Medicine education through a gender lens

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Abstract. A gender approach is a fundamental ethical and scientific commitment to ensure the best care for each person, respecting the differences and thus achieving an effective personalized medicine. Italy is the first country in Europe to formalize the inclusion of the concept of "gender" in medical curricula, but the implementation is not the same across universities. Students (330) enrolled in the first-year of the Medicine and Surgery course at the University of Genoa (a.y. 2019-20) were asked to answer a questionnaire on the relevance and usefulness of a gender dimension in medical education, consisting of five closed-ended questions as well as two one open-ended questions. The development of a gender approach is viewed very positively by 71.14% of the students. The majority of first year students agree with a personalized view of medicine. The knowledge of gender medicine is also considered very useful within the educational programs by 82.84% of the students. However, the answers about which medical areas should benefit more from a gender approach reveal that students have still a superficial view of the subject. Only half of the students (52.73%) consider it useful to include a brief course on the history of gender medicine. The findings show that future physicians are responsive to the value of a gender approach in medicine. Further studies are needed to investigate how such gender-oriented efforts should be outlined in medical training to be most effective, not forgetting taking into account the different gender approaches in different cultures and healing systems.

Key words: gender attitudes, gender differences, medical education, medical curricula, physicians, gender medicine

Introduction

The vast literature and substantial scientific evidence show how men and women can not only present different clinical and symptomatic manifestations for the same pathology, but also develop substantially different therapeutic responses (1-4). One of the best-known cases is that of heart disease, which has long been defined primarily as a male pathology, causing inadequate therapeutic responses and higher mortality rates in the female population (5-7). In 1991, Bernardine Healy, caught the attention of the scientific community on the "women question" publishing on the New England Journal of Medicine an article expressively titled "The Yentl Syndrome". In this article, the American cardiologist described the persistent discriminatory attitude of doctors towards women, expressly recalling the 19th-century heroine of Isaac Bashevis Singer's short story, who had to disguise herself as a man to attend school and study the Talmud (8). This article was a starting point for good work in the cardiology field. On the contrary to what has happened for heart disease, osteoporosis has been mainly considered as a typical pathology in women and men have often been neglected or untreated (9). The exclusion of women from clinical trials for the development of new drugs until very few years ago led to the marketing of products that proved to be harmful to the female population (3, 10-12).

The first researches and related health policies were developed in the USA and Canada in the late 1980s (13, 14), where the need for structures for sex

and gender-specific approaches had been recognised much earlier than in Europe. Early research was predominantly focused on protecting women's health and only later the application of the gender perspective to medicine has become synonymous with a better medicine for all - men and women - and a more effective, efficient and sustainable health care system (15).

In recent years, then, specific courses in universities and new training and awareness-raising policies have been instituted, also at the instigation of the WHO, which has promoted their enhancement by including gender in the social determinants of health and urging the Member States to include this type of perspective in health policies and the organization of health systems. In 2009, the WHO stated that "ness and policies, and health programmes must consider gender from the outset (…). The process of creating this knowledge and awareness of - and responsibility for - gender among all health workers is called gender mainstreaming" (16). The policy framework for health and well-being in the WHO European Region, Health 2020, adopted in 2012, as well as the sustainable development goals of the Agenda 2030 (17) include gender mainstreaming as a mechanism to achieve gender equality and ensure universal health.

At the educational level, starting from 2002, the Columbia University in New York has instituted the first course of gender medicine titled "A new approach to health care based on insights into biological differences between women and men", which shows an exclusively biological cut to gender differences, which was not yet framed in the holistic view that has been spreading in the last few years.

Afterwards, Gender Medicine courses have been included in Medical degree programs in several universities (18).

Only now, the diffusion of Gender Medicine begins to play an important role and this is mainly due to its widespread introduction in university and vocational training (19-22).

In Italy, the first institutional initiatives for the promotion of gender medicine date back to the end of the 1990s. In our context, the attention was initially focused on the specific theme of women's health (23). Over the last decade, however, there has been a progressive widening of the gender perspective with a growing focus on the personalisation of care and the effectiveness of a new approach to medicine for women and men. The creation of the National Observatory on Women's Health at the Ministry of Health in 2005 and the establishment of the Women's Health Commission of the Ministry of Health represented two turning points at the Italian level.

