

Diploma thesis

**Where have all the women gone?
The representation of women in Gastroenterology and
Hepatology in Austria**

Submitted by

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Graz, 10.03.2021

Affidavit

I hereby declare that the following diploma thesis has been written only by the undersigned and without any assistance from third parties. Furthermore, I confirm that no sources have been used in the preparation of this thesis other than those indicated in the thesis itself

Graz, 10.03.2021

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Table of contents

Acknowledgements	ii
Table of contents	iii
Figures.....	v
Tables	vi
Zusammenfassung	vii
Abstract	ix
1 Introduction	10
1.1 History of women in Medicine	10
1.1.1 History of women in Medicine in early ages	10
1.1.2 History of women in medicine in Austria	11
1.2 Women in medicine in the 21 st century.....	12
1.2.1 Women in medical leadership positions.....	14
1.2.2 The importance of gender equality in medicine	15
1.2.3 Obstacles in female physicians' careers	16
1.3 Women in medical conferences.....	16
1.3.1 Underrepresentation of women in faculty of medical conferences	16
1.3.2 Recommendations to support women in medical conferences.....	17
1.3.3 Developments that promote women in medical conferences	18
1.4 Women in Gastroenterology and Hepatology.....	18
1.4.1 Special obstacles in the field of gastroenterology and hepatology	18
1.4.2 The history of the ÖGGH.....	19
1.4.3 The history of the ÖDG	20
2 Methods.....	22
2.1 Statistical Analysis	24
3 Results.....	25
3.1 The ÖGGH	25
3.1.1 Annual conferences.....	25
3.1.2 Advanced training course	27
3.1.3 Satellite symposia	27
3.2 The ÖDG	27
3.2.1 Annual conferences of the ÖDG	27
3.2.2 Satellite symposia	30
3.3 ÖGGH vs. ÖDG.....	30
3.3.1 Satellite symposia in comparison	31
4 Discussion.....	33

4.1	Underrepresentation of women in the ÖGGH	33
4.2	Challenges for women in medicine	34
4.3	Deficits of the ÖGGH's approach in reaching gender balance	35
4.4	ÖDG's progress compared to the ÖGGH	36
4.5	Recommendations to achieve gender balance	37
4.6	Limitations	37
4.7	Conclusions.....	38
5	References.....	39

Figures

Figure 1 The mean percentages of female doctors by the OECD (9).....	13
Figure 2 Invited female lecturers over time in the ÖGGH.....	25
Figure 3 Chairwomen over time in the ÖGGH.....	26
Figure 4 Open lectures over time in the ÖGGH.....	26
Figure 5 Invited female lecturers over time in the ÖDG.....	28
Figure 6 Chairwomen over time in the ÖDG.....	29
Figure 7 Female open lecturers over time in the ÖDG.....	29
Figure 8 Annual conferences ÖDG vs. ÖGGH.....	31
Figure 9 Presidency in the ÖGGH: 1 female president in 18 years.....	31
Figure 10 Presidency in the ÖDG: 4 female president in 16 years.....	31
Figure 11 Satellite symposia ÖDG vs. ÖGGH.....	32

Tables

Table 1 Female faculty representation	30
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Zusammenfassung

Einleitung: Obwohl die Zahl der Medizinstudentinnen in den letzten Jahrzehnten weltweit gestiegen ist, sind Frauen in medizinischen Führungspositionen stark unterrepräsentiert. Diese Ungleichheit und Benachteiligung von Frauen spiegelt sich im wissenschaftlichen Bereich auch bei Kongressen von medizinischen Fachgesellschaften wider, bei denen der Großteil der Vortragenden und Vorsitzenden männlich ist. Allerdings gibt es auch vereinzelte nationale und internationale Kongresse, die gezielte Maßnahmen gesetzt haben und mit Erfolg ein ausgeglicheneres Verhältnis zwischen Männern und Frauen erreicht haben. Um herauszufinden, ob Frauen auch in der Österreichischen Gesellschaft für Gastroenterologie und Hepatologie (ÖGGH) benachteiligt werden, wurden die Jahrestagungen der ÖGGH hinsichtlich der Frauenquote analysiert und mit der Österreichischen Diabetes Gesellschaft (ÖDG) verglichen.

Methoden: Die Hauptprogramme der Jahrestagungen der ÖGGH von 2002 bis 2019 wurden hinsichtlich des Frauenanteils bei eingeladenen Vorträgen, Vorsitzen, freien Vorträgen und PräsidentInnen analysiert. Anschließend wurde der Frauenanteil der ÖGGH mit dem der ÖDG von 2004 bis 2019 verglichen.

Resultate: Bei den Jahrestagungen der ÖGGH lag der Frauenanteil bei eingeladenen Vorträgen bei 8,4% ($\pm 7,5$), bei Vorsitzen bei 9,9% ($\pm 7,5\%$) und bei freien Vorträgen bei 37,7% ($\pm 17,5$). Im Vergleich dazu kommen die Jahrestagungen der ÖDG in einem vergleichbaren Zeitraum auf einen signifikant höheren Frauenanteil bei eingeladenen Vorträgen [27,5% ($\pm 7,9$), $p < 0,001$] und bei Vorsitzenden [30,7% (14,6), $p < 0,001$] und zu einem vergleichbaren Frauenanteil bei freien Vorträgen [42,9% (8,9), $p = 0,533$]. Während der Frauenanteil der ÖGGH mit der Zeit nicht zugenommen hat, kann die ÖDG einen signifikanten Anstieg von weiblichen Vortragenden ($r_s = 0.626$, $p = 0,009$) sowie Vorsitzenden ($r_s = 0.802$, $p < 0,001$) seit 2004 verzeichnen.

Diskussion: In den Jahrestagungen der ÖGGH sind Frauen als eingeladene Vortragende, Vorsitzende und Präsidentinnen stark unterrepräsentiert. Dieses Defizit zeigt sich auch im nationalen Vergleich mit der ÖDG. Diese Ergebnisse weisen auf eine Diskriminierung von Frauen in der medizinisch wissenschaftlichen Gesellschaft der Gastroenterologie und Hepatologie hin. Da der Frauenanteil bei Kongressen in der ÖGGH stagniert, besteht akuter Handlungsbedarf um

gastroenterologischen Expertinnen eine Bühne zu bieten und weibliche Vorbilder für zukünftige Generationen zu etablieren.

Abstract

Introduction: Even though numbers of female medical students are rising, women continue to be underrepresented in medical leadership positions throughout the world. This inequality can also be seen in academic medicine where the majority of faculty members in medical conferences is male. However, national and international medical societies exist that have successfully implemented strategies to elevate the proportion of female faculty. The aim of this study is to analyse the gender distribution in conferences of the Austrian Society of Gastroenterology and Hepatology (ÖGGH) and see differences in a national comparison to the Austrian Diabetes Society (ÖDG).

Methods: The main programmes of the ÖGGH's annual conferences from 2002 to 2019 were analysed regarding the gender distribution in invited lectures, chairs, open lectures and presidency and compared with the annual conferences of the ÖDG from 2004 to 2019.

Results: In the 18 analysed annual conferences of the ÖGGH, 8.4% (± 7.5) invited lecturers, 9.9% ($\pm 7.5\%$) chairpersons, 37.7% (± 17.5) open lectures and one president were female. The ÖDG had a significantly higher proportion of female faculty than the ÖGGH in a comparable timeframe regarding invited female lecturers [27.5% (± 7.9), $p < 0.001$] and female chairs [30.7% (14.6), [$p < 0.001$]] and a similar gender distribution in open lectures [42.9% (8.9), $p = 0.533$]. The proportion of female faculty of the ÖGGH did not improve over time, whereas the ÖDG shows a significant rise in female lecturers ($r_s = 0.626$, $p = 0.009$) and chairwomen ($r_s = 0.802$, $p < 0.001$) since 2004.

Discussion: Women are underrepresented in invited lectures, chairs and as presidents in annual conferences of the ÖGGH. The ÖGGH also has a massive deficit regarding gender balance in the national comparison with the ÖDG. This is a strong sign for gender discrimination in the academic medical field of Gastroenterology and Hepatology. Since there has been no significant increase over time, there is an immediate need for action to encourage gastroenterological experts regardless of their gender and establish female role models for future generations.

1 Introduction

1.1 *History of women in Medicine*

1.1.1 **History of women in Medicine in early ages**

In the early history of medical doctors, there have been few reports about female doctors, even though women practiced in various medical fields. (1) Early on women did play a role in medicine as herbalists and nurses. (2) In ancient Egypt, reports about priestesses who worked as healers and paintings of women performing surgery were found. Similar findings were made in ancient Greece where women taught medicine and took care of patients. There were also reports about specific doctors like the renowned surgeon Margareta or Origenia who was praised for her remedies.

