

From Gender Equality Research to Gender Medicine: Where Do We Stand?

**Reflections from the Department of Biomedical,
Surgical and Dental Sciences, University of Milan**

edited by Giulia Ottaviani and
Maria Pia Abbracchio



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General note on figures and tables

Unless otherwise indicated, figures and tables have been prepared by the author(s) of the chapter in question.

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I. Preface

This volume includes five manuscripts extracted from the contributors' presentations at the 2nd International conference on Gender Equality organized by the Department of Biomedical, Surgical and Dental Science of the University of Milan, Milan, Italy, February 14th, 2024. The contributors belong to an international panorama: The University of Milan, Milan, Italy and the University of Texas Health Science Center at Houston, Texas, USA were involved. We thank all the contributors for their dedication.

Why did we wish to publish a book on gender equality? We aimed at highlighting the issue of gender equality in our Department, as an example of the disparities that are still present in biomedical professions, but, at the same time, we wanted to exploit this opportunity to include research data on gender distribution related to pathological and dermatological findings, because there are limited resources in the field.

We thus wanted to attract attention on both *gender in medicine* and *gender medicine*, a branch of science that is still in its infancy and deserves enormous efforts to be developed via recruitment of both male and female physicians and researchers. Among other topics, the recruitment of women into the workforce and their career progression will be discussed, especially in the field of Pathology. To exclude an entire gender simply because we have an unstated tradition of exclusion is a waste of national resources. As doctors and scientists, we say we want the best resources available to our patients. We hope we can all recognize as peers that some of the best in our field are actually persons who are not our gender.

In recent years, the Department of Biomedical, Surgical, and Dental Science at the University of Milan has been at the forefront of proposing an inclusive and equitable academic environment, assured by the two departmental referents for gender equality, Giulia Ottaviani and Francesca Sisto. Recognizing the importance of gender equality in the fields of Medicine, Surgery and Dentistry, the Department is proud to present its research on Gender Equality. The volume aligns with the institution's commitment to promoting diversity, equity, and inclusion. It serves as a platform to address pertinent issues and explore innovative solutions in the context of Gender Equality within academic and professional spheres.

The volume encompassed the celebration of the International Day of Women and Girls in Science, emphasizing the global significance of advancing Gender Equality

in scientific fields. The presentations span a range of crucial topics, from workforce re-starting grants for young mothers to recognizing and reducing barriers to diversity and inclusion in the field of Pathology.

This volume provides a platform for researchers within the department to showcase their groundbreaking work related to gender equality. From exploring multidiscrimination and career development to addressing dermatological challenges in the transgender community, our researchers are actively contributing to the discourse on gender equality.

By including speakers from various disciplines and international perspectives, this volume aims to foster interdisciplinary discussions. This approach recognizes the interconnectedness of gender equality issues and encourages collaborative efforts to address challenges in research, academia, and healthcare.

Someday, it may happen that we will be patients ourselves and we will want the best treatment available for our family members. For example, if your own child is sick, you would not care if the best pathologist is a man or a woman, or in addition to being woman, that she might be disabled. We have found times that show that maybe the best physicians or pathologists were not available because of our own systemic bias. We publish this volume to ask the readers to be open to the benefits that inclusionary policies may bring to our institution and country as a whole.

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II. Introduction and volume presentation

This volume, “From Gender Equality Research to Gender Medicine: Where Do We Stand?” is a comprehensive compilation of five chapters derived from presentations at the 2nd International Conference on Gender Equality, organized by the Department of Biomedical, Surgical and Dental Science of the University of Milan, that took place on February 14th, 2024, a few days later the 10th **International Day of Women and Girls in Science**, an initiative introduced in 2015 by United Nations Member States, Inter-Governmental Organizations and their entities, to achieve equality in science, technology, and innovation for Socio-Economic Sustainable Development by 2030 and beyond, fully in line with the 5th UN Goal “**Achieve gender equality and empower all women and girls**”.

According to the latest (2024) report on the progress made for the 5th Goal, gender parity, especially in women’s participation in public life and managerial roles, remains distant (https://sdgs.un.org/goals/goal5#progress_and_info). At the current rate, achieving gender parity in managerial positions will take 176 years. The unprecedented global challenges that we have to face cannot, obviously, wait such a long time, and urgent action is needed to change biased social norms and discriminatory laws that still prevents talented women to take their right place in society.

This is particularly important in the biomedical field, that is experiencing unprecedented challenges due to the enormous increase of the percentage of aged people needing medical assistance for chronic non transmittable diseases in western countries, and to new emerging infections affecting the entire world. Therefore, increasing women’s leadership roles and investments in gender equality are crucial at both local regional, national, and international institutions, and we hope that this volume will contribute to raise awareness on this topic and help communities in the medical and scientific field reaching such objectives.

The contributors to this volume come from two international institutions, the University of Milan in Italy and the University of Texas Health Science Center at Houston, Texas, USA. Gender equality is highly encouraged by the Faculty of Medicine and Surgery of the University of Milan, which has implemented initiatives and policies to promote an inclusive and equitable academic environment. The faculty is committed to fostering diversity among its students, staff, and faculty members, ensuring that

everyone has equal opportunities for education, professional recruitment, and career advancement. This commitment is reflected in programs and resources aimed at addressing gender disparities and supporting the progression of women and individuals from underrepresented groups within the medical fields. More in general, offering equal opportunities to both young males and females and identifying critical *fragility* issues and periods in carriers is at the very center of the policies of the University of Milan, as better outlined in one of the chapters of this volume. On this basis, our primary has been to shed light on the critical issue of gender equality within our Department of Biomedical, Clinical and Surgical Sciences. Despite the advancements in science and technology, gender disparity remains a persistent issue, particularly in the recruitment and career progression of women in academia and the medical field. This volume seeks to highlight these challenges and also present research data on gender distribution related to pathological and dermatological findings offering some examples of the diverse gender-dependent presentation of diseases and raising the need of different personalized medical approaches between different sexes.

In recent years, our Department has made significant strides in fostering an inclusive and equitable academic environment. This volume reflects our commitment to promoting diversity, equity, and inclusion within the fields of Medicine and Dentistry. By presenting our research on gender equality, we aim to address the systemic barriers that women and individuals with disabilities often face in their professional journeys.

The book begins with a Preface by Paola Muti, Francesca Sisto, Giulia Ottaviani and Maria Pia Abbracchio.

In Chapter 1, Maria Pia Abbracchio and Giulia Ottaviani introduce initiatives like the Re-Starting Grant for Young Mothers at the University of Milan.

In Chapter 2, L. Maximilian Buja addresses the importance of recognizing and reducing barriers to diversity, equity, and inclusion in Pathology and beyond.

In Chapter 3, Giulia Ottaviani provides an in-depth analysis of the multidiscrimination and difficulties faced at University of Milan in the fifties of last century by blessed Benedetta Bianchi Porro, an intelligent and resilient medical student presenting two simultaneous disadvantages: being a woman and being disabled, that prevented her to obtain her medical degree.

In Chapter 4, Giulia Ottaviani further explores the broader issues of multidiscrimination, career development, and diversity in Pathology.

In Chapter 5, Giovanni Damiani and Giulia Ottaviani address dermatological care

challenges in the transgender community.

We hope that this volume will inspire continued dialogue and action towards achieving true gender equality in the biomedical sciences. The research presented here is also a testament to the resilience and potential of women and individuals with disabilities, highlighting the importance of creating an environment where everyone can thrive, regardless of their gender or physical abilities.

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Chapter 1. Call to action for mothers in science at the University of Milan: A Re-Starting Grant for Young Mothers

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Abstract

This chapter examines a concrete measure introduced by the University of Milan to counteract the loss of women in academic careers: the *Re-Starting Grant* dedicated to young mother scientists employed on fixed-term contracts. Nationally, one in five women leaves work after childbirth. Internationally, evidence from the organization Mothers in Science shows that three in ten mother scientists abandon their research careers, making motherhood a major contributor to the “leaky pipeline” in academia. Even mothers who remain employed report reduced career opportunities and diminished recognition of their expertise. At the University of Milan, men still represent the majority of faculty members, and gender imbalance increases at higher academic ranks. Although the Institution performs slightly better than national averages, a marked decline in female representation persists from the postdoctoral level to full professorship, reflecting a persistent glass ceiling. To address these challenges, the University created a Task Force of governance members, gender-equity experts, ethicists, and administrative staff to design a strategic policy fostering both men’s and women’s careers continuity. The Task Force recognized that all staff members may experience some kind of difficulty along their careers, and agreed that it is important for the Institution to identify the most critical steps in order to intervene and help overcoming obstacles. Specific interventions will increase trust between the two parts, and also increase staff’s sense of belonging. As a first intervention, the Task Force recognized the urgency in reducing the leaky pipeline typical of mother scientists’ careers, and designed the

first Re-Starting Grant Call for young mothers reserved to post-doctoral fellows and fixed-term researchers with children under 12 months. Based on meritocratic analysis of their research proposals, this grant provided to the 6 female winners a two-year salary support and research funds for enabling them to resume work and strengthen their academic trajectory. This pilot initiative represents an important, practical step toward retaining female talents in science.

1.1 Introduction: gender balance and vulnerability of womens' rights

According to the 2025 Report of the World Economic Forum, we still need additional 134 years to actually reach gender equality. Based on a number of fixed parameters that take into account access to education, scholarization degree, professional opportunities (in terms of quality jobs and salary level), political representation and several others, North America and Europe show the highest equality index (around 75%, being 100% equal to full parity). Latin American countries are immediately below, followed by Asian countries and Africa with decreasing values.

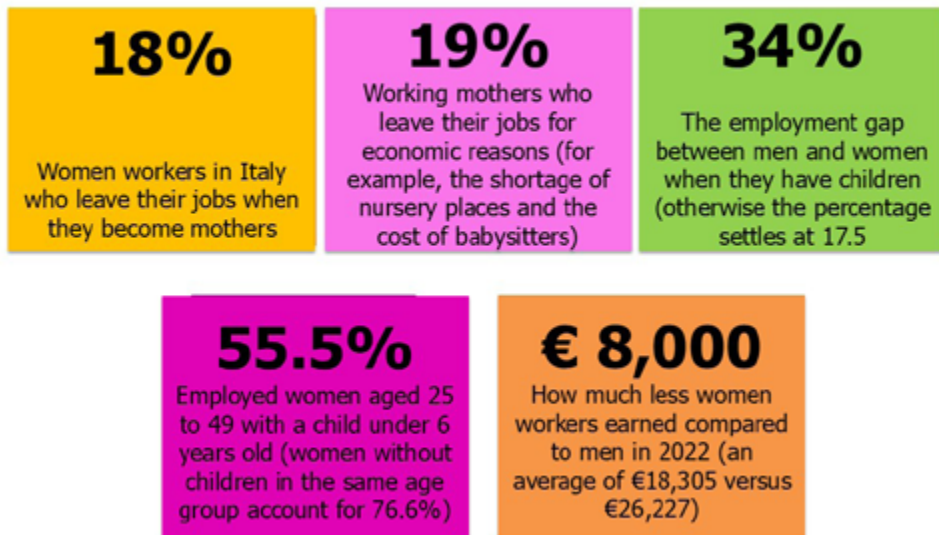
Also due to the Covid emergency and to the ongoing wars worldwide, that have dramatically shown how labile are women's and minorities' rights, such values will make it impossible to reach the objectives of the 5th Sustainable Developmental Goal (SDG) (i.e., closure of the gender gap) within 2030, as originally envisaged by the United Nations and the 2030 European Commission Agenda.

