






POSITION PAPER

Connecting Women in Neurosciences: A networking project to sustain mutual empowerment in young, female clinical neuroscientists

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Abstract

Simultaneously acquiring broad clinical knowledge and scientific expertise is a major challenge for young clinical scientists. Female researchers may face additional hurdles in their career, for example, due to unconscious bias. We aimed to address clinical, research, and gender-related challenges among young female clinical neuroscientists. We implemented a peer-led networking group dedicated to increasing clinical and scientific knowledge, improve soft skills, and encourage exchange between fellow residents. In monthly meetings, two participants hold short presentations on a clinical topic or scientific method, followed by a discussion and feedback to the presenter. Afterwards, participants network and discuss challenges they face in their daily experience. Nine neurology residents at a Swiss University Hospital with ≤ 3 years of training participated in the Connecting Women in Neurosciences project from August 2020 to June 2021. In a qualitative evaluation, participants reported they felt empowered by these meetings and profited from their new network. We identified several challenges in combining clinical and research activities, some of which participants perceived to be gender-related. In addition to women-only meetings, we will promote events addressing all interested researchers. Peer-to-peer networking is an easy and low-budget intervention to encourage female residents to engage in research activities, profit from each other's expertise, and promote interdisciplinary teamwork. It can provide a protected environment to discuss and overcome in particular gender-related challenges. We encourage young colleagues to regularly engage in structured networking activities with their local peers.

KEYWORDS

career, networking, neurosciences, project, women

INTRODUCTION

Simultaneously acquiring broad clinical knowledge and scientific expertise is challenging for young clinician-scientists. Junior female

researchers may face additional hurdles due to gender-related misperception or unconscious bias [1].

Despite a growing number of female medical students and residents, women pursuing both a clinical and academic career are still

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rather rare. In relation to the number of graduates, female doctors are underrepresented in leading positions and professorships in all European countries [2].

Several reasons for this “leaky pipeline,” describing women not pursuing their original career path, have been identified in work and private life. Various studies have investigated the influence of gender on reviewers' perception of quality and found that the same publications were rated higher if supposedly written by a man [4]. Papers written by male authors are more often cited [1]. Fewer women are coauthors or first or senior authors in high-ranked journal publications and even at early career stages women receive lower grant amounts and protected research time than men [5]. When introducing a female speaker, male chairs less often mention her professional titles [3]. Although feedback addressing women is often positive, it remains rather vague [6]. Women have different communication strategies than men, and behavioral suggestions to women differ from feedback to men [7]. In private life, women more often step back for their partner's career or take time off work for family care, consecutively missing important years for their career [8].

To overcome these hurdles contributing to the “leaky pipeline,” many universities offer mentoring programs designed for young female researchers to motivate and empower them to start and maintain a career in research. Ideally, these programs propose female mentors, but as there are many more well-advanced males than females, there is a higher demand for female mentors, which can impose an additional burden on women at higher career levels [5].

In this context, a peer-to-peer networking group called Connecting Women in Neurosciences (CWIN) was initiated by two female neurology residents (M.B.G., E.S.W.) to identify challenges and support each other. The network was open to female residents interested in academic research in parallel to a clinical career. This article provides an overview on the project idea, discusses aspects we identified as potentially preventing this target group from engaging in research, and names possible causes for the “leaky pipeline.” It also gives an outlook on project adaptations that evolved after the pilot phase. Finally, it encourages fellow residents to regularly engage in structured networking activities with their local peers.

PROJECT DESCRIPTION

The aims of this project are to encourage peer-to-peer networking and mutual support, improve communication skills, and identify potential gender-related hurdles on a clinical and academic career path.

The pilot phase lasted from August 2020 to June 2021. The group consisted of nine women working at the Department of Neurology at Inselspital, Bern University Hospital, with 0–3 years of clinical experience, who aim at becoming board-certified neurologists.