After the downfall of the Roman Empire, fewer women practiced medicine due to the rising influence of the catholic church. (3,4) In medieval times, the church continued to heavily discredit women working as herbalists and healers and even hunted them as witches. (2,5) In 800 CE, the famous Tortula studied medicine in Salerno and wrote a book about obstetrics and gynaecology that was used for more than 400 years. (2,3) However, apart from graduates of the University in Salerno, the medical profession in Europe was mostly occupied by men. The route of this development can be found in the 1400s where many cities and governments ruled that the medical profession must be taught in universities, where women were not allowed to study at the time. (2)

Changes only occurred in the 19th century, when women successfully fought to practice medicine. (5) Reports about Dr. James Barry - a renowned military surgeon in the UK - went public after his death that concluded that he was in fact a woman. She pretended her whole life to be a man to perform as a medical doctor. (6) The exclusion of women from universities was partly justified with untrue "biological justifications", such as those made by Dr. Edward Clark in 1873 who warned that 'higher education in women produces monstrous brains and puny bodies, abnormally active cerebration and abnormally weak digestion; flowing thought and constipated bowels'. (3,5) In the later 19th hundreds courageous women such as Elizabeth Blackwell, Elizabeth Garrett Anderson and Sophia Jex Blake became the first female doctors in the UK in modern age, facing harassments and resistance. Anderson, Blake, and other pioneers continued to establish a medical school in

1874 in Britain that gave women the opportunity to study medicine and work as doctors. (2,5) While women slowly gained the right to be trained in medicine in the late 19th and early 20th century, a significant rise in female doctors occurred during the first and second world war. Due to the recruiting of men into the army, there was a shortage of doctors, contributing to a rise of women in medical training. (2,3,5,7) At the end of the Second World War, a law in the UK stated that public funds will only go to medical schools that accept at least 20% woman. Albeit these developments, in the majority of households' women did not occupy a payed position. This may have been due to workplace's restrictions that could still be found for women, such as "marriage bars" that restricted women in the workplace once they got married or became pregnant. (5) Despite these severe disadvantages for women and after having been rejected by several medical universities, Sheila Sherlock became a successful researcher in the field of hepatology and the first female Professor of Medicine in Britain in 1959. (8)

From the 1960s onwards, the social pressure for equality led to an ongoing increase of female doctors in Britain. (5) This increase led to 45.8% female doctor's today in Britain (figure 1 shows the rise in female doctors in various states throughout Europe (9)). The highest proportion of female medical doctors nowadays can be found in Latvia and Estonia with over 70% of physicians being female. These high numbers can be traced back to developments from the 1950s onwards. Due to the oppression of the Soviet Union doctors had to flee, were exiled, imprisoned or even killed. This shortage of doctors led to an encouragement for women to work in medicine. (10)

1.1.2 History of women in medicine in Austria

In Austria, the history of female medical doctors has its beginnings around 1900 when women were officially allowed to study medicine in Austria. There are reports about women, who studied medicine in Switzerland in the 19th century and continued to work as medical doctors in Austria before 1900, like Dr. Rosa Kerschbaumer and Dr. Gabriele Rossanna von Ehrenthal. In 1910, there were 80 female doctors working in the monarchy that had studied medicine in Austria. In 1929, the number of female doctors rose to 477 and it was possible for women to become a medical specialist. One year later the first woman reached postdoctoral lecture qualification in medicine: Dr. Helene Wastl became a professor in physiology. (11,12)

Another good example of successful women in research and medicine years later in Austria was Dr. Hildegunde Piza-Katzer, who build up the department of plastic surgery in Lainz in 1992 and became the first “Ordinaria” (full professor) for plastic surgery in the german-speaking area. (13)

1.2 Women in medicine in the 21st century

In the 21st century, the situation for women in medicine has improved. A rising number of female medical doctors can be seen all around the world: The Organisation for Economic Co-operation and Development – OECD released a report in 2015 comparing the percentages of female doctors in various states (figure 1). This analysis showed multiple states with high rates of female doctors such as Latvia (74.3%), Slovenia (61.6%), Hungary and the Czech Republic (both 54.5%). However, it also showed countries with a female representation under 50%, like Austria (46.5%), France (44.3%), Italy (40.3%), Switzerland (39.7%), the United States (34.1%) and Japan (20.3%). (9,14)

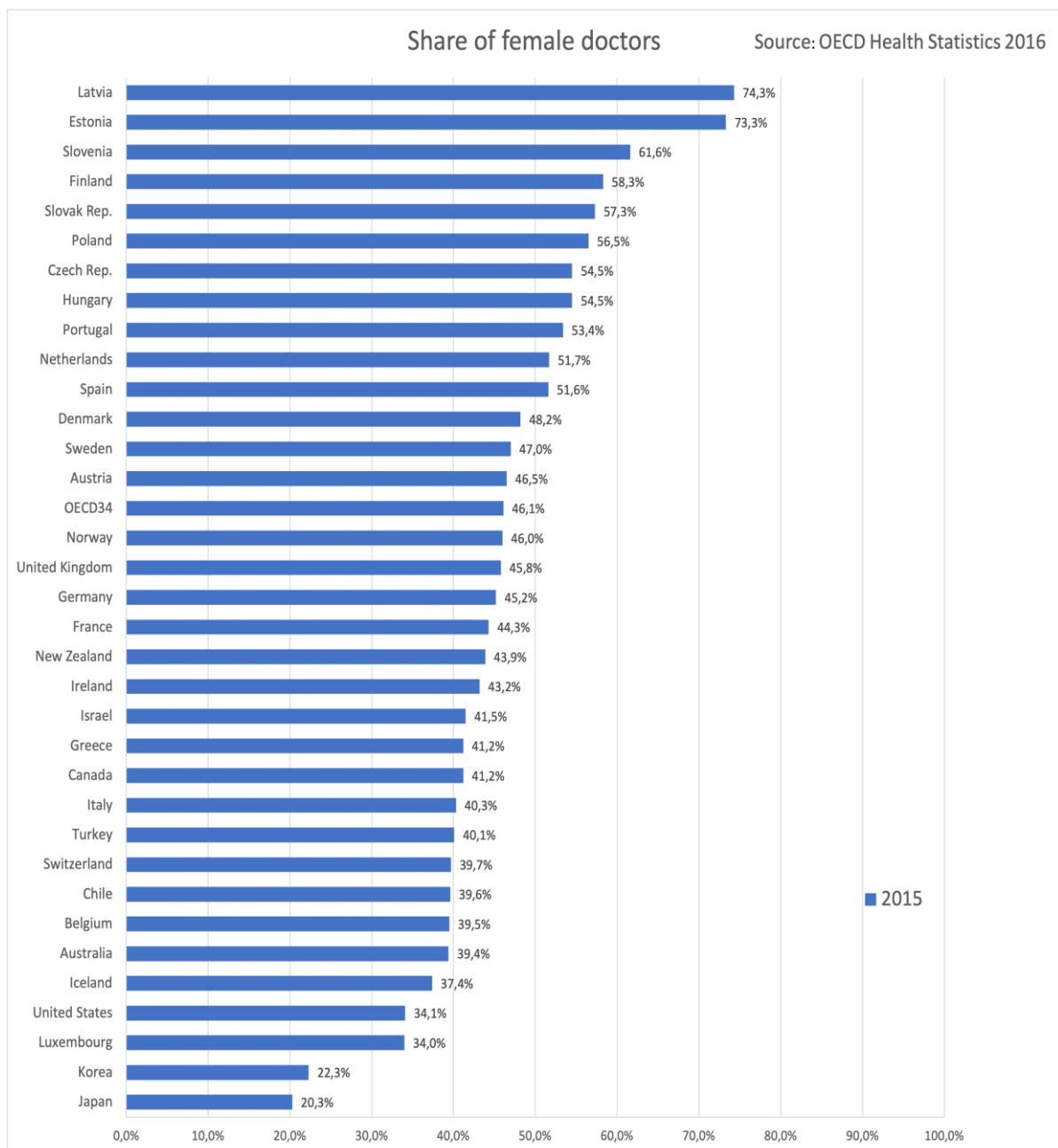


Figure 1 The mean percentages of female doctors by the OECD adapted from <http://www.oecd.org/gender/data/women-make-up-most-of-the-health-sector-workers-but-they-are-under-represented-in-high-skilled-jobs.htm> (9)

Even though more women become medical doctors around the world, they are not equally represented throughout the medical specialties. A study asking Swedish medical students came to the result that male and female students opted for similar medical specialties. (15) However, even though women and men aspire to work in the same medical specialties while still being students, an analysis of the current situation in the US shows that the gender distribution varies in specialties. While orthopaedic surgery, neurological surgery, thoracic surgery and radiology are mostly chosen by men, women preferably chose obstetrics and gynaecology, allergy and immunology, paediatrics and medical genetics. (16,17) In the UK similar

findings were made with a majority of male doctors in specialties like cardiology, neurology and gastroenterology and women being strongly represented in palliative medicine, medical genetics and genitourinary specialties. (18) In Germany, typical specialties with more men than women are surgical specialties such as thoracic surgery, neurological surgery, heart surgery and orthopaedic surgery. German female doctors often choose specialties like obstetrics and gynaecology, paediatrics, internal medicine and geriatrics. (19) In Austria, men prefer general practice, as well as surgical specialties like orthopaedic surgery and plastic surgery, while women prefer general practice, anaesthesiology, gynaecology and obstetrics, psychiatry, paediatrics and internal medicine. (20)

1.2.1 Women in medical leadership positions

These findings suggest that the genders are not balanced in various medical specialties. Further up on the career ladder, the genders are also unequally represented in leadership positions. (5,21) A good example for this are the United States. Even though roughly 40% of all medical students are female, women only make up about 34% of all physicians, 18% of hospital CEOs and only 16% of all deans and department chairs. This imbalance is also shown in senior authorship (10% female) and Editors-in-Chief (7% female) at notable medical journals. (22) Another study analysing the percentage of women in medical societies in the US showed that women made up 29.3% of full members and that the mean proportion of governing boards was 0 to 37.3% (mean of means, 18.8%). (23)

This imbalance can be seen in other countries as well. In Germany the “Medical Women on Top” study of 2019 showed that only 13% of all leadership positions in universities (=clinical directors, institute management and chair holders) were held by women. Inequality also exists in senior physicians, where a study of the year 2016 showed that women only make up about 31% of senior physicians. (24,25)

In Austria, in 2019, 58% of all first year medical students were female and (26) in December 2018 there were 47.6% female doctors with over 13.000 of those 22.062 women working in general practice. (20) Although there’s a trend that more women than men study medicine, the female-to-male-ratio changes along the career ladder with 41% female resident physicians, 21% female “Dozenten” (=assistant professors), 18% female professors and only 14% female chief physicians. (27)

1.2.2 The importance of gender equality in medicine

This shows that gender inequality exists in leadership positions and in medical societies. However, gender equality is important in the (medical) work field with many factors underlining this importance.