Significant gaps still remain in political representation (only the 39% of the members of the European Parliament are women), in salaries (women still gain 20% lower salaries compared to their male colleagues, and this gap increases to 30% after retiring), in their presence in the media, as well as in some professions belonging to the STEM (Science, Technology, Engineering and Mathematics) area.

Only approximately 30% of engineers, and only 22% of all professionals in Information Communication Technologies (ICT) are women, which creates a dangerous disequilibrium in the use of the algorithms for the analysis of Big Data. More than 90% of algorithms are indeed written by white males, introducing a number of "implicit biases" that do not only affect women but profoundly impact on the civil rights of minorities and fragile individuals. This may, in turn, profoundly change the results of economical, environmental and sanitary data analysis, potentially leading to the adoption of unfair public policies.

Regarding Italy, female participation in the labor market continues to be marked by profound disparities, particularly for women with children. According to an analysis of the Research Service of the Italian Chamber of Deputies dedicated to female employment [1], 18% of the working mothers give up their job due to many familiar commitments. It also underlines that 19% of women giving up their job do that due to economical reasons because they cannot bear the cost related to kindergartens and babysitting and so on. Only 34% of the workforce in Italy is represented by women with children, which is much different compared to men. Employed women aged 25 to 49 with a child under 6 years are only the 55% of total, while women without children in the same age group account for 76.6%. There still is a significant pay gap - more or less of between €8,000 and €10,000 per year - between the salary received by a women mother compared to colleagues of the same level of professionalism without children. So, **one out of five women in Italy give up their work after becoming mothers (Fig. 1.1).**

Italy ranks last in Europe: **1 in 5 women leaves work after motherhood**



Servizio studi della Camera dei Deputati dedicato all'occupazione femminile

Fig. 1.1. Employment outcomes for women in Italy after motherhood. Data translated from: <https://documenti.camera.it/leg19/dossier/pdf/PP004LA.pdf>

According to the Italian Chamber [1], mothers face major labor-market barriers: 18% leave work due to caregiving demands and 19% because childcare is costly. Only 34% of workers are mothers. Employment among women 25–49 drops sharply with young children, and mothers earn €8,000–€10,000 less annually. Overall, one in five exits work after childbirth.

According to Mothers in Science [2], an International Organization gathering 17 different national organizations, three out of ten, so more than double of mother scientists compared to “general” female participation in the labor market, are obliged to give up their work after becoming mothers.

So, according to the data that have been collected among these 17 different organizations, becoming a mother is really one of the main reasons responsible for what is called the “*leaky pipeline*” of female academic careers, which means that in many cases talented scientists are obliged to give up their work when they become mother for either the first, second or third time. The loss of talented women occur everywhere, independently of the field of interest, since it has been reported worldwide, in careers as engineering, gastroenterology or other medical specializations.

What is even worse is that, even for mothers who can stay at work, and they keep their work after becoming a mother, 60% of them complain about problems regarding their life at work. For example, many of them realize that they are offered fewer professional opportunities after becoming mothers compared to aged-paired men. Something else that is already coming up is that also the confidence that these mothers gain inside their community regarding their competencies from either colleagues or their supervisors is jeopardized after becoming mothers. So, they are believed to be less expert than they were before, and in many cases they are not given back the same position that they used to have before becoming mothers.

At the University of Milan, the teaching staff is still mainly composed by men [3]. The number of women is still significantly lower. We are not equally divided between the two sexes and this is even more evident if you scale up careers. There is almost a parity in the lower levels of career when regarding post-doctoral fellows or assistant professor researchers, but the number of women among associate professor and even more among full professors is progressively decreased. Among students, there is even a higher number of females compared to males, but this number goes down a little bit when we are considering PhD students and at the level of the first academic degree, at the “researcher” level. But if you go on and consider the number of women at

higher academic levels, i.e., associate professors and full professors, then there is what we call the typical scissor figure where there is more and more difference between the number of women and men in these positions. This indicates that the so-called glass ceiling is still there and this is better represented together with other data, for example with the difficulties that women scientists had to face during the pandemics, as written in two recent books “Donne nella scienza. La lunga strada verso la parità” [4] and “Scienza al femminile: storie e testimonianze” [5].

The data related to our University indicate that we are performing a little better compared to the national data. According to the 2022 Report made available by the Italian Ministry of University and Research (Fig. 1.2), in academia, the presence of women at various career stages (from Grade D to Grades C, B and A, corresponding, respectively, to post-doctoral fellow, assistant/researcher level, associate and full professors) is still hampered by the presence of “glass ceilings” or “sticky floors”, that prevent women from reaching the highest professional levels, despite very comparable numbers in students, graduates and post doctoral fellows. Amazingly, when comparing 2020 data with similar data collected back in 2005, only small increases in the presence of women in the highest academic roles were noted, indicating that there still is a long way to go.

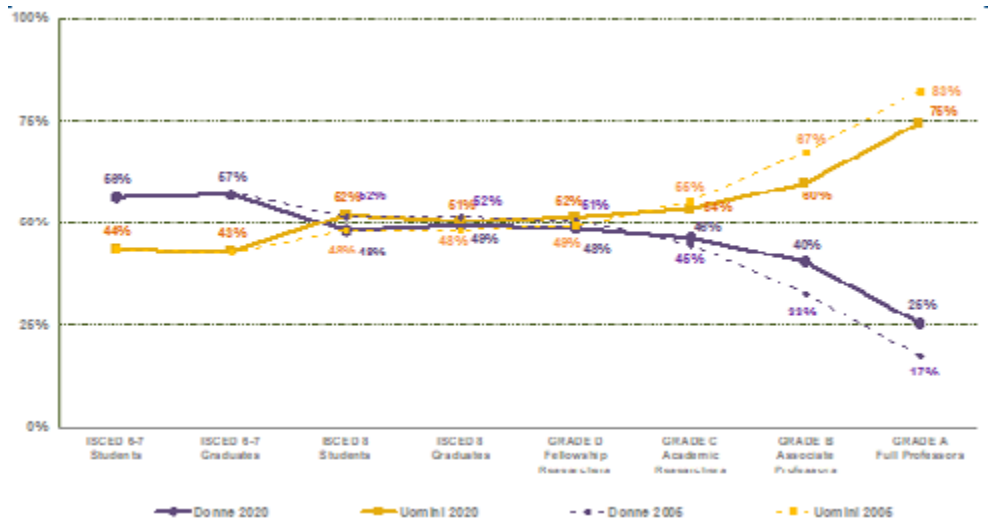


Fig. 1.2. Presence of women and men in students’ careers from college to PhD educational levels, and in the various degrees of academic positions in Italy, in 2005 and 2020. Data are from MUR: <https://ustat.mur.gov.it/media/1155/focus-carriere-femminili-universita.pdf>.

The Italian data reported above are very similar to the rest of Europe, as shown by the last (2024) SHE FIGURES report of the European commission [6]. This report considers the already mentioned four different levels of academic professionals. In the Grade D, the postdoctoral level, the percentage of women is 47.1%. In Grade C, the assistant professor/researcher level, 46.6% are women. In Grade B, the associate professors level, the women are 40.3%. In Grade A, the highest level of full professorship, the percentage of women is 26.2%. The number of females at these different ranks is never equal to that of men and gender imbalance increases at higher academic ranks, so indicating that we do still have a problem.

1.2 The Re-starting Grant Call at University of Milan

Women in academia face persistent barriers following childbirth, often resulting in career disruption, slower professional advancement, or permanent departure from scholarly pathways [2]. In response, the University of Milan has developed a structured institutional strategy to support early-career mother scientists and reduce talent attrition. This outlines the development, structure, and anticipated impact of the University's Re-Starting Grant Call, a pilot initiative intended to facilitate continuity in research careers during early motherhood.

To address the departure of young women scientists, the University of Milan launched a task-force-driven initiative aimed at strengthening re-entry opportunities for early-career mothers. A multidisciplinary task force was established to design a University-wide policy for supporting young mothers returning to research positions. Members included internal and external gender-studies experts, representatives from the University ethics committee, and administrative staff. Their inclusion ensured alignment with the University's strategic plan and gender equality plan, ensuring both conceptual rigor and administrative feasibility.

The task force identified early-career researchers—particularly postdoctoral fellows and fixed-term researchers—as the most vulnerable group due to the short duration of their contracts and lack of permanent status. For these women, childbirth often interrupts an already precarious professional trajectory, reducing continuity in research activity.

The Re-Starting Grant Call has been the first pilot action implemented under this strategy. Eligible applicants included fixed-term academic staff who had become mothers and had children not older than 12 months. Applicants had to submit a scien-

tific proposal to receive, if successful, a two-year salary support, allowing uninterrupted engagement in academic research; a small research budget, supporting essential materials needed to develop and consolidate scientific projects within the University [7], for a total amount of money ranging between 90,000 and 100,000 €, depending upon the ERC (European Research Council) sector, i.e., implying that scientific areas like Life Sciences (LF) and Physical Sciences and Engineering (PE) need more money to perform laboratory and instrumental research compared to the needs of professionals in the Social Sciences and Humanities (SH) area.

This structure seeks to maintain research continuity, provide financial stability, and encourage women to pursue further competitive fellowships or permanent academic positions. The Re-Starting Grant Call addresses multiple structural and psychological barriers that frequently impede mothers' academic careers: Improved career continuity after childbirth; Reduced risk of attrition among early-career mothers; Enhanced research productivity via dedicated funding; Encouragement of gender balance in higher academic ranks; Retention of scientific talent within the institution.

The Re-Starting Grant Call received 23 applications that were carefully analyzed by a Committee composed of an equal number of professors belonging to the 3 ERC Sectors (LF, PE and SH). Based on meritocratic criteria that included the quality level of the proposed research, the feasibility of the proposed work as well as the previous Applicants' scientific careers and qualifications, 6 grants were attributed to 6 selected candidates, 3 in the LF, 1 in the PE and 2 in the SH ERC Sectors.

Although still a pilot, the initiative represents a highly practical, scalable model for Institutions seeking to actively support gender equity and prevent the loss of talented female scientists.

International studies show that early-career female researchers commonly experience reduced publication output, slower career progression, and decreased likelihood of tenure following motherhood. Institutional support mechanisms—financial, structural, and mentoring-based—can limit these effects, but remain unevenly implemented across higher-education systems.

The University of Milan initiative stands out for its explicit focus on fixed-term researchers—a population with high vulnerability and limited social protections. Its holistic approach, integrating ethics, administrative feasibility, and gender-expert consultation, demonstrates a strong Institutional commitment to equity.

1.3 Discussion and conclusions

Women's rights are never for ever [8]. Economical or sanitary emergencies, as well as democratic backsliding in illiberal democracies and monarchies can lead to rapid loss of women's rights, starting from education. Denying or reducing young girls' access to school and to higher education represents one of the most common means to prevent women (and other fragile members of social communities) from reaching full independence and realize their talents. For this reason, democratic Institutions have a very important role in helping young students and scientists reaching their goals.

Unfortunately, the underrepresentation of women in academic careers, particularly after motherhood, still represents a well-documented global issue. Parental responsibilities, lack of flexible support, and precarious employment conditions contribute to losses of scientific talent and gender imbalance in higher education systems. Institutions increasingly recognize the need for targeted interventions to counteract these dynamics.

