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Current and future workforce of general internal medicine in Switzerland

Reinhard Lukas[1], Clarfeld Lars[2], Gobin Niels[3,4], Knoblauch Christoph[2,3], Järgen Patrick[3,5], Le Boudec Joana[3,6], Merker Meret[3,7], Rimensberger Caroline[3], Roulet Céline[3], Schaub Nora[3], Töttler Katja[2], Wertli M. Maria[3,5], Streit Sven[1,3]

1 Institute of Primary Health Care (BIHAM), University of Bern, Switzerland

2 Swiss Society of General Internal Medicine

3 Swiss Society of General Internal Medicine's Young Talent Promotion Committee

4 General Internal Medicine, Hospital Center of Valais Romand (CHVR), Sion, Valais, Switzerland

5 Department of Internal Medicine, Cantonal Hospital Baden, Baden, Switzerland

6 Unisanté, Center for Primary Care and Public Health, University of Lausanne

7 Department of Internal Medicine Cantonal Hospital Olten, Solothurner Spitäler AG, Olten, Switzerland

Corresponding Author:

Professor Sven Streit, MD MSc PhD

Co-Head of Interprofessional Primary Care

Institute of Primary Health Care (BIHAM)

University of Bern

sven.streit@unibe.ch

Summary

Aim of this study: General Internal Medicine (GIM) is a crucial element in healthcare systems. In order to maintain and improve the quality for patients in healthcare systems, it is important to have a good understanding of how many people are and will be working in this field. This can provide a basis for political decisions.

Methods: We conducted a cross-sectional study to analyze the current and future workforce of generalists (general practitioners and internists in hospitals) in Switzerland. The Swiss Society of General Internal Medicine (SGAIM) organized a survey to all members. Respondents were asked about their current average workload in 2023 and planned workload in 2033. From there, we calculated full-time equivalent (FTE) for the current and future workforce of generalists and extrapolated FTE to all active SGAIM members. To model the demand by 2033, we derived different scenarios.

Results: Of all 6,232 active SGAIM members, 2,030 (33%) participated: 46% female, largest age group was 56-65years old (25%), 19% were still in postgraduate training. The overall average workload in 2023 was 78% for female and 87% for male generalists thus the FTE extrapolated to all active SGAIM members in 2023 was 5,246. By 2033, 1,935 FTEs (36%) will retire, 502 FTEs (10%) will reduce their workload, 116 FTEs (2%) will increase their workload, and 2,800 FTEs (53%) will remain in the workforce with the same workload as in 2023. In order to maintain the same workforce as in 2023, 2,321 new FTEs (44%) will be needed by 2033. To fill this gap of 232 FTE new generalists per year, we modelled different scenarios under the assumption of interest, workload, migration and dropouts.

Conclusions: Within only one decade, 44% of the current workforce of generalists will disappear mainly due to retirement and workload decrease. To fill this gap, various scenarios need to be incorporated and politicians are called upon to create the political framework that allows generalists to create an attractive training and working conditions for generalists to address the future demand for healthcare services.

Introduction

Generalists (i.e. general practitioners and internists in hospitals) play a crucial role in healthcare systems. They can be defined as "first level of professional care (…), where people present their health problems and where the majority of curative and preventive health needs are satisfied"[123]. Generalists can handle many health issues. Where necessary they enable matching patient needs to health care resources as well as managing and triaging undifferentiated symptoms[4]. As complexity in medicine is rising, more generalists are needed[5]. Therefore, a balanced number of specialists and generalists is crucial. Generalists complement a health care system by dealing with a wide range of health problems, the capacity to prioritize, and providing person-centered care[6].

Comparable to other countries, the Swiss healthcare system is highly dependent on the immigration of physicians who are trained outside of Switzerland, mainly from Germany. The latest available report of 2022 showed 1209 new doctors trained within Switzerland vs. 3053 doctors having received recognition for their credential in order to work as doctors in Switzerland. This proportion has remained about the same since 2011 and is about equal for General Internal Medicine (GIM)[7]. Using such official numbers is helpful to follow-up trends and proportions of trained GIM but these registries tend to overestimate the current workforce of generalists[8] e.g. due to the trend to work part-time or the fact that these registries are not necessarily designed to actively exclude doctors that do not work anymore.

Therefore, our study is needed to assess the current and future workforce of generalists in Switzerland and allowing a data-driven approach to maintain the workforce of generalists in the Swiss health care system.

Methods

Study design

We conducted a cross-sectional study to analyze the current and future workforce of generalists in Switzerland. The online survey was open from 7 March 2023 to 5 April 2023.

