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Women in cardiology: past, present and future

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In 2018, the Swiss Society of Cardiology celebrated its 70th year. Is this also a celebration for the achievement of women in cardiology? Yes and no.

Introduction

Yes, women are increasingly seen in cardiology fellowships, hospital settings and private practice. But, no, so far, unfortunately there has been no female main editor of a Swiss cardiology journal, no female chief of a cardiology department in a large hospital, and no female president of the Swiss Society of Cardiology (SSC). The percentage of women in leading positions or boards in cardiology is negligible. Also, editorial boards are still dominated by men. This shows the need for more support of female cardiologists in Switzerland. Things are, however, evolving. In the USA, "women in cardiology (WIC)" has been a section of the American College of Cardiology (ACC) for many years, and in Switzerland, a WIC group has been founded in 2017. Gender issues are important, also in cardiology. Patients need physicians of both genders to be treated best. Gender disparity remains to be improved. Female cardiologists still face many challenges such as failure in family planning, radiation exposure, sex discrimination, sexual harassment, lack of career advancement and unequal financial compensations. However, the future will be different. The percentage of women and men working in cardiology will become equal. Perhaps even in invasive cardiology and electrophysiology, there will be an increasing number of women. Men and women will have to work together for optimal patient care.

History of women in cardiology

The start for women in cardiology was not easy. In ancient times, more than 2000 years ago, women were allowed to work as midwives but not physicians.

Henry VIII in the 16th century made a charter for the company of barber surgeons and this led to the specialisation of the health care profession where women were initially excluded. Even in the 19th century, James Miranda Stuart Barry (1795–1865) had to dress as a man to practice medicine and only when "he" died was discovered to be female. Barry served as an army doctor and performed the first C-section in Africa. The first physician with some cardiology interest was perhaps Hildegard von Bingen (1098–1179) living in the 12th century. Her work *Causae et Curae* (*Ursachen und Heilungen*) from around 1150 dealt with the cause and treatment of different diseases. She described honey parsley wine ("meluvin") as healing heart disease. The first qualified female physicians were fighters, such as Elizabeth Blackwell (1821–1910) from England and Nadeja Suslova (1843–1918) who finished her medical studies in Zurich in 1867. One of the first famous female cardiologists was Helen Taussig (figure 1). In 1947, she developed together with the surgeon Alfred Blalock the Blalock-Taussig shunt, enabling better survival for cyanotic children with congenital heart disease. In 1965, Helen Taussig was the first woman to become president of the American Heart Association (AHA). Taussig was followed by many famous female cardiologists. Maude Abbott invented an international classification system for congenital heart disease in 1936. Jacqueline Noonan became the first female governor of a Chapter of the American College of Cardiology (ACC) in Kentucky in 1977. In 1993, the WIC Committee of the AHA was established. In 1998, Suzanne B. Knoebel became the first woman president and Master of the ACC. In 2004, the WIC Section held its first Section meeting at the AHA in New Orleans. In 2005, the British Cardiovascular Society's WIC Committee was established, and the ACC officially launched the WIC Members Section. In 2015, Sarah Clarke became the first female president of the British Society of Cardiology. What does the European Society of Cardiology (ESC) do for its female members? The ESC offers eight grants to attend an innovative Women Transforming Leadership Program, run by the Saïd Business School of the University of Oxford, UK. However, overall, the efforts of the ESC for support of women in leading positions are not strong enough yet. The situation seems to be improving: In 2018, the first female president was elected, the Italian Barbara Casadei from the United Kingdom, where she is Deputy Head of the Division of Cardiovascular Medicine at the University of Oxford. The ESC so far lacks a separate working group for female cardiologists.

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Female cardiologists in Switzerland

In 1928, there were 3300 physicians in Switzerland, 128 (3.9%) were women and no male or female cardiologists. In 1964, the first male cardiologist was recognised. Only four years later, in 1968, Ursula McKenna-Guhl became the first female cardiologist in Switzerland. The first female cardiologists included Barbara Güller (deceased), Isabelle Renggli, Yvonne Scholer, Sue Brand (deceased), Ingrid Oberhänsli, and Antonia Lüthy (deceased). They were the fighters for our cause. Their professional lives have been summarised previously [1].