To address this issue, the University of Milan developed a policy aimed to remove maternity-related obstacles in the first year after childbirth, a period shown to be especially critical for mothers' academic productivity and retention. Along this direction, in December 2023 the University of Milan launched the Re-Starting Grant Call representing a meaningful first step in counteracting the loss of young mother scientists from academia. By providing targeted financial and structural support, the University of Milan aimed to reduce career interruptions, retain research talent, and promote long-term gender equality within the scientific community. Future evaluation will assess grant outcomes, participant career trajectories, and broader cultural impact to determine scalability and best-practice elements.

As a pilot program, this initiative may serve as a model for similar efforts at other institutions.

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Chapter 2. Recognizing and Reducing Barriers to Diversity, Equity and Inclusion in Academic Medicine, Healthcare and Beyond

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Abstract

In this presentation, an analysis is presented regarding the development of the diversity, equity and inclusion (D.E.I.) framework and its relationship to affirmative action initiatives. A particular focus is the use of D.E.I. and affirmative action to meet the challenge of improving the numbers of underrepresented in medicine (UIM). The role of implicit bias as a barrier is discussed along with approaches to overcome implicit biases. The opposition and hostile environment generated by libertarian and conservative forces is discussed as are approaches to continue to pursue D.E.I. in the current environment. This effort must continue because there is a compelling moral basis for achieving diversity, equity and inclusion in the workplace, academia medicine, healthcare and society at large.

2.1 Introduction

Diversity, equity, and inclusion (D.E.I.) is a conceptual framework that aims to promote the fair treatment and full participation of all people, especially in the workplace and academic institutions, with particular attention to populations who have historically been under-represented or subject to discrimination because of their background, identity, disability, and other factors [1,2]. In this presentation, an analysis is presented regarding the development of the D.E.I. framework, its relationship to affirmative action initiatives and approaches to overcome barriers to its implementation.

2.2 Materials and Methods

A literature review was conducted regarding the implementation of D.E.I. and affirmative action programs in various settings. Also, insights regarding barriers to implementation were explored.

2.3 Results

D.E.I. programs have a basis in morality and in law [3-5]. Relevant laws in the U.S.A. are the 1964 Civil Rights Act which provides protections for race, color, religion, sex, or national origin in the areas of voting, education, employment, and public accommodations, and the 1990 Americans with Disabilities Act (ADA) which provides the same protections for disabled persons.

Diversity describes a wide variety of differences that may exist amongst people in any community, including race, ethnicity, nationality, gender and sexual identity, disability, neurodiversity, and others. The umbrella term “diversity” encompasses not only the awareness about differences but also a set of principles and practices that aim to transform that awareness into safe and positive working environments [1,2].

Equity is the practice of providing fair opportunities via personalized approaches based on individual needs, thus aiming to “level the playing field” by taking into account the different starting points of different individuals. Therefore, “equity” aims to achieve fairness by considering each individual’s trajectory and context. It should not be confused with the notion of “equality” which aims to treat everyone the same. Equity involves factoring in individuals’ starting points and trajectories. Applying equity means implementing fair opportunities in a way that accounts for the differences that exist between individuals [1,2].

Inclusion specifies the desired outcome, namely, ensuring that individuals find opportunities and spaces to participate, regardless of their differences. Inclusion is a step towards integration, where diverse individuals blend into the environment safely and harmoniously [1,2].

Affirmative action has been defined as “any measure, beyond simple termination of a discriminatory practice, adopted to correct or compensate for past or present discrimination or to prevent discrimination from recurring in the future.” (U.S. Commission on Civil Rights, Statement on Affirmative Action, October 1977) [6]. Affirmative action programs encompass more than outreach and recruitment, however, and include effor-

ts to prevent discrimination by eliminating barriers to equal employment opportunity [7,8]. Affirmative action has been criticized as constituting reverse discrimination, preferential treatment, stigmatizing to beneficiaries and contravening principles of merit. But it is important to recognize that affirmative action is not a quota system, or a system that gives preferential treatment or guarantees results.

In an analysis by Dr. Karol E. Watson, MD PhD (UCLA David Geffen School of Medicine), difficult problems and uncomfortable truths were addressed with the aims of: 1) increasing an understanding and awareness of racial disparities, 2) recognizing ways that healthcare professionals have helped to perpetuate these disparities, and 3) highlighting how healthcare professionals may become agents for change (9). The process of understanding and awareness begins with a consideration of key definitions and concepts. Race is a social/cultural construct without genetic or biologic basis (only 0.1% genetic difference between two randomly selected humans). Race refers to a group of people who typically share some physical characteristics. Ethnicity refers to a group of people who share a particular culture. Characteristics may segregate along racial or ethnic lines, but that is not the same as an intrinsic biologic or genetic difference. Sex refers to a set of biological attributes in humans and animals. It is primarily associated with physical and physiological features including chromosomes, gene expression, hormone levels and function, and reproductive/sexual anatomy. Gender refers to the socially constructed roles, behaviors, expressions and identities of girls, women, boys, men, and gender diverse people. Disparity is more than a difference in healthiness or health outcomes. Disparity is when the reason for that difference is inequitable and unjust. Equality refers to everyone receiving the same support, regardless of their individual needs or circumstances (e.g., government stimulus check distribution to all citizens). Equity, in contrast, refers to everyone receiving the specific support based on a characteristic or need (e.g., 'Affirmative Action' efforts in the U.S.). Justice in this context denotes addressing the cause(s) of inequity by removing systemic barrier(s). Structural racism describes a system in which institutional practices reinforce and perpetuate racial inequality.

Difficult problems and uncomfortable truths related to race and ethnicity have been documented [9]. For instance, vital statistics in the U.S. show a clear disparity based on race/ethnicity. African Americans have higher death rates for twelve of the top 15 leading causes of death (including cardiovascular). They have higher age-specific death rates from birth through retirement years (as do Native Americans). Hispanics have

higher death rates from diabetes, hypertension, cirrhosis, and homicide as compared to Whites. It is generally observed that minorities get sick earlier, have more severe illnesses, and die sooner. The impact of COVID-19 on life expectancy was disproportionately negative on Blacks. Whereas a decrement of 0.8 and 0.7 years was observed in White men and women, respectively, by CDC population statistics black men lost 3.0 years and black women 2.4 years of life expectancy in the same interval [9-11].

Understanding the root causes and unjust and inequitable reasons behind many of these disparities is the first step in knowing how to address them. Such factors have been recognized at the societal, healthcare, and individual levels. Societal and socioeconomic factors play an important role in health and include safe housing, transportation, healthy food, healthcare access, education, and income opportunities. Community, family, and social support also play a significant role. Healthcare providers should keep their patient's social context in mind.

Evidence for the impact of societal factors includes the 'Whitehall Study' which followed 10,000 British civil servants over 10 years showed up to a 4-fold difference in cumulative mortality between those in administrative, professional, and executive positions as compared to messengers and doorkeepers [12].

Across all income levels, data show that Americans with lower income are less healthy than those with incomes higher than their own. Countries with higher per capita gross national product also have greater life expectancy. Access to healthcare and the quality of that healthcare clearly also impact the health of any individual. Part of addressing cardiovascular disease disparities needs to include bringing healthcare closer to communities; expand the healthcare workforce numbers and diversity, and removing financial barriers to good care. The American Heart Association published a scientific statement in 2015 stating that: 1) the impact of social disadvantage on health is substantial, 2) health is determined, at least in part, by the places people live, work, and play, and 3) there is a 14-year difference in life expectancy due primarily to differences in cardiovascular mortality among different groups in different parts of the US [13]. The American Academy of Family Physicians also "recognizes the impact of racism within the US health care delivery system, which has historically engaged in the systematic segregation and discrimination of patients based on race and ethnicity. These issues result in inequities in access to and quality of health care and are major contributors to racial and ethnic health disparities" [14].

Individual behaviors, of course, dictate our health most directly and "modifiable

risk factors” such as smoking and tobacco use, diet, exercise, and sexual activity are ultimately individual choices. Through all the examples, it is clear healthcare disparities exist. Social determinants may underly many, but not all, disparities. Structural racism as well as bias (both explicit and unconscious) contributes to disparities. There are no easy solutions to these difficult problems, and healthcare professionals must confront some uncomfortable truths as they work toward addressing these disparities. Potential solutions are being developed and tested, but recognizing provider biases and opportunities to make the care provided more just and equitable will be part of the answer to this problem.

Acknowledging the importance of diversity awareness in medicine and treatment has been a massive step in the medical world [15]. The realm of both academic and applied medicine has been historically white, male, cisgender, and straight, and many diverse individuals have spoken about alienating experiences in this field [1,2,16]. Based on more recent research, it has been found that not only are diverse individuals made to feel unsafe and unwelcome, they may also be experiencing inadequate treatment based on their differences. D.E.I. is vital in medicine as physical differences in diverse individuals in the past have led to improper care and less than ideal interactions with medical staff. It has also been shown that greater diversity can strengthen both research teams and patient relations.

A strong argument has been made for the importance of D.E.I. for the healthcare workforce (16). The importance of DEI within the biomedical research workforce has also been noted by the National Institutes of Health [17]. In recent years, undergraduate medical education (UME) and graduate medical education (GME) training programs have appropriately placed an increasing emphasis on the promotion of diversity, equity, and inclusion (DEI) within training programs. Much of this focus has centered on racial and ethnic diversity and inclusion, with a focus on increasing representation of individuals from groups underrepresented in medicine (UIM) (18). The Association of American Medical Colleges (AAMC) defines underrepresented in medicine (UIM) as “those racial and ethnic populations that are underrepresented in the medical profession relative to their numbers in the general population.” [18] UIM include Blacks/African Americans; Hispanics/Latinx, specifically Mexican Americans and mainland Puerto Ricans, and Native Americans, including American Indians, Alaska natives and native Hawaiians.

Like most medical specialties, pathology has been faced with the challenge of recru-

itment of individuals from UIM groups [19,20]. The number of UIM applicants has been significantly lower for pathology training programs compared with US UIM medical student applicants to all AAMC medical specialties since 2017. Possible solutions include a mixture of the following. Increased early exposure including post-sophomore fellowships and funded rotations for medical students. Increase visibility by involving UIM faculty and trainees in the interview and recruitment process. Increase visibility by participation in medical school lectures and other direct contacts with medical students. Employ a holistic application review process defined by the AAMC as “mission-aligned admissions or selection processes that consider a broad range of factors – experiences, attributes, and academic metrics – when reviewing applications.” Efforts in pathology have still fallen short of the goal of overcoming inequities in gender and ethnic diversity. The effort needs to be ongoing because gender and ethnicity have a significant influence on leadership positions, academic ranks, and research productivity among pathology faculty members.

A major barrier to the achievement of D.E.I. is unconscious bias, also called implicit bias [21-28]. This is a positive or negative mental attitude towards a person, thing, or group that a person holds at an unconscious level, that is, a prejudice one has, but is unaware of [21,22]. Implicit biases are pervasive since we all have them, and they do not necessarily align with our declared beliefs. A quick Implicit Association Test (IAT) is available for all to assess themselves [23]. On the positive side, implicit biases are malleable since they can be unlearned and replaced with different mental associations. Another consideration relates to stereotypes. A stereotype is a conscious belief about a personal attribute or about a group of people. Stereotypes are based on images in media, or beliefs passed on by parents, peers and other members of society. Stereotypes can be positive or negative.

