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Representation of minorities in European neurosurgical leadership

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ABSTRACT

Introduction: Ethnic diversity has significantly increased within European countries since World War II for several reasons. However, there continues to be a contrasting lag in leadership positions within healthcare circles, and neurosurgery is no exception. Under-representation of minorities is a contributory factor to recurring problems of healthcare inequality.
Research question: The European Association of Neurosurgical Societies (EANS) Diversity Committee (DC) set out to examine trends in underrepresented minority (URM) representation in leadership positions across Europe.
Material and methods: Data on the race and ethnicity of departmental heads across the units in the European nations was collated. We defined the term 'ethnic minority' in line with the criteria set by the European Commission against Racism and Intolerance (ECRI). The percentage of URM among the European neurosurgical units was analysed against the demographics of the respective countries to assess whether there was a corresponding association.
Results: The percentage of URM representation was low across most European countries. Countries with the highest immigration rates e.g. Great Britain and Germany had the highest rates of representation within the neurosurgical leadership in comparison to other countries. The Balkan states had zero rates of URM representation within the neurosurgical leadership.
Discussion and conclusion: Our findings demonstrate that URM representation in neurosurgical leadership across European countries is significantly low. Selection policies, training curricula and recruitment processes aimed at improving health inequality are necessary. Further studies are needed to elucidate the factors contributing to the low participation of URM in neurosurgical leadership.

1. Introduction

Overall, the term 'minorities' is often used to describe a group of people with unique social, religious, ethnic, racial, and/or other characteristics that differ from those of a majority group (Perkins and Wiley, 2014). However, the definition of minority may vary in different countries depending on demographics and socioeconomic aspects. For example, the term "people of colour" (POC) is primarily used to describe any person who is not considered "white" in the United States and Canada, dating back to the French colonial era in the Caribbean and North America. Historically, it was an expression grouping people of mixed African and European ancestry. This term was considered preferable to "non-whites" in the late 20th century, but it continues to possess negative connotations dividing POC versus those who are white

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(Oxford English dictionary).

Contrarily, modern European states have applied other terms e.g., "immigrant minorities ", and "indigenous minorities" to describe "non-white" populations, due to the heterogeneity noted all over the continent. Immigrant minorities are culturally and ethnically distinct communities, which have resulted from post-World War II movements of economic migrants, refugees, and asylum seekers. On the other hand, indigenous minorities are culturally and/or linguistically distinct from the majority of the population (Turton and González Ferras, 1999). Both groups can be termed "underrepresented minorities" (URM), but the definition thereof can be extremely heterogeneous and differ from country to country.

Thus, the European Commission against Racism and Intolerance (ECRI) of the Council of Europe encourages all governments to monitor racial discrimination by collecting relevant data such as nationality, origins, language, and religion (Simon, 2007). ECRI believes the collation of ethnic data would be crucial in the promotion of equal opportunities, as well as the development of future policies against racial discrimination, potentially leading to the improvement in the status of URM.

In medicine and neurosurgery specifically, POC and URM appear to suffer from a lack of opportunities, transparency and limited career development (Asfaw et al., 2022) – (Borden et al., 2022). Nevertheless, it has been reported that an ethnically diverse and racially literate healthcare workforce leads to more equal health outcomes for patients from all ethnic backgrounds (Medical Workforce Race Equality Standard). Thus, addressing racial disparities in surgery can lead to improved knowledge at a clinical level and consequently reduce racial bias and discrimination against patients at an interpersonal level (Asfaw et al., 2022), (Medical Workforce Race Equality Standard).

In view of the latter, it is evident that further characterization of URM in European neurosurgery is warranted to develop adequate interventions and remove barriers to career opportunities, leadership roles, and equal patient care in neurosurgery. Hence, the European Association of Neurosurgical Societies (EANS)' Diversity Committee (DC) designed this study with the primary objective of characterising the status quo of URM in neurosurgery within Europe, specifically in relation to leadership.

2. Materials and methods

We conducted a cross-sectional study of the current leadership in neurosurgical departments across Europe, inquiring whether current neurosurgical department chairs were from URM. For this purpose, the European Association of Neurosurgical Societies (EANS) database of member societies was searched and homepages of the affiliated departments scrutinised. National differences in hospital structure or hierarchy were taken into consideration as much as possible. Authors and collaborators (listed under "Acknowledgments") from all parts of Europe contributed with personal knowledge and language skills to the appropriate in- or exclusion of a neurosurgery unit from the study and for the identification of the chair's background.

2.1. Inclusion and exclusion criteria

Departments were included if: (a) they were listed in the EANS online repository at the time this study was conducted (June 2020–June 2021), (b) had a clearly identifiable chair.

On the other hand, departments were excluded if: (a) they were located in countries not listed on the EANS website (Andorra, Belarus, Iceland, Liechtenstein, Luxembourg, Monaco, San Marino, Slovakia, Vatican City), (b) they were affiliated with the EANS but located outside of Europe (Israel, Kazakhstan); (c) they were private practices or small departments, where a clear department chair could not be identified.

2.2. Definitions

For the purposes of this study, the Minority Rights Group International (MRGI) was consulted to determine what constitutes an URM in each European country (Home, 2023). In a second step, the proportion of those URM within the general population of any given country was calculated. Countries were then grouped according to ECRI (Simon, 2007) into eight categories, as depicted in Table 1.

2.3. Statistics

The percentage of URM in neurosurgical leadership positions was compared to the absolute national percentage of URM for each country by means of a *t*-test. The pooled percentages of the countries included in each group were then compared to one another by means of a one-way ANOVA test. Statistical significance was assumed at a p value of $< .05$. Analysis was performed with IBM SPSS v. 27.