A recent milestone in the application of Gender Medicine in Italy is represented by the Law n. 3 of 11th January 2018 entitled "Application and dissemination of Gender Medicine in the National Health Service". In fact, Article 3 expressly provides for a plan aimed at the diffusion of gender medicine via its teaching and at the promotion of adequate levels of training for medical personnel, which has to keep updated on the subject (24). In particular, in paragraph 4, the article provides for the promotion of specific studies in the degree courses of the health professions.

Although the attention for gender medicine has been spreading all over the world, with the approval of this law, Italy has become one of the first countries in Europe to formalize the inclusion of the concept of "gender" in the medical training course. This political measure is an essential prerequisite for ensuring the best care for each person and, thus, for achieving an effective personalized medicine.

In order to be compliant to the new educational demands, some Universities (in particular Padua, Siena, Ferrara) has already started, on a spontaneous basis, pilot training courses on the gender approach (23).

The School of Medicine and Surgery of the University of Genoa, after having offered in the last few years educational activities for a gender sensitive medicine, ranging from disciplines of biomedical to clinical medicine, has planned a short course of Gender Medicine for the first-year Medical students in a.y. 2019-2020.

Monitoring student's knowledge and attitude to the newly introduced subject, is vital for the planning-of an adequate training and for the high critical issues of this emergent topic. This study aims at investigating the perception of Italian Medical students to the gender approach in the prevention of disease and in the definitions of treatment methods. To date, there are few investigations on this issue in Italian universities.

Methodology

We used an online questionnaire containing 4 closed questions, pertaining the evaluation of important gender medicine approaches, and 2 semi-closed questions on the students' knowledge and interest towards the introduction of a gender approach in different medical areas.

The survey involved all the students (330; 170 males, 160 females; 18-29 years old) enrolled in the first year of the Medicine and Surgery course at the University of Genoa (a.y. 2019-20),-who attended the teaching of "Human Sciences" (first year, first semester) , which featured a short in-depth course on gender-related health issues.

Students were asked to fill in the questionnaire online via the UNIGE learning platform AulaWeb in December 2019. Participation was voluntary and fully anonymous.

Participants were asked to indicate their level of agreement or disagreement with each statement in a set of closed-ended questions and to respond to 2 open-ended questions on what they think Gender Medicine is about. A 10 point Likert scale was used. Respondents scoring 7–10 were considered to "agree strongly" with the statements, whereas those scoring 0–4 to "disagree strongly".

Results

We collected 239 valid answers in the online survey (66,9% female, 33,1% male).232 had complete answers to the open-ended questions. The response rate to the closed-ended questions was 72.4% and 70,3% to the open-ended questions.

The results of the survey indicate that there is a wide variety among students in the perception of Gender Medicine.

To the question "Do you think it is useful to include a short course on the history of gender medicine?" in the History of Medicine course (Fig. 1), just