Firstly, considering a broader perspective in society: Gender equality is a human right and an essential factor for peaceful societies and a determining factor for health and economic development. Restrictive gender norms in the population on the other hand, can lead to health risks for the population through discriminatory values and beliefs that induces stress and anxiety in both women (because of their role as caregivers) and men (because of their role as breadwinners). In worse cases these harmful gender norms can lead to violence against women. Therefore, confronting these norms is essential for all people. (28)

Secondly, in sciences and medicine a well-balanced male-to-female ratio is associated to higher levels of productivity, innovation and decision making as well as employee satisfaction in the workplace. These factors also benefit research since more diverse research teams are associated with more relevant scientific questions and outcomes that are applicable for a broader population. (28)

Thirdly, in general, the recovery and outcome of a patient is not influenced by the gender of the treating doctor. However, some studies – e.g. a comparison of the postoperative outcome of patients in Canada - suggest a slightly lower mortality rate of patients treated by women. Authors concluded that there might be different practice pattern of women and men that reflect in patient outcomes. For example, several studies came to the conclusion that women generally provide more preventive care than their male colleagues. A meta-analysis of communication patterns found that female doctors spend on average 10% more time doing their medical visit and engage in more patient centered communication than their male colleagues. These skills are linked to a variety of positive outcomes like higher levels of patient satisfaction, therapeutic compliance and a better mental health status. (28–31)

Furthermore, it is not only important that there are equal rights for both genders in their ability to practice medicine, but also that they are equally represented in leadership positions. The chief academic officer of the AAMC (Association of American Medical Colleges) John Prescott stated that inequities in leadership positions in medical schools affect the school's ability to recruit and retain talented

faculty leading to a negative impact on students and ultimately patient outcomes. (32) The approach to attain more female leaders is also important because they tend to support other female students and generally women's careers by providing sponsorship, mentorship and networking opportunities. (33) Another positive side effect of this would be the establishment of female role models for medical students. (34,35) Several studies indicate that role models play a relevant role in the development of professionalism. (36) This also accounts for women as presenters in conferences, where their visibility and work lead to lower gender biases in their communities. It also helps women individually regarding their own network and career advancements. (37)

1.2.3 Obstacles in female physicians' careers

Since the evidence on the importance of a gender balanced medical work field is clear, the question arises which obstacles are blocking the way. A study conducted with women working in health-related careers in New York, Haiti, Tanzania and India, concluded that major obstacles for women aspiring leadership positions were:

- not enough time with their families
- gender discrimination
- discouragement regarding promotions and leadership positions
- sexual harassment in the work field
- lack of female role models (38)

Authors concluded that those factors lead to a resigned acceptance of women regarding their situation. (21) In an Austrian survey done with 2497 female physicians' similar findings were made. It concluded that 61% see having children and child care as the most frequent obstacle for climbing the career ladder. Only 6% rated the compatibility of their work and family life as "very good". Additionally, 37% of all women didn't feel supported enough by their supervisors in the hospital (39) and the majority of women stated that they also experienced sexist comments in the work field (e.g. disrespectful or insinuating comments). (40)

1.3 Women in medical conferences

1.3.1 Underrepresentation of women in faculty of medical conferences

These obstacles do not only apply for women in leadership positions in universities but also extend to medical congresses and conferences. A study by Ruzycki,

Fletcher, Earp et al. analysed the percentages of female speakers in medical conferences in the United States and in Canada from 2007 to 2017. Even though the average percentage of female speakers rose from 24.6% to 34.1%, there is still an underrepresentation of women in medical conferences. (37) This imbalance exists in other states as well, e.g. Australia, where annual conferences of six specialties from 2012 to 2014 have been analysed. In every conference, fewer women than men were presenting. The mean percentage of female faculty ranged from 8% to 42%. (41) These findings were in accordance with a paper published in the Harvard Business Review summarized that there is evidence showing that there are greater challenges for women than men in academic medicine. These issues include that men are more often sponsored and mentored, which leads to career disparities between men and women. In general, men that join a faculty are offered better payment and more research funding. Additionally, the pay gap between the genders continues to exist in various comparable medical positions with comparable productivity levels. (22) In interviews, women who left scientific medical careers also stated that their work environment was biased in favour of male faculty. (38)

1.3.2 Recommendations to support women in medical conferences

- Recommendations to support women in medical schools, teaching hospitals and academic societies were given out by the AAMC's (Association of American Medical Colleges) Project Implementation Committee that included amongst others: To assess, which practices discriminate women in their professional success
- To enhance search committees in the mission of attracting female candidates and to evaluate how candidates' qualifications are defined
- To financially support women in medicine programmes (42)

Another good implementation to increase female faculty in medical conferences is the engagement of more women in programme committees, since gender balanced committees are more likely to sponsor women and less likely to hold all-male panels. Furthermore, the establishment of consult lists of female researches including their credentials and research foci is an effective measure in attaining more female faculty. Additionally, another useful initiative is the establishment of childcare possibilities, which could enable more women with children to attend to conferences.

Also, analysing the primarily chosen invitees and reasons for declinations may help to further understand inequalities. These general aspects to support women should also be accompanied by individual contributions like mentorship and sponsorship for women, as well as publicly speaking up about the existing inequities. (43,44)

1.3.3 Developments that promote women in medical conferences

In some medical conferences around the world efforts were being made to implement these recommendations that promote women and strive to establish equity for women and men. For one, in 2019, Francis Collins – head of the National Institutes of Health, the largest biomedical research agency in the world – spoke up publicly about inequities in the medical work field. He stated that it is time to end all-male speaking panels (“manels”) and that he will not speak at such events anymore. He admitted to be embarrassed to have been part of manels despite the fact that a wonderfully diverse research world exists. His actions encouraged some of his male colleagues to join his declaration and refuse to speak on gender imbalanced panels. (45,46)

Another good initiative is the Social Media and Critical Care Medicine conference in Australia that puts high efforts into establishing a diverse faculty. The conference sponsors speakers from low-income countries, highlights diversity-related topics, tracks the diversity of their speakers and also established on-site childcare. These efforts reflected for example in their conference in 2017 where 41% of delegates and 41% of speakers were female. (43,47)

The American Society for Gastrointestinal Endoscopy (ASGE) used another approach in supporting women by implementing a programme to encourage women in their career ambitions. The programme is called “Leadership Education and Development” and their mission is to enhance women’s leadership and career skills. An analysis from 2009 to 2014 showed that there was an increase of female participation as lecturers and course directors over time in annual conferences and that their proportion exceeded the proportion of female ASGE membership rates. (48)

1.4 Women in Gastroenterology and Hepatology

1.4.1 Special obstacles in the field of gastroenterology and hepatology

In the future, the demand for female gastroenterologists is likely to increase, since more and more female patients demand a female gastroenterologist. (49) However,

currently women tend to be underrepresented in the medical field of gastroenterology and hepatology due to several factors.

For one, workhours that can go up to 60 hours per week (and those hours may not even include time spend on reading medical papers and educating oneself), are an important factor. Those hours can lead to a dissatisfying work-life balance especially for women, since the majority of childcare duties and household work is in many households still their responsibility. In addition, the obligatory training programme to become a gastroenterologist often has to be done at a time where women are mothers of young children. Under these preconditions, some women chose another medical field that offers a better work-life balance with more time for their families. (50)

Female doctors face another difficulty in endoscopy, where the endoscope dial comes in a standard size that may be improperly too large for most women's hands leading to problems in practicability. There were also reports about more musculoskeletal and occupational injuries for women practicing in the field of laparoscopy than for men. (50,51)

Furthermore, the gender pay gap also exists in gastroenterology. A study that included gastroenterologists who had been in practice for 10 years showed that even after adjusting parameters (such as work hours, vacation time and practice settings) women earned 22% less than men. (50)

Moreover, a survey concluded that in the academic field, female gastroenterologists feel less career satisfaction and get fewer promotions than their male colleagues do. (52) Women in gastroenterology are more likely than men to feel like their gender, ethnicity, age or marital status affected their career advancement. (49) These factors combined play a role for women's careers throughout the gastroenterological field.

