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Diversity in Health Informatics: Mentoring and Leadership

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Abstract. Diversity, inclusion and interdisciplinary collaboration are drivers for healthcare innovation and adoption of new, technology-mediated services. The importance of diversity has been highlighted by the United Nations' in SDG5 "Achieve gender equality and empower all women and girls", to drive adoption of social and digital innovation. Women play an instrumental role in health care and are in position to bring about significant changes to support ongoing digitalization and transformation. At the same time, women are underrepresented in Science, Technology, Engineering and Mathematics (STEM). To some extent, the same holds for health care informatics. This paper sums up input to strategies for peer mentoring to ensure diversity in health informatics, to target systemic inequalities and build sustainable, intergenerational communities, improve digital health literacy and build capacity in digital health without losing the human touch.

Keywords. Diversity, Mentoring, Gender, Digital Health Literacy, SDGs

1. Introduction

Diversity is a strength and important source for innovation in any field, and comes with different expertise and, oftentimes, different values. In interdisciplinary environments the differences among professionals of various disciplines can become pervasive. Inclusion should transcend unconscious bias and stereotypes, in efforts to build inclusive, diverse collaborative environments capable to address societal challenges [1]. Ensuring diversity and interdisciplinarity comes with tremendous potential to mobilize the talented human capital for improvement in health and care for all through innovation [2].

Around the globe, women play important, instrumental roles in health care changes, but their presence in Science, Technology, Engineering and Mathematics (STEM) remains low [3], as shown in the graph below.

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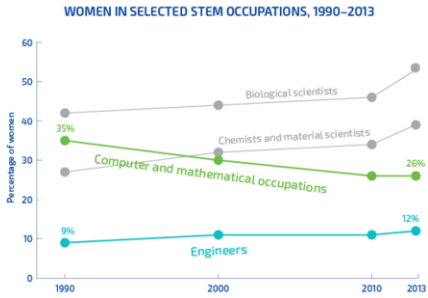

Figure 1. Women in Science, Technology, Engineering, and Mathematics (STEM) [3].

In health care, women make up the majority in the health care workforce using digital health information systems. Women are still significantly underrepresented in top leading positions and decision making, still at the same time, very receptive in using health information systems [1]. Although more participation in professional meetings and increasingly more female presenters, as shown in the table below, concerns are valid.

Table 1. First authors of accepted podium presentation at MedInfo, global health informatics conferences [5][2].

MedInfo	2013	%	2015	%	2017	%	2019	%
female	68	36	73	41	88	35	120	42
male	114	62	103	57	137	55	150	53
uncertain	3	2	1	2	24	10	15	5
Total	N=185		N=178		N=247		N=285	

Data also suggests that women are underrepresented in roles such as keynote speakers compared to the expected representation [6]. Acknowledging diversity and actively engaging women and girls in projects, adoption and utilization of social and digital innovation will help strengthen the interdisciplinary community [2], whilst, at the same time, afford leaders stronger supporting structures as a base to push forth with inclusion for innovative solutions.

This paper presents outcomes of workshops carried out in MedInfo2019 and MIE2020 (online), the methodology of organizing the workshops and collecting results.

2. Methodology

Inclusion and gender diversity are necessary to bring out the untapped potential in health informatics, addressing diversity gaps in use of digital health technology is timely, if not overdue. Women's empowerment and active engagement is good not just for the person who benefit but is likely to bring new perspectives and energy for change. At the company level, a growing body of evidence shows that more gender equality is good for bottom lines. Greater diversity of leadership styles and inclusion of more perspectives improves the quality of decision-making. If given the opportunity, women could be leading innovators in the age of automation and artificial intelligence and could help to ensure that algorithms are free of gender bias. Furthermore, among the new jobs that will be created will be many in fields like education and health care, where women have

[2] The program of the conferences was manually reviewed to estimate the gender of authors based on author names and knowledge of the community, to leverage gender-name associations to compile aggregate statistics.

traditionally thrived. According to MGI research, more than 100 million jobs could be created over the next 10-15 years as health care and education needs grow. It is not exactly yet clear how automation will affect women's employment.

Gender diversity could be a starting point for active inclusion of other underrepresented groups. Tapping the power, potential and energy embedded in diversity are key drivers to wider adoption of digital health innovations. Leadership and mentoring pathways can harness opportunities to connect with leaders within and across fields. When considering the need for interprofessional training, the concept of peer mentoring when mentoring is considered as a bidirectional activity is a topic worthy of reflection.

The first four authors organized a workshop at MedInfo2019, which formed the basis for a MIE2020 panel, organized online due to the COVID-19 pandemic. In MedInfo2019, the audience and speakers coauthored an online document[3] that referred main issues concerning diversity in health informatics. With these issues as background all authors joined an online panel in MIE2020. The panelists argued that diversity, equal opportunity and equality are important to tap the full potential of ongoing developments, in addition to being core values that our community aspires to.

3. Results

Several key areas were addressed by panelists and formed the basic for discussion on next steps for the health informatics community in Europe and globally. Constrains to the advancement of gender equity, points to divides between specialties in health informatics, and warrant strategies to help overcome diversity challenges. In particular, recent changes in policy and emerging initiatives for empowering women and girls in global health across disciplines, comes with inspiration and direction. The discussion on diversity highligh strategies to value professional contributions as important qualities that adds to interdisciplinarity in Health Informatics, effective strategies to improve diversity in community.