Research indicates that unconscious bias of doctors plays a role in persistence of health and healthcare disparities [24]. Unconscious biases often surface when we're multitasking or when we're stressed. They come up in tense situations where we don't have time to think. Doctors struggle with unconscious bias, same as police. Like police on the street at night who have to decide quickly if a person is reaching for a wallet, or a gun. It's similar for doctors in the hospital [25].

Unconscious bias is operative in relationship to multiple factors, including race/ethnicity, socioeconomic status, language barrier, education level, religion, age, gender/sexuality,

ability/disability, cognitive errors, elitism, negative stereotypes, positive stereotypes, first impressions, and good fit/bad fit. Personal experience with a disability can lead to a change in thinking regarding D.E.I. programs [26].

As a case in point, one study evaluated letters of recommendation for successful applicants for faculty in a large American medical school (312 letters), and compared letters written for male (222) and female (89) hires [27]. Women were more likely to get shorter letters of recommendation 15% vs 6% ($p=.021$); women's letters were only 84% as long as men's. Women were more likely to have doubts raised -24% vs 12% ($p=.01$) "she worked hard on the projects she accepted". Stereotypical terms more commonly used for men included "successful" (7% vs 3%) and "accomplishment or achievement" (13% vs 3%). Stereotypical terms used more often for women included "compassionate" (16% vs 4%) and "careful" (34% vs 23%).

How can we control what we are not consciously aware of? Evaluate your feelings and perceptions. Strategies to deal with unconscious biases include acknowledging your own biases and recognize in-group bias and confirmation bias [28]. Slow down and deliberately monitor your thoughts. Recognize that one is most susceptible to bias when one is fatigued, angry, hungry, or rushing. See your patients as individuals and try not to succumb to stereotyping based on their race, income, age, etc. Try viewing the situation from the patient's perspective - "putting yourself in the other person's shoes." Providers need to be aware of their biases and assure that these do not alter the best possible care you can provide to your patients.

2.4 Discussion

This review has presented the strong rationale and underpinnings of D.E.I. and affirmative action. While this analysis is focused on D.E.I. and affirmative action initiatives in the U.S.A., similar initiatives with similar challenges are ongoing in European institutions [29-32]. Despite the strong rationale, caveats and complexities need to be acknowledged. Furthermore, libertarian and conservative movements have launched major attacks on D.E.I. and affirmative action. The current climate in the U.S.A. is quite challenging, as discussed below.

With regard to the business world, D.E.I. training programs have been around for decades [33]. But, based on heightened awareness for a commitment for racial justice, the D.E.I. industry has greatly expanded reaching an estimated \$3.4 billion in the American market in 2020. However, social science studies have shown that mandatory

D.E.I. training has had little or no positive long-term effects. Some diversity initiatives might actually worsen the D.E.I. climates of the organizations that pay for them. So what does work? “Focus on actions and behaviors rather than hearts and minds.” Dr. Robert Livingston, Harvard Kennedy School. Dr. Livingston suggested that it’s more important to accurately diagnose an organization’s specific problems with D.E.I. and to come up with strategies for solving them than it is to attempt to change the attitudes of individual employees through mandatory training [33].

Despite decades-long calls for increasing racial and ethnic diversity, the medical profession continues to undersubscribe members of Black or African American, Hispanic or Latinx, and Indigenous groups [1,2,9]. While the number of positions, committees, and projects described as “Diversity, Equity, and Inclusion (D.E.I.)” work has grown rapidly in recent years in higher education and academic medical institutions, attention to the theory, praxis, or lived experience of this work has been found to be insufficient [34].

Insights were obtained from a survey conducted of US medical school admissions leaders’ experiences with barriers to and advances in diversity, equity, and inclusion [35]. Among 39 participants from 37 medical schools, admissions experience ranged from 1 to 40 years. Participants characterized diversity broadly, with limited attention to racial injustice. Barriers to advancing racial and ethnic diversity included lack of leadership commitment; pressure from faculty and administrators to overemphasize academic scores and school rankings; and political and social influences, such as donors and alumni. Accreditation requirements, holistic review initiatives, and local policy motivated reforms but may also have inadvertently lowered expectations and accountability. Strategies to overcome challenges included narrative change and revision of school leadership structure, admissions goals, practices, and committee membership. Admissions leaders characterized the ways in which entrenched beliefs, practices, and power structures in medical schools may perpetuate institutional racism, with far-reaching implications for health equity. Participants offered insights on how to remove inequitable structures and implement process changes. Without such action, calls for racial justice will likely remain performative, and racism across health care institutions will continue [35].

Another recent survey was based on interviews with 32 participants who held formal D.E.I. positions in their school of medicine, health system, or department [36,37]. The survey was aimed at the question: “Has the increased presence of leaders in diversity, equity, and inclusion (D.E.I.) since the murder of George Floyd led to a demonstrable

change in academic medical institutions?” Key themes reflected ongoing challenges for D.E.I. leaders, including (1) variability in roles, responsibilities, and access to resources, both across participants and institutions as well as within the same position over time; (2) mismatch between institutional investments and directives, including insufficient authority, support staff, and/or funding, and reduced efficacy due to lack of integration with other units within the school or health system; (3) lack of evidence-based practices, theories of change, or standards to guide their work; and (4) work experiences that drive and exhaust leaders. Multiple participants described burnout due to increasing demands that are not met with equivalent increase in institutional support. Creating statements and positions, without mechanisms for change, perpetuates stagnation and injustice.

Unfortunately, the challenges for D.E.I. and affirmative action have increased by orders of magnitude as a result of countervailing forces. Libertarian and conservative groups have mounted significant opposition to D.E.I. and affirmative action based on concern that these initiatives are subject to creating reverse discrimination. These efforts have had a major impact in the U.S.A. [38-40]. Challenges also are being faced in Europe [32].

It is instructive to consider the background and history of the U.S. Supreme Court’s decisions on race as a factor in university admissions and decisions [41]. In 2013, the U.S. Supreme Court, in *Fisher v University of Texas*, revisited the constitutionality of race-conscious admissions practices aimed at fostering student diversity in university programs. Although it concluded that student diversity remains the type of compelling state interest that justifies consideration of race in admissions, the court nonetheless raised the bar on the use of such practices by requiring universities to prove that no workable race-neutral methods can produce the same result. While universities adapted to meet this standard of proof, challenges were mounted against universities that continued to use the holistic methods previously sanctioned.

In 2023, the U.S. supreme court went on to rule that any use of race/ethnicity was barred from use in admission policies in higher education [42]. Given the shift in its composition, the decision of the Supreme Court to end race-conscious admissions to the nation’s universities was widely expected, but, when it came by a 6-3 decision, the verdict still was shocking for academia. Writing in the minority, Justice Ketanji Brown Jackson stated: “With let them-eat-cake obliviousness, today, the majority pulls the ripcord and announces ‘colorblindness for all’ by legal fiat. But deeming race irrelevant in law does not make it so in life.” The court ruled that Harvard University, a private

institution in Cambridge, Massachusetts, and the public University of North Carolina in Chapel Hill violated the Equal Protection Clause of the US Constitution's 14th Amendment by considering race, alongside other factors such as grades and test scores, in their admissions policies. The decision deprived universities of a crucial tool in the ongoing struggle to establish more-diverse and more-equitable educational environments [42].

Thus, forty-five years after the U.S. Supreme Court first endorsed racial affirmative action in higher education, the 2023 decision with its "color-blind" rationale effectively ended the support for affirmative action [43]. The consequences of ending the policy for U.S. healthcare are judged to be considerable and deeply problematic. In addition to undermining equitable access to education and redress for centuries of racial injustice, the ruling threatens access to care, quality of care, and inclusive leadership for the health care system at large [16,43,44].

Concurrently with the push at the national legal level, many Republican-led states have taken steps to restrict or eliminate diversity, equity and inclusion programs and initiatives at public universities and colleges, with conservative lawmakers and groups arguing that such programs can be discriminatory to the people who are left out (38-40). Laws banning D.E.I. have now been implemented in 30 states [39].

A physician's race and ethnicity are among the strongest predictors of specialty choice and whether or not a physician cares for Medicaid and uninsured populations. In a study done in 2016, an analysis found that the potential effect of an affirmative action ban would reduce the number of primary care physicians for Medicaid and uninsured patients and deny primary care access for 1.25 million of our nation's most vulnerable patients, considerably worsening existing healthcare disparities [16]. The recent developments have created a scenario for these projections to become a reality [43,44]. Institutions must now find innovative and alternative ways to continue their efforts to build a more diverse academic environment. This is important not only for moral and ethical reasons. Evidence also shows that greater diversity improves all students' education and leads to increased innovation, which ultimately benefits all of society [1,2,16,43,44].

Universities now are challenged to find ways to promote the principles of D.E.I., while in many states, official offices and programs in D.E.I. have been forced to be abandoned. The Association of American Medical Colleges (AAMC) has been committed to developing programs to meet the challenges [45]. In 2007, the AAMC developed the Holistic Review Framework for medical school admissions to increase mission-aligned student diversity. This approach balances an applicant's experiences, attributes, and met-

rics during the screening, interview, and selection processes. Faculty recruitment provides its own set of challenges, and there is persistent underrepresentation of certain racial and ethnic minority groups and women in faculty and leadership positions in U.S. academic health centers (AHCs). In 2019, the AAMC initiated a pilot program to adapt and implement the framework for use in faculty recruitment at AHCs. From the pilot implementation of the Holistic Review Framework for Faculty Recruitment and Retention, findings have identified both barriers and opportunities in implementing the framework. Renewed commitment to racial justice was associated with increased momentum and urgency for the implementation of faculty holistic review at the majority of pilot institutions. Common themes from the pilot leads' experiences included the importance of achieving "buy in," having a dedicated implementation team, and being explicit about core values. Other themes included the importance of adaptability and flexibility to meet the needs of different institutions and mission areas. The faculty holistic review framework has shown promise as an approach to advancing faculty diversity goals. The pilot institutions will continue to share best practices, track outcomes, implement quality improvement, and disseminate findings to assist other institutions and health care communities with their endeavors to recruit and retain diverse faculty.

A case in point is the initiative at the Schulich School of Medicine and Dentistry (Western University, Ontario, Canada) [46]. In 2017, this medical school critically reviewed its general Admissions pathways for the Doctor of Medicine (MD) program. The rationale was based on the rationale that enhancing equity, diversity, and inclusion (EDI) in admissions processes includes identifying and mitigating barriers for those underrepresented in medicine (URM). Till that time, interview invitations were primarily based on academic metrics rather than a holistic review as for its Indigenous MD Admissions pathway. To help diversify the Canadian physician workforce, Schulich Medicine utilized a multipronged approach with five key changes implemented over 2 years into the general MD Admissions pathways: 1. A voluntary applicant diversity survey (race, socioeconomic status, and community size) to examine potential barriers within the Admissions process; 2. Diversification of the admissions committee and evaluator pool with the inclusion of an Equity Representative on the admissions committee; 3. A biosketch for applicants' life experiences; 4. Implicit bias awareness training for Committee members, file reviewers and interviewers; and 5. A specific pathway for applicants with financial, sociocultural, and medical barriers (termed ACCESS pathway). Diversity data before (Class of 2022) vs. after (Class of 2024) these initiatives and of the

applicant pool vs. admitted class were examined. The data indicated that the initiatives broadly improved representation of racialized students, LGBTQ2S+, and those with disability with statistically significant increases in representation of those with socioeconomic challenges (32.3 vs. 19.3%, $p = 0.04$), and those with language diversity (42.1 vs. 35.0%, $p = 0.04$). Thus, these changes within the general MD admissions pathways will help diversify the future physician workforce and inform future initiatives to address health equity and social accountability within Canada.