1.4.2 The history of the ÖGGH

In this study, the female representation in annual conferences of the ÖGGH was evaluated. The history of the ÖGGH goes back to the 1920s, when Austrian doctors who worked in the field of gastroenterology and hepatology were usually members in the DGVS, a german society for digestional and metabolic diseases. The DGVS was founded in 1925 in Vienna and was therefore also the responsible institution for Austrian doctors. In 1967/68 the Austrian Society for Gastroenterology and Hepatology, Österreichische Gesellschaft für Gastroenterologie und Hepatologie

(ÖGGH) was founded. The ÖGGH evolved in the next years due to the efforts of Boller and Leodolter, who were staff members in the general hospital in Vienna, the AKH and other doctors and staff members of the first and second medical clinics of Vienna helped them. Wewalka was one of the main protagonists in the process of the establishment of the society. Wewalka and his colleague Deutsch were both presidents in the first annual conference of the ÖGGH in 1968. The first three annual conferences were held in Vienna and starting in 1971, the conferences were held in other Austrian cities as well. Since 1987 there are advanced training courses the day before the annual conference.

In the 30 years following the foundation of the ÖGGH, the main projects of the society were: the annual conferences, the advanced training course, scientific events (usually on Saturdays for a few hours) and lately also the advanced trainings for endoscopy as well as special courses for nurses. During all transformation processes, connections to doctors and organisations from other countries such as the DSGV from Germany and Eastern European countries, were always welcome. One of the biggest successes in the history of the ÖGGH was the demand to make gastroenterology and hepatology a medical specialty, which happened in 1994. From 2003 onwards the presidents of the ÖGGH were all male, the last one being Dr. Michael Gschwantler. Today there are over 800 members in the ÖGGH. (53,54) Currently, about 32% of all members are women (source: personal communication with the ÖGGH office).

1.4.3 The history of the ÖDG

The control group for the ÖGGH in this study is the Austrian society for diabetes (ÖDG). Prof. Erwin Deutsch founded the ÖDG in 1969. The first annual conference of the ÖDG was held one year later in 1970 in Innsbruck. At first, it was only a conference for medical doctors but from the 1990s onward, the society opened their events and training courses to diabetes consultants and technical workers as well. A huge milestone was hit in 1996 when the Austrian, German and Swiss diabetes society held their annual conference together in Basel with 4.000 participants. The ÖDG also took the initiative to introduce the idea of a new medical specialty for endocrinology and metabolism. (55)

Today the main activities of the ÖDG are the organisation of annual conferences, springtime conferences, further trainings for medical doctors and diabetes consultants, as well as the promotion and financial support of scientific research for

diabetes. (56) Since 2004 there have been 4 female presidents out of 16 presidents in total. In 2021 there are 938 members in the ÖDG, about 52% of them are female.

2 Methods

As primary goal of this study, the percentage of female faculty in annual conferences of the ÖGGH was assessed. This was done in a retrospective analysis of the conference's programmes from the years 2002 – 2019. Secondary outcomes included the change of the percentage of female faculty over time, the percentage of female faculty in the advanced training course of the ÖGGH, the percentage of female faculty and changes over time in a comparable Austrian society, the ÖDG, as well as differences between the two societies.

All programmes that could be found on the homepage of the ÖGGH were analysed (<http://www.oeggh.at/die-oeggh/geschichte/jahrestagungen.html> cited: 25.03.2020). In 2009, the annual conference of the ÖGGH was combined with the annual conference of the ÖGC - "Österreichische Gesellschaft für Chirurgie", the Austrian Society of Surgery. In this case, only faculty of the ÖGGH was listed. For comparison, all programmes of annual conferences between 2004 – 2019 which were listed on the ÖDG's homepage (https://www.oedg.at/archiv_oedg_tagungen.html cited: 25.03.2020) were analysed. Then all chairmen/chairwomen, lecturers and presidents of the annual conferences were listed and divided by gender. The gender was determined by their first name. The full name was listed in some programmes, in other programmes only the initial of the first name, the last name and the place of work was stated. In some other cases, the first name could be worn by both genders. Those faculty members were identified through the hospital's webpage, published articles or long time ÖGGH/ÖDG members who might have known this person. There was only one person that could not be identified and was therefore excluded from the study.

The percentage of female faculty was analysed in the following categories:

- Invited lectures
- Open lectures
- The advanced training courses
- Satellite symposia
- Discussions
- Award ceremonies

- Honorific lecturers

Other categories, lectures and positions were excluded and therefore not analysed:

- First chair of the president of the particular congresses
- Welcome and introduction speeches
- “Organisators” – sometimes organisers were listed next to chair positions
- General assemblies
- Poster exhibitions
- The IVEPA faculty
- „Meet-the-experts“ and „What do the experts say?“ sections
- ÖDG programmes that were not specifically for medical doctors
 - The advanced training course for diabetes consultants
 - „Adiposidas-Akademie“
 - The insulin-pump-course
 - “DMP-Kurs Basic“)
- Closing words

Every president, lecturer and chairman/chairwoman was listed individually. The only exception was if there were 2 lecturers for one lecture meaning that it was a double presentation. In this case each lecturer made up 50% for the certain lecture – the 2 lecturers were listed together. Lectures about “pros and cons” were assessed as double presentations. However, in lectures that were split with 2 different medical professions (e.g. “Sicht des Endoskopikers und Sicht des Chirurgen” in the ÖGGH in 2006) reporting about it, each lecturer was listed individually. Lecturers in discussion rounds were listed individually. If there were 1 to 3 chairmen/chairwomen for subject areas - varying without obvious reasoning - each chairman/chairwoman was listed fully, regardless if there were 1 or 3 of them for one subject area. All lecturers and chairmen/chairwomen counted the same regardless of the duration of their lecture or subject area.

Only presidents were listed in the category “president”. All lecturers were listed, including lecturers of “State of the art” and “Keynote” – lectures as well as 2 lecturers that had “angefragt” (“inquired”) written after the lecturer’s name. Everyone whose

position was Vorsitz” or “Moderation” were listed as “chairmen/chairwomen” . All lectures that were listed as round tables, discussion rounds and panel discussions were listed as “discussions”. Sponsored subject areas called “Satellitensymposia”, “Lunch-Symposia” or “Pharmakoreferentenrap” were listed in the category “satellite symposia”. Open lectures were a category for “Freie Vorträge”, “Café Banting” and “Ausgewählte Videos” (in the ÖGGH annual conference of 2006) and included lectures of new scientific papers. If the presenter of the open lecture wasn’t clearly stated, the first author of the abstract was listed as presenter.

2.1 Statistical Analysis

Data was collected in Microsoft Excel and then analysed using descriptive analysis in SPSS 26. To compare categories, each category’s normality was tested via Kolmogorov-Smirnov test and Shapiro-Wilk test in SPSS. If both groups that were compared had a normal distribution, a parametric test (t-test for independent samples) had been done. If one or both groups were not normally distributed, a non-parametric test (Mann-Whitney-U test) had been done.

To analyse trends and changes over time, the correlation coefficient was calculated for all categories.

3 Results

3.1 The ÖGGH

3.1.1 Annual conferences

In annual conferences of the ÖGGH the female-to-male-ratio in every position offered, was analysed from 2002 – 2019. The positions included invited lectures, chairs, open lectures and presidency. There have been $8.4 \pm 7.5\%$ invited female lecturers and $9.9 \pm 7.5\%$ chairwomen, whereas there have been $37.7 \pm 17.5\%$ female lecturers in open lectures that were chosen by a commission. To determine, if more women were chairwomen or lecturers in the last few years, the 18 years analysed were split in 2 groups, previous years from 2002 – 2010 and more recent years from 2011 – 2019. The analysis showed that there was no statistically significant difference of female faculty between 2002 – 2010 and 2011 – 2019 (invited lectures: $p=0.332$, open lectures: $p=0.975$, chairwomen: $p=0.354$). On the contrary, there were even years with not one invited female lecturer (2014, 2016 and 2018), as well as years without any chairwomen (2007, 2014 and 2018). In addition, there was no time dependent trend in the percentage of females in invited lecturers ($r= 0.306$, $p=0.217$, figure 2), open lecturers ($r= -0.115$, $p=0.659$, figure 4) or chairmanship ($r= 0.209$, $p=0.406$, figure 3). In the years of 2002 – 2019, there was only one female president (in 2002).