Since then, many more female cardiologists have been educated. By 2005, over 25% of physicians and around 50% of medical school students were women. In Switzerland in 2018, 26 of 207 (13%) and 80 of 308 (26%) staff cardiologists were females. However, this is an overestimation due to part time work by some. From 2012 to 2017, the specialist title of cardiologist was obtained by 87 women and 171 men (34% females versus 66% males). In spring 2018, there were 686 regular SSC members, 122 (18%) of them were women. Increasingly, female cardiologists become more visible and competitive, although in 2018, there were only 2 women among 16 physicians on the

Figure 1: Helen B. Taussig, Professor Emeritus of Pediatrics, The Johns Hopkins Hospital, in 1954 ((photograph by Yousouf Karsh, Camera Press London).

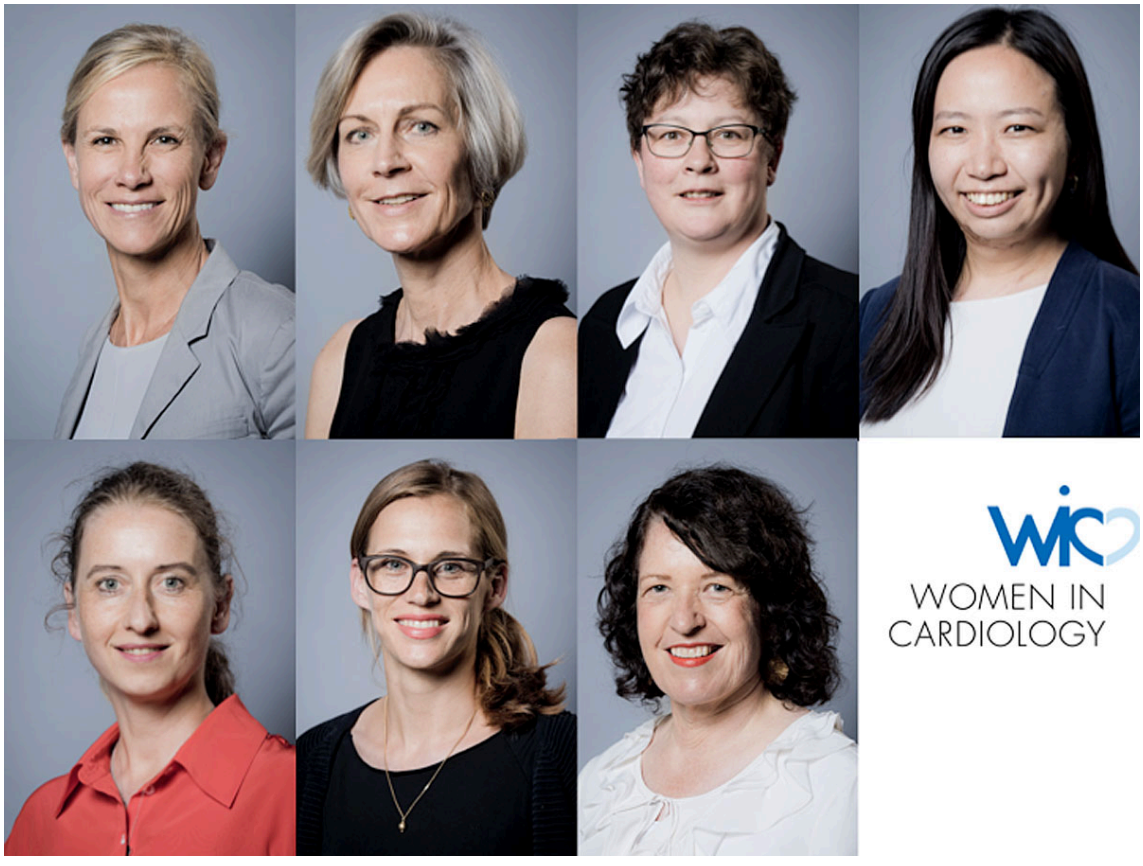
SSC Board. This is still a striking underrepresentation of women. In a recent article about the future of cardiology, gender issues are not mentioned at all, showing that it is still a minor concern to most [2]. Thus, as a reaction to the present situation in Switzerland, the "Women in Cardiology" (WIC) group was formed by Katja Grünenfelder, Hildegard Tanner, Marianne Zimmerli Vögtlin, and Anna Lam on the 27th of March 2017. Later, the group received additional support from Kerstin Wustmann, Fabienne Schwitz and Christine Attenhofer Jost (figure 2). Currently, there are 94 WIC members in Switzerland, with the hope of many more women joining in the next years. The WIC group in Switzerland (www.ig-wic.ch) aims to have a better representation of women at meetings, in science, in the SSC to help young female cardiologists with mentoring and moral support. They plan also to join their efforts with peers abroad.