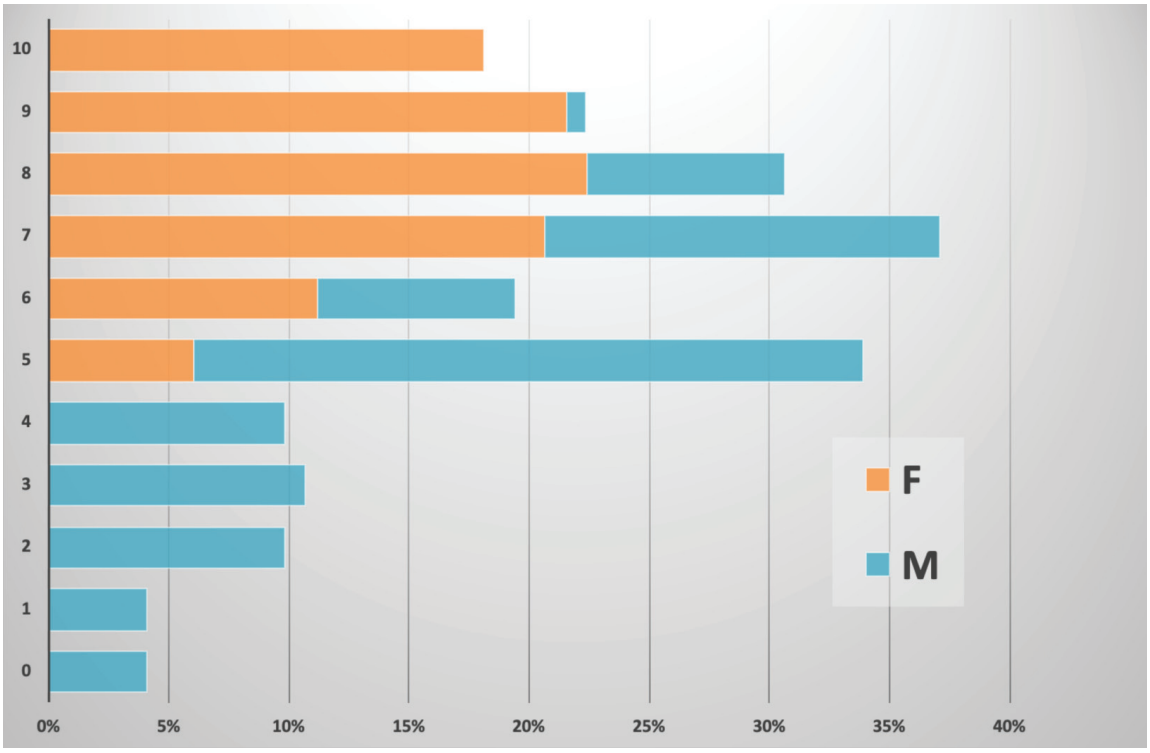

Figure 1.

over half (52.73%; over 88% female) fully agree, 20.5% of the students (all males) strongly disagree (0-4), and the remaining 26.78% are indifferent (5-6).

When asked whether a gender approach in different medical teaching is important (Fig. 2), the majority of students (71.14%) responded positively, only 21.76% were indifferent, and the rest (7.11%) did not agree at all.

A good knowledge of Gender Medicine is considered very useful by 82.84% of the students (over 90% female), not at all useful by 4.6% the remaining 21.76% do not think it is an aspect to be considered and valued within the educational programs of the degree course in Medicine. 198 students considered it very important to know the gender differences when the health care worker takes care of and treats patients, as showed in Fig. 3.

The majority of first-year students believe that little attention is paid by health professionals to gender issues, as highlighted in the Fig. 4.

Additionally, it is worth noting that some students are not fully aware of the meaning of the term "gender", which is often confused with "sex" As a matter of fact, When asked "what is gender medicine for you?", most students (63%) referred just to biological differences between men and women. Only 34% of the students were able to identify the specific aspects of a truly gender-sensitive approach.

The remaining 3% could not answer the question or indicated an answer not related to the issue.

There were several Very interesting answers to the open question.

A first point that emerged can be outlined in the following answer, given by a female students, about the meaning of Gender Medicine:

> gender medicine does not give space to generalisation and is based on the centrality of the person.

As for the concept of a personalised medicine, the following male student's answer can be considered representative of 65% of the students:

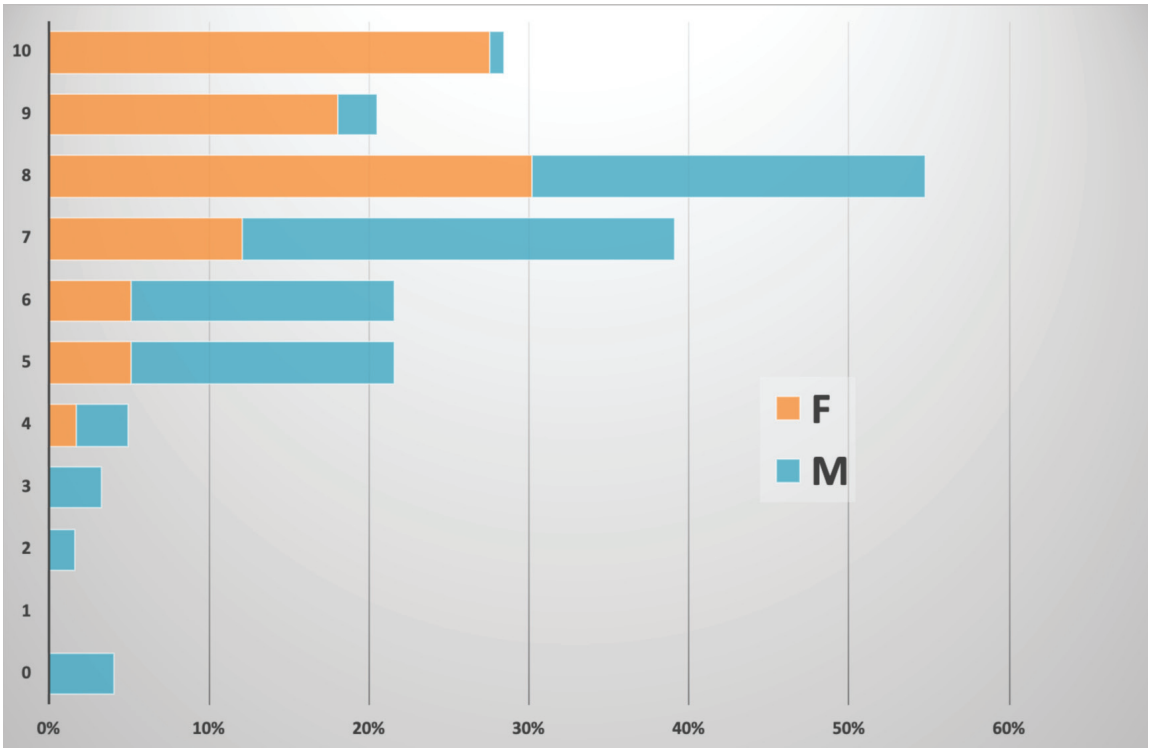

Figure 2.