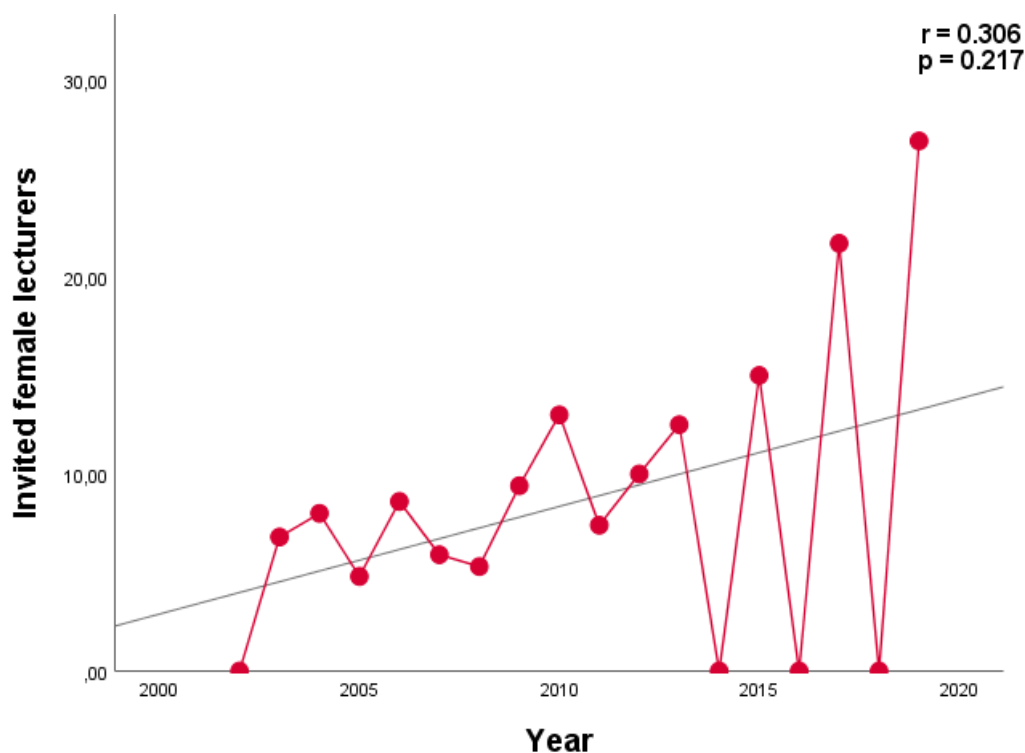


Figure 2 Invited female lecturers over time in the ÖGGH

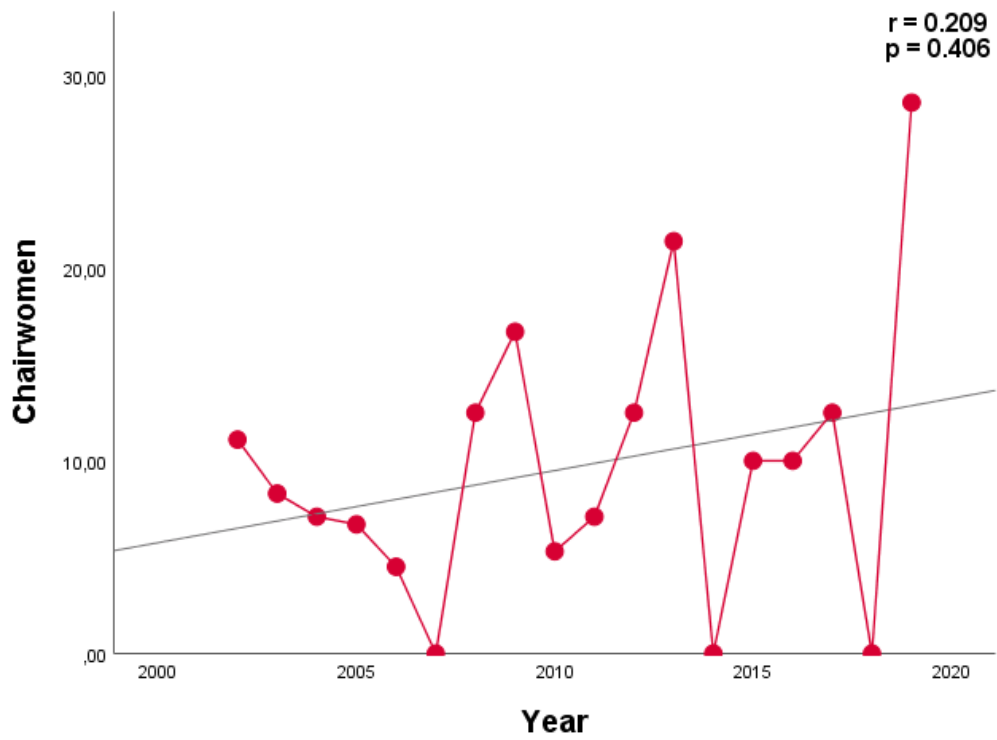


Figure 3 Chairwomen over time in the ÖGGH

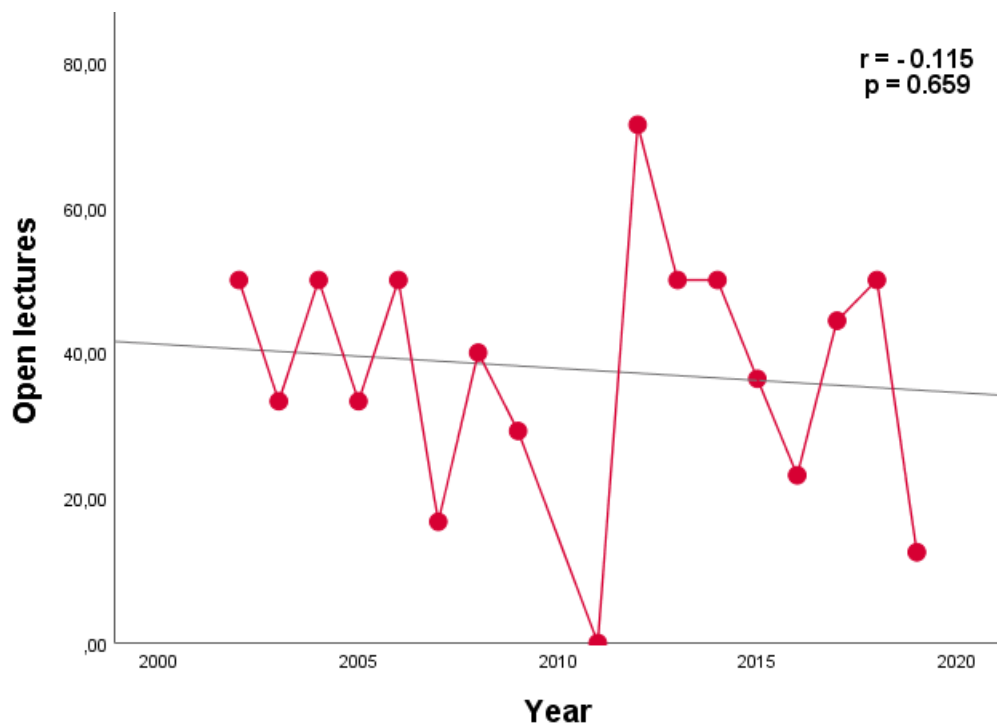


Figure 4 Open lectures over time in the ÖGGH

3.1.2 Advanced training course

The female representation in faculty of the advanced training courses was analysed separately from the annual conferences. The faculty of the advanced training course consists of chairmen/chairwomen and invited lecturers. All years combined women composed $14.3 \pm 6.9\%$ of all lecturers and held $10 \pm 9.6\%$ of all chair positions. There was no significant difference of female lecturers ($p=0.397$) or chairwomen ($p=0.605$) in the years 2002 – 2010 vs. 2011 – 2019 and across all years combined there was no trend regarding the increase in female lecturers ($r=0.245$, $p=0.327$) or chairwomen ($r=0.068$, $p=0.789$). Furthermore, the comparison to the annual conferences of the ÖGGH showed that there were significantly more female lecturers in the advanced training course (14.3% vs. 8.4%, $p=0.024$), but no significant difference in chairwomen (advanced training course: 10% vs. annual conference: 9.9%, $p=0.913$).

3.1.3 Satellite symposia

In annual conferences and advanced training courses of the ÖGGH, satellite symposia that consist of chairmen/chairwomen and invited lectures were held. Satellite symposia are sponsored events and were therefore analysed separately. There were $9.4 \pm 9.2\%$ female lecturers and $9.6 \pm 18\%$ chairwomen in the satellite symposia. The years 2002 – 2010 and 2011 – 2019 were similar regarding the percentage of lecturers ($p=0.114$) and chairwomen ($p>0.999$). During all years combined there was no trend or change over time in the percentage of female lecturers ($r=0.468$, $p=0.058$) or chairwomen ($r=-0.285$, $p=0.285$) in satellite symposia. Those results were comparable to those of the annual conferences of the ÖGGH. In all years combined the mean percentages in the annual conferences and the satellite symposia of female lecturers (8.4% vs. 9.4%, $p=0.935$) and chairwomen (9.9% vs 9.6%, $p=0.064$) were similar.

3.2 The ÖDG

3.2.1 Annual conferences of the ÖDG

A similar society, the ÖDG, was analysed in a comparable timeframe, from 2004 to 2019. The ÖDG was chosen as the comparison group because the ÖDG is in the same medical field (internal medicine) and holds annual conferences with a comparable structure. In the ÖDG, there were the same categories as for the ÖGGH: invited lectures, open lectures, chairs and presidents. There were $27.5 \pm$

7.9% women in invited lecturers and $42.9 \pm 8.9\%$ in open lectures. Furthermore, $30.7 \pm 14.6\%$ women were holding chair positions. The years 2004 – 2010 and 2011 – 2019 were comparable regarding women in invited lectures ($p=0.212$) and open lectures ($p=0.606$). However, the mean percentage of chairwomen was significantly higher in 2011 – 2019 than in 2004 – 2010 (mean percentages: 37.5% vs. 21.9%, $p=0.022$). In figure 6, the statistically significant increase of women in chair positions throughout the years is shown ($r= 0.802$, $p<0.001$). In addition, regarding all years from 2004 to 2019 there was a significant increase of female invited lecturers over time ($r= 0.626$, $p=0.009$, figure 5). However, figure 7 shows that in open lectures ($r= 0.135$, $p=0.617$) stagnated around 42% during the observation period. In all 16 years combined, there have been four female presidents, which makes up 25%.