The original plan consisted of three distinct event types: a kick-off meeting, monthly group meetings, and an input workshop. During a kick-off meeting, two senior female clinician–scientists gave a talk on their own career paths, reflecting on successes and challenges. This was followed by an informal part allowing participants to discuss and

network. Tables 1–6 give an overview on different aspects of CWIN. Group meetings consisted of three parts. First, two participants presented a clinical and a scientific/methodological topic, followed by discussion as well as constructive and specific feedback from the audience. Participants were encouraged to experiment with new presentation techniques and to ask questions they might not ask in a setting with senior or male fellows. Afterwards, we discussed a previously defined topic with emphasis on gender differences (e.g. communication strategies). Topics of interest were written on a piece of paper by the participants and collected in a box. At the end of an evening, we picked one key word participants would reflect on for the next month and discuss during the following meeting. A networking part with food, drinks, and conversation followed. Due to COVID-19 restrictions, most of the meetings took place virtually and the input event, interactive training on conflict management, had to be postponed.

TABLE 1 Checklist with ideas on how to organize different aspects of the event: The following aspects and propositions can be considered and adapted according to needs and resources.

Issue	Possible options
Place	Meeting room at the hospital
	Rotate to participants' houses
	Seminar room (e.g., local university)
	Virtual (can be a good addition, suitable for pandemic circumstances or if in-person meetings are not possible)
Dates	Define the dates for all events from the beginning (coordinating dates in larger groups can be difficult)
	Propose different dates to choose from (e.g. electronic poll)
Food and drinks	Each time, a different person is responsible for bringing food
	"Potluck" (everyone contributes something to the buffet)
	Food delivery/takeout service
	Go to a restaurant/bar/food place after the first part of the event
	No catering (e.g., virtual events; think of other options on how to engage with each other)
Choosing topics	Participants should suggest topics
	Participants should choose topics they feel motivated about and comfortable presenting (dare to challenge yourselves!)
Mode of presentation	Flip chart, moderation cards, pen and pencil
	PowerPoint
	Be open for creative or experimental approaches
	Virtual or in-person meeting

TABLE 2 Criteria for participation.

Participation criteria
Resident in neurology training
Interest in clinical research (ideally with own project)
Agreement to active participation in the project
Agreement to present during meetings

TABLE 3 Structure of the networking events.

Event structure
Presentation on a clinical topic (10 min)
Discussions, questions, feedback (10 min)
Presentation on a methodological topic (10 min)
Discussions, questions, feedback (10 min)
Thoughts on gender-related topics and daily challenges
General discussion, networking (optionally with dinner)
Conclusion

TABLE 4 Group and individual goals defined for Connecting Women in Neurosciences.

Goals
Group level
Learn together and from each other
Support each other
Identify challenges and look for solutions
Individual level
Networking in a group of peers
Train self-presentation
Strengthen self-confidence
Improve conflict management
Give and receive honest feedback
Find role models
Become aware of own unconscious biases

EVALUATION AND REFLECTIONS

We provided quantifiable key outcomes of interest and descriptive parameters based on the participant's evaluations, to the extent that seemed reasonable taking into account the small group size. However, given the very young academic age of participants, several academic outcomes, which would in principle be interesting to assess (e.g. number of publications, academic achievements), did not seem achievable within 1 year and were therefore not assessed.

CWIN has attracted interest nationally in Switzerland and internationally. In 2020, the first authors (E.S.W. and M.B.G.) received funding for CWIN from the Nachwuchsförderungs-Projektpool, University of Bern, Switzerland. In 2021, they were invited to a presentation of the project and a panel discussion at the annual congress of the German Society of Internal Medicine. In 2021, they

TABLE 5 Principles of Connecting Women in Neurosciences to allow open and honest discussions.

Principles
Show appreciation
Confidentiality
Constructive, objective, and specific criticism
Settle disagreements directly
There are no "stupid" questions
There are different right ways to reach a goal

TABLE 6 General recommendations.

General recommendations
Peer-to-peer approach is important for confidentiality
Give participants the possibility to shape the event
Look for support in your department
Look out for role models and mentors who might support the project
Check what kind of local groups/events already exist; consider getting in touch with them
Look for funding (not mandatory)
Create a project name and logo for identification
Consider expanding some discussions to a broader public to enhance diversity

presented an abstract about CWIN at the annual Congress of the European Academy of Neurology.

At the beginning of the project, seven of nine participants were actively engaged in research projects, including four (MD-)PhD students; one person was holding a personal and a project grant. One year later, eight of the nine participants were actively engaged in research projects, including four MD-PhD students. One had successfully finished her PhD. [Figure 1](#) shows dynamics in research activities before and after CWIN participation. Four participants have successfully acquired personal and/or project grants after the start of the pilot phase.

