

Status of Women in Small Academic Medical Communities: Case Study of the Zagreb University School of Medicine

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Aim. To analyze the proportion of women among student and teaching bodies of the Zagreb University School of Medicine between 1950 and 2000.

Methods. The data on medical school graduates from the Zagreb University School of Medicine between 1950 and 2000 were collected from the archive of the School. The data on the School's teaching staff between 1950 and 2000 were collected from the Archive of the Zagreb University. The data collected were the number of women among graduate students, grade average of medical school graduates, and the number of women within different faculty ranks among the teaching staff.

Results. The proportion of women among medical school graduates increased from 26% to 67% during the last 50 years. The grades showed significant inflation between 1970 and 1990. In 1990 and 2000, men had significantly higher grades than women. The proportion of female teaching staff increased during the same period from 28% to 34%. The proportion of assistants was significantly higher among female teaching staff in every studied year. The proportion of professors among male and female teaching staff increased at the same rate until 1990, when the proportion of male professors decreased because of the decrease in the absolute number of male professors.

Conclusion. Women in Croatia are beginning to advance in academic medicine although the number of women among the teaching staff is far smaller than that of men, most probably because of delayed entrance of women into academic medicine.

Key words: *Croatia; feminization; schools, medical; students; teaching; women*

Medicine is no longer a men's world. Women have come a long way in medical profession and the topic of feminization of the medical profession is constantly debated (1). In recent years, the number of women entering medical schools has noticeably increased, largely due to better results at the entrance point (knowledge test, secondary school grades, and interview) (2,3). There has also been a considerable increase in the proportion of women in all medical specialties and academia (3-5). Research in differences in the distribution of men and women across academic ranks at medical schools produced contradictory results. Some studies found that women were constantly underrepresented among higher academic ranks in medicine because the promotion of women took longer than that of men (the "sticky floor" phenomenon) (6-8), and that faculties of medical schools continue to have substantially fewer women than their student bodies (9). Others have found that women advance within academic departments as

rapidly as men, and that differences in the promotion rates among higher ranks can be explained by delayed entering of women into medical school faculties (10).

We wanted to determine whether these trends were present in a small medical community from the scientific periphery, like Croatia (11). According to the archives of the Zagreb University School of Medicine, the first woman graduated from the School 80 years ago. From that time, women have been entering the world of Croatian academic medicine. We conducted this study to show the change in proportion of women among student and teaching bodies of the Zagreb University School of Medicine between 1950 and 2000, and to determine if the number of female teaching staff reflected the changes that occurred in the student's body of the School. We also wanted to investigate if there were any differences in the sex distribution among faculty positions.

Material and Methods

Data were collected for the academic years 1950/1951, 1960/1961, 1970/1971, 1980/1981, 1990/1991, and 2000/2001.

The data available from the School's archive were the number of medical school graduates (Croatian citizens only), proportion of women among graduated students, and their grade average. The grade average is a mean value of all grades during the study and is used in assessing the academic performance of students in Croatia (12).

The Zagreb University Archive keeps the record of the number of teaching staff at University Schools, including the School of Medicine. We collected the data on the teaching staff for the studied academic years and their rank. We classified faculty ranks into three categories: low (assistants), medium (assistant professors, "dozent"), and high (associate and full professors).

We tested the normality of the distribution of grade averages with Kolomogorov-Simonov Test. The distribution was normal, allowing us to use the ANOVA test to compare the overall grade average between each decade and Student's t-test to compare the grade averages of men and women in each academic year. Differences in the proportion of men and women within faculty ranks were assessed with the chi-square test. P value of 0.05 was considered statistically significant. SPSS software, v. 7.5 (SPSS Inc, Chicago, IL, USA) was used for all statistical analyses.

Results

The proportion of female medical school graduates increased during the last 50 years, from 26% in 1950 to 67% in 2000. The increase was most remarkable between 1970 and 1980, when the proportion of female graduates increased from 45% to 62%. In the 1980/1981 academic year, the prevalence of women over men among graduates became quite pronounced: 62% vs. 38%, respectively. The highest percentage of women among graduate students (69%) was reported in academic year 1990/1991. The proportion of female graduates remained constant in the last two decades (Fig. 1).