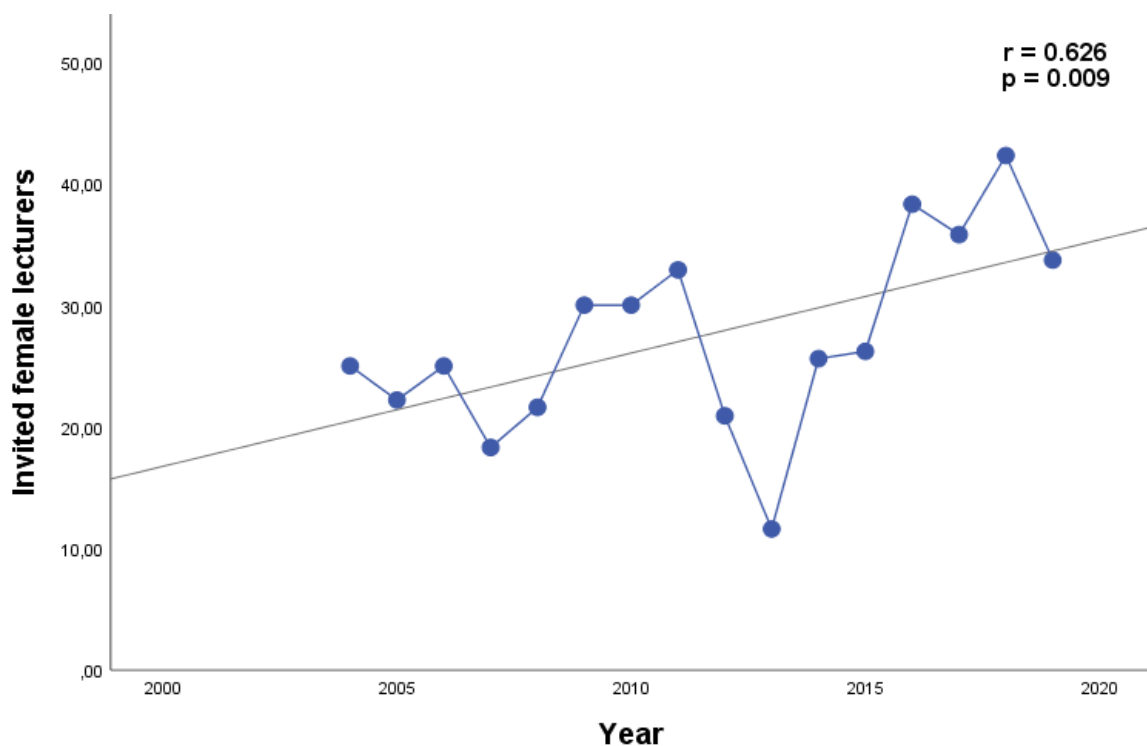


Figure 5 Invited female lecturers over time in the ÖDG

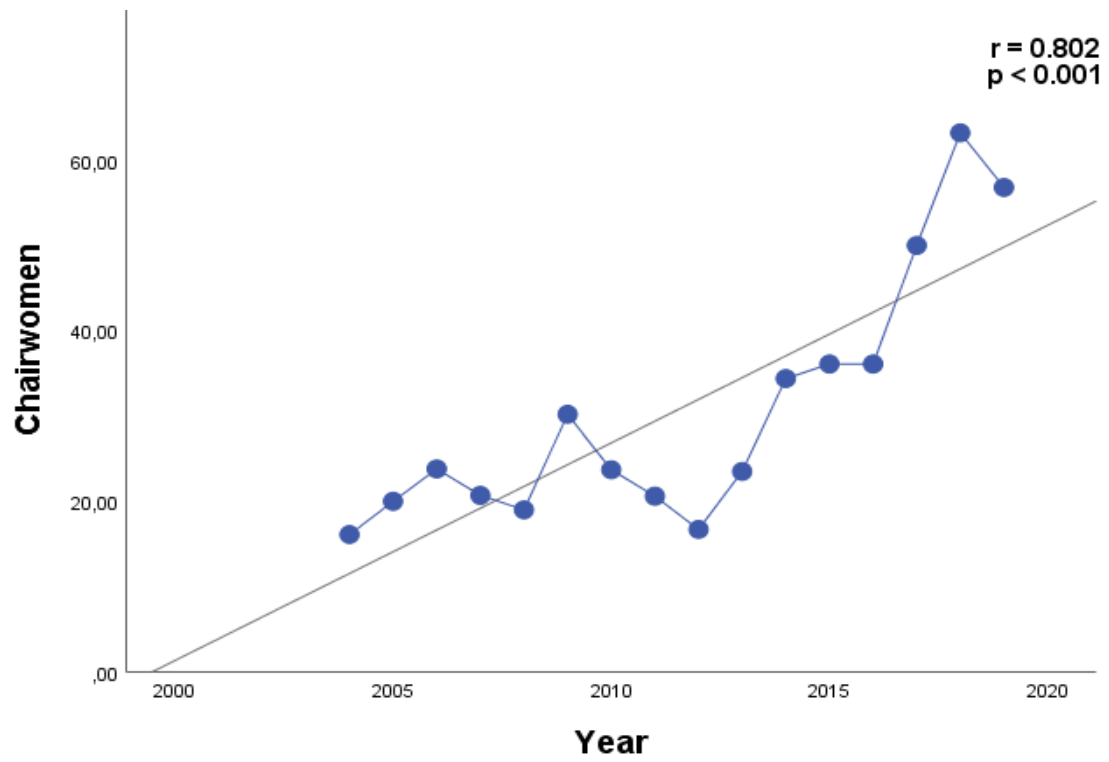


Figure 6 Chairwomen over time in the ÖDG

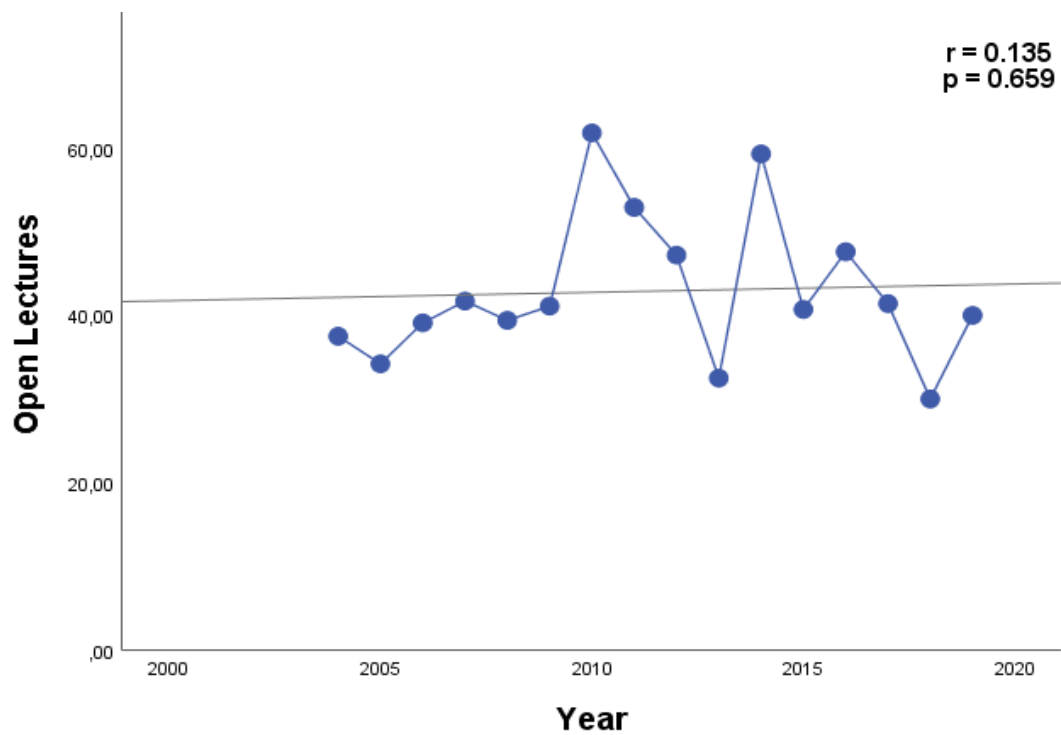


Figure 7 Female open lecturers over time in the ÖDG

3.2.2 Satellite symposia

During annual conferences of the ÖDG, satellite symposia were held just like in the ÖGGH. In those symposia, there were $20.3 \pm 7.2\%$ female lecturers and $17.8 \pm 14.5\%$ chairwomen. The years 2004 – 2010 and 2011 – 2019 did not vary significantly regarding female lecturers ($p=0.127$) and chairwomen ($p=0.501$) and no increase or decrease of female lecturers ($r=0.328$, $p=0.215$) or chairwomen ($r=0.301$, $p=0.257$) was apparent. Compared to the main conference, there were significantly fewer female lecturers (mean percentages: 27.5% vs. 20.3%, $p=0.012$) as well as chairwomen (mean percentages: 30.7% vs. 17.8%, $p=0.026$) in satellite symposia.