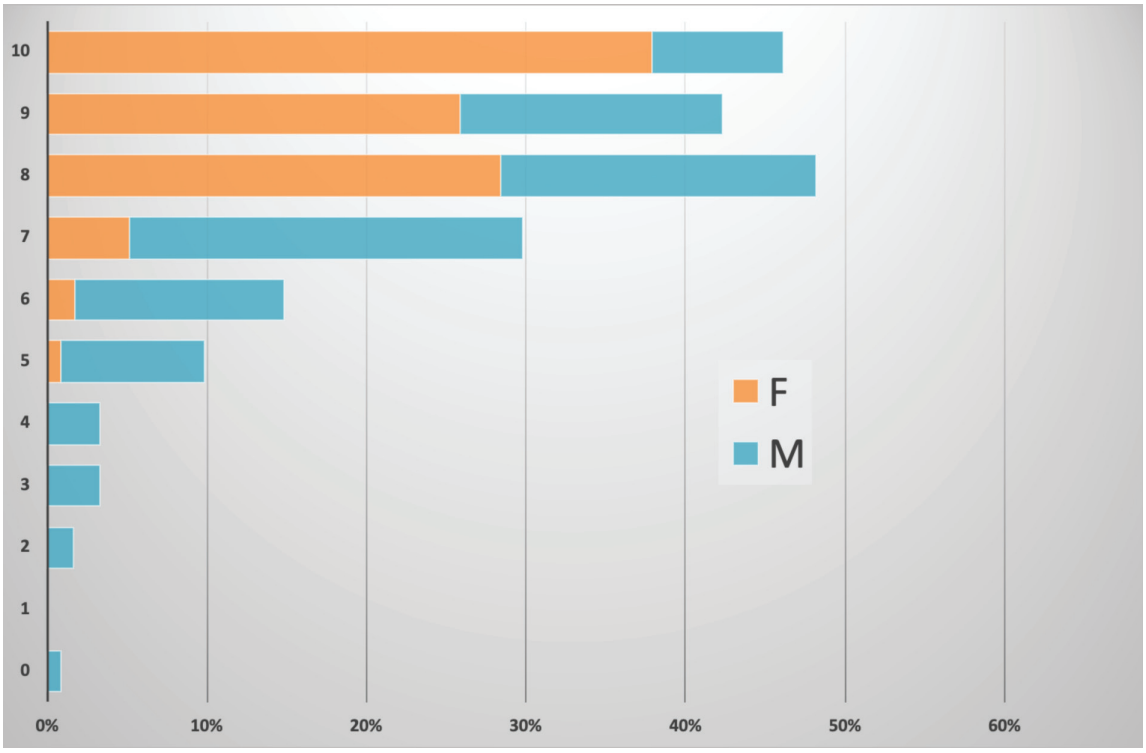

Figure 3.

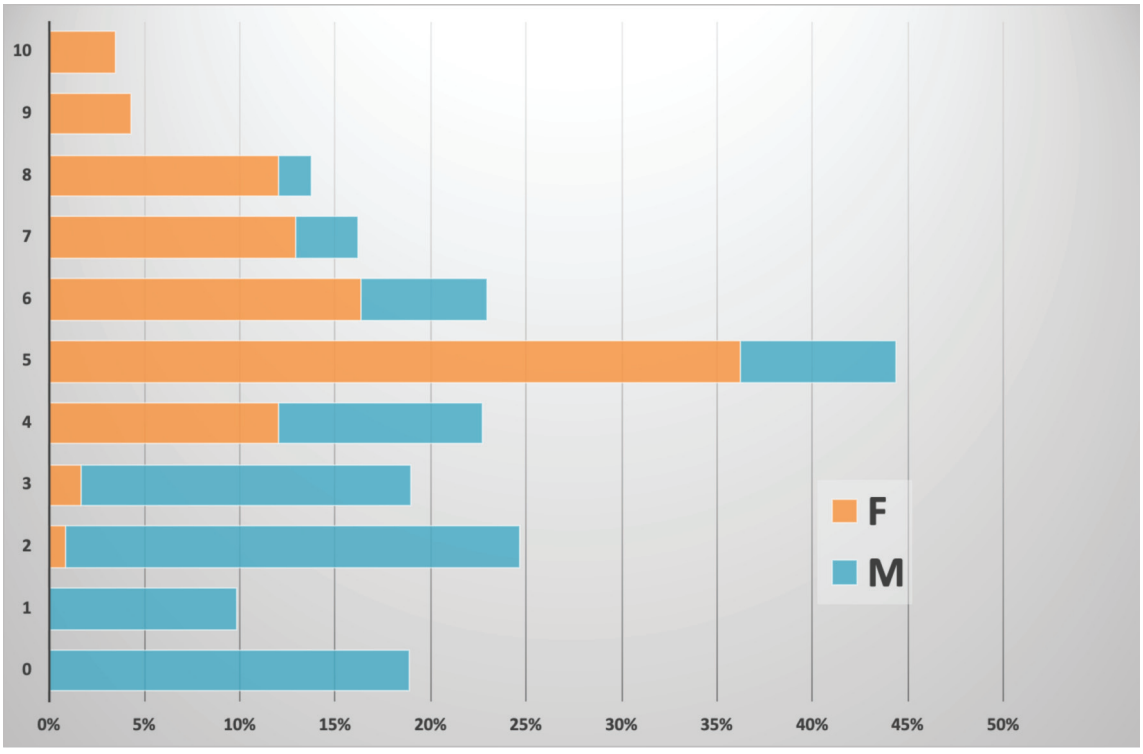

Figure 4.

> personalizing the therapeutic strategy, bringing to the treatment of patients the best available science, data and cutting-edge technologies to obtain a better diagnosis and follow-up than the generic model.

Most first-year students share a similar view on the importance of a holistic view of the patient. In fact, 83.5% of the answers are in line with this definition:

> A treatment path has to consider the biological profile of the patient but with equal attention his/her personal, social and cultural dimension. Many students (85,4%) agreed with the following female student's observation: personalized medicine, centered on the patient and the personalization of therapies, already includes the consideration of gender differences, being aimed at ensuring the best care to each person.