Glass ceiling in cardiology

Therefore, increasingly women are getting established, but there is a "glass ceiling" that only few women could break through in the past. Only 10-15% of professors at Swiss medical schools are female, indicating the difficulty of penetrating the glass ceiling. However, job satisfaction remains high, also for women, although women remain less likely than men to marry and have children [3].

Typically for women in cardiology seems to be that they are more likely to work in academic hospitals, they are often pediatric cardiologists, and prefer doing noninvasive cardiology. This has not changed in the last 20 years as shown in an US study (figure 3) [3]. Despite similar levels of career satisfaction, many women complain of discrimination (three times more than men). A good example from the past showing the discrimination is the movie: "My fair lady" where the main actor sings: *"Why is thinking something women never do? And why is logic never even tried? Straightening up their hair is all they ever do. Why don't they straighten up the mess that's inside?"*, although this is meant jokingly, some grain of truth of male thinking might be there. A survey of the European Association of Percutaneous Cardiovascular Interventions found that the reason women do not choose interventional cardiology was because of lack of opportunity, lack of guidance and lack of good mentors. Female authorship in journals has increased, but there is still a big gap in academic medicine. There is gender bias and the belief that women may not be able to handle the pattern and workload needed. Women should be encouraged to give talks; they should be invited for leadership roles in hospitals, societies, journals and organisation of meetings. Dr. Angela Maas wrote in an article "Why I'm a cardiofeminist" that she wants better cardiovascular healthcare for women and better positions for female cardiologists. Maas mentions that in the U.S. less than 10% of new cardiologists are women because the culture in cardiology is still not very attractive for female colleagues. Women have only rarely been involved in cardiology politics; not only at the national level, but also in hospitals and group practices. This is hopefully changing.

Figure 2: The Members of the First Women in Cardiology Board in Switzerland founded in 2017. From left to right: Upper row: Katja Grünenfelder, Marianne Zimmerli Vögtli, Hildegard Tanner, Anna Lam; Lower row: Kerstin Wustmann, Fabienne Schwitz, Christine Attenhofer Jost