Maintaining admissions of underrepresented students to medical schools is essential to securing a diverse health care workforce. Empirical evidence indicates that minority patients may prefer practitioners of their own race. The recent US Supreme Court decision concerning affirmative action makes this goal more difficult, but medical schools can still work within the language of the law to redouble their efforts to seat a diverse class of medical students. A literature search was performed correlating the availability of minority physicians and the health outcomes of the patients they serve [47]. The literature was reviewed on race-conscious policies of medical schools intended to address the shortage of minority physicians considering the benefits achieved through a diverse field of health care workers. Also examined were the law and the recent US Supreme Court opinion, including the application of equal protection principles, to suggest strategies to seat a diverse class of students within the scope of the law. Institutions have maintained the status quo of disparate distributions of professions by race through structural biases that also limit access to medical schools. The new US Supreme Court decision is expected to exacerbate this disparity unless medical schools engage in admissions protocols that actively solicit the character and unique abilities that each of the applicants can offer to contribute to the medical school and the health care profession. The new US Supreme Court mandate is likely to create challenges for medical schools in their efforts to recruit and seat minority applicants. The mandate provides little discussion, suggesting a lack of understanding of the downstream public health consequences to patients if medical school applicants are denied the benefits of race-conscious admissions policies. Nevertheless, the language of the US Supreme Court's opinion may provide a viable path forward, at least with respect to medical schools where the need for a diverse pool of health care practitioners is particularly compelling [47].

There is a moral imperative for institutions to develop strategies to continue to strive for diversity, equity and inclusion. There is a compelling moral case for diversity and in-

clusion in the workplace and beyond. Ensuring everyone is treated equally, with dignity and has their fair share of resources (whether that be access to work or equitable pay) is simply the right thing to do. People matter, and we all should have equal opportunity to develop, progress, and be rewarded and recognized at work. Organizations must ensure that their people management practices champion this fundamental principle.

A successful institutional culture can be build and maintained by ongoing implementation of the principles of F.A.C.E.S.: F – Foster a culture where every voice is welcome, heard, and respected; A – Affirm diversity, understanding, accepting and embracing our differences; C – Create an inclusive environment that respects the unique characteristics, skills, and experiences of all learners, faculty, and staff; E - Empower individuals to promote diversity and inclusion; and S – Strive toward equity for all.

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Chapter 3. Benedetta Bianchi Porro: Multidiscrimination of Woman with Disability in the History of the University of Milan

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“Those who cannot
remember the past are
condemned to repeat it” –
George Santayana

Abstract

Examples of multi-discrimination due to the presence of two disadvantaged conditions, being a woman and being disabled, can unfortunately also be found in the history of the University of Milan, which has started its centennial celebrations. What is most regrettable is that the discrimination took place precisely within the Faculty of Medicine and Surgery. The professors were physicians, people of culture and science and what is the use of their medical science if, despite the Hippocratic oath, they have not been able to apply the ideals of the profession to their daily practice, including teaching? The most striking example of resistance and resilience due to disability and being a woman is the life of Benedetta Bianchi Porro, whose story has been well documented during her beatification process.

3.1 Introduction

Examples of multidiscrimination due to the presence of two disadvantaged conditions, being a woman and being disabled, are unfortunately also found in the history of the University of Milan. On the occasion of the centennial of the founding of the University of Milan, established in 1924 by a physician, Prof. Luigi Mangiagalli, MD [1]; it is proposed to analyze the significant historical events concerning the women who have made history at our university. Those were times of great injustices, and it is not

the first time that it is read about terrible historical injustices related to disabled women. The history of the saints and blessed of the Catholic Church serves as a source of information and historical facts.

Benedetta Bianchi Porro (Figure 1) was beatified on September 14, 2019, during the pontificate of Pope Francis. Her liturgical memory is celebrated on January 23, the day of her birth into Heaven. Benedetta Bianchi Porro was born in Dovadola (FO) on August 8, 1936 and died on January 23, 1964, at the young age of 27. If she were still alive today, she would be the age of our parents or grandparents, and some of them might have known her personally. Some older colleagues in the medical faculty, such as my professor of Pathological Anatomy, Prof. Luigi Maturri, MD, might remember her as a classmate. However, everyone should know her to appreciate her undeniable qualities, not only religious but also human, in her resilience against misunderstandings and multidiscrimination for being a woman and disabled.

With extraordinary willpower, despite her health problems, most notably her difficulty walking and deafness, she continued to study and take exams. However, she encountered insensitive professors who mocked her disability.

To the best of my knowledge, no articles on the multidiscrimination of women with disabilities in the history of medicine are present on PubMed or other medical databases. The figure of Blessed Benedetta Bianchi Porro, although well studied by the Congregation for the Causes of Saints, has been scarcely studied as a historical example of multidiscrimination at the Faculty of Medicine and Surgery.

3.2 The Case of Benedetta Bianchi Porro

Benedetta Bianchi Porro (Fig. 3.1) was born in Dovadola (FO), Italy, on August 8, 1936. The father was an engineer; second of six children, three of which studied Medicine, a younger brother and a younger sister could graduate as physicians while she could not graduate due to her being woman and disabled.

At the age of three months, she contracted poliomyelitis and from then on, her right leg remained shorter. As a child, she walked with a limp and was called “the cripple” and she replied: “What is wrong with that? It is the truth!”. She had to wear an uncomfortable brace to correct the scoliosis caused by the uneven length of her lower limbs. From the age of 8, she recorded all her experiences in a diary, as requested by her mother for her and her siblings. She had always been the top student in her class and demonstrated great maturity in writing her diary, more so than her siblings and

able-bodied classmates. [2,3].

Starting at the age of 13, she began to experience progressive hearing loss first noticed when questioned by a teacher in Latin class: she was unable to hear the questions. Physicians could not find the cause. This did not prevent her from dedicating herself to her studies, obtaining her high school diploma at just 17 years old, and enrolling in the Faculty of Medicine and Surgery at the University of Milan, two years earlier than her classmates. She chose the faculty of Medicine and Surgery to help patients like herself. At the age of 20, her vision also began to weaken. Despite her mobility difficulties, growing deafness, and worsening blindness, she continued her university studies with dedication. She experienced difficulty to access written rather than oral examinations, denied, among others, by professors of Anatomy and Hygiene. The doctors did not understand her illness, which for a period was unjustly interpreted as a psychiatric problem. Her scientific knowledge allowed her to self-diagnose the nature of her illness, which had eluded the best specialists of the time: diffuse neurofibromatosis, or Recklinghausen's disease, characterized by the proliferation of multiple small tumors in the nervous system [2,3].

At the age of 23, in 1959, at the Hygiene exam, her last exam before graduation, she asked: «Professor, I cannot hear anything... Could you ask me the questions in writing?». The professor yelled: «Who ever heard of a deaf doctor?» as he threw her grade book against the wall! She was denied her medical degree [2,3].

A classmate of Benedetta, like her, suffered from the effects of polio and also walked with a cane, but unlike Benedetta, she was able to graduate. Regarding the hygiene exam that she did not pass, the testimony came from her maid who had accompanied her to the University, because Benedetta did not complain about the injustices and offenses she suffered.

During her two pilgrimages to Lourdes, she discovered her true vocation: to achieve holiness by living with her illness in full acceptance and faith. The disease progressed inexorably until Benedetta became completely blind, deaf, paralyzed, and voiceless. She was able to communicate with the outside world only through her right hand, the only part of her body that retained sensitivity. Through her hand, she dictated many letters. Friends and strangers gathered around her, and her letters touched many hearts. She died at the age of 27 on January 23, 1964, in her home in Sirmione, with her last word being “Thank you.” Since March 22, 1969, her mortal remains have rested in the church of the Abbey of Sant'Andrea in Dovadola, Italy [2,3].



Fig. 3.1. A picture of Benedetta Bianchi Porro. Modified from: Wikipedia, with Creative Commons licensing https://en.wikipedia.org/wiki/Benedetta_Bianchi_Porro. Accessed: June 21, 2024

3.3 Discussion

Benedetta managed to live through the darkest moments of her life in an astonishing way. She had the grace to value her life despite all the suffering that befell her. She knew how to transmit light and joy to everyone who approached her.

Throughout history, there have been many injustices due to conditions of disadvantage, as in the case of Benedetta, due to her mobility difficulties and deafness, the first signs of a serious pathology that had not yet been diagnosed at the time and which she later diagnosed herself, thanks to her knowledge.

This case has been extensively studied and reported in literature because Benedetta belongs to everyone; she is Blessed in the Catholic Church. But how many other similar cases multidiscrimination have remained unknown? The blame is not necessarily on our University; it is the fault of society, the lack of precise laws against discrimination available at the time. But has the University of Milan ever apologized?

Exclusionary and marginalizing behaviors still exist today, but there are laws that provide support. The University has an office for disabilities and a network of referents for gender equality.

What is most regrettable is that the discrimination took place precisely within the

Faculty of Medicine and Surgery. The professors were physicians, people of culture and science and what is the use of their medical science if, despite the Hippocratic oath, they have not been able to apply the ideals of the profession to their daily practice, including teaching?

Benedetta diagnosed her own illness, which the leading experts at our University and in our city had failed to diagnose, demonstrating her strong medical knowledge, even though she was denied her degree. Her elements of discrimination, being a woman and being disabled, did not simply add up but multiplied.

In the early 1960's the presence of women in medical schools and in the medical profession was limited. Various societal, cultural, and institutional barriers contributed to the low number of female medical students and practicing female physicians at that time.

Disabled physicians represent only 3.1% of doctors, primarily due to chronic illnesses and mobility disorders [4]; they are an integral part of the medical workforce, but they are at a higher risk of mistreatment, which places them at an elevated risk for burnout. This impacts the health and well-being of physicians, healthcare costs, the quality of care, and the attrition rate of physicians [5].

A classmate of Benedetta, like her, suffered from the effects of polio and also walked with a cane, but unlike Benedetta, she was able to graduate. Benedetta also had diffuse neurofibromatosis type 1, a rare and highly debilitating progressive disease that would soon lead to her death. Benedetta was not only lame and in need of a cane to walk, but she also suffered from deafness. Compared to her classmate, it is evident that the discrimination was greater towards her due to her more severe form of disability.

Benedetta reached university studies through her commitment, persistence, and resilience. From a very young age, she experienced difficulties with walking, unlike her brothers and sisters. The disability that began at a young age led her to greater introspection. Having always been an excellent student, she was much more profound in writing her diary compared to her siblings. Difficulty in walking in children appears to lead to greater introspection and higher academic performance. In a study on survivors of osteosarcoma of the lower limbs, long-term survivors had higher academic achievement compared to their siblings and the general population [6] there has been relatively little research published to date regarding very long-term survivors of childhood and adolescent osteosarcoma. In the current study, the authors compared the very long-term survival outcomes of patients with osteosarcoma who were treated with either limb salvage procedures or amputation. A total of 38 patients

with osteosarcoma who survived ≥ 20 years from the time of diagnosis were divided into two groups according to whether they underwent amputation or limb salvage. Participants were asked to complete a questionnaire concerning their education, employment, annual income, marital status, health insurance, lifestyle, siblings, and all current and past health issues. Education, employment, marital status, and health insurance were not found to differ significantly between the two groups of survivors, who described themselves as being similar to their siblings. Eight percent of survivors underwent secondary amputation because of complications with an endoprosthesis. The cumulative incidence of second primary neoplasms was 13%, and this finding was significantly higher in females and in survivors who underwent radiotherapy and had a genetic predisposition. The second primary malignancies were breast cancer (ductal invasive carcinoma, ductal in situ carcinoma, and leiomyosarcoma). Moreover, there are other historical examples of successful people with disabilities, such as Frida Kahlo, who from a young age could not run and, while bedridden, was given a canvas to paint by her father.