At the end of the pilot phase, we performed a qualitative survey to evaluate participants' personal experience during the project and aspects to be improved. Eight of nine participants wished to continue the project because they perceived a personal benefit. One participant left the project due to time constraints and family duties.

Participants appreciated the networking opportunity during the pandemic. As the presentations covered a broad range of topics, they expanded their scientific and methodological knowledge. They also exchanged advice regarding their own research projects. Presenters used the opportunity to try different presentation techniques in front of a benevolent but critical public.

Due to the COVID-19 pandemic, we had to hold some meetings virtually, which could feel exhausting after a tiring office day. Quality and quantity of feedback to the presenters became scarcer as soon as the meetings were held virtually. We assume that giving feedback personally might be more pleasant for both sides and also

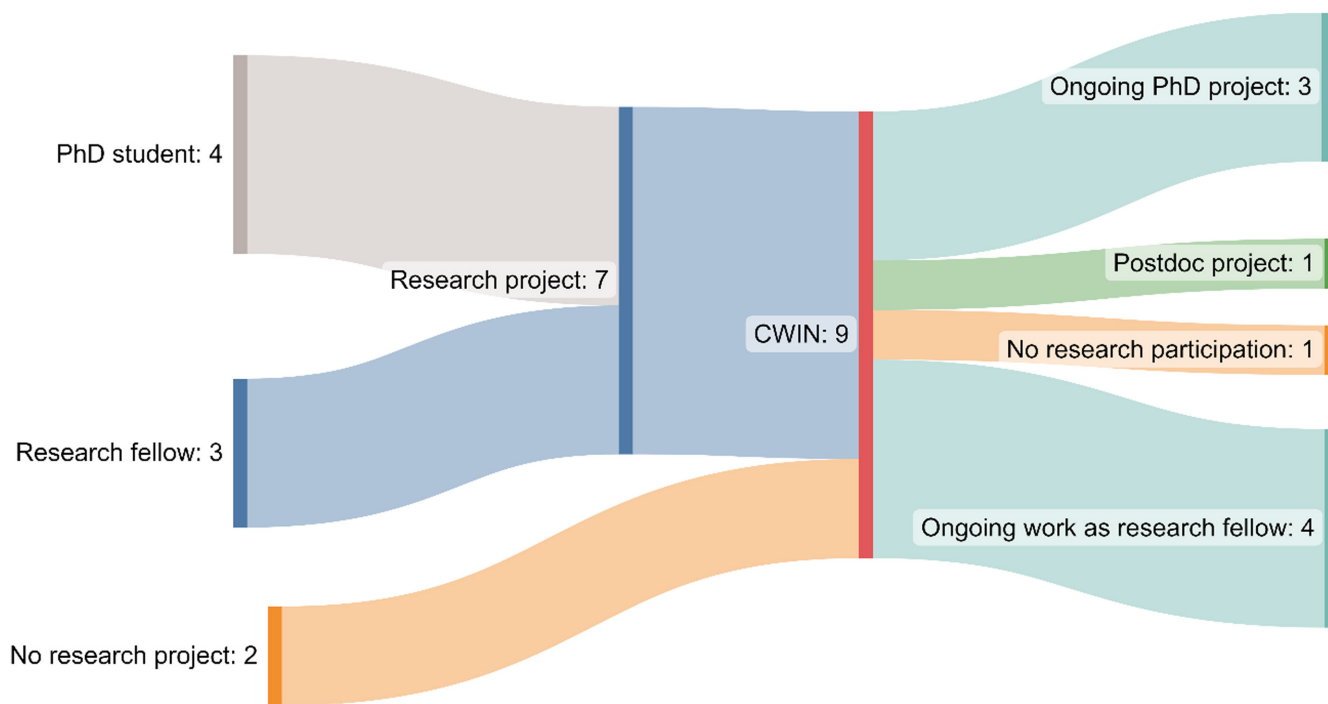


FIGURE 1 Sankey diagram demonstrating dynamics of research participation by Connecting Women in Neurosciences (CWIN) participants. Diagram was made with Sankey Diagram (<https://sankeydiagram.net>).

takes nonverbal communication into account. Several participants reported they found it easier to accept feedback from peers than seniors. This may be related to the confidential setting, but also to peers not being involved in promotional decisions. We consider this to be a significant advantage of the peer-to-peer approach. Furthermore, the frequency (1x per month) was a little too intense for some. On the other hand, participants wished for additional events allowing exchange with other groups, including basic/translational science researchers and male or more senior clinician-researchers. Table 7 gives an overview on the structured feedback we have received after 1 year.

