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Sex-Specific Determinants of Leadership Aspirations Among General Internal Medicine Physicians in Switzerland

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Abstract

Background:

A “leaky pipeline” exists in leadership for medicine in Switzerland, with majorities of women among resident or attending physicians, yet only 32% female senior and 16% chief physicians. Here, we examined factors associated with career ambitions of General Internal Medicine (GIM) physicians.

Methods:

We performed a cross-sectional web-based survey among GIM physicians in Switzerland. Outcome was the intent of becoming senior or chief physician. Exposures included workplace-related factors including network, supervisor’s support and gender-related discrimination and personal factors including Physician Well-being index and family situation.

Results

The sample included 624 physicians, of which 60% were women. During medical school, career aspirations of men and women were comparable. Yet, in their current aspiration towards leadership, men more frequently reported high aspirations than women (17% vs. 11%) ($p=0.03$). Higher career aspiration was present among those who were more satisfied with their work (OR: 3.26, 95% CI: 1.56-7.73). Among men, higher career aspiration was associated with a lower probability of pathological well-being (OR: 0.12, 95% CI: 0.02-0.50). Among women, higher career aspiration was associated with reporting gender discrimination or facing negative views on parenthood by their supervisors (OR: 7.48, 95% CI: 1.71-39.0).

Conclusion

Both female and male physicians reported to have held similar career aspirations at onset of their career, while sex differences emerged during career progression. Supervisors’ unfavorable views on parenthood and gender discrimination in association with female physicians’ career aspirations may guide workplace-tailored strategies to close the leak in the pipeline towards medical leadership.

Key points

- Question: A leaky pipeline describes the attrition of female physicians with increasing hierarchical positions, but the sex-specific factors associated with leadership aspirations are unclear.
- Findings: Comparable fractions of men and women reported to have aimed to attain a leadership position in the past, but currently 11% of women and 17% of men aiming for leading positions among physicians in Switzerland. In female physicians, leadership aspiration is associated with facing challenges such as gender discrimination or unfavorable views regarding motherhood at the workplace.
- Meaning: The observed sex differences in leadership aspiration among physicians is accompanied by potentially modifiable workplace-related challenges. Resolving these challenges may enable future initiatives to facilitate female career advancement in medicine.

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Introduction

Women have become the majorities of medical students and residents in many European countries in the last decades.(1–3) However, their advancement for leadership positions is still far from equal. Women remain underrepresented among leadership in medicine both in the U.S. (4) and in most European countries.(1,5,6) In fact, women make up fewer than 20% of department chairs and deans.(6–9) This constitutes a gender gap in leadership linked to a “leaky pipeline”, a term coined over 20 years ago to describe the attrition of women and minority groups from a career in science after having received a bachelor's degree.(10,11) Since then, “leaky pipeline” has mostly been used to describe the progressively decreasing fraction of female academics with advancing hierarchical position, especially so in medicine.

Known challenges for female physicians and physician-mothers include domestic and/or childcare responsibilities, work-life balance, lack of adequate mentors and role models, receiving fewer career support, and discrimination or sexual harassment due to gender and pregnancy.(12–14) Moreover, the relationship between an unsupportive workplace environment and declining career ambitions has been observed in non-medical professionals.(15) In Switzerland, scientists considered the lack of compatibility between family and work life as a key reason not to pursue an academic career.(16) Yet, it remains an open question how personal and workplace-related factors may affect career ambitions for physicians of the current General Internal Medicine (GIM) workforce.

Leadership aspirations and the representation of women in leadership positions in medical careers warrant further research due to existing knowledge gaps about the importance and relevance of personal and workplace-related factors that could better serve to identify and understand the priorities and/or obstacles of future health care providers. Some factors could be modifiable and help to improve the participation of women in leading positions in medicine. Therefore, we aimed to describe and compare past and current career aspirations of the Swiss GIM workforce in both women and men. Secondly, we determined potential factors associated with high career aspirations in the Swiss GIM workforce as a whole and specifically in women.