The greater the degree of disability, the greater the discrimination, as can be seen in the difference in treatment between Benedetta and her classmate who also survived polio. Unlike Benedetta, her classmate was only lame, but she could see and hear well.

It is important to highlight that Benedetta's life story serves as a powerful testament to the strength and perseverance required to overcome such significant challenges. Her journey is an inspiration for all, showing that despite facing considerable obstacles, she remained steadfast in her faith and humanity. Benedetta's experiences offer valuable lessons in empathy, resilience, and the importance of inclusivity.

In an academic and professional context, her legacy reminds us of the ongoing need to address and dismantle systemic biases that continue to affect women and individuals with disabilities. By learning about and reflecting on Benedetta's life, we can better understand the impact of discrimination and the importance of fostering a supportive and equitable environment for all. This understanding is crucial for current and future generations of medical professionals, who must strive to embody the principles of compassion and equality in their practice and interactions.

Benedetta's story is not just a part of history; it is a call to action for everyone in the academic and medical community to commit to creating a more inclusive and understanding world, where every individual's contributions are valued and respected, regardless of gender or ability.

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Chapter 4. Multidiscrimination, Career Development and Diversity in Pathology

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Abstract

In 1959, Benedetta Bianchi Porro, despite her disabilities, was denied the opportunity to graduate in Medicine at the University of Milan. Her story is a powerful example of resilience and determination. This study examines whether systemic barriers still exist within the university's Pathological Anatomy field, particularly against women and individuals with disabilities. Although female students (61.3%) outnumber male students and graduate younger with higher grades, men dominate senior academic positions, with women comprising only 14% of full professors in this field. We analyzed faculty members' career progression using data from the "Who and Where" website and evaluation documents of the University of Milan. Our findings reveal a male predominance in the Pathology faculty, with significant delays in career advancement for women and those with disabilities. One notable case is a disabled woman faculty member who, despite a distinguished academic record, has faced significant delays in her career progression compared to her male peers. This suggests that discrimination based on gender and disability is still prevalent. Historical examples, such as Maria Montessori's success in educating children with disabilities, highlight the potential achievements when given equal opportunities. Similarly, studies on pediatric osteosarcoma survivors show that those with walking difficulties often achieve higher education levels than their able-bodied siblings. These findings indicate a need for more inclusive and equitable practices in academia. Despite improvements in supporting individuals with disabilities, much more needs to be done to eliminate discrimination and ensure equal career advancement opportunities for all.

4.1 Introduction

Back in 1959, when blessed Benedetta Bianchi Porro was at the last year of her medical studies at the University of Milan, she was denied the graduation as a physician

at her very last exam due to her disability. Her journey is a testament to her unyielding spirit and deep faith, which could serve as an inspiration to many.

Nowadays, at the University of Milan, which is this year celebrating its centennial since its foundation in 1924 by the physician Prof. Luigi Mangiagalli, the disability office and the network of gender equality referents and the national laws anti-discrimination, should assure equality. However, the career progression survives within a male-dominated field and even today there are systemic barriers that women and disabled individuals often face.

In particular, the scientific sector of Pathological Anatomy at the University of Milan needs a thorough analysis because it may be marginalizing towards women and people with disabilities. There are more female freshmen (61.3%) than male; women graduate younger and with higher grades, but in career progression, men are more likely to hold top positions. Despite advances in science and technology, career progression still favors men, with women representing only 30% of full professors [1].

Career progression data for the scientific discipline of Pathological Anatomy are not well known. Women and people with disabilities might be disadvantaged in career advancement. Anatomic Pathology could present a special case, as disabled doctors might be particularly attracted to this scientific discipline, given that it is known to be more sedentary, with a significant proportion of time spent sitting and analyzing slides under a microscope, as well as the extensive related research activity.

The purpose of this study is to analyze all faculty members working at the University of Milan to examine career progression based on gender distribution or other discriminatory factors, particularly disability.

4.2 Materials and Methods

The entire scientific disciplinary sector of pathological anatomy has been analyzed through the curricula published on the “Who and Where” [2] website of the University of Milan and the documents of evaluation procedures for career advancement, also published on the University of Milan’s website. For each member of the faculty, the data about education, training, faculty employment, publications, research, faculty progression have been collected and compared. The data are reported de-identified, i.e., without revealing the names. Only pathologists with a medical degree (MD) were enrolled in the study. The faculty pathologists have been divided into three groups based on

their age, years of graduation, completion of the residency program, and the years of having attained their national qualifications.

4.3 Results

Compared with internal medicine (N=26), in pathology (N=17) there fewer faculty members and there is a male predominance (Fig. 4.1). In the Pathology faculty there are only 5 women (29%) versus 12 men (71%).

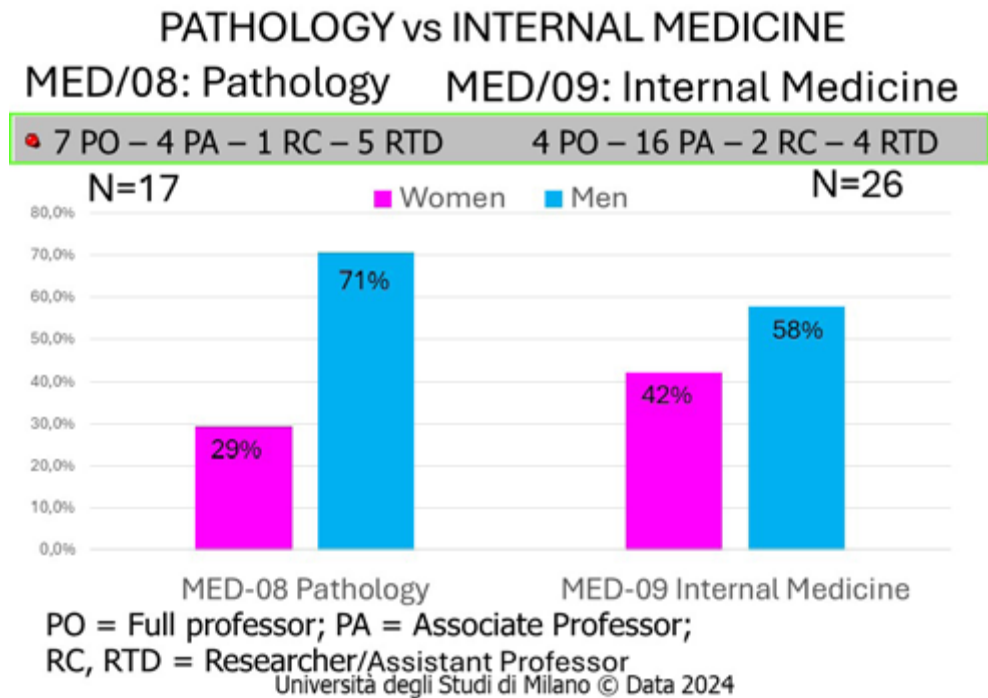


Fig. 4.1. Comparison between Pathology and Internal Medicine. Data have been elaborated from the publicly available data from “Who and Where” of the University of Milan (<https://www.unimi.it/en/who-and-where>).

The average of the faculty members where residents in the academic year 1995-1996, at the time in which women and men were equally distributed as 50%, differently from the academic year 2022-2023 in which there is a women’s predominance (Fig. 3.2). However, today’s faculty predominance of men (Table 4.1) underlines the higher difficulty for women to enter the academic workforce.

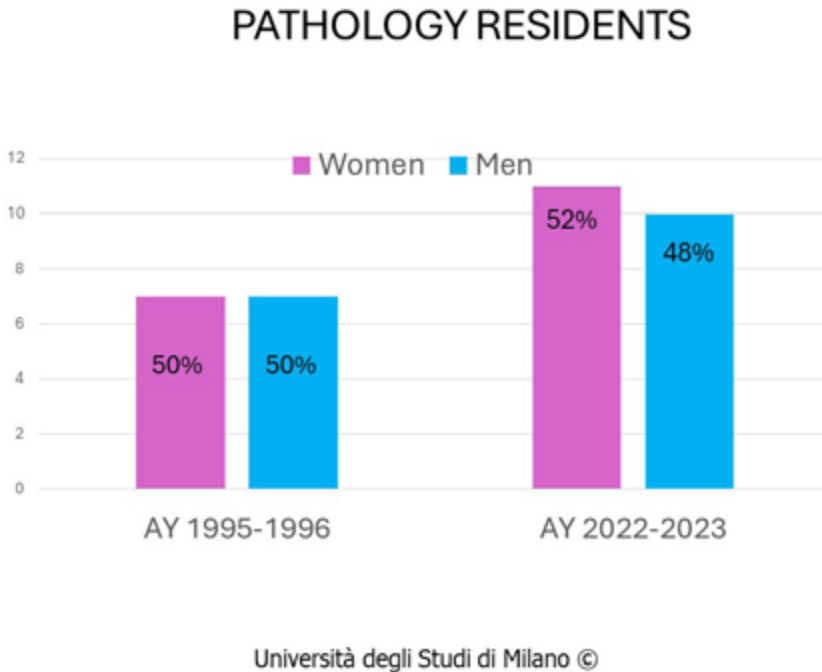


Fig. 4.2. Gender distribution of pathology residents in academic year (AY) 1995-1996, compared to AY 2022-2023.

As shown in Fig. 3.3, there is a prevalence of men pathologists in the faculty. There is only one woman (14%) full professor compared to six men (86%) full professors. Why the women associate professors not progress as full professors? The red asterisk points to the case of the faculty member # 10 shown in Table 4.1. Of interest, six out of the 12 men (50%) are full professors, versus only one out of five women (20%).

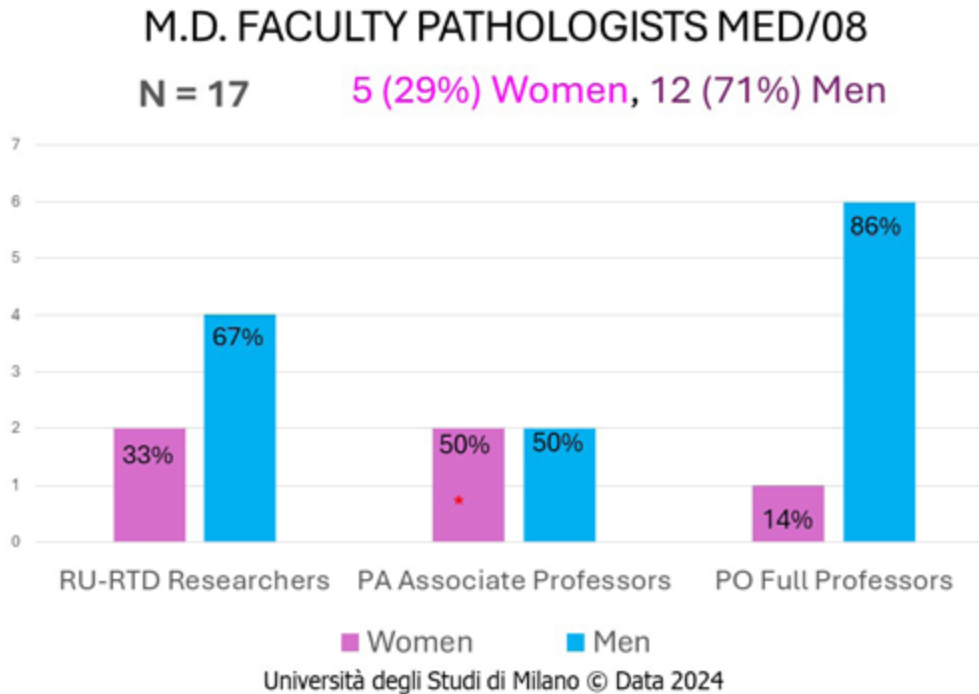


Fig. 4.3. Gender distribution of pathology faculty members distributed by academic ranks. Data have been elaborated from the publicly available data from “Who and Where” of the University of Milan (<https://www.unimi.it/en/who-and-where>).