EVENT	INVITED LECTURES	OPEN LECTURES	CHAIR POSITIONS
ÖGGH - ANNUAL CONFERENCE	8.4 ($\pm 7.5\%$)	37.7 ($\pm 17.5\%$)	9.9 ($\pm 7.5\%$)
ÖGGH - ADVANCED TRAINING COURSE	14.3 ($\pm 6.9\%$)	-	10 ($\pm 9.6\%$)
ÖGGH - SATELLITE SYMPOSIA	9.4 ($\pm 9.2\%$)	-	9.6 ($\pm 18\%$)
ÖDG - ANNUAL CONFERENCE	27.5 ($\pm 7.9\%$)	42.9 ($\pm 8.9\%$)	30.7 ($\pm 14.6\%$)
ÖDG - SATELLITE SYMPOSIA	20.3 ($\pm 7.2\%$)	-	17.8 ($\pm 14.5\%$)

Table 1 Female faculty representation

3.3 ÖGGH vs. ÖDG

Figure 8 shows the comparison of the two societies. The ÖGGH had fewer female lecturers than the ÖDG in the analysed time period (8.4% vs. 27.5%, $p<0.001$). There were also significantly fewer chairwomen in the ÖGGH than in the ÖDG (9.9% vs. 30.7%, $p<0.001$). However, the category open lectures (37.5% vs. 42.9%, $p=0.533$) was similar. The evaluation of the mean percentages of female faculty from 2011 - 2019 showed that in those recent years, female representation in open lectures ($p=0.471$) was similar in the societies. However, there were more women in invited lectures ($29.7 \pm 9.6\%$ vs. $10.4 \pm 9.7\%$, $p=0.001$) in the ÖDG than in the ÖGGH, as well as more chairwomen ($37.5 \pm 16.3\%$ vs. $11.3 \pm 9.2\%$, $p=0.001$). By

comparing figure 9 with figure 10, the difference of female presidents in the societies is shown: the ÖDG had more female presidents (4 out of 16) than the ÖGGH (1 out of 18).

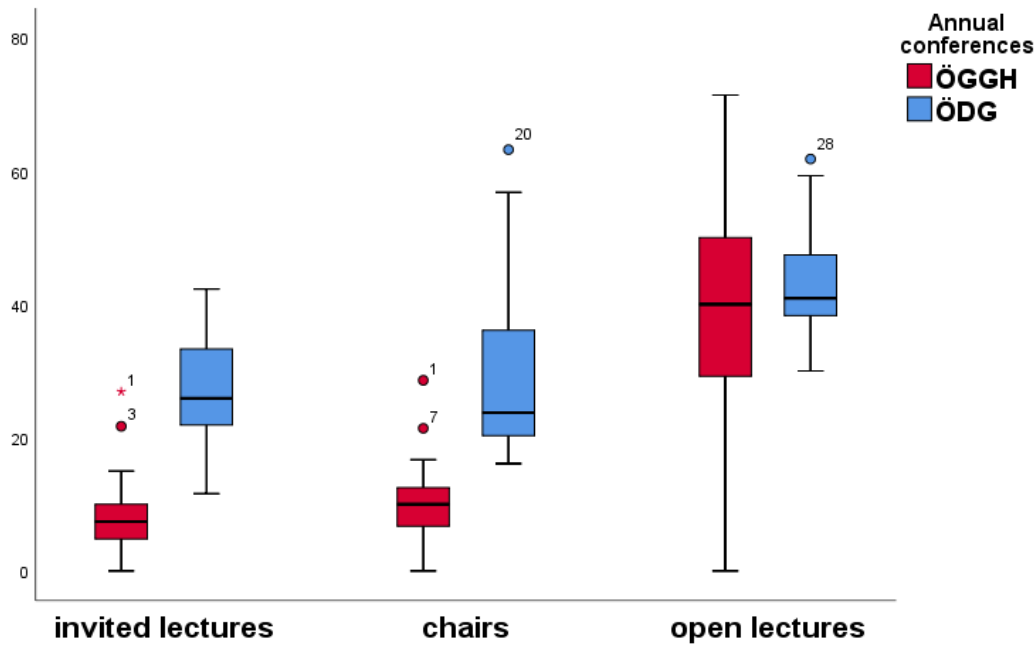


Figure 8 Annual conferences ÖDG vs. ÖGGH

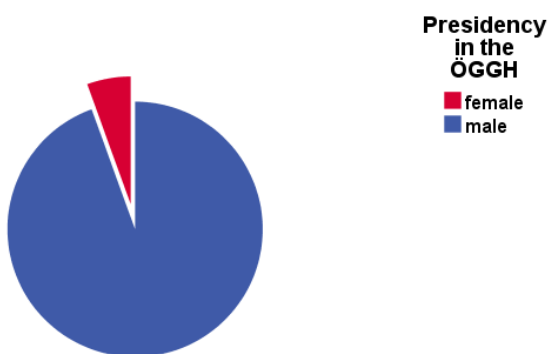


Figure 9 Presidency in the ÖGGH: 1 female president in 18 years

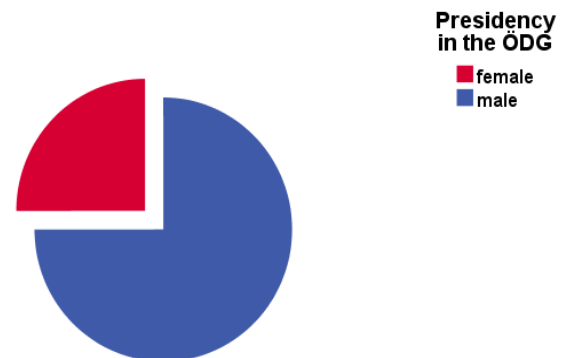


Figure 10 Presidency in the ÖDG: 4 female presidents in 16 years

3.3.1 Satellite symposia in comparison

The female faculty of the satellite symposia of the ÖGGH and ÖDG was evaluated separately (figure 11). The comparison showed that there were fewer female lecturers in the ÖGGH than in the ÖDG (9.4% vs. 20.3%, $p=0.001$) and also fewer chairwomen (9.6% vs. 17.8%, $p=0.039$).

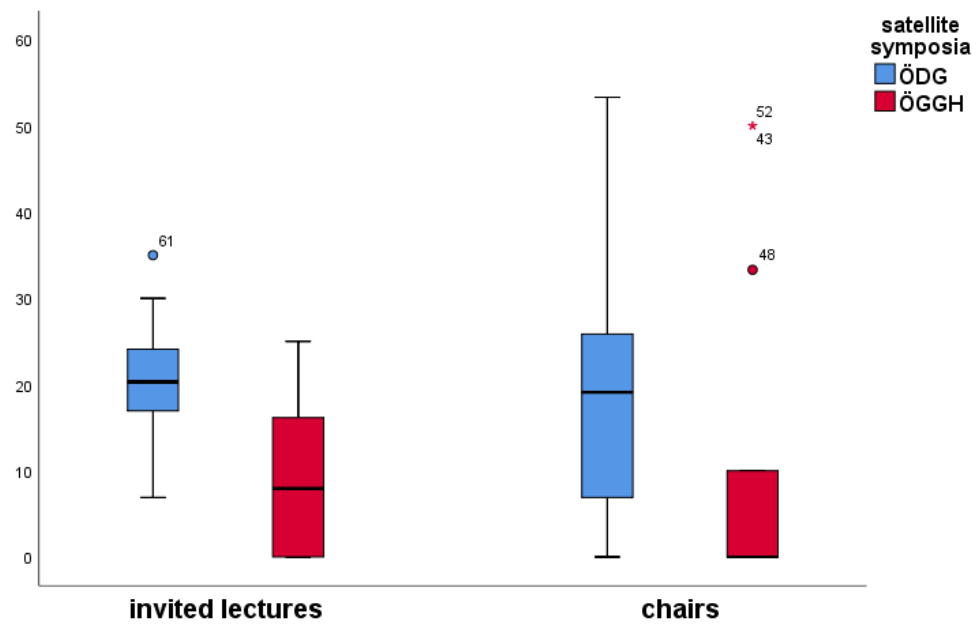


Figure 11 Satellite symposia ÖDG vs. ÖGGH

4 Discussion

The results of this study show an underrepresentation of female faculty in the ÖGGH. Women made up 8.4% of invited lecturers, 9.9% of chairs and since 2003 there was not one female president. There is no significant rise of female faculty in any of the categories, indicating a stagnation for women in the ÖGGH. The comparison with the ÖDG shows that this similar society has had 27.5% female invited lecturers, 30.7% of chairs and 42.9% of female open lecturers, as well as 4 female presidents in the last 16 years. Additionally, there was a rising number of women represented as invited lecturers and chairs over time. The comparison between ÖGGH and ÖDG showed that the inclusion and facilitation of women in faculty has successfully been initiated in the ÖDG and while the ÖDG made progress in the last years, the ÖGGH stagnates.

4.1 *Underrepresentation of women in the ÖGGH*

The proportion of female faculty in the ÖGGH in the years from 2002 – 2019 is astoundingly low. Female representation in the two categories “invited lecturers” and “chair positions” was under 10%. This underrepresentation cannot be explained by the lack of female medical doctors in Austria (currently around 58% female medical students and around 47% female doctors (9,57)) or a lack of female members of the ÖGGH (32%). The exact reasons can only be speculated.