Methods

Design, setting and participants

This study reports on a cross-sectional web-based survey that was administered to GIM physicians in Switzerland. The participants were contacted via the head or administration of GIM departments in 14 Swiss hospitals, 6 ambulatories or primary care institutes, and via newsletter announcements by the Swiss Society of General Internal Medicine and the Swiss Young General Practitioners Association (JHaS), as well as by an advertisement in the Swiss journal titled “Primary Hospital Care”.

The study was waived and exempted from full review by the ethics committee of the canton of Bern under the identifier: Req-2021-01085. All participants were informed about the purpose of this study and gave informed consent for anonymous participation in the survey.

Data collection

The survey was available from December 2021 to April 2022 and covered the following topics:

Outcomes of the study were: Aiming for a leading position, i.e. the aim of becoming a senior physician and/or chief physician, was the primary outcome of interest, and was assessed with a dichotomous item (Yes vs. No). As a secondary outcome, we chose aiming for an academic career. Those already holding a higher academic position or degree (professorship, lectureship or PhD) were excluded from the study population, and from the remainder all answering the question if they aim for an academic career with “yes” or “no” were analyzed. A third outcome was career ambition based on an abbreviated version of the 24-item Career Aspiration Scale-Revised (CAS-R).(17) The CAS-R is a 24-item questionnaire and has been validated in different populations.(17,18) Six questions were selected to assess career ambition. Each question was answered by a Likert scale ranging from 1 to 5 points, and the sum of responses were combined to a numerical career ambition score (CAS, minimum 6, maximum 30 points).

Further variables were collected as exposures of interest or potential confounders:

- i) General demographic with information on participants' age, Swiss language region, type of workplace and current job position, quota of employment, and relationship status;
- ii) Mental health assessment using the seven-item physician Well-being index (PWBI) to screen medical students for low mental well-being, burnout and fatigue.(19,20) The WBI was validated in large studies among U.S. physicians in the Mayo Clinic Program on Physician Well-being.(21,22) The standard cut-off value of ≥ 5 out of 7 PWBI points was considered as surrogate of impaired mental health.(21,22)
- iii) Job satisfaction was assessed by a single-item Likert question («How satisfied are you with your job?»), with responses ranging from 1 (dissatisfied) to 5 (satisfied).
- iv) Workplace culture assessment included four questions of the 19-items questionnaire by Hall et al. for measures of organizational culture.(23) The four close-ended questions assessing gender-related and general corporate inclusiveness. In addition, a self-developed question was added to determine if parenthood is viewed negatively at the workplace.
- v) Family-related topics were identified and assessed using close-ended questions or Likert scale including having delayed having children, wishing or having children, age at birth of first child, the number of children, having adequate childcare, childcare duties and household duties compared with partner.(12)

vi) Factors influencing career ambitions mentioned in the literature, including having a good network, having good mentoring and supervisor supporting an individual's career (14).

vii) Gender discrimination was assessed using 8 self-developed questions because of lack of suitable assessment instruments for physicians on this topic. The questions were partly inspired from a dedicated web-based tool and literature.(24–27)

A pilot version of the questionnaire was tested in ten physicians for comprehensiveness and feasibility. The final questionnaire underwent back-and-forth translation from English to German or French and back by native speakers to ensure validity.(28) The survey was then offered to participants in German and French. The English version of the survey questions analyzed is available in Supplemental Table 1.