As shown in Table 4.1, there are a total of 17 MD pathologists at the faculty of Medicine of the University of Milan. To all the pathologists the hospital appointment has been granted at the time of work contract at the University of Milan, except for the faculty member # 10, who is a woman and is disabled. Visibly, she suffers from walking and hearing impairments. Overall, the women had more important curricula than men when entered the faculty. For example, the two women faculty members # 10 and # 11 were the only ones who had a PhD title; no men obtained the PhD title, but this title did not help to progress more rapidly. Overall, the women graduated younger than men and completed the residency program at a younger age compared to men, two of them earned the PhD title, but their career progression has been slower.

In group 1, faculty members # 1-5, there is only one woman, versus four men, and she is still in the role of researcher, the lowest role compared to the men colleague. She completed the residency program and earned the role of researcher at the youngest age compared to her peers, but she did not progress (Table 4.1).

In group 2, faculty members # 6-10, there are only two women. When compared to men, the time from the national qualification as full professor and the call in service has been significant longer in women. The men obtained promotions much faster than women. For example, the faculty member man # 8 became researcher in 2005, compared to 2002 of the faculty member woman # 9 and gained the call as full professor in 2018 while the woman had to wait until 2019. The faculty member # 10, disabled woman, is the only one who never received the hospital role. All medical colleagues were assigned hospital roles that eventually progressed to senior positions, including department heads, which suggests that the discrimination was due to her disability. The comparison between women highlights that #10 has been disadvantaged compared to # 9; in fact, despite earning the national qualification in 2017, like the other four colleagues, to date never obtained the call in service as full professor, despite the attempt (Table 4.1).

In group 3, faculty members # 11-17, there are only two women versus five men. Given that the age at the completion of the residency program was younger in women compared to the men, the women entered in the faculty at a older age. The two women # 11 and # 13 obtained the call in the role of Associate Professor much later compared to the man # 12 (Table 4.1).

CARRER DEVELOPMENT IN PATHOLOGY PROMOTION DATA MED/08

5 Women; 12 Men

Nº	Role	Age	Sex	Age ASN	Age Residency	PhD	RC-Call	Age RC-Call	PA Board-Residential	PA-ASN	PA-Call	Months PA-Res-call	Age PA-Call	PO Board-Residential	PO-ASN	PO-Call	Months PO-Appr-call	Age PO-Call	Hospital Role	Institutional Role	ASN Rank	As there Career	
1	PO	57	M	25	24		1994	28	1999	NA	1998	0	38			2002	2002	28	Chief		170	100.0	
2	PA	57	M	25	24		1994	28	1999	NA	1998	0	38			2002	2018	30	Chief		175	85.0	
3	PO	56	M	26	25		1995	29	2005	NA	2004	0	48			2002	2018	30	Chief		184	100.0	
4	PO	43	M	25	28		1991	31	1999	NA	1998	0	38			2002		42	Chief	Pa. Director, Dep. Director	140	85.0	
5	PO	56	F	25	28		1993	28											Resident		80	10.0	
6	PO	51	M	24	28		1993	28	2010	NA	2002	1	30			2017	2018	25	NA	Chief		252	11.0
7	PO	58	M	25	32		2008	43	2014	2014	2014	30	49			2017	2020	45	55	Chief		202	10.0
8	PO	57	M	28	30		2005	39	2014	2014	2014	30	44			2017	2018	15	52	Chief		312	20.0
9	PO	33	F	23	30		2002	33	2009	NA	2013	48	41			2017	2019	30	51	Chief	President degree course	184	10.0
10	PA	53	F	23	29	Yes	2002	32	3 Attempts 2009-2020	2014	(2 Attempts 2014) 2020	73	50	1 Attempt 2009	2021	1 Attempt 2021			Disabled	None Assigned	Denied	213	5.0
11	PA	47	F	23	30	Yes	2020	44		2018	2023	55	48						assigned		89	8.0	
12	PA	40	M	27	34		2016	35		2019	2020	31	38			2020			Chief		180	12.0	
13	PO	40	F	23	31		2017	32		2020	in progress	33	40						assigned		88	11.0	
14	PO	39	M	23	31		2019	34											assigned		81	10.0	
15	PO	37	M	23	34		2019	33											assigned		81	10.0	
16	PO	34	M	24	30		2019	35											assigned		8	10.0	
17	PO	37	M	24	30		2019	31											assigned		25	10.0	

PO= Full Professor; PA= Associate Professor; RC, RU, RTD = Assistant Professors; ASN = National Scientific Qualification; Call = Appointment.

Università degli Studi di Milano © Data 2024

Table 4.1. Promotion data for the faculty pathologists in service at the University of Milan. Data have been elaborated from the publicly available curricula data from “Who and Where” of the University of Milan (<https://www.unimi.it/en/who-and-where>).

4.3 Discussion

It is well known that despite the advancement of science and technology, differences in recruitment and career progression for women in academia still persist [1]. While it is reported that women constitute 30% of full professors [1], the field of pathological anatomy at the University of Milan diverges from the literature as only 14% of full professors are women. Of interest, six out of the 12 men (50%) are full professors, versus only one out of five women (20%) (Figure 3) (Table 4.1).

The data reported here indicate exclusionary behaviors towards female pathologists in academia. The fact that such exclusionary acts occurred primarily within the Faculty of Medicine and Surgery makes the issue even more serious. The factors of disability and being a woman, as demonstrated in the career progression of faculty member #10 (Table 4.1), show that discriminatory factors do not simply add up but multiply. Discrimination is perpetrated by the academic field itself: men full professors, already at the peak of their careers, predominantly recruit men, as seen with the three newly recruited members in the field, faculty members #14-17, all of whom are men, while they offer scarce progression opportunities to women and in particular to the disabled woman faculty member #10 (Table 4.1).

There are many types of disabilities, but disabled individuals, such as the faculty member # 10 (Table 4.1) can obtain higher level of education and capabilities. Maria Montessori, one of the first female physicians in Italy, made significant contributions to education, particularly through her work with children with disabilities. In the early 1900s, Montessori worked at the Orthophrenic School, a part of the University of Rome, where she applied her scientific background to the education of children who were considered unteachable due to their disabilities. Montessori's methods were groundbreaking. She developed educational materials and techniques that emphasized hands-on learning and sensory experiences. Under her guidance, these children, who were often ridiculed by their able-bodied peers, were able to achieve remarkable academic success. In a notable instance, the children Montessori taught not only passed the Italian public school examinations, which seemed an impossible feat at the time, but also outperformed many of their able-bodied peers. This success was a testament to Montessori's innovative approach and the potential of her educational methods [3]. Her work laid the foundation for the Montessori Method, which is still widely used around the world today. It underscores the importance of creating inclusive educational environments that can foster the abilities of all children, regardless of their physical or

mental challenges.

Examples of multidiscrimination due to the presence of two disadvantaged conditions, being a woman and being disabled, are unfortunately also found in the history of the University of Milan, as seen in the example of Benedetta Bianchi Porro. A female disabled student, Benedetta was denied the opportunity to graduate in Medicine and Surgery in 1959 [4,5]. It is disheartening to know that the discrimination occurred within the Faculty of Medicine and Surgery, where the discriminatory professors were surgeons, individuals of culture and medical science who, despite the Hippocratic Oath, failed to apply the ideals of the profession to their daily practice.

The times of Benedetta Bianchi Porro were marked by severe injustices against disability; today, the situation has improved. Much is done for the disabled, thanks to current regulations and the office for disabilities and the network of gender policy representatives, but more needs to be done.

Benedetta reached university studies through her commitment, persistence, and resilience. From a very young age, she experienced walking difficulties. She came from a well-off family; in comparison to her able-bodied siblings, two of whom were able to graduate in Medicine and Surgery, unlike her.

A study on survivors of pediatric osteosarcoma with walking difficulties showed that they had studied more than their able-bodied siblings, achieving a higher level of education [6] there has been relatively little research published to date regarding very long-term survivors of childhood and adolescent osteosarcoma. In the current study, the authors compared the very long-term survival outcomes of patients with osteosarcoma who were treated with either limb salvage procedures or amputation. A total of 38 patients with osteosarcoma who survived ≥ 20 years from the time of diagnosis were divided into two groups according to whether they underwent amputation or limb salvage. Participants were asked to complete a questionnaire concerning their education, employment, annual income, marital status, health insurance, lifestyle, siblings, and all current and past health issues. Education, employment, marital status, and health insurance were not found to differ significantly between the 2 groups of survivors, who described themselves as being similar to their siblings. Eight percent of survivors underwent secondary amputation because of complications with an endoprosthesis. The cumulative incidence of second primary neoplasms was 13%, and this finding was significantly higher in females and in survivors who underwent radiotherapy and had a genetic predisposition. The second primary malignancies were breast cancer (ductal

invasive carcinoma, ductal in situ carcinoma, and leiomyosarcoma).

Therefore, disabled individuals who have experienced mobility difficulties seem to have studied with greater dedication, but the efforts of faculty member #10 (Table 4.1) do not seem to have been fully appreciated, as evidenced by the slowed career progression. This could lead to a worsening of the disability itself due to the obvious psychological issues that exclusion causes in the minds of those already suffering from disabilities [7].

The field of anatomic pathology shows that the group of faculty pathologist is very competitive; one of them, the faculty member # 4, has been Rector of the entire University of Milan. Compared to the general population average and the academic average, faculty member #10 has achieved more milestones and is therefore seen as an ambitious person (Table 4.1). But what's wrong with a disabled physician being ambitious?

The activity of a pathologist is to shed light, to make post-mortem diagnoses, and to diagnose diseases; here, it is about diagnosing a sick system of recruitment and career progression within the pathology field itself.