The second open question was about the medical areas in which the student most believed a gender approach was applicable. The answers reveal a lack of knowledge on the subject. However, according to the survey, The most suitable specialties are paediatrics, psychiatry and oncology, which together account for 65% of the answers. There are many students who have identified surgery and orthopaedics as fields of application (16%). Of the remaining responses, 14% indicated all specialties and 5% were undecided.

To sum up, two key aspects have emerged from the survey: firstly, it is vital to identify in which cases gender-based differences are significant; secondly, the current academic system needs to introduce the "teaching gender competence" in medical training and curricula to ensure the most personalized care as possible.

Discussion

The high response rate of first-year medical students allowed a sufficiently deep pilot analysis of the situation with respect to the knowledge of gender medicine and to the perception of the usefulness and relevance of the gender approach.

The inclusion of a specific and deepened gender approach in the course of "Human Sciences" at the UNIGE School of Medicine responds appropriately to the national guidelines and consolidates the interdisciplinary approach between the medical areas and the humanity sciences. Indeed, a better understanding of women's demand for health than men and orienting research/therapeutic interventions inevitably require raising awareness among future physicians through gender focus as early as their curricula. Therefore, an appropriate medical education in line with a gender-based approach is now recognized to be crucial in order to ensure everyone the best available treatment, thus reducing the level of error in medical practice and decreasing the costs of the National Health Services.

Unfortunately, in the field of medical training, there are still few Italian universities that have provided, in a structured way, a gender approach as an integral part of the training process (23). The Italian academic system seems still to struggle to recognize this subject as an essential disciplinary component of the educational curriculum of students who undertake medical or health care courses. Indeed, only a profound synergy between technical-scientific skills and the humanities can fully qualify a health care staff capable of taking care of the patient in a global way , thus guaranteeing its centrality in the care relationship (25).

The initiative of Genoese medical School demonstrated awareness of the relevance in adopting a gender approach already from the first approach with the medical sciences, in order to ensure the adequacy of research, prevention, diagnosis and treatment. Recognising biological, social and cultural differences related to the gender dimension is crucial to outline programmes and actions, to organise health services, to stimulate research, to inform and communicate correctly and comprehensively. The planning and the organisation of an academic education focused on a gender-sensitive approach to health shows a growing awareness of the relevance of personalisation in care.

The issue of gender differences in common diseases has gradually assumed central relevance also from an ethical point of view. The use of the sex and gender perspective in research and clinical practice, as well as in health planning, is considered as an element of innovation enhancing the fundamental ethical principles of equity and distributive justice (26). In 1998, World Health Organization (WHO) included gender medi-

cine in the Equity Act, indicating equity as a principle to be applied to access care for women and for men as well as to pertinence in care and personalize therapies. In addition, WHO underlined the relevance of this approach creating a women's health unit, which in 2000 evolved into the Department of Gender, Women and Health (GWH).

Even the Italian National Committee for Bioethics (CNB) emphasized the principle of equal consideration of women in experimentation and underlined the need for an adequate medical training in this respect (27). Likewise, the CNR's Commission on Research Ethics and Bioethics has also pointed out the need to enhance academic training on the specificity of women in the general field of health, highlighting the serious repercussions that an androcentric approach can have on research itself and on the exercise of the constitutionally protected right to health protection (28).

The implementation of training activities, now explicitly foreseen as a commitment in pre and postgraduate university courses (degree courses in medicine and surgery, pharmacy, biology and health professions, and related specialization schools), as indicated in the Italian "Plan for the application and dissemination of Gender Medicine", approved by the Italian Ministry of Health in 2019 (29), is the prerequisite for a correct introduction and application of Gender Medicine.

Achieving an effective personalization of care means adopting an intersectoral approach between medical and human sciences areas that takes into account gender differences, that supports research (biomedical, pharmacological and psycho-social) based on gender differences, that is able to raise awareness among health professionals through targeted education. This has been well highlighted by our students, who declared that knowledge of Gender Medicine can be useful for the care and treatment of patients.