Data collection and process

The Swiss Society of General Internal Medicine (Schweizerische Gesellschaft für Allgemeine Innere Medizin, SGAIM) is the representative body of GIM. With more than 8,000 members, it is the largest medical society in Switzerland representing physicians specializing in GIM in hospital and outpatient settings. SGAIM stands for reflective, critical and patient-centered medicine. It is committed to promoting young talents and ensures the maintenance and development of professional expertise through congresses, further education, and training. The society supports research and science by awarding various prizes and grants, among other things[9].

The Swiss Society of General Internal Medicine's Young Talent Promotion Committee initiated this study, and the SGAIM sent an online survey to all newsletter subscribers of which >8,000 are members. The prerequisite for ordinary membership is the specialist title in GIM. Resident physicians (still without the specialist title), interested Master students and retired internists can become extraordinary members. Two reminders were sent. Retired members were excluded from this study.

Questionnaire

The Swiss Society of General Internal Medicine's Young Talent Promotion Committee developed a questionnaire to assess the current and future workforce of generalists using existing questions from similar workforce studies[8,10]. The questionnaire was an online, closed survey, sent to SGAIM members by e-mail and answered on a voluntary basis without incentives. The questionnaire was piloted for feasibility, length, and clarity by peer generalists. The following data were collected: Age (in 5-year clusters), gender, language, whether the person was still

undergoing further residency, current place of work (multiple-choice question), current workload (i.e. total of clinical and administrative workload with no differentiation between the two) in %, and future workload in % in 10 years' time. The survey was anonymous and, therefore, ethical approval was not required.

Statistical analysis

We imported anonymized data from SurveyMonkey through Excel to Stata version 15.1 (STATA corp., College Stata TX, USA). Data was prepared for the analysis using techniques such as summarizing, analyzing ranges and other consistency checks. Hard coding was done to reduce the future workload to 0% for participants who said they would retire by 2033. We reduced workload to 100% in 99 respondents who reported a workload of >100%. We showed data using descriptive methods of proportions, 95% confidence intervals (CI), means and standard deviations (SD). Since the SGAIM membership database used the same data (age bands and gender), we were able to compare participant characteristics with the full target population for generalization. We reported full-time equivalents (FTEs) by multiplying the number of participants by their current or future workload. The decrease of FTEs over time (2023 to 2033) was calculated by year for easier understanding. To model for different factors and scenarios that will have an impact on the future workforce, the author group chose to focus on 1) interest in becoming a generalist at the end of medical school, 2) workload, 3) dropouts, 4) influx from abroad, 5) early retirement, and 6) population growth.

Results

Study population

The e-mail containing the survey was received by 6,232 active members, and 2,030 members took part in the survey (33% response rate). On average, it took participants 5 minutes to complete the survey. Excluded were 106 respondents because they reported to be retired (Figure 1).

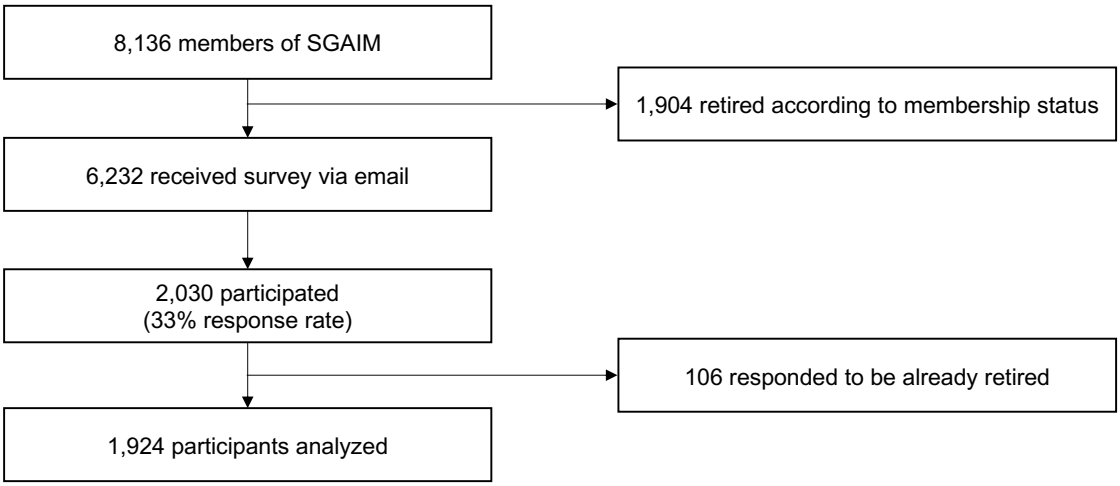

Figure 1. Study flowchart

Baseline characteristics

Table 1 describes the baseline characteristics of participants: 46% were women, 53% men, and 1% were non-binary (n=13). Participants' age categories were as follows: 18% were younger than 35 years old, 19% were aged 35 to 45, 21% were aged 46 to 55, 25% were aged 56 to 65, and 18% were older than 65. 82% chose the German survey version, 18% the French survey version. Of all participants, 19% indicated that they were still training to become generalists. Multiple answers were possible regarding place of work, with 953 participants working in a practice, 273 in a hospital, and 105 in another location. Similar results were found when comparing gender and age across participants and all SGAIM members (Appendix 1).