The overall grade average also changed between 1950 and 2000. The grades significantly decreased from 1950/1951 to 1960/1961 academic year, but later on constantly increased until 1990/1991 (Table 1). Male graduates had significantly higher total grade averages than women in 1990/91 and 2000/2001 academic years (Table 1).

The increase in the number of women within the teaching body of the School was much slower (Fig. 2). The greatest increase in the proportion of female teaching staff occurred between 1990 and 2000 (Fig. 2). This was related to the decrease in the absolute number of male teaching staff (Table 2). The proportion of women among assistant professors and profes-

sors during the reviewed period showed a constant increase, whereas the proportion of women among assistants increased until 1980, when it became constant (Table 2).

There was a significant difference in the distribution of men and women among different faculty ranks in every studied year (Table 2). The proportion of assistants was greater among female teaching staff, whereas the proportion of professors was greater among male teaching staff. However, the proportion of professors among male and female teaching staff increased at the same rate until 1990 (Fig. 3). Between 1990 and 2000, the proportion of professors among female teaching staff increased, whereas the proportion of professors among male teaching staff decreased. This was the consequence of a greater decrease in the absolute number of male professors (Table 2).

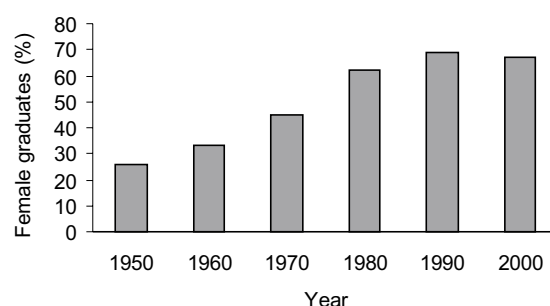


Figure 1. Proportion of female graduates at Zagreb University School of Medicine between 1950 and 2000.

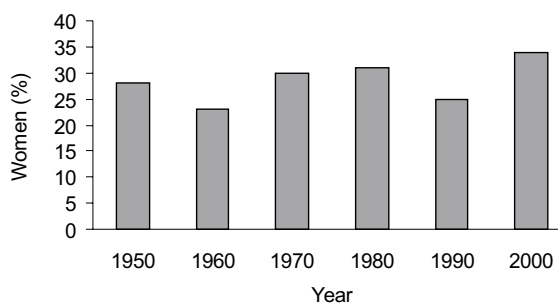


Figure 2. Proportion of women among the teaching staff at Zagreb University School of Medicine between 1950 and 2000.

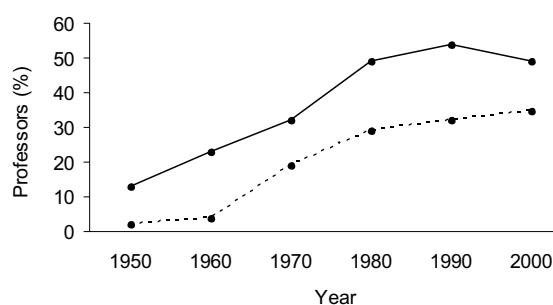


Figure 3. Proportions of associate and full professors among male (full line) and female (broken line) teaching staff at Zagreb University School of Medicine between 1950 and 2000.

Table 1. Total grade average of male and female medical graduates from the Zagreb University School of Medicine between 1950 and 2000

Academic year	No. of graduates	Grade average ± SD		
		total	men	women
1950/1951	190	3.4±0.6	3.4±0.7	3.4±0.6
1960/1961	237	3.2±0.6*	3.2±0.6	3.2±0.6
1970/1971	333	3.2±0.5	3.2±0.6	3.1±0.5
1980/1981	345	3.4±0.5*	3.5±0.5	3.4±0.4
1990/1991	250	3.8±0.5*	4.0±0.5	3.8±0.5 [†]
2000/2001	277	3.8±0.5	3.9±0.5	3.8±0.4 [†]

*Significantly different from the previous year; p<0.05, ANOVA and Tukey HSD post-hoc test.