During the discussions, we touched certain aspects that could prevent junior women from taking up research activities and identified possible solutions.

The biggest hurdle seems to be a lack of time. Doctors perform a significant part of research activities in their leisure time. This can discourage people in the light of long working hours and limited control over the clinical workload and might interfere with private activities, independent of gender. Protected research time for young clinician-researchers, which allows them to pursue clinical training and research simultaneously, is in our opinion an effective measure to reduce this burden.

Communicational behavior reflects many unconscious biases and social conventions that lead to gender differences. For example, female doctors in primary care spend more time for each patient and engage more in patient-centered communication [9, 10]. This reduces available time for research activities. On the other side, women use less speaking time in meetings [11], have more difficulties raising their voice [12], and are expected to deliver and cope

rather than engaging in political maneuvers [7]. Thus, their expertise might be less visible in a group compared to male colleagues. Moreover, women are less confident they can master complex scientific methods [1]. Being aware and addressing gender stereotypes as a group leader could provide more equal chances for all group members.

Aspects of future planning may also influence a woman's decision to take up research activities. Starting a family has a higher effect on women's compared to men's career path and working hours [5, 8]. The fear of failing to manage the triad of clinical work, research, and private life, and eventually losing projects and status, might keep young women from engaging in research even before starting a family. There is also a relative lack of role models successfully handling this triad, which might reinforce this tendency. On the other hand, women might delay family planning to when they are established professionals at the cost of having higher rates of pregnancy-related complications [13, 14]. Expansion of childcare services, equal opportunities for parental leave, and social acceptance for men to engage in family care would relieve some of the burden of women aiming for a fulfilled career and family life and make their return back to work easier. Furthermore, more institutions should offer grants that can be prolonged over parental leave and/or provide additional support measures, as is the case at the Swiss National Science Foundation [15].

Taken together, literature and participants' personal experiences suggest that women face barriers at early career stages their male colleagues do not face to the same extent. Many barriers are related to stereotypes. Involving everyone in discussions about equality could alleviate the burden laid on women and other minorities at all stages of their careers.

TABLE 7 Project evaluation.

Questions	Synopsis of answers
What has CWIN changed for you?	Networking
	Exchange about questions regarding research and work-life-balance
	Increased awareness for gender bias
	Increased knowledge on neurological and scientific topics
	Tried new presentation techniques
What did you appreciate?	Better understanding of research structures
	Presentations covered a wide range of topics with high quality
Comments/criticism	Opportunity for networking with other researchers despite the pandemic
	Small group
	Preferentially hold in-person meetings
Should CWIN continue after the pilot project phase? If so, in what format?	Invite more external presenters/guests
	Less motivation to participate if the event is in the evening
	Continue group evenings in-person (if possible)
	Additional events that allow exchange with other groups (e.g., basic science labs, male young researchers)

Abbreviation: CWIN, Connecting Women in Neurosciences.

OUTLOOK AND FUTURE DIRECTIONS

CWIN provides a peer-to-peer network, promoting interaction between academically interested female neurology residents. The concept is easy to adapt, and the threshold to start and participate in such a network is low due to its peer-to-peer approach and self-implementation.

Participants benefit directly and learn from their network, mutual discussions, and feedback. They enlarge their knowledge on clinical and research topics and soft skills, connect with other researchers, and become involved in local research projects. Participation can enhance self-confidence and the feeling of competence. The confidential setting facilitates exchange on important and sensitive topics, such as gender-related questions and challenges.

Since the end of the pilot phase, CWIN has continued as a networking project for female residents with an interest in academic research. Meetings still follow the presented concept but with bi- to trimonthly meetings and up to 12 participants. In addition to women-only meetings, we plan to promote events addressing a

broader target group of clinician–researchers in collaboration with other stakeholders at our department.

We encourage colleagues from all disciplines to regularly engage in structured networking activities and provide a checklist with important aspects to consider (Table 1). Tables 2–6 include more information about CWIN and inspirations to create a similar project. We believe this easy and low-budget intervention is another step towards more gender equality and equity in academia.

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CONFLICT OF INTEREST STATEMENT

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DATA AVAILABILITY STATEMENT

Data sharing is not applicable to this article.

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