Unfortunately, the research results show that the path of awareness raising of future physicians is still long. In fact, although a high percentage of students (71,14%) recognizes the relevance of a gender approach in the various medical courses, a high percentage of students still declares themselves indifferent (21,76%). This result should be carefully considered in order to plan training initiatives inserting this "new" dimension of medicine in all medical areas.

Only by proceeding in this direction will it be possible to guarantee the best care to each person, further reinforcing the ethical concepts of "patient centrality", "personalisation of therapies" as well as "appropriateness of the interventions".

From another perspective, the students' perception of a limited consideration of gender issues by health professionals themselves and therefore also by their teachers who are themselves professionals emerges. In fact, most respondents think that health professionals pay little attention to gender issues. This suggests that there is a lack of in-depth knowledge of the value of applying such an approach and that the indifference shown by many respondents can be attributed to a lack of familiarity with the potential of a gender-based approach to medical problems. In fact, in the open answers the indifferent students showed that they are not able to define gender medicine and to frame its potentialities.

These considerations suggest therefore the need for a continuous training along both the whole educational program and the working path, which would enable health professionals to understand the importance of personalized medicine, as a medicine capable of looking at each person in its very own specificity. Moreover, it is not only recognized that only a deep synergy between technical-scientific and humanistic competences can fully qualify a health worker able to take care of the patient in a holistic perspective and guarantee his centrality in the care relationship (25).

In this sense it should not be forgotten that a gender approach requires a very high effort, being characterized by an interdisciplinary approach involving humanistic, social and individual approaches.

It is astonishing the limited interest of students to face a path also historical on gender medicine and suggests a lack of awareness of the importance that the knowledge of the historical evolution of a discipline or approach can have in the development of a critical epistemological reflection on the development of medicine and its continuous changes (30). This deserves a special attention and it requires a reflection on how and when it would be more functional to introduce in the medical curriculum also a historical view of medicine and also of gender, so that it can be appreciated not only for its cultural value, but also for the input it

offers in the approach to the person, to his needs and to his expectations of care.

In summary, the information acquired in this pilot study allows us to state that there is a good degree of awareness of the importance and usefulness of a gender approach applied to medicine. It is indeed a valuable tool to better understand the complexity of life in order to prevent, cure and heal the person in his uniqueness. At the same time, however, there is a need to identify the most effective organization in order to give the gender approach the right space in the medical curriculum. From the students' answers, in fact, an interest emerges in treating the gender approach not only from a historical-evolutionary point of view, but also in the preclinical and clinical fields.

Conclusion

Although the survey was conducted in a single university context, it represents a valid starting point to understand how gender culture could be conveyed.

the results presented offer an interesting cognitive framework: it is in fact an "open and flexible container" that can be integrated and improved in the subsequent stages of the research, when additional actors involved in the university education system, such as trainers and professionals, who were excluded from the preliminary survey , will have the opportunity to share their perception of the usefulness and relevance of gender medicine, which will probably differ from that of the students.

A proper introduction of the gender perspective in medical education requires that teachers, academies, and policymakers are involved together In addition to deepening the Genoese situation through the point of view and expectations of future doctors, the study wanted to offer an input to stimulate people's interest to the gender perspective and to point out the still widespread ignorance on the subject. Moreover, we wanted to outline the benefits of the introduction of a historical perspective on gender in the first course of the medical curriculum.

Further research is needed to find out how such gender-oriented endeavours should be outlined in medical specialisation areas, not forgetting the different approaches to gender among different cultures and different healing systems.

In this study we have dealt mostly with training, but it is only thanks to research that training finds lifeblood. Unfortunately, there is still a long way to go in order to reach a gender balance in both preclinical and clinical research. Even today, most of the experimental work in medicine does not take into account the relevance of gender and the possible consequences of not considering this biological variable adequately. This happens despite it is well known that dealing with a properly selected sample is vital in order to make reliable claims.

Also in clinical trials it is crucial to implement the stable use of cohorts of patients with a fair distribution between the two sexes. It is indeed undeniable that a thorough knowledge of the biological and cultural differences allows physicians to intervene with the most appropriate treatments.

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