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Chapter 5. Frontiers of Gender Medicine in Dermatology: Transgender Health

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Abstract

Transgender individuals, whose gender identity differs from sex assigned at birth, represent a historically neglected and understudied population. Although society previously recognized only two sexes, increasing awareness has revealed a spectrum of identities, leading to the inclusion of diverse transgender subgroups within clinical research. Gender dysphoria, defined in the DSM-5-TR, and reclassified in the ICD-11 as gender incongruence within sexual health, reflects the psychological distress experienced by many transgender people. Despite early milestones in gender-affirming care dating back to Magnus Hirschfeld in the early 20th century, epidemiological data on transgender populations remain scarce, often limited to survey-based studies. Under-recognition and sociocultural disparities contribute to inconsistent prevalence estimates across regions and ethnicities. Most existing literature focuses disproportionately on sexually transmitted infections, resulting in clinical under-representation and therapeutic gaps. Emerging evidence indicates distinct health risks in transgender individuals, including increased rates of non-melanoma skin cancer, cardiovascular disease, and poorer oncologic outcomes. These disparities emphasize the growing relevance of precision medicine, acknowledging biological diversity beyond human rights-based equity. These findings underscore the necessity of inclusive study designs and nonlinear analytic approaches to ensure equitable, biologically informed care for transgender patients, who must no longer be treated as outliers.

5.1 Introduction

The transgender community is a very neglected population. Transgenders are a people with a gender identity that differs from the sex of birth. In the past, we were used to consider that there were only two sexes, males and females. But the more that our society starts to care and study more the population, we discovered that those two sexes intersect. In this intersection, there are several clusters of transgender patients worth to be studied and included in the clinical trials. This population may suffer from a psychological distress called gender dysphoria. Notably, the DSM 5TR [1] defined the gender dysphoria with some criteria and the ICD11 [2] finally in 2019 depathologized the gender dysphoria and moved that from the mental disorder to the chapter of sexual health with the label of gender incongruence.

The gender reassignment, as the last part of moving from one gender to the other one, started in 1929 by Magnus Hirschfeld, a German physician and activist, working the Institute for Sexual Science (Institut für Sexualwissenschaft) in Berlin. His surgical interventions were intended to align physical characteristics with gender identity. Dora Richter was the first patient in 1922 and then in 1930 the second patient was Lill Elbe that was a painter, as artist and as a person of great character for the transgender culture. At the time, these surgeries were experimental, performed without the benefit of modern reconstructive techniques, antisepsis, or immunosuppression, and often associated with major morbidity [3]. Moving from history to data, from a deep evaluation of the literature, there are only very few epidemiological studies that are mainly surveys [4,5]. The real problem of surveys is that, in order to have real world data, we need to have patients that recognizing themselves as transgenders. The strange reality is that unfortunately 25% of the transgender population do not recognize themselves as transgenders. In other words, the prevalence is also related to social acceptance and this is related to sociology. There is a big difference between Europe and US, but also from different ethnicities, having the highest prevalence in the Hispanic Latinos [6]. In Milan, from official data, we have 5,000-6,000 transgenders. It is an important population that need to be evaluated deeply and not only about sexual transmitted diseases because most of the medical literature is about sexual transmitted diseases [7,8].

5.2 Dermatologic Considerations in Gender-Affirming Care

Hormone	Common Cutaneous Effects	Long-term Risks
Testosterone	Acne, seborrhea, hirsutism, androgenetic alopecia, xerosis	Scarring, post-inflammatory hyperpigmentation
Estrogen + Antiandrogens	Reduced acne, skin thinning, telangiectasia, melasma	Photoaging, impaired wound healing
Puberty Blockers (GnRH analogs)	Minimal direct dermatologic impact	Xerosis, injection-site reactions

Table 5.1. Dermatologic Manifestations of Gender-Affirming Hormone Therapy.

5.3 Acne and Seborrhea

Acne is one of the most common dermatologic manifestations observed in transgender and gender-diverse (TGD) individuals undergoing masculinizing hormone therapy. Testosterone stimulates sebaceous glands, increasing sebum production and altering follicular keratinization, which predisposes to comedones and inflammatory lesions. Clinical studies demonstrate that more than half of transmasculine adolescents develop new-onset acne within one year of initiating testosterone, with up to 70% affected within two years [9]. Lesions typically localize to the face, chest, and back, with severity varying from mild papulopustular eruptions to severe nodulocystic acne with scarring potential. These lesions are similar to the steroidal-acne found in body-builders.

The psychosocial impact of acne in TGD individuals is particularly profound. Acne is strongly associated with depression, anxiety, and impaired quality of life in adolescents, and these effects may be amplified among transgender youth who already face stigma and dysphoria. Acne on the chest may worsen discomfort for patients who practice chest binding, creating a cycle of physical irritation and psychosocial distress [9]. Chest binders, which up to 90% of transmasculine adolescents use, contribute to occlusion, friction, and sweat retention, leading not only to acne but also folliculitis and contact dermatitis. Treatment follows standard dermatologic guidelines but requires adaptation to the transition context. For example, spironolactone and combined oral contraceptives may be appropriate in transfeminine individuals but are contraindicated in transmasculine patients pursuing masculinization [10]. Isotretinoin remains an option for severe acne but requires careful counseling regarding teratogenicity and possible mood effects, particularly relevant in populations already vulnerable to mental health challenges

5.4 Hair Disorders

Changes in hair pattern are highly visible and carry both aesthetic and affirming significance for TGD individuals. Specific therapies are capable to trigger sebaceous gland dysfunction and consequently their cutaneous (seborrhea) and trichological manifestations (i.e. alopecia androgenetica both female and male pattern). For transmasculine patients, testosterone induces terminal hair growth on the face, trunk, and limbs, which is often desirable but may cause complications. Shaving-induced pseudofolliculitis barbae, more common in patients with coarse, curly hair, can lead to chronic papulopustular eruptions and scarring. Management strategies include modifying shaving practices, topical keratolytics, antibiotics, or in some cases, laser hair reduction [9].

Scalp hair changes differ by sex assigned at birth. Some transmasculine individuals develop androgenetic alopecia after years of testosterone exposure, mirroring male-pattern baldness. Transfeminine patients, on the other hand, may present with pre-existing androgenetic alopecia that only partially regresses after estrogen therapy. Minoxidil and finasteride remain mainstays of therapy, though finasteride use must be balanced with patient goals, as some individuals may prefer to avoid additional antiandrogenic effects [10].

Hair removal plays a crucial role in gender-affirming care, particularly for transfeminine patients seeking to reduce facial and body hair. Methods include shaving, waxing, chemical depilatories, laser, and electrolysis. Each carries unique dermatologic risks: shaving may lead to pseudofolliculitis, depilatories may cause irritant dermatitis, and laser treatment can trigger post-inflammatory hyperpigmentation in darker skin types. Electrolysis, though permanent, can be painful and result in scarring or dyspigmentation. Thorough counseling on risks, costs, and expected outcomes is essential.

5.5 Cutaneous Side Effects of Transitioning Therapy

Hormone therapy produces systemic changes that are reflected in the skin. Testosterone increases sweat production and may cause bothersome hyperhidrosis. It can also lead to xerosis and fissuring of the skin barrier, raising susceptibility to eczematous dermatitis. In individuals with higher phototypes, testosterone-associated acne and folliculitis often heal with post-inflammatory hyperpigmentation, which can be disfiguring and slow to resolve [9].

Estrogen therapy exerts different but equally important effects. It enhances skin

hydration and elasticity but may predispose to vascular changes, including telangiectasia, spider angiomas, and increased bruising due to capillary fragility [11]. Hyperpigmentation, including melasma, is also well-documented among transfeminine patients, especially those with greater sun exposure. Estrogen reduces collagen density over time, which can contribute to skin thinning, delayed wound healing, and increased visibility of scars. Antiandrogens such as spironolactone may cause urticaria or lichenoid drug eruptions in rare cases.

Patients should be counseled on skincare regimens tailored to their treatment—photoprotection and pigment control for those on estrogen, barrier repair and acne management for those on testosterone. Importantly, the dermatologist's role includes aligning interventions with the patient's gender-affirming goals rather than strictly cosmetic outcomes.

5.6 Autoimmune and Cancer Diseases During and After Transition

Gender-affirming hormone therapy (GAHT) influences immune pathways, with implications for autoimmune skin disease. Estrogen enhances humoral immunity and has been implicated in the onset or worsening of lupus erythematosus and dermatomyositis. Case reports describe flares of systemic and cutaneous lupus in transfeminine patients on estrogen therapy [11]. Testosterone, conversely, tends to exert immunosuppressive effects and may mitigate certain conditions such as psoriasis, though evidence remains limited. Both hormones modulate cytokine expression (e.g., IL-17, TNF- α), potentially shifting disease activity in unpredictable ways.

Cancer risk is also a growing concern. Neovaginas constructed from penile or scrotal skin are susceptible to HPV infection, intraepithelial neoplasia, and squamous cell carcinoma, with latency periods exceeding 10 years [12]. Cutaneous malignancies may also arise from chronic scarring, particularly keloid-prone surgical sites. Furthermore, long-term estrogen therapy may increase risks of melanoma and non-melanoma skin cancers, though current data remain inconclusive. Vigilant screening, HPV vaccination, and patient education on self-examination are critical preventive strategies.

5.7 Discussion

The transgenders need to be protected and studied. Otherwise, the second side of the medal will be that this population is understudied and consequently undertreated.

We cannot treat what we do not know. Equity feat diversity: that is another important chapter in terms of science because it is true that the starting point is having equal rights from a humanistic perspective, but the more precision medicine progresses, the more the idea of every person has his own biological fingertip start to grow in terms of importance and in terms of therapeutical consequences.

Assisting the transgender population, we finally know that transgender females have more non-melanocytic skin cancer than males and even transgender males. They have two to six times more cardiovascular problems and they have worst outcomes in terms of radio and chemotherapy [8]. The next step will be accepting a biological diversity and tailor a treatment, not to under treat the transgender population.

We do not have to treat the transgenders as outliers, but we need to conceive different recruiting criteria to better represent the real life and our multidisciplinary and multi-ethnic society. We need to have inclusive trials and apply not anymore linear statistics that basically exclude outliers but nonlinear statistics techniques such as cluster analysis or even machine learning.

5.8 Future directions

Building evidence becomes more and more mandatory for transgender population, a cluster of patients labelled in the umbrella group of “special populations”. Indeed no solid evidence can be affirmed without a solid methodology. For transgender population the choice of the comparator group is particularly tricky since the group/groups should account for two main aspects: 1) the transgender population intrinsic characteristics and 2) the chosen outcome.

For example, if in a case-control study I set as a primary outcome the cutaneous Minimal Erythema Dose (MED) in transgenders I need to think about control groups.

To balance transgenders intrinsic characteristics, I need two control groups:

- Age and Diet type Males;
- Age and Diet type Females.

Furthermore, to balance the chosen outcome I will need to have as control groups males with an increased level of estrogens and women with an increased level of testosterone:

- Males age-matched with increased levels of estrogens/decrease ratio testosterone/estrogen could be patients with hepatic failure or with III grade varicocele. Since hepatic failure is a well-known cause of decreased MED, these patients are not feasible

to be enrolled due to the outcome chosen.

- Females age-matched with increased levels of testosterone could be patients with polycystic ovary syndrome or early menopausal ones.

This combined approach in transgender studies was never used and the transgender health need to update their methodology to improve the strength of their recommendations.

5.9 Conclusions

Transgender individuals constitute a growing population in our society that must be both protected and thoroughly studied. Without inclusive research, these individuals remain at risk of being neglected—understudied and consequently undertreated. Equity demands more than equal access—it requires recognition of diversity and the application of precision medicine principles so that every person has his own biological fingertip and therapeutic consequences follow. As evidence accumulates on cardiovascular and oncologic risks, the next step lies in tailoring research, screening, and treatment strategies that reflect transgender biology, identity, and health-care context. Only then can we move from acknowledgment to action and ensure that transgender patients receive the care they warrant.

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