Table 1. Baseline characteristics of participating generalists (n=1,924)

Characteristics	**n (%)**
Gender	
Female	876 (46.0%)
Male	1,016 (53.3%)
Non-binary	13 (0.7%)
Age group	
Under 35 years	344 (17.9%)
35-45 years	358 (18.6%)
46-55 years	398 (20.7%)
56-65 years	484 (25.2%)
Over 65 years	337 (17.5%)
Language	
German	1,584 (82.3%)
French	340 (17.7%)
Postgraduate training	
Ongoing	370 (19.2%)
Completed	1,554 (80.8%)
Duration since board examination[1]	
Mean years (SD)	18.9 (10.9%)
Workplace[2]	
Practice	953
Hospital	273
Other[3]	105

[1] Only reported for generalists with completed postgraduate training
[2] Multiple-choice questions hence no proportions in %
[3] Other are e.g. teaching or research

Current workload 2023

1,417 people (missingness 507, 26%) reported an average workload of 83%. Table 2 describes the workload in 2023 stratified by gender and other baseline characteristics. The average workload was 78% for female and 87% for male generalists. The average workload for residents was 89% for female and 94% for male. For generalists after board examination, the average workload for women was 76%, and for men 86%. With increasing age, the average workload for both female and male generalists decrease but those working with an age >65 years (retirement) still work 66% (female) and 68% (male generalists).

Table 2: Current workload

Characteristics	Female Generalists			Male Generalists		
	n	Mean (95% CI)	p-value[1]	n	Mean (95% CI)	p-value[1]
Overall workload						
Workload	663	78.3 (76.8 - 79.8)		754	87.0 (85.5 - 88.5)	
Workload by age group						
<35 Years	150	88.0 (85.2 - 90.8)	<0.001	88	94.0 (91.2 - 96.7)	<0.001
35-45 Years	180	72.7 (69.9 - 75.5)		107	89.7 (87.4 - 92.0)	
46-55 Years	176	77.3 (74.5 - 80.1)		148	92.8 (90.8 - 94.8)	
56-65 Years	135	78.5 (75.5 - 81.5)		248	92.2 (90.3 - 94.1)	
>65 Years	22	66.4 (53.3 - 79.5)		162	68.2 (63.4 - 72.9)	
Workload by language						
German	548	78.3 (76.6 - 80.0)	0.90	625	87.1 (85.4 - 88.7)	0.86
French	115	78.6 (75.1 - 82.1)		129	86.7 (83.0 - 90.4)	
Workload by board examination						
Ongoing	136	89.0 (85.9 - 92.0)	<0.001	71	93.5 (90.1 - 97.0)	0.006
Completed	527	75.6 (74.0 - 77.2)		683	86.3 (84.7 - 87.9)	

[1] All p-values derived from univariate regression for each gender separately. For age group, a p-for-trend is reported.

Workforce development by 2033

1,411 people provided information on their planned workload in the next 10 years. A large proportion of respondents reported they will retire by 2033 (38.4%), and another 30.5% plan to decrease their workload, while 21.5% plan to maintain their workload, and 9.6% plan to increase their workload. When extrapolating the number and workload per respondent to all SGAIM members (6,232 SGAIM members / 1,411 participants with data on workload 2023 and 2033 = factor 4.48), we calculated that by 2033 (Figure 2) 1,935 FTEs (36%) will be lost due to retirement, 502 FTEs (10%) due to workload reduction, 116 FTEs (2%) will be gained by workload increase, and 2,800 FTEs (53%) remain in the workforce with the same workload as in 2023. In order to maintain the same workforce as in 2023, 2,321 new FTEs (44%) will be needed by 2033.