3.1 Leadership and Mentorship pathways to sustain innovation.

Different strategies for peer mentoring were proposed to complement traditional and reverse mentoring to build capacity, and support sustainable, intergenerational communities in the presence of the accelerated digital transformation of health and care. Special mention was attributed to the UN Sustainable Development Goals (SDGs), in particular SDG 3 (good health and wellbeing), SDG5 (gender equality), SDG8 (decent work and economic growth), SDG10 (reducing inequality), and SDG17 (cross-sectoral collaborative actions). In an everchanging healthcare environment, empowering women for leadership roles is vital to sustain innovation and stay ahead of times. The McKinsey Global Institute (MGI) has estimated that advancing gender equality could add $12 trillion per year to the world economy by 2025. In their study of 90 entities and 50000 managers, MGI notes that companies with more women in executive teams have a 56% higher operating profit, highlighting that gender-balanced organizations produced results that were far more predictable, sustainable, and profitable.

Many companies, like Medtronic, are taking bold steps towards elevating women in a holistic approach building an inclusive, diverse and equitable workspace for women,

[3] https://docs.google.com/document/d/1AeOK1Kth6WUNHIh8_5CpBgKk3DDWtPGYgcBf22619t8

by providing a variety of development programs for managers, including unconscious bias training and facilitating networks of women and men that promote change (15000 members, 118 hubs, 68 countries).

3.2 OECD: Women at the core of the fight against COVID-19 crisis

The COVID-19 pandemic is harming health, social and economic well-being worldwide, with women at the center. First and foremost, women are leading the health response, making up almost 70% of healthcare workforce exposed to risk of infection. Women shouldering much of the burden at home, as school and childcare facility close, and being in longstanding gender inequalities of unpaid work. Women also face high risks of job & income loss, increased risks of violence, exploitation, abuse or harassment during times of crisis and quarantine. Thus, the pandemic unveiled important gendered implications that call for immediate policy action.

3.3 Gender equity, unconscious bias and work culture

Gender inequality is quite prominent in the health sector, where care is led by men and delivered by women representing 70% of the workforce, with a 28% gender pay gap. Stereotypes, blind spots and bias are part of our daily lives, including in the very definition of gender, which is often implied as binary [7]. There are ways we can train ourselves to make note of these. One way is by thinking about strong women leaders or seeing positive images of underrepresented groups can temporarily change unconscious biases. A second is by working together in structured settings to solve shared problems can dramatically alter people's attitudes about diversity. Finally, we should strive to understand that a person with biases will not necessarily always act in biased ways. It is possible to consciously override bias [8]. For women to thrive, individuals need to have passion to drive diversity, make it a personal priority, and show perseverance over time [9]. At the same time organizations need to rely on proof before jumping to solutions, install regular, robust processes to ensure equity and lastly, implement and support critical programs that support women's unique needs.

In 2013, in 'Women Rising' [10] the presence of second generation bias: a paucity of role models for women, gendered career paths and gendered work, women's lack of access to networks and sponsors, and double binds: feminine qualities and leadership mismatch. Proposed actions to support women's access to leadership are: educate women and men about second-generation gender bias, create safe "identity workspaces" to support transitions to bigger roles, "acceptably disruptive," and anchor women's development efforts to leadership purpose rather perception.

3.4 Traditional Mentoring, Peer Mentoring and Reverse Mentoring

Mentor as a word has its roots in Homer's Odyssey. Mentor was appointed by Ulysses to provide guidance to his son Telemachus when he left Ithaca for the Trojan war. Mentors became popular again in the 18th century, signifying experienced persons providing guidance and moral support to help a less experienced person develop successfully. Peer mentoring is a relationship between people at the same career stage or age, in which one person can provide support, knowledge and skills transfer to the other in one-on-one relationship. Reverse mentoring is when younger generation persons

provide mentorship to senior colleagues or professionals. Reverse mentoring is particularly relevant with the accelerated pace of digitization.

Several universities have organized mentorship programs. the Université Paris Saclay has organized a mentoring program open to female PhD candidates and all faculty with monthly mentor/mentee meetings, where discussion groups on mentoring topics (e.g. self-confidence, work life balance), workshops (e.g. networking, crafting an elevator pitch), and career stories are shared. The program since its inception in 2018 has supported more than 45 mentor/mentee pairs per year with 15% male faculty and 25% mentors from industry. Key points highlighted by the program is the value of pairing across disciplines in the health and life sciences, as well as the importance of benevolence and confidentiality, exposure to a diversity of experiences, and empowerment.

4. Discussion and conclusions

Although there are concrete efforts to promote diversity, knowledge and policy gaps in sustainable global health workforce development persist. The COVID-19 pandemic has demonstrated notable lack of evidence-informed policymaking. Current policies miss an integrated approach when considering gendered dimensions of organization and delivery of health care, stereotypes and complexity of lives of women and men; intergenerational gaps; ageism, discrimination v. inclusiveness, understanding issues.

Health Informatics is an area where we need to build capacity for diversity. Several activities underway directed toward mentoring seem to bear fruit and need to scale up. The role of associations like EFMI and IMIA in catalyzing cooperation with the industry to advance diversity is key in the accelerated digital transformation of the health sector. In particular, the yEFMI program, just started by EFMI, educational offerings and the diversity taskforce of AMIA point in the right direction and need to be scaled up.

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