, also at a medium-sized local institute like our university, there are gender stereotypes among medical students even before the beginning of their professional life as medical doctors.

These elements may affect the final attitude of medical personnel toward both their patients and colleagues. But this does not mean that we do not have to consider gender at all or that we should not go towards a gender-neutral medicine practice.

Gender-specific medicine can affect the contributions that women and men can make as healthcare professionals. We think it is necessary to take gender into consideration when providing healthcare, starting with the education of healthcare professionals. In contemporary medical education, much attention is paid to developing a patient-centered attitude in medical students. Hence, patient centeredness seems related to the concept of gender awareness, with a higher degree of it being positively related to gender sensitivity and negatively related to gender stereotyping.[3,6] Gender has been regarded as a crucial element in a physician's working life by other authors,[9] and we agree with this position.

The integration of gender issues into medical education – with regard to knowledge and attitude-forming, and the skills to apply these in medical practice – is advocated in all medical disciplines and across the learning continuum, from undergraduate through ongoing professional development.[6] An improved awareness – necessary to achieve a genuine connection with the patient – can also lead to an increase in the quality of healthcare for men and women.[3] A recent survey conducted among US medical students, who were members of some national medical student organizations, showed that the majority of participants strongly agreed that sex and gender medicine improve patient management (96.0%) and should be included as a part of the medical school curriculum (94.4%).[22]

It is well known that psychology students participating in the gender sensitivity program differ in their attitudes towards gender sensitivity and gender equality, while their awareness of gender equality increases.

A major limitation of this study were the self-reported measures, because they rely on subjective judgments and are affected by memory failure.

Another limitation is the lack of generalization of our study. We included only a single university setting; thus, our cohort may not be representative of all Italian medical students, and it's not indeed representative of all the professional figures involved in healthcare, such as nurses, physiotherapists and other healthcare workers who, even with different duties, play an important role in the assistance to patients. Also, the GS-area reliability score of ≤0.59 we encountered in the Italian version of the questionnaire is a limitation, considering a threshold value of 0.7.

Another aspect to emphasize is the relatively small number of participants, particularly when stratified by sex, which may have minimized the statistical power of the study, thus detecting modest but meaningful differences as statistically significant. Furthermore, some non-standard measures and measures without very good reliability were used, which may have resulted in a misclassification of the results and/or a lack of comparability of the results with those of prior studies.

The strong points are represented by the fact that, to the best of our knowledge, this is the first study to investigate gender awareness through N-GAMS among a cohort of medical students in Italy. Moreover, our sample is quite heterogeneous in terms of gender and socioeconomic factors, since all subjects came from different families, with different economic and social backgrounds. Also, administrating the questionnaire in a total anonymous way allowed us to avoid any bias due to the tendency to change one's answers for fear of being judged.

Conclusions

The results of our study show that in our local reality gender awareness is by no means a spontaneous process, and that the inclusion of gender medicine issues may be an important area of intervention in medical education and clinical practice. Indeed, some works showed that current medical teaching activities are not useful in terms of gender awareness. Naturally, more studies are needed to confirm our preliminary findings and to better identify the possible recipients of this education among students, but we believe that all the people directly involved in healthcare should be adequately trained about this topic. Further investigations are also needed to better quantify the presence of gender stereotypes at national level and to better focus on the possible risk factors associated to gender stereotypes. If this presence is confirmed, we believe that gender medicine should be included nationwide as a specific course for medical students. This is extremely important, also con-

sidering that, today, healthcare providers must face health-related challenges coming not only from patients identified as males or females, but also from a wider range of gender identities, like transgender, lesbian, gay and bisexual patients, who have unique population-specific needs and risk factors. The efforts needed to obtain this are not necessarily unbearable, since it has been shown how even a single five-seminar session significantly improve the confidence level and self-perceived proficiency of healthcare personnel.[23]

Pending a possible mandatory nationwide introduction of gender medicine (since in Italy it's now only recommended), a first important step may be to extend investigations like the one we described to all healthcare students in our university, and possibly implement additional gender medicine courses, starting from local institutes like ours. If more medical universities are included, these investigations may assume the characteristics of a multicenter study, aimed at gathering a sample representative as much as possible of the national picture. More studies are also needed to better identify – both at local and national level – the risk factors associated with the presence of gender stereotypes among medical students.

Key messages

- Male medical students have more gender-stereotyped behaviors toward doctors and patients, while female students tend to disagree with the stereotyped statements
- Even at a medium-sized local institute like ours there are gender stereotypes among medical students even before the beginning of their professional life as medical doctors
- Gender-specific medicine can affect the contributions that women and men can make as healthcare professionals
- Including gender medicine issues may be an important area of intervention in medical education and clinical practice

Annex

Nijmegen gender awareness in medicine scale (NGAMS)	**1 = totally disagree 5 = totally agree**
Gender sensitivity **- Do you think that:**	
Addressing differences between men and women creates inequity in health care?	
Physicians' knowledge of gender differences in illness and health increases quality of care?	
Physicians should only address biological differences between men and women?	
In non-sex-specific health disorders the sex/gender of the patient is irrelevant?	
A physician should confine as much as possible to the medical aspects of the health complaints of men and women?	
Physicians do not need to know what happens in the life of men and women in order to be able to deliver medical care?	
Differences between male and female physicians are too small to be relevant?	
Precisely because men and women are different, physicians should treat everybody the same?	
Physicians who address gender differences are not dealing with the most important issues?	
In communicating with patients, it does not matter to a physician whether the patient is male or female?	
In communicating with patients, it does not matter whether the physician is male or female?	
Differences between male and female patients are so small that physicians can hardly take them into account?	
For an effective treatment, physicians should address gender differences in the etiology and consequences of the disease?	
It is not necessary to consider gender differences during the presentation of complaints?	

Continues

Annex - Continued

Nijmegen gender awareness in medicine scale (NGAMS)	**1 = totally disagree 5 = totally agree**
Gender role ideology towards patients **- Do you think that:**	
Male patients better understand the approach of physicians than female patients?	
Female patients have unreasonable expectations from physicians compared to male patients?	
Women more frequently than men want to discuss problems with physicians that do not belong in the consultation room?	
Women expect too much emotional support from their physician?	
Male patients are less demanding than female patients?	
Women are larger consumers of healthcare than is needed?	
Men do not go to a physician for harmless health problems?	
Medically unexplained symptoms develop in women because they complain too much about their health?	
Female patients complain about their health because they need more attention than male patients?	
It's easier to find the causes of health complaints in men, because men communicate in a direct way?	
Men resort to healthcare more often with problems they should have prevented?	
Gender role ideology towards doctors **- Do you think that:**	
Male physicians put too much emphasis on the technical aspects of medicine compared to female physicians?	
Female physicians prolong their consultations too much compared to male physicians?	
Male physicians are more efficient than female physicians?	
Female physicians are more empathic than male physicians?	
Female physicians needlessly take into account how a patient experiences her disease?	
Male physicians are better able to deal with their work than female physicians?	
Female physicians are too emotionally involved with their patients?	

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