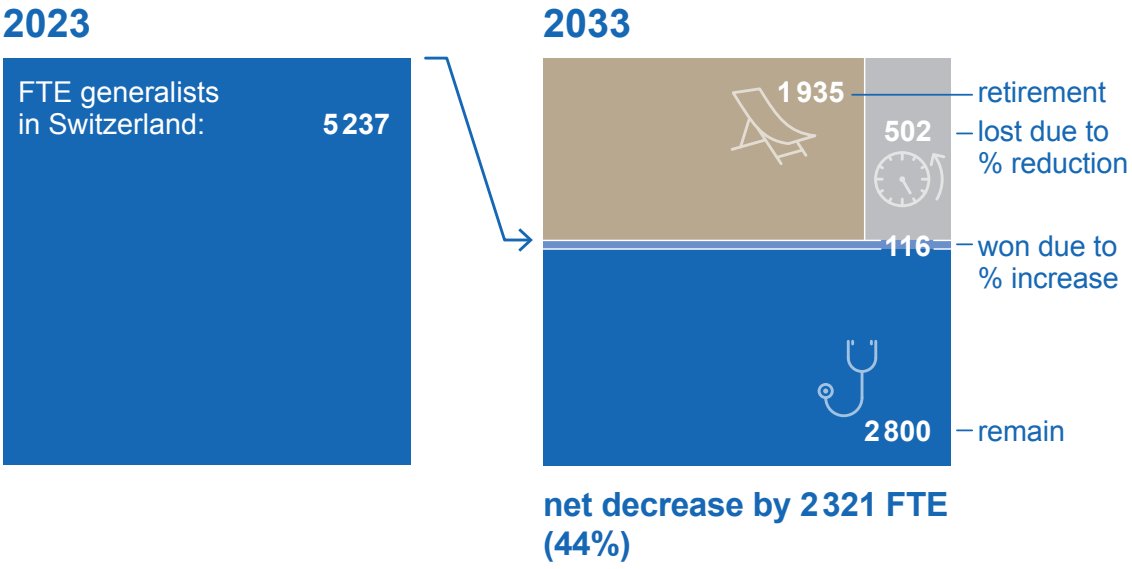

Figure 2: Workforce 2023 and 2033

All data presented in full-time equivalent (FTE) by extrapolating data of participants (n=1,411) with data on workforce 2023 and 2033 to all SGAIM members not yet retired (n=6,323) with a respective factor of 4.48

Modelling the future demand for generalists

With the gap of 2,321 FTE by 2033 from Figure 2, we modelled this gap for better interpretation on a yearly basis according to different scenarios stratified into the selected factors influence the number of generalists needed by 2033 (Tables 3a and 3b).

Table 3a. Modelling enablers and barriers towards filling the gap in generalists by 2033

		Interest to become generalists		
		20%	**30%**	**50%**
Workload scenarios	**60%**	144	216	360
	70%	168	252	420
	80%	192	288	480

Legend: FTEs of new generalists per year needed according toi Interest to become generalists and workload scenarios. Example to read the table: In 2022, 1,200 medical students graduated[11]; if 30% of them became generalists (as in 2022) and would work at an employment level of 80%, this would generate 288 FTEs of new generalists per year.

Table 3b. Modelling enablers and barriers towards filling the gap in generalists by 2033

		Board examinations of residents from abroad		
		0%	**10%**	**20%**
Dropout scenarios	**10%**	227	249	272
	15%	214	236	257
	20%	202	222	242

Legend: FTEs of new generalists per year available needed according to Board examinations of residents from abroad and dropout scenarios. Example to read the table: In Table 3a, 252 new FTEs are expected to pass the Swiss board examination. If additional 10% board-certified residents are expected to come to Switzerland from abroad then, under the assumption of 15% dropouts, 236 additional new generalist FTEs would be available.

Interest among students during medical education

In 2022, about 1,200 medical students graduated in Switzerland[11], and about 30% of all board certifications were in GIM[12], but, according to a new survey among medical students in Switzerland, 47% are interested in becoming generalists[13]. We modelled the number of new FTE per year assuming 20%, 30%, and 50% in combination with different workloads such as 60%, 70%, and 80%. This results in 252 new FTE per year (range 144 to 480).

During Residency

We continue with the estimated 252 new FTE per year and model influx from abroad as well as dropouts. In 2022, 1,420 board certifications from outside Switzerland have been accepted of which 134 (9.4%) were in GIM[12]. We know from an earlier study that about 14% of all students that graduate in Switzerland will actually not work in the field (dropouts)[10]. We therefore modelled an influx of generalists as 0%, 10%, and 20% as well as dropouts of 10%, 15%, and 20%. This results in 236 new FTE per year (range 202 to 272)

Other factors

Early retirement: In our sample, 47 of 542 (9%) of all those who want to retire by 2033 are under the age of 55 at the time of this survey. This translates to 181 FTE lost by 2033 due to early retirement.

