


Review Article

History of Women in Neurosurgery (WIN) in Senegal

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Abstract

Women in neurosurgery (WIN) occupy an increasingly visible place, even if the discipline remains historically male-dominated. In Senegal, the discipline is gradually opening up to women, and many young female doctors are interested in this specialty. Despite advances in issues related to gender equity, barriers to recruiting and retaining women in neurosurgery continue to exist. Attracting women to neurosurgery can capitalize on strategies, such as mentoring, teaching leadership and negotiating skills, and job sharing or dual training tracks to name a few, that would benefit both men and women passionate about pursuing neurosurgery. The lack of a critical mass of females in neurosurgery can translate to greater difficulties in establishing a supportive network and a greater likelihood of feeling isolated as a result. Lifestyle considerations are a major concern to both genders when choosing a career; even more so in Africa, where women play a central role in the management of household chores and the education of children. The number of women entering neurosurgery training programs and the number of female neurosurgeons graduating are increasing in Senegal. The aim of this work is to share the experience and to take stock of the situation of women in neurosurgery in Senegal.

Keywords

Women, Neurosurgery, Training, Senegal

1. Introduction

Neurosurgical practice has been performed in Senegal since 50s by french military doctors. In Senegal, it became a full surgical speciality in 1968, with the support of french neurosurgeons, in Fann Teaching Hospital. Gradually, under the lead of Professor M. GUEYE, some Senegalese doctors became interested in this speciality.

Senegal currently has thirty-seven neurosurgeons for a population of just over seventeen million.

Gender inequalities in the surgical field have been the

subject of much debate in recent decades [1]. Yet over the past 5 years, women have outnumbered men in medical school applications and enrolments [2]. Despite the increase in the percentage of women entering the medical profession, surgical specialties are dominated by men worldwide. This gender disparity is particularly evident in orthopaedic and trauma surgery, cardiothoracic surgery and neurosurgery [3]. Several factors could explain this inequality in neurosurgery [4].

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2. History of Win in the World

Neurosurgery is a modern surgical specialty; indeed, although attempts to perform surgery for diseases affecting the nervous system date back to antiquity [5, 6] and have marked the history of medicine, neurosurgery was not isolated as a surgical sub-specialty until the early 1900s, thanks to Harvey Cushing [7, 8].

In the UK, Diana Beck became the world's first female neurosurgeon [9]. This claim had also been made about Sofia Ionescu, the first female neurosurgeon in Romania [10]. However, her diploma was not recognized until 1945.

The history of female neurosurgeons in Africa began in North Africa, specifically Algeria, with Professor Faiza Lalam in 1977. She became a board-certified neurosurgeon in the Department of Surgery at Tizi Ouzou University Hospital in 1982. In 2011, she became professor and head of department. [11]

3. Women in Neurosurgery in Senegal (Figure 1)

Dr Mame Saly Diene was completed her neurosurgery residency from 1995 to 2000, before being appointed clinical assistant in neurosurgery in 2003 at the Neurosurgical Department of Fann teaching hospital, where all the neurosurgeons in Senegal have been trained. She was the first female

Senegalese neurosurgeon; she passed away in February 2021.

Pr Magatte Gaye Sakho was enrolled in the residency of Neurosurgery in 2002 and continued her career with the Neurosurgery team of the Fann University Hospital with internships abroad, notably in Marseille. On her return, she became interested in tumour pathology, especially in skull-base and spinal pathologies. She then joined the Neurosurgery team of Idrissa Pouye General Hospital (HOGIP), one of the 3 hospitals in the capital where Neurosurgery is performed. Since December 2018, she has held the position of head of the Neurosurgery department of HOGIP as the first woman Associate Professor of Neurosurgery in Senegal (CAMES 2018). She is also very involved in the activities of the Senegalese Society of Neurosurgery.

Pr Maguette Mbaye-Ndour, WIN at Fann Teaching Hospital: after his internship in Dakar (between 2007 to 2011), she completed a fellowship at the neurological hospital in Lyon (France). His main interests are endoscopic skull base surgery for pituitary tumors, vascular surgery and pediatric neurosurgery. She is the second Associate Professor of Neurosurgery in Senegal (CAMES 2020).

Dr Sagar Diop-Diouf (1st female military Neurosurgeon, presently Captain Doctor, practicing at Dakar Army Hospital, after his internship in Dakar, completed a fellowship at the neurological hospital in Lyon (France). Interested in vascular and tumoral pathologies.

There are currently nine Senegalese female neurosurgeons (1/4 of the country's total).



Dr Mame Salimata Diene
First WIN in Senegal



Pr Magatte Gaye -Sakho
First WIN Professor of
neurosurgery in Senegal



Pr Maguette Mbaye-NDOUR
Win in Fann teaching hospital
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Dr Sagar Diop-Diouf
First WIN in military
hospital in Dakar

Figure 1. Women pioneers in neurosurgery in Senegal.