Statistical analyses

Data are presented as mean (standard deviation) or median (interquartile range) for continuous variables depending on their distribution, and n (%) for categorical data as n (%), with or without stratification by sex. Participants identifying as nonbinary were retained in sex-combined analyses but excluded from sex-stratified analyses because we considered them at risk for identification. Continuous variables were compared using Student's t-tests or Wilcoxon rank sum test, as appropriate, and categorical variables using chi-squared tests. Next, we built univariable logistic regression models of factors associated with the primary outcome. Exposure variables were chosen based on the literature and included several personal and workplace-related characteristics.(14,29,30) For multivariable logistic regression, separate models were built for each exposure of interest, with Age, type of workplace and Swiss language region as a priori covariates and stratification by sex. For the second outcome, similar univariable and multivariable logistic models were established for aiming for an academic career. For the third outcome, univariable and multivariable linear regression models were constructed similarly with CAS as dependent variable. For all models, complete-case analyses were made. A subgroup analysis was performed for the main analysis of career aspirations in all parents with sex stratification. Finally, a sensitivity analysis was performed excluding general practitioners, because our definition of “leading position” in a hospital may deviate from career goals of general practitioners with high career ambitions. The obtained sample sizes for multivariable models were considered as suitable by an estimation of subjects per variable (SPV), with the literature referring to a minimum of 5 to 20 SPV or a fixed population size of at least 200 for multivariable modelling (31). This approach would deem a sample of 240 participants sufficient for inclusion of up to 12 covariates in regression models. All analyses were performed with R v. 4.1.3 and RStudio v. 2023.06.1. P-values <0.05 were considered as statistically significant. No adjustments were made for multiplicity.

Results

Demographic characteristics

The survey was completed by 684 physician respondents. For the present analysis, $n=58$ (8.5%) respondents currently holding a position as senior or chief physician were excluded, and $n=2$ (0.3%) respondents identifying as nonbinary were excluded from sex-stratified analyses. The sex-stratified characteristics of the analyzed sample of 624 physicians is displayed in Table 1, containing 237 (40%) men with mean age of 37 years (standard deviation [SD] 11 years), and 387 (60%) women with mean age of 35 years (SD 10 years). Work-place of 76% respondents was in hospitals and of 21% respondents in private practice. Current median work quota was 100% (IQR [interquartile range] 100, 100) in men and 100% (IQR: 80, 100) in women ($p<0.001$). The majority of respondents were in a relationship (88% of men and 80% of women, $p<0.01$). Men were less likely planning to delay (27% of men vs. 38% of women) or to have delayed having children than women (12% of men vs. 19% of women, $p=0.002$). Among workplace-related factors, gender discrimination questions were more frequently answered “yes” by women than men, but overall workplace inclusiveness was comparable between male and female respondents (Table 1). Extent of missing data in personal and work-place factors was comparable between the sexes (Supplemental Table 2).

Sex differences in career ambitions

Sex-stratified univariate analyses of career aspirations are shown in Table 2. No significant difference existed between the frequency of men and women having had higher career aspirations in the past during medical school (men vs women: 14% vs 12%, $p=0.62$). However, current career aspirations showed a sex difference, with men reporting higher career aspirations in 17% and women 11% ($p=0.03$) (Table 2, Supplemental Table 3, Supplemental Table 4). Career ambition scores were higher in men than in women, with 24 (7) (median, IQR) in men and 23 (7) in women ($p=0.033$). The fraction aiming for an academic position was however similar between the sexes (Table 2). Multivariable logistic regression analyses of the entire population showed that, female sex, the French language - speaking region and working in a group practice were associated with a lower probability of higher career aspirations (Table 3).

Sex-stratified analysis of personal and workplace-related factors associated with higher career aspirations

Univariable analyses and multivariable models adjusted for age, Swiss language region and type of workplace are presented in Figures 1-2 and Supplemental Tables 5-6. Female physicians had several personal and workplace-related factors that showed associations with higher career aspirations in multivariable analysis (Figure 1, Supplemental Table 5). Female respondents who were dissatisfied with their work were less likely to have higher career aspirations compared to their counterparts who were satisfied (OR: 0.33, 95% CI: 0.09-0.90, $p=0.048$; Figure 1, Supplemental Table 5). Among women, those with higher career aspirations were more likely to experience negative views on

parenthood by their supervisors (OR: 7.48, 95% CI: 1.71-39.0, $p=0.01$). Finally, in women, higher career aspirations were associated with more frequently reporting gender discrimination by feeling discriminated at work (OR: 2.21, 95% CI: 1.07, 4.53, $p=0.031$), reporting that the opposite gender receives more responsibilities at work or more recognition for equal achievements (OR: 2.83 [95% CI: 1.37-5.82, $p=0.005$] and OR: 2.26 [95% CI: 1.11-4.62, $p=0.025$], respectively). Importantly, having or wanting to have children, having adequate childcare and the distribution of childcare or household duties with one's partner were not associated with higher career aspirations (Figure 1, Supplemental Table 5). In addition, answers to questions regarding workplace inclusiveness were also not associated with aiming for a leading position. A subgroup analysis of physician-mothers yielded overall similar results (Supplemental Table 7).