Change of population: By 2033, almost 1 mio. (+9.3%) more persons will live in Switzerland[14]. Therefore, our models could also be increased by +10% to account for this population growth.

Discussion

Summary

The current workforce in GIM will decrease by about 44% from 2023 to 2033 in Switzerland. The large share of almost 40% retirements is the main driver for the decrease while another 30% plan to decrease their workload. 20% plan to keep their workload, and 10% intend to increase their workload. Until 2033, the workforce of generalists in Switzerland will decrease by about 2,321 FTE. This gap needs to be filled by a new generation of generalists that will largely be trained in Switzerland. However, various factors such as interest, dropouts, influx from abroad, and workload in addition to early retirements and a growing and aging population influence the assumptions under which Switzerland will manage to maintain its current workforce. Switzerland will struggle to close the gap; more efforts are needed to increase the workforce of generalists and to retain the workforce until their retirement.

Context

Our findings are in agreement with others that call for action for the future workforce of health care providers or physicians specifically[15,16,17]. While we did not focus on the effect of the COVID-19 pandemic on the workforce, it should be noted that the pandemic's impact on health care works are still largely unknown on the long term but the toll on mental health, demoralization and the wish to leave the profession should increase the urge to protect the workforce[18]. It should also be noted that there are also domains and settings where not a lack but even a surplus is expected such as in Emergency Physicians in the US[19]. Workforce studies using surveys are subject to selection bias. However, we also want to point out that official registries can largely overestimate the health workforce[8,20] i.e. because the registries are not updated, the workload not known or the future planned workforce not reported. Many factors influence the development of the workforce and we tried to integrate a part of them in our scenarios based on interest, workload, dropouts, influx from abroad, early retirement and population

growth. We acknowledge that not all those factors are solely impacted by decisions from the political decision-makers but also from how the professionals themselves position GIM in the future. Sharpening the profile and acknowledging the broad field in which generalists are working are key elements for GIM to be seen and chosen as a career specialty[21].

Limitations and Strengths

We acknowledge several limitations in our study: 1) It is a cross-sectional study with a 33% participation rate. However, since Switzerland lacks a trustable source in form of a register to assess the generalist workforce, their FTE and their planned workforce, this design is therefore the next best choice. In addition, several reviews concluded that such response rates in a survey of physicians do not introduce selection bias[2223] and the characteristics of gender and age across study participants non-participating SGAIM members where similar i.e. generalization can be assumed but not proven. 2) We asked generalists to predict their workload plans which may differ from what actually happens. 3) When assessing the future need, several factors interplay with each other, and only the future will tell which factors have the largest effect. Hence, expert opinions[24] form a basis to select those factors as in this paper. However, we chose to transparently mention all assumptions, their basis, and their variance that will help the reader to choose the most realistic scenario and calculate the expected demand. To our knowledge, this is the first study to assess the workforce of generalist incorporating FTE instead of counting persons and focusing on generalist in contrast to all physicians or General Practitioners (GP) specifically.

Implications

On the national level, the Swiss ‘numerus clausus’, currently applied due to capacity constraints at many universities, needs to be cautiously re-evaluated and placements for Bachelor and Master students increased. In addition, we consider it not only necessary to evaluate an

increase in capacity to train future generalists at universities, but also later on in hospitals and in general practice. Also, generalists themselves can help closing the gap by promoting this interesting profession with a close connection to people and a very broad field of activity[25]. However, we acknowledge that shortage of health care professionals is a universal problem and that not only increasing FTE of generalists is a solution but also 1) to better collaborate interprofessionally with e.g. nurse practitioners, physician assistants, pharmacists etc., 2) to re-focus on patient care and to fight back the increase in unnecessary administrative work, 3) to offer high quality training opportunities for future generalists including mentoring and skills to strengthen resilience, and 4) to foster digital transformation to allow generalists to work more efficiently and focused on patient care.

Conclusion

Switzerland's workforce of generalists will dramatically decrease by 44% in 10 years. The main driver is retirement followed by planned workload reductions. The need to fill this gap depends on various factors including attracting more generalists, workload, dropouts, influx from abroad, retirement, and population growth. Based on this study, policy makers, universities, health care institutions, and professionals themselves should invest in attractive job options and career plans for generalists to fill the gap.

Availability of data and materials

The data used and analyzed in this study may be made available upon reasonable request.

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Potential competing interests

All authors have completed and submitted the International Committee of Medical Journal Editors form for disclosure of potential conflicts of interest. No potential conflict of interest related to the content of this manuscript was disclosed.

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