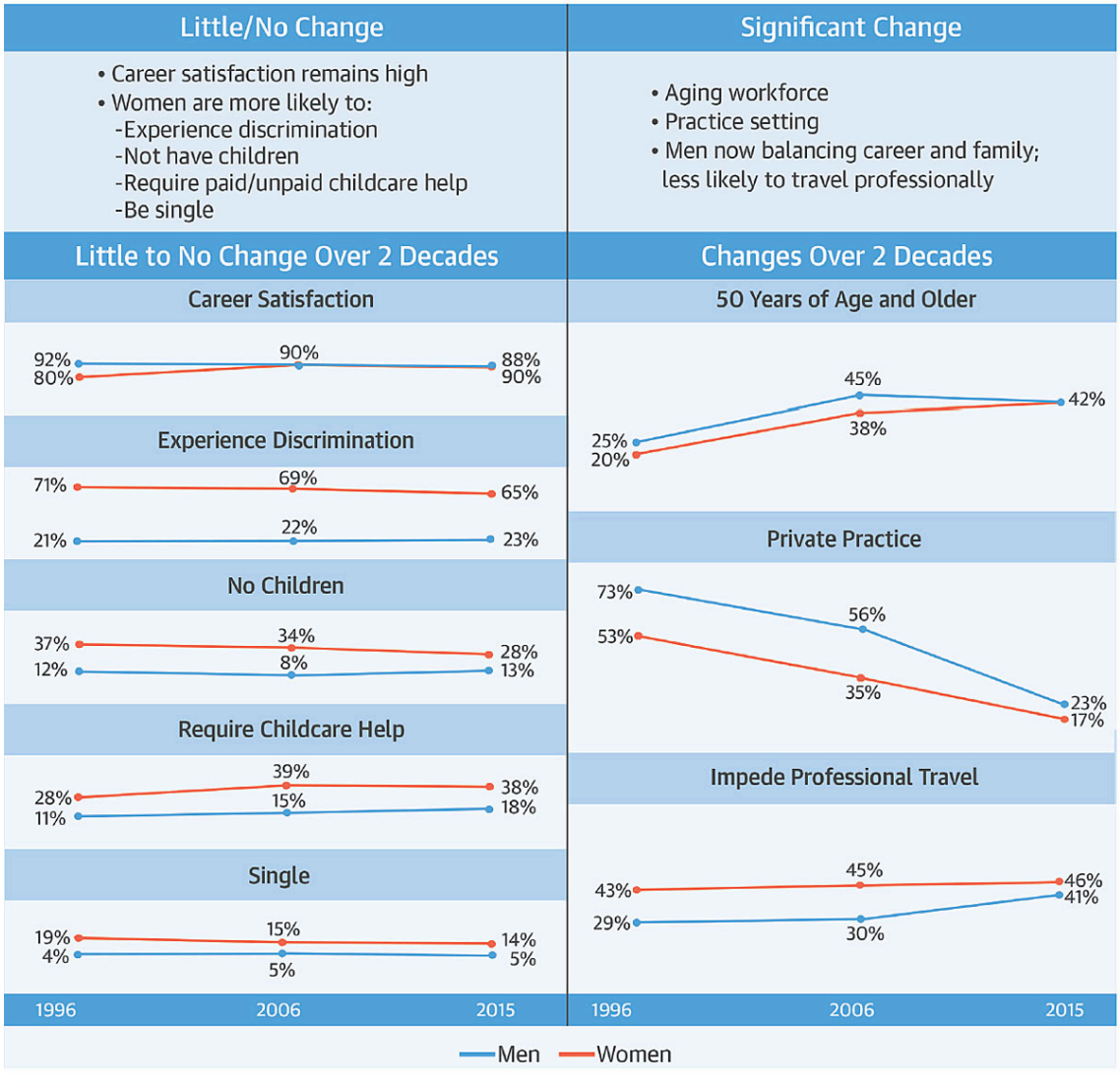
Marriage, children and radiation exposure in female cardiologists

A survey in the Mayo Clinic Proceedings in 2008 showed at that time that there was a significant difference in marriage and children between male and female cardiologists. 37% of female cardiologists had no children compared to 19% of male cardiologists, 19% were not married versus 4% of male cardiologists [4]. Since then, increasingly female cardiologists do have children and this leads to more part-time jobs, making cardiology a more attractive field for women who also want children.

Even these days, a career in cardiology often impacts family planning and pregnancy or vice-versa. Part-time work may not be consistent with a successful professional career. Radiation exposure should be avoided or minimised during pregnancy. Interestingly in France, 54% of female interventional cardiologists have children [5]. There are increasing efforts for better radiation protection during pregnancy. The problem of radiation exposure has been discussed by the European Heart Rhythm Association [6]. The authors wrote that in an international survey of 380 members of the Society of Cardiovascular Angiography and Interventions, 8% of females did not declare pregnancy to their institutions; this is not advisable, as proper monitoring is necessary with possible negative legal consequences. Of note, although the operator is still exposed to some radiation during a procedure, the fluoroscopy dose has fortunately decreased by 95% in the last 10 years [7]. Interestingly enough in an ESC report, women reported not taking up a fellowship in interventional cardiology not because of radiation but because they were not given the opportunity [8]. After pregnancy, female cardiologists should be careful not to take shorter parental leave than usual.

What is also essential in cardiology training programmes are opportunities for job sharing and options for flexible training (the option to finish the cardiology fellowship working part-time), this will help increase the percentage of female cardiologists [9].

Figure 3: The changes in lives of cardiologists over 2 decades. Reprinted from: Lewis SJ, Mehta LS, Douglas PS, Gulati M, Limacher MC, Poppas A, et al; American College of Cardiology Women in Cardiology Leadership Council. Changes in the professional lives of cardiologists over 2 decades. J Am Coll Cardiol. 2017;69(4):452-62, with permission from Elsevier.



Discrimination and sexual harassment in cardiology?

In a recent article summarising a survey in the US, discrimination was reported much more by women than by men, especially regarding sex and parenthood [3]. Interestingly, female cardiologists experienced sex discrimination not only from other physicians but also from patients and allied health professionals. Men more often experienced racial and religious discrimination. This data is shown in figure 4. Also in Switzerland, we have seen male cardiologists experiencing racial discrimination, though religious harassment seems less an issue.