In male physicians, a different summary of personal factors but not workplace-related factors were associated with higher career aspirations (Figure 2, Supplemental Table 6): Similar to female participants, male physicians who were dissatisfied with work also showed a lower probability of higher career aspirations (OR 0.31, 95% CI: 0.09-0.86, $p=0.04$). However, male physicians who had a pathological PWBI were less likely to have higher career aspirations, with an OR 0.12 (95% CI: 0.02-0.50, $p=0.012$). In the male group, responses covering gender discrimination or workplace inclusiveness were not associated with higher career aspirations (Figure 2, Supplemental Table 7). A subgroup analysis including physician-as fathers identified no associations with higher career aspirations in adjusted analysis (Supplemental Table 8).

Sex-stratified analyses of factors associated with aiming for an academic career and career ambition scores

In women, aiming for an academic career was associated with not complying with the maximum allowed weekly working hours during pregnancy (OR 3.65 (95% CI: 1.09-14.8, $p=0.046$ $p > 0.05$; Supplemental Table 9). Women aiming for an academic career had a high likelihood of reporting gender discrimination such as not being taken seriously, receiving less trust, being treated worse by colleagues, and often taking on duties that were not advancing their career (Supplemental Table 9). Among women, being a parent was associated with a lower probability of aiming for an academic career only in univariable but not in adjusted analysis (Supplemental Table 9). Among men, working at an institution that reportedly does not value both genders' contributions was associated with aiming for an academic career (OR 3.57 (1.17-11.5, $p=0.027$), Supplemental Table 10).

Regarding career ambition, feeling unhappy because of work was associated with lower partial CAS-R scores among women, whereas a higher rating in the partial CAS-R scores was associated with frequent incidence of perceived gender-related discrimination (Supplemental Table 11). Career ambition scores were higher in male respondents when factors were present such as having support by superiors, having a good network and good mentoring (Supplemental Table 12).

Sensitivity analysis

A sex-stratified result of an analysis excluding general practitioners were overall comparable to the main analysis (Supplemental Tables 13-14). This analysis strengthens the robustness of the factors associated with higher career aspirations in the present dataset.

Discussion

In this study, we aimed to describe career aspirations of physicians in GIM in Switzerland and to verify which personal and work-related factors are associated with higher career aspirations. Overall, female and male physicians had similar career aspirations during medical studies, but career aspirations appeared to decrease over time in female physicians. Among physicians of both sexes, dissatisfaction with work is associated with a lower probability of aiming for a leading position. Finally, gender discrimination was identified as an important workplace-related factor with a potential for career obstruction when female physicians aimed to pursue a career path towards hospital leadership or towards an academic career.

Our findings of an apparent decline in female physicians' career ambitions over the time strengthen the existing evidence from other countries. A German study found no initial gap in career ambition between women and men during early medical studies, but a career ambition gap among advanced medical students and physicians.(32) Further, gender discrimination related to pregnancy and parenthood was reported as the most common cause of discrimination among female physicians in Switzerland.(25) Furthermore, in female non-physician academics in Switzerland, even the potential future first-time motherhood was associated with negative workplace experiences.(33) In contrast, women's ambitions remained high and comparable to men's over the time in supportive work environments.(15) Our findings align with recent U.S. data suggesting that female faculty is more likely to report to be pushed from their academic positions than male.(34) The present findings and the literature suggest that gender discrimination remains an important topic regarding career aspirations in women and may disadvantage women in work assignments or promotions. As consequence, fewer women may attain leadership positions.(4,25) Our findings support a need and implications for tailored strategies towards optimization of physician's workplace environment, thus allowing to fully mobilize the human capital and retain potential female leadership.(35)