One problem might be the stagnancy of female presenters in ÖGGH conferences since at least 2002. Since then, no relevant trend over time showed an improvement of female participation as invited lecturers or chairs in their annual conferences. These findings are in contrast to many positive examples around the world, like the rising number of women presenting in ASGE conferences or Social Media and Critical Care Medicine conferences in Australia. (47,48)

The analysis of the satellite symposia of the ÖGGH showed comparable numbers to those of the annual conferences with female lecturers around 10%, pointing out that women are equally underrepresented in both events. In addition, the proportion of female faculty in satellite symposia did not improve over time, which is another sign that the inequality of men and women in the scientific medical field of gastroenterology and hepatology stagnates in the industry as well.

The female-to-male ratio is better in open lectures, a category that gives younger researchers the possibility to present the results of their scientific projects. The mean percentage of female lecturers in open lectures was a bit higher than the

female membership rate. A possible reason for this significantly higher rate in open lectures in comparison to invited lectures may be the selection process that is based more on the quality of the abstract. This also shows that young female researchers contribute relevant research results and correlates with the international representation of a rather satisfactory proportion of women in the beginning of their scientific medical careers and a lack of them further up the career ladder. (5,21,22) Leading once more to the question why women are not accordingly represented further up in the career ladder in the ÖGGH faculty.

4.2 Challenges for women in medicine

The underrepresentation of women in faculty of the ÖGGH, may be due to various reasons. However, the lack of young female academics is not one of them. Today the proportion of female students is around 50% in many states throughout Europe. In Austria, there have been 58% of female medical students in 2019. (26) In the beginning of their medical career, women often seek to become certain medical specialists like e.g. a gastroenterologist. However, a third of them does not end up in the medical field they primarily wished upon. (58) Further, along the career leader, the proportion of women decreases. Often times when it comes to leadership positions in medicine such as professors or chief physicians, women occupy less than 20% of them. (22,24,25) In the ÖGGH annual conferences the last female presidents was Dr. Brigitte Dragosics. She was president in 2002. Since then, there was not one female president in the ÖGGH. (59)

There are various reasons for this inequality between men and women in leadership positions and as researchers in medicine. For most women the main challenge in their career is to balance their family's and children's needs and household chores with the demands of rising work hours and additional hours needed for educational purposes. These excessive demands are harder for women than for men because women are still mainly responsible for raising children and household chores. The timing of the training is especially unfavourable for women because many women are pregnant and/or have small children at home during their specialty training ("Facharztausbildung"). (51,58) Other issues that add to the personal struggles for women are gender biases and gender discrimination at work, which sometimes even manifests itself as sexual harassment. These factors often lead to "resigned acceptance" for women and therefore to fewer women in top positions, which in conclusion leads to fewer female role models. (21,38)

This inequality continues to be represented in scientific medicine, where medical conferences are held with few to no female speakers, leading to fewer female role models that could potentially motivate other women and break through cultural gender biases. (46) The ÖGGH held 3 annual conferences in the last years with not one woman speaking as invited lecturer or as chair. These factors together evolve to a vicious circle.

4.3 Deficits of the ÖGGH's approach in reaching gender balance

The factors that influence female participation in medical conferences were not analysed in this study, so possible reasons can only be assumed. In the literature research several factors that influence women's participation in faculties of conferences could be identified. The comparison with international recommendations and the ÖGGH's approach showed several discrepancies.

One factor are the presidents of the conferences and how much they encourage women to participate. In the ÖGGH there was in total only one female president in 2002. This could have been a contributing factor to the low female faculty rate in the conferences of the years 2018, 2016 and 2014 where only men were invited lecturers and the years 2018, 2014 and 2007 where all chair positions were given to men. To put these numbers in perspective, it is important to highlight that more than half of all medical students in Austria are female, yet recent gastroenterological conferences were being held with not one woman presenting either as an invited lecturer or chairwoman. (20,26) The employment of female presidents is important because studies have shown that women in committees of conferences are more committed to finding suitable female speakers than their male colleagues. In addition, they are also role models for other women and therefore inspire them to achieve high-ranking positions in their careers too. (43) These findings highlight the necessity of more female presidents in the ÖGGH's annual conferences in the future.

Furthermore, the ÖGGH does not offer child care options during their events, even though other medical societies already established - sometimes even free - child care possibilities on-site as this is a great opportunity to encourage women who have young children to participate in conferences. (60) The absence of such options might make some women unable to participate. Since other medical societies like the ÖDG have already shown that it is possible to establish child care on-site and it might also benefit the participants of the annual ÖGGH conference.

The one initiative that could be identified to enhance female faculty in the ÖGGH was the category called “Women in GI” in 2019 that gave women a platform to speak. This generally good idea to include more women resulted in a 1 hour and 20 minutes time slot. (61) The amount of time brought up for female speakers is disproportionately low compared to the duration of the conference and the advanced training course that all in all lasted 3 days. This measure led to 26.9% female lecturers and 28.6% chairwomen in 2019 in the annual conference, making a difference to the all-male-panel the year before but the female membership rate of 32% of the ÖGGH was not met in either category.

4.4 ÖDG’s progress compared to the ÖGGH

The comparison to another medical society that holds similar annual conferences in Austria, the ÖDG, showed that the ÖGGH had a significantly worse gender balance than the ÖDG. There were significantly more female lectures and chairwomen in the ÖDG’s conferences. Moreover, in the ÖDG there was an increase of female faculty over time. These results suggest that it is possible and sustainable to aspire gender equality in medical conferences in Austria.

Three conditions that the ÖDG installed may have been the reason for higher female faculty rates. Firstly, the ÖDG had four female presidents in 16 years, including Prof. Dr. Alexandra Kautzky-Willer in 2018 and 2019 - and her First Secretary Prof. Dr. Yvonne Winhofer-Stöckl. (62,63) The president of the ÖDG that followed Kautzky-Willer in January 2020, was Prof. Dr. Susanne Kaser. (63) Kautzky-Willer is not only an internal specialist, but also a specialist in gender medicine. (62,64) Her qualifications and education regarding gender aspects were probably an important contributor to reaching 42.3% female lecturers and 63.2% chairwomen in 2018 as well as 33.7% female lecturers and 56.8% chairwomen in 2019. The time dependent trend shows that the female faculty rate in ÖDG continually improved over time. Additionally, her role as female president of a medical society may have inspired other young female doctors and reduced gender biases in the perception of the public regarding women in medical leadership positions.

Secondly, the proportion of female faculty in satellite symposia of the ÖDG is higher than in the ÖGGH. This indicates that more women are represented in their industry as well. It makes the women presenting better known in the society and therefore gives them better networking opportunities and career advancements.

Thirdly, during ÖDG annual and springtime conferences, free child care with specially trained pedagogues is offered. (60)

The ÖDG is therefore a better example than the ÖGGH in showing the support for women in academic medicine and overcoming gender biases.

4.5 Recommendations to achieve gender balance

The following steps have not yet been carried out by the ÖGGH even though other medical societies in around the world have already implemented them with first signs of success. They should be considered while aiming to include more women in faculties of the ÖGGH annual conferences in the future:

- The recruitment of women in leadership positions such as presidency or committees (this measure is effective in two ways: Female leaders include female candidates more than male leaders and they also function as role models) (44)
- Proposal of child care opportunities during conferences (42–44,65)
- Evaluating the current female-to-male ratio in conferences, defining concrete goals for female faculty percentages and setting measures to reach these goals, afterwards re-evaluating these measures
- Financially supporting female researchers and their projects
- Establishing a list with female researchers including their research focus and choosing candidates for faculty based of this list (42,43)
- Organising programmes that teach women in leadership skills (48)
- Publicly speaking up about gender inequalities and discrimination like Francis Collins (46,65)

4.6 Limitations

This study is a retrospective analysis and therefore has its limitations in biases of an unknown degree. This is especially relevant for one aspect of the study: It is not known which lecturers were invited to speak, so that the female faculty was analysed solely based of the final programme of the annual conference. It is possible that more women were invited to speak and encouraged to participate as faculty in the annual conferences but declined this opportunity. In future prospective studies, first choices/invitations for lecturers should be considered as well in the analysis to get a better impression of female participation patterns.

The measures and therefore recommendations suggested have not been analysed in this study. There could be a correlating relationship and not a cause and effect relationship. Further studies are needed to evaluate each measure individually.

Another limitation is that earlier annual conferences were not analysed, since only programmes from the years 2002 (ÖGGH) and 2004 (ÖDG) onwards were available online. There may have been different participation patterns with other influencing factors in earlier years.

4.7 Conclusions

In summary, women face severe disadvantages and obstacles in their medical careers in comparison to men and are strongly underrepresented in the faculty of the ÖGGH. This is a strong sign for gender discrimination in academic medicine. Since there is no trend showing a potential improvement of the gender inequality, immediate modifications are highly recommended. Measures that have proved to be very effective are recruiting women as presidents and committee members, implementing better financial support for women and offering opportunities for child care during annual conferences. (43,60) Action should be taken now to change subconscious gender biases and to encourage researchers regardless of their gender.

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