Sexual harassment respectively #Metoo is also a topic in cardiovascular medicine. However, this is not specific for cardiology but can be considered "normal" at workplaces involving different genders. In a recent article, zero tolerance for sexual harassment in cardiology was demanded [10]. Senior staff cardiologists and scientists should not exploit their positions of authority to take advantage of younger women who are dependent on them.

The more gender balance we have, the less sexual harassment will be a problem.

Happiness and burnout in cardiologists

In the 2018 Medscape Lifestyle Report, (see https://www.medscape.com/slideshow/2018-lifestyle-cardiologist-6009219) cardiologists were the least happy among all specialists (21% in cardiology versus 37% in ophthalmology or 33% in gastroenterology). Burnout symptoms were reported by 46%, which was comparable to other physicians (52% of women, 41% of men).

Burnout is a hot topic that should be addressed urgently, especially in the current era with an ageing physician population. We have to learn to balance our workforce to not to become too exhausted and "eaten up" by our practice. Many try to recover by exercising and family time, and try to get enough sleep. But also eating disorders (junk food or binge eating) have been reported. Professional women should have help in the household so they can spend some free hours on Sunday, extra childcare, online shopping etc. In order to avoid a burnout, it is recommended to exercise regularly, meet friends and family, have time for a massage, or pedicure, and have some dates … We should be taught at medical school about the importance of self-awareness, work-life balance, acceptance of some clinical uncertainty (perfectionism and burnout are linked), personalised stress reduction and help-seeking for mental health problems [11].

The future in cardiology

To attract the best and enough women working in cardiology, we need jobs with flexible work hours, part-time jobs, group practice settings, mentoring, control of sexist behaviours, better representation of women in the staff, and - we want a female President of the Swiss Society of Cardiology. Marie Curie, the first person to receive two Nobel prizes, a chemist and physicist, said: "Life is not easy for any of us. But what of that? We must have perseverance and above all confidence in ourselves. We must believe that we are gifted for something and that this thing must be attained". This should be the motto of all female and male cardiologists. It should not be a battle of the sexes as by the tennis players Billie Jean King and Billy Riggs in 1973, or the golfer Annika Sorenstam 2003 on the PGA tour. As Bruce Fye pointed out in an article in JACC 2002: "in the 21st century: both male and female medical graduates seek for better balance between professional and personal lives. This is our future and will make us together strong. Everybody must work in this mission together. "

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Figure 4: Discrimination in male and female cardiologists during a follow-up of 20 years. Reprinted from: Lewis SJ, Mehta LS, Douglas PS, Gulati M, Limacher MC, Poppas A, et al; American College of Cardiology Women in Cardiology Leadership Council. Changes in the professional lives of cardiologists over 2 decades. J Am Coll Cardiol. 2017;69(4):452-62, with permission from Elsevier.

TABLE 4 Discrimination

	1996			2006			2015		
	Women (n = 518)	Men (n = 546)	Women vs. Men p Value	Women (n = 667)	Men (n = 442)	Women vs. Men p Value	Women (n = 964)	Men (n = 1,349)	Women vs. Men p Value
Experienced discrimination	71 (368)	21 (115)	≤0.001	69 (458)	22 (96)	≤0.001	65* (624)	23 (309)	≤0.001
Affected activities with colleagues	61	16	≤0.001	45*	39*	NS	58†	45*	≤0.001
Affected activities with patients	30	11	≤0.001	14*	17	NS	21*†	22*	NS
Affected activities within ACC	18	4	≤0.001	9*	9	NS	13	14*	NS
Types of Discrimination Experienced									
Sex	81	4	≤0.001	95*	5	≤0.001	96*	8*	≤0.001
Race	5	31	≤0.001	12*	46	≤0.001	18*	59*	≤0.001
Parenting responsibilities	8	1	≤0.01	39*	4	≤0.001	37*	8	≤0.001
Religion	<1	18	≤0.001	6*	25	≤0.001	5*	22	≤0.001
Sexual orientation	–	–		2	0	NS	1	2	NS

Values are % (n) or %, unless otherwise indicated. *p ≤ 0.05 compared with same sex in 1996. †p ≤ 0.05 compared with same sex in 2006.
ACC = American College of Cardiology.

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