“The barrier (for women) is neither obvious nor assumed, but it does exist” [12]. In our countries, where the burden of child-rearing is traditionally left to women, many give up on their own, or are encouraged to switch to less demanding specialties [13, 14]. Women frequently have to choose between family and career. Female neurosurgeons are less likely to marry and have children than their male counterparts [15, 16]. Senegal, like many African countries, remains steeped in

customs and habits. In this society, women's main role is to educate children and run the household. There is also a higher risk of miscarriage during the years of specialization in the field [17]. Despite this, Senegal has 25% female neurosurgeons. This is higher than the data in the literature [18]. Also during the neurosurgery consultation, when a female neurosurgeon makes an indication, some patients ask if it is the woman who will operate on them. This is surely related to our

society where the Senegalese woman is devolved to household chores and relegated to the background. However, we are noticing a positive mentality change.

4. African Women Neurosurgeons Train in Dakar-Senegal

Table 1. Several female neurosurgeon pioneers from several African countries were trained in Dakar.

Dr Mireille MOUMI	1 st WIN of Cameroon
Dr Aminath KELANI	1 st WIN of Niger
Dr Denise OKOME MEZUI	1 st WIN of Gabon
Dr Sarah MUTOMB	1 st WIN of the Republic of Congo
Dr Aminata DIOP	1 st WIN of republic of Mauritania
Dr Anis ANSAOU	1 st WIN of the Republic of Comores
Dr Rosy YOGOLELO	WIN of the Republic of Congo
Dr Mounia BOUH	WIN of Morocco
Dr Sonia Congo Kabore	WIN of Burkina Faso

It is a speciality that is more and more attracting Senegalese women. The residency in neurosurgery à Dakar will have trained 19 womens (including 9 Senegalese women) since its creation. The curriculum is over 5 years, spread in the various training centers such as the neurosurgery departments of Fann, HOGIP and HPD. The course ends with an internship abroad before the dissertation is defended. In practice, there is no discrimination during the training period regarding the in-

ternships and educational activities.

5. Perspectives

Inspiring many more women would help to train more female neurosurgeons, thus helping to increase the number of women in neurosurgery. In Africa, a cross-sectional study of first-year medical students in Nigeria, with 41.8% women, found that only 4% of female respondents wished to continue their studies in neurosurgery [19].

Although many male neurosurgeons serve as mentors and role models for younger students, studies have shown that women prefer to have female mentors and tend to seek out female role models [20]. It is therefore important for female neurosurgeons to be able to share their passion for this specialty with young female medical students.

One of the most important challenges, apart from managing family life, remains equipping our health facilities and providing ongoing training for our female neurosurgeons.

6. Conclusion

Neurosurgery remains one of the most demanding surgical specialties. It is therefore not an easy field for women. Enthusiasm and passion for the profession are essential factors in choosing this specialty.

By and large, the neurosurgical practice of Senegalese women (even if we are few in number compared to men) is carried out in a warm, courteous and non-discriminatory atmosphere. We owe this to the fraternal and courteous climate established by our teachers, elders and preceptors, among whom we can mention Professors Badiane, Sakho and Ba. We have the opportunity to pay them a vibrant tribute.

Table 2. List of women neurosurgeons of Senegal.

First and last name	Year of training onset	Practice site
Mame Salimata DIENE	1995	Rest in peace
Magatte GAYE-SAKHO	2002	HOGIP/Dakar
Maguette MBAYE-NDOUR	2007	Fann/Dakar
Sagar DIOP-DIOUF	2014	HPD/Dakar
Natacha Sambou Diakaoe BADIANE	2016	Ziguinchor
Manal SGHIOUAR-NDIAYE	2016	Diourbel
Ndoumbe SARR-AW	2018	Diourbel
Diana DIOP-NDIAYE	2019	Thies
Adja Seynabou DIALLO-NDIAYE	2019	Ziguinchor
Nantenin DOUMBIA	2019	Fann/Dakar

Abbreviations

WIN	Women in Neurosurgery
HOGIP	Hopital General Idrissa Pouye
HPD	Hopital Principal de Dakar
CHNU	Centre Hospitalier National Universitaire

Conflicts of Interest

The authors declare no conflicts of interest.