Strengths of this study include the comprehensive characterization of personal and work-place related factors in association with career ambitions. Our study included a large sample of 624 participants, constituting roughly 1.5% of all practicing physicians in Switzerland. The present study allows to disentangle sex differences, as the questionnaires were answered by respondents of a relatively balanced sex ratio. Finally, the observed differences in factors associated with career aspirations among female and male physicians – a focus on overcoming negative views on motherhood and

preventing gender-related discrimination – could likely give a strong incentive for guiding interventions to promote an organizational change in hospitals in Switzerland.(36)

The present study also has some limitations. First, the survey response rate cannot be determined, as the number of viewers of the survey advertisements is unknown, website views were not measured and thus a risk of selection bias exists. However, the PWBI prevalence among the present data were similar to previous Swiss studies with response rate of 40% (29,30). This indicates that, for instance, physicians who are unwell were not overrepresented among the present sample. Further, the gender ratio of the sample was equal to the true population-level gender ratio among internists obtaining their specialization in 2022 in Switzerland.(37) Next, different career stages cannot directly be longitudinally compared due to the cross-sectional design of the study. In addition, causality could not be detected based on the reported associations alone, and as is the case in all observational studies. Next, there is a risk of non-random missingness of data even though comparable missingness was observed between the sexes. This may introduce additional bias if reluctance to respond a question led to missingness. Finally, this survey was limited to Switzerland, and therefore the results may not necessarily be generalizable to countries with different education and health care systems. For example, we found no sex differences in the link between mentoring and career aspirations. As several mentoring initiatives have been launched in recent years in Switzerland, access of physicians to mentoring programs may be uniform despite systemic gender inequalities.

Based on the outcomes of this study, several further steps can be formulated that could be considered and evaluated. First, work environment policies would need to be adapted towards implementation of educational activities to understand the roots of disadvantage of losing the contribution of incentives for female leadership in health care sector. Irrespectively of any government's involvement, the current actions could be initiated even during medical education trying to build career ladder models, including leadership courses, for the future generation of physicians which is dedicated to improve gender equality issues towards a progress for better health and its associated services. Current leaders in medicine might potentially also need education for an understanding of existing problems and to gain tools to minimize gender bias during recruitment or for women's career development. Finally, even a strategic recruitment of female-only leadership might be considered for certain environments or periods, although this must be considered with caution by not excluding professional and soft skill competence needed for future tasks.

Conclusion

Female and male physicians equally aim for leading positions at their work at the beginning of their career in medicine, but the different types and intensity of challenges that women and men face during their career progression could cause or amplify the underrepresentation of women among leadership in medicine. Interventions to diminish discrimination related to parenthood or gender among GIM physicians could contribute to increased inclusivity and preserve career aspirations, and such interventions should be carefully designed and evaluated in prospective studies.

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Declarations

Ethics approval and consent to participate:

The study was waived and exempted from full review by the ethics committee of the canton of Bern under the identifier: Req-2021-01085. The study was conducted in accordance with relevant guidelines and regulations including the Declaration of Helsinki. All participants were informed about the purpose of this study and gave informed consent for anonymous participation in the survey.

Consent for publication:

Not applicable.

Availability of data and materials:

All data produced in the present study are available upon reasonable request to the authors.

Competing interests:

All authors have no conflict of interests to declare.

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Authors' contributions:

JM conceived the study and acquired research funding. JM and CN designed the study questionnaire. JM designed the analysis plan. JM and LW collected and analyzed data. All authors interpreted the obtained results. All authors reviewed the manuscript and consented to publication.

Acknowledgement:

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Figure legends

Figure 1: Higher career aspirations among female physicians. Forest plot of the odds ratios of personal (top panel) and work-related factors (lower panel) for higher career aspirations among female physicians. Each row depicts an univariable model (light blue) and a multivariable logistic regression model (dark blue) adjusted for age, Swiss language region and type of workplace. Stars indicate significant associations, and error bars indicate 95% confidence intervals.