[†]Significantly different from men; p<0.05, Student's t-test.

Table 2. Academic ranks among male and female teaching staff at the Zagreb University School of Medicine between 1950 and 2000

Academic rank	No. (%) of faculty in academic year*					
	1950/1951	1960/1961	1970/1971	1980/1981	1990/1991	2000/2001
Assistants:						
men	108 (67)	106 (71)	133 (66)	96 (59)	115 (59)	102 (59)
women	52 (33)	44 (29)	69 (34)	66 (41)	78 (41)	70 (41)
total	160 (100)	150 (100)	202 (100)	162 (100)	193 (100)	172 (100)
Assistant professors:						
men	13 (93)	20 (87)	27 (84)	25 (73)	105 (77)	66 (63)
women	1 (7)	3 (13)	5 (16)	9 (27)	32 (23)	38 (37)
total	14 (100)	23 (100)	32 (100)	34 (100)	137 (100)	104 (100)
Professors:						
men	18 (95)	37 (95)	75 (81)	118 (79)	253 (83)	165 (73)
women	1 (5)	2 (5)	17 (19)	31 (21)	51 (17)	60 (27)
total	19 (100)	39 (100)	92 (100)	149 (100)	304 (100)	225 (100)

*The proportion of women was greater among assistants than among other academic ranks; $p < 0.05$ for each year; chi-square test.

Discussion

Our study showed a significant increase in the number of women at the Zagreb University School of Medicine between 1950 and 2000. The number of women on medical faculty increased most rapidly in the 1970's. This was a decade of remarkable growth for women in academic medicine, described in other studies (5,13).

The increase was more notable among medical school graduates than among the teaching staff, and the medical school continued to have substantially fewer women than their student bodies (8). Knowing that the achievement during the study opens the door for the future academic career (12), we compared male and female graduates regarding the grade average. We found significant difference between them only in 1990 and 2000, which has been attributed to the war in Croatia (14). Also, recent studies carried out at the Zagreb University School of Medicine among medical students showed that more male students wished to pursue a yielding academic career or high positions in medicine (15). Therefore, it is possible that men perform better due to higher motivation to succeed in gaining leadership positions.

The fact that we used a single assessment of student or graduate achievement by comparing male and female graduates only by their grade average is a limitation to our study. There are other aspects of the achievement during the study or after the first faculty appointment, which may be important for an academic career. It would be interesting to prospectively investigate the role of other factors, which were not available from the Archive of the Zagreb Medical School, such as the number of publications, mentor relationship, grant support, average number of working hours per week, or resources available at first faculty appointment (6).

Although there was a constant growth in the proportion of women among teaching staff and highest ranks, women were underrepresented among faculty members and primarily held lower positions (6-9). We believe this was a result of delayed entrance of women in academic medicine because the proportion of professors among male and female teaching staff increased at the same rate until 1990. Between 1990 and 2000, the increase in the proportion of

women within higher ranks was even more rapid than that of men (1,10).

Other studies have also shown that the promotion of women took longer time than that of men (9) and offered different explanations. It would be interesting to investigate how conservatism and sexual discrimination (8,16,17), a supportive mentor (18), better negotiation skills of men (19,20), and child-rearing responsibilities (21) influence the achievement of women during academic career in Croatia.

In conclusion, our study confirmed that feminization of medicine is a phenomenon present in both the mainstream academic environment and scientific periphery. Women in Croatia can succeed in academic medicine and the proportion of women among faculty members will continue to increase due to a larger pool of women joining academic faculty. Academic medicine should offer family-friendly options and include greater flexibility, as has been proposed for hospital medicine, if it wants to continue to attract women into faculty ranks (3).

Acknowledgment

We thank Prof. J. Božikov, Mr. D. Hren, and Mr. E. Glavaš for the help with statistical analysis.

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Received: December 12, 2002

Accepted: January 20, 2003

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