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# The Feminization of Medicine and Population Health

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Over the past century, women have moved from near exclusion from medical schools toward forming the majority of new graduates in medicine, a trend referred to as "the feminization of medicine."<sup>1</sup> While eliminating barriers to entry is a matter of equity and fairness, it has been argued that the real influence of this feminization will be a humanization of the profession and the care it provides.<sup>2</sup> In reality, the shift toward values that are stereotypically female may be unrelated to a shifting sex makeup of the profession, but rather may have resulted from consumer demand, litigation, or evidence of best practices. On the other hand, a critical mass of female physicians may have contributed to the changes that now make medicine a more welcoming place for women and men, both as patients and practitioners. Nevertheless, working patterns of female physicians in developed countries have prompted concern that women in medicine are either the cause of, or will exacerbate, physician shortages. In this Commentary, we describe the career choices of women physicians and the contribution of medical care to decreasing mortality rates and hypothesize that the feminization of medicine is good for health outcomes.

A review of specialty choices of male and female medical school graduates in Canada, the United Kingdom, and the United States shows that although the numbers of women in medical schools have increased steadily over the past 5 decades, women remain a minority in some specialties and

overrepresented in others.<sup>3-6</sup> Female medical students are more likely to become primary care clinicians such as family physicians and pediatricians rather than subspecialists or surgeons. In 2007, 33% of Canadian female medical graduates (n = 393) entered family medicine training whereas only 22% of their male counterparts (n = 184) chose this specialty.<sup>3</sup> Women account for a minority of currently practicing Canadian physicians (37.9%) but a majority of that country's family physicians (58.6%).<sup>4</sup> In the United States, fewer than half of medical school graduates are women (43.5%), but they account for the majority of residents in primary care programs.<sup>5</sup> Data from the United Kingdom show similar distributions of men and women currently in medical practice.<sup>6</sup> This pattern of women being disproportionately represented among generalist physicians is similar throughout Europe and Australia.<sup>7-8</sup>

Recent reports identifying lower productivity among female physicians have debated whether more women in medicine will exacerbate a shortage of physicians by limiting patient access to care.<sup>9-10</sup> Differences in how men and women practice medicine are well documented and relatively consistent across countries. In general, women are less likely to work excessive hours or to work past the typical age of retirement. Female physicians see fewer patients per hour, demonstrate better communication skills, and include more preventive care than their male counterparts.<sup>2, 11</sup> However, there are no published studies documenting whether increases in the female-to-male ratio, that is, the feminization of medicine, will affect health outcomes.

What bearing does physician density and activity have on measurable health outcomes such as mortality rates? Do either quantity or quality of clinical care influence standard measures of population health? How will sex shifts within the physician workforce interact with these effects? In developed countries, the number of physicians per capita, alone and separated from any analysis of the nature of care provided, has no association with mortality rates.<sup>12-13</sup> In 1978, Cochrane examined how a number of proximate factors, including gross domestic product, physician density, sugar consumption, and cigarette smoking, were associated with mortality rates in 1960 and 1970 across 18 developed countries.<sup>13</sup> He found no association between physician density and any of the standard mortality rates and concluded that health service factors were relatively unimportant in explaining differences in mortality among developed countries.

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The disconnect between physician density and outcomes is neither a historic nor a statistical artifact. Current World Health Organization data for the same 18 countries show little change from the findings by Cochrane et al<sup>14</sup> 3 decades ago. Canada has the lowest physician density (19 per 10 000) of these wealthy, developed countries but has a female life expectancy of 83 years and a male life expectancy of 78 years. In the United States, with a higher physician density (26 per 10 000), life expectancies for women (80 years) and men (75 years) are shorter. Although the Netherlands has an even greater physician density (37 per 10 000), outcomes are no better than those for Canada (female life expectancy, 82 years; male, 78 years). Most anomalous is the low physician density in Japan (21 per 10 000), the country with the longest life expectancies (female, 86 years; male, 79 years) in the world. Above a threshold level, and in wealthier countries, there is no universal and definable number of physicians needed to serve a set number of patients and optimize population health. In other words, in countries with a physician density above approximately 19 per 10 000, increasing the number of physicians without redirecting the activities of those physicians is a poor strategy if improved health is the goal.

Any influence of physicians on health outcomes in developed countries appears to be related to factors other than sheer numbers alone. The nature and quality of physicians' work rather than the quantity may be of significance. Seeing more patients more frequently may not increase the life expectancy of those patients, but spending more time with each patient, hearing and listening more effectively, and including more preventive measures (all characteristics identified in studies of female physicians) may result in fewer but more effective clinical encounters rather than a greater volume of encounters.

Whether the relative number of generalist to specialist physicians has an effect on health outcomes across countries is a measure of quality that has been studied.<sup>15</sup> Using information from Organization for Economic Cooperation and Development (OECD) health data to assign countries a primary care score, Macinko et al<sup>15</sup> showed that for 18 OECD countries, 15 of which overlap with those studied by Cochrane, the strength of a country's primary care system was inversely associated with several health outcomes, including all-cause mortality, all-cause premature mortality, and cause-specific premature mortality. These results suggest an association between a more robust primary medical care system and lower morbidity and mortality rates across countries. The authors did not address whether the sex make-up of each physician group had any bearing on findings, ie, whether the benefits of a generalist health system were associated with generalism alone or with styles of practice such as those women bring to their disproportionate presence in primary care.

Although physician density is not a determinant of health outcomes, a greater proportion of generalists to specialists among those same physicians is associated with increased longevity of the population.<sup>15</sup> Because women across time and place tend to become primary care physicians, the feminization of medicine may well have beneficial health outcomes possibly attributable to the nature of the care they provide irrespective of women's lower volume output relative to that of men. Such an improvement in outcomes may occur because of the practice styles of women, who outnumber men in primary care, or because of the nature of generalism. Either way, as women increasingly enter medicine and become generalists, rather than being a liability by not working excessively long hours or abandoning parenting, the quality of the care they provide may result in improved population health.

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