Figure 2: Higher career aspirations among male physicians. Forest plot of the odds ratios of personal (top panel) and work-related factors (lower panel) for higher career aspirations among male physicians. Each row depicts an univariable model (light blue) and a multivariable logistic regression model (dark blue) adjusted for age, Swiss language region and type of workplace. Stars indicate significant associations, and error bars indicate 95% confidence intervals.

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Table 1. Physician characteristics				
	N	Men, N=237	Women, N=387	p-value
Age (years), mean (SD)	624	37 (11)	35 (10)	0.205
Swiss language region	624			0.36
German-speaking		168 (71%)	277 (72%)	
French-speaking		62 (26%)	105 (27%)	
Italian-speaking		7 (3.0%)	5 (1.3%)	
Type of workplace	624			0.277
University hospital		93 (39%)	151 (39%)	
Other hospital		88 (37%)	140 (36%)	
Private practice with <3 colleagues		29 (12%)	36 (9.3%)	
Private practice with ≥3 colleagues		23 (9.7%)	42 (11%)	
Other place		4 (1.7%)	18 (4.7%)	
Current work quota % (median (IQR))	543	100 (100, 100)	100 (80, 100)	<0.001
Current position				
General practitioner		49 (21%)	73 (19%)	
(Dpty) attending physician in GIM		39 (16%)	54 (14%)	
(Dpty) attending physician in specialty other than GIM		110 (46%)	212 (55%)	
Resident aiming for certification in GIM		25 (11%)	29 (7.5%)	
Resident aiming for certification other than GIM		4 (1.7%)	6 (1.6%)	
Other		49 (21%)	73 (19%)	
Currently holding a higher academic degree or position (PhD, lectureship, professorship)	536	17 (8.5%)	10 (3.0%)	
Currently active in research	533	38 (19%)	48 (14%)	
Currently active in medical education	533	60 (30%)	78 (23%)	
Abbreviations: IQR, interquartile range. SD, standard deviation. Dpty, deputy. GIM, general internal medicine. Numbers are presented as n (%), unless indicated otherwise. Missing data were present for currently holding a higher academic career (36 men, 52 women), current activity in research or in medical education (both 36 men, 55 women).				

Table 2. Outcomes				
	N	Men, N = 237	Women, N = 387	p value
Aiming for a Leading Position	624	40 (17%)	42 (11%)	0.031
Aiming for a Leading Position during medical studies	624	32 (14%)	47 (12%)	0.621
Career ambition score	537	24 (7)	23 (7)	0.033
Aiming for an academic career	509	51 (28%)*	86 (26%)°	0.756
n (%) or mean (standard deviation) is shown. Career ambition score, composite score of 6 questions regarding career ambition with an overall minimum of 6 and maximum 30 points. Missing data occurred in n=87 for Career ambition score. * number of included men: n=184. ° number of included women: n=325.				

Table 3: Factors associated with with higher career aspirations				
		Multivariable logistic regression		
Characteristic	N	OR	95% CI	p-value
Age	625	1.07	1.03, 1.11	<0.001
Swiss language region	625			
German-speaking		—	—	
French-speaking		0.35	0.17, 0.68	0.003
Italian-speaking		0		>0.99
Type of work place	625			
University hospital		—	—	
Other place		0.21	0.01, 1.25	0.16
Other hospital		0.62	0.37, 1.03	0.066
Private practice with <3 colleagues		0	0.00, 87.1	0.98
Private practice with ≥3 colleagues		0.02	0.00, 0.10	<0.001
Sex	625			
Female		—	—	
Male		1.74	1.06, 2.85	0.029

OR, odds ratio. CI, confidence interval. The multivariable model contained the variables age, Swiss language region, type of work place and sex. For sex, estimates for nonbinary (n<5) are not shown but non-binary participants are included in the total participant count of n=625.