References

- [1] Alba Scerrati, Chiara Angelini, Alba Madoglio, Daniela Lucidi, Sara Parini, Daunia Verdi, Andrew A. Gumbs, Gaya Spolverato. Status of Women in Neurosurgery: Results from a National Survey in Italy. *World Neurosurg.* X (2023) 18: 100149. <https://doi.org/10.1016/j.wnsx.2022.100149>
- [2] Yaeger KA, Munich SA, Byrne RW, Germano IM. Trends in United States neurosurgery residency education and training over the last decade (2009- 2019). *Neurosurgery.* 2020; 48: E6. <https://doi.org/10.3171/2019.12.focus19827>
- [3] Garozzo D, Rispoli R, Graziano F, Gerardi R M, Grotenhuis A, Jenkins A, Sammons V, Visocchi M, Pinazzo S, Lima R, Martinez F, Emamhadi M, Pedro M T, Shirwari H S, Guedes F, Bhagavatula I D, Shukla D P, Bhat I D, Ojo O A, Tirsit A, Gonzales- Gonzales M E, Luna F, Kretschmer T, Benzel E and Cappelletto B (2022) Women in Neurosurgery: Historical Path to Self-Segregation and Proposal for an Integrated Future. *Front. Surg.* 9: 908540. <https://doi.org/10.3389/fsurg.2022.908540>
- [4] Graziano F, Gerardi RM, Scalia G, Cammarata G, Nicoletti GF, Chaurasia B, et al. Women in neurosurgery: from a matter of fortuitous occasions toward a conscious choice. *World Neurosurg.* (2021) 148: 129–35. <https://doi.org/10.1016/j.wneu.2021.01.049>
- [5] González-Darder JM. La trepanación craneal en las culturas primitivas [Cranial trepanation in primitive cultures]. *Neurocirugia (Astur).* (2017) 28(1): 28–40. <https://doi.org/10.1016/j.neucir.2016.04.003>
- [6] Arena F, Larocca F, Gualdi-Russo E. Cranial surgery in Italy during the bronze age. *World Neurosurg.* (2022) 157: 36–44. <https://doi.org/10.1016/j.wneu.2021.09.105>
- [7] Savitz SI. The pivotal role of Harvey Cushing in the birth of modern neurosurgery. *JAMA.* (1997) 278(13): 1119. <https://doi.org/10.1001/jama.278.13.1119>
- [8] Spetzler RF. Progress of women in neurosurgery. *Asian J Neurosurg.* (2011) 6(1): 6–12. <https://doi.org/10.4103/1793-5482.85627>
- [9] Andrushko VA, Verano JW. Prehistoric trepanation in the Cuzco region of Peru: a view into an ancient Andean practice. *Am J Phys Anthropol.* (2008) 137(1): 4–13. <https://doi.org/10.1002/ajpa.20836>
- [10] Lv X, Li Z, Li Y. Prehistoric skull trepanation in China. *World Neurosurg.* (2013) 80(6): 897–9. <https://doi.org/10.1016/j.wneu.2012.08.009>
- [11] Claire Karekezi, MD, Nqobile Thango, MD, Salamat Ahuoiza Aliu-Ibrahim, MD, Hajar Bechri, MD, Espérance Maman You Broalet, MD, Mouna Bougrine, MD, Jebet Beverly Cheserem, MD, Maguette Mbaye, MD, Zarina Ali Shabbay, MD, Nabila Tighilt, MD, Souad Bakhti, MD, and Najia El Abbadi, MD. History of African women in neurosurgery. *Neurosurg Focus* 50(3): E15, 2021. <https://doi.org/10.3171/2020.12.focus20905>
- [12] Duncan N. Caring physicians of the world. *New York: Pfizer Medical Human Initiatives.* bmj volume 332. 25. february 2006. p. 67.
- [13] Baxter N, Cohen R, McLeod R. The impact of gender on the choice of surgery as a career. *Am J Surg.* (1996) 172: 373–76. [https://doi.org/10.1016/S0002-9610\(96\)00185-7](https://doi.org/10.1016/S0002-9610(96)00185-7)
- [14] Maehara T, Kamiya K, Fujimaki T, Matsumura A, Hongo K, Kuroda S, et al. A questionnaire to assess the challenges faced by women who quit working as full-time neurosurgeons. *World Neurosurg.* (2020) 133: 331–42. <https://doi.org/10.1016/j.wneu.2019.08.045>
- [15] Gadjudj PS, Matawlie RHS, Voigt I, Harhangi BS, Vleggeert-Lankamp CLAM. Gender differences between male and female neurosurgeons: is there equality for all? *World Neurosurg.* (2020) 136: 348–56. <https://doi.org/10.1016/j.wneu.2019.11.178>
- [16] Shi HH, Westrup AM, O’Neal CM, Hendrix MC, Dunn IF, Gernsback JE. Women in neurosurgery around the world: a systematic review and discussion of barriers, training, professional development, and solutions. *World Neurosurg.* (2021) 154: 206–13. <https://doi.org/10.1016/j.wneu.2021.07.037>
- [17] Thum JA, Chang D, Tata N, Liao LM. Neurosurgeons in 2020: the impact of gender on neurosurgical training, family planning, and workplace culture. *Neurosurg Focus.* (2021) 50(3): E11. <https://doi.org/10.3171/2020.12.focus20965>
- [18] Tracey Trizah John. A report on women neurosurgeons in Kenya: Historical Perspective. *EAJNS [Internet].* 2022 Jun. 13 [cited 2024 Nov. 12]; 1(2): 41-6. Available from: <https://www.theejns.org/index.php/eajns/article/view/25>
- [19] Balogun JA, Adebayo AM. Perception (of) and willingness to choose a neurosurgery career among final-year medical students in Ibadan, Nigeria. *World Neurosurg.* 2019; 126: e998-e1004. <https://doi.org/10.1016/j.wneu.2019.03.020>
- [20] Phan HT, Blizzard CL, Reeves MJ, et al. Sex differences in long-term mortality after stroke in the INSTRUCT (international stroke outcomes study): a meta-analysis of individual participant data. *Circ Cardiovasc Qual Outcomes.* 2017; 10(2): e003436. <https://doi.org/10.1161/circoutcomes.116.003436>