3. Results

A total of 32 countries were included in the analysis. The demographic make-up of each country, as well as the URM/immigrant representation in neurosurgical leadership is summarized in Table 2. The groups that constitute an ethnic minority and the years during which the data were gathered are summarized in the Supplementary Electronic Material (SEM) 1.

Countries like Belgium, France, Greece, Italy, Poland, Romania and the Russian Federation had significantly less URM/immigrant representation in neurosurgical leadership than expected, based on their national demographic profile. On the other hand, Germany, Switzerland and the United Kingdom had significantly more URM/immigrant representation in neurosurgical leadership than expected, based on their national demographic profile.

As depicted in Table 3, countries with internally heterogeneous populations and long-standing immigration had a statistically significantly higher proportion of neurosurgical department chairs from

Table 1
Groups of countries, stratified by their history of immigration and demographic make-up. Adapted from ECRI (Simon, 2007).

	Long-established immigration	Recent immigration	Little or no immigration
Internally homogeneous	Austria Denmark France Germany The Netherlands	Greece Italy Portugal	
Heterogeneous without minorities	Belgium Switzerland United Kingdom	Spain	
Heterogenous with long-established minorities	Estonia Finland Latvia Lithuania Norway Sweden	Turkey	Albania Armenia Bosnia and Herzegovina Bulgaria Croatia Cyprus Hungary Moldova Montenegro Northern Macedonia Poland Romania Russian Federation Serbia Slovenia Ukraine

Table 2
Percentage of minorities in each country affiliated with the EANS, according to Minority Rights ("Home, 2023). *Year of reference for each country is noted below.*

Country	Total population	Number of neurosurgical departments	Percentage of minorities in the general national population	Percentage of URM/immigrant chairs	P
Albania	3,169,000	2	2	0	.840
Armenia	3,000,756	4	11	0	.482
Austria	9,006,398	11	6.75	9.09	.757
Belgium	11,589,623	41	68.9	4.76	<.001[a]
Bosnia & Herzegovina	3,279,987	2	12	0	.602
Bulgaria	6,520,314	17	8.8	0	.200
Croatia	4,086,614	11	5	0	.447
Cyprus	875,899	6	18	0	.251
Czech Republic	10,230,000	14	9.4	0	.228
Denmark	5,825,000	4	6	0	.613
Estonia	1,401,000	2	30	0	.354
Finland	5,581,000	5	4	0	.648
France	65,372,120	48	11	2	.046[a]
Germany	83,783,942	143	5	11.72	<.001[a]
Greece	10,720,000	40	10	0	.040[a]
Hungary	9,900,000	14	4	0	.450
Italy	60,360,000	155	8	2	<.001[a]
Latvia	1,920,000	5	28	0	.163
Lithuania	3,483,972	6	29	0	.118
North Macedonia	1,836,713	2	33	0	.321
Moldova	2,603,813	6	19	0	.236
The Netherlands	17,280,000	18	12	0	.117
Norway	5,320,000	6	19	16.67	.884
Poland	37,846,611	49	17	0	<.001[a]
Portugal	10,196,709	13	14	0	.146
Romania	19,079,014	48	18	5.56	.025[a]
Russian Federation	146,012,884	20	20	0	.023[a]
Serbia	8,707,715	10	12.08	0	.241
Slovenia	2,079,139	1	8	0	.768
Sweden	10,230,000	5	7	0	.540
Switzerland	8,545,000	16	30.5	62.5	<.001[a]
United Kingdom	67,886,011	40	12.9	26.83	.009[a]

[a] Denotes statistical significance.

Table 3
Percentage of minority/immigrant leadership in European neurosurgery, stratified according to the ECRI criteria (Simon, 2007).

Group	Mean percentage of minority/immigrant leadership	Range	p
Internally homogeneous with long-standing immigration	4.56	0–12	.001
Internally homogeneous with recent immigration	0	0–0	
Heterogeneous without minorities with long-standing immigration	31.36	5–63	
Heterogenous with long-established minorities with long-standing immigration	2.78	0–17	
Heterogenous with long-established minorities with no immigration	.37	0–6	

minority/immigrant backgrounds (p = .001). To avoid Type 2 error, two groups were excluded from the final analysis, since they only contained one country. The first one was the group with internally heterogeneous, no minorities, and recent immigration (Spain), and the second group was the one with internally heterogeneous, long-established minorities and recent immigration (Turkey).

In absolute terms, the countries with most minority/immigrant representation in their neurosurgical leadership were Switzerland (62.5%), United Kingdom (26.83%), Norway (16.67%), and Germany (11.76%), all countries with long-established immigration. Contrarily, countries with little to no immigration, even if they were heterogeneous in their demographic make-up and had long-established minorities, had a gross underrepresentation of minorities and/or immigrants in their neurosurgical leadership.

4. Discussion

This is the first study to evaluate URM representation in European neurosurgery. While similar projects have been undertaken in North American neurosurgery (Asfaw et al., 2022) – (Borden et al., 2022), this study constitutes a pioneering effort to further characterize the European neurosurgical workforce in terms of "ethnicity".

One common feature of the different European countries is that being "white" is regarded as the norm (Ball et al., 2022). This had inadvertently been set as the standard during the process of Europe's construction (Mbembe and Bischoff, 2023), (Arndt, 2005). Compared to the United States, where the legacies of slave trade are more often discussed, the legacies of the European colonial period are treated in a more muted manner (Ball et al., 2022). The historical parallels and reluctance of several European nation-states to deal with colonial history and the general notion that Europe consists of many different ethnicities, who, however, all belong to the same "white race" has made the topic of identifying URM more complex (Wandert et al., 2009). To aggravate this issue even more, France adopted an "absolute equality" principle after the French Revolution, which has prohibited the government from collecting data or statistics on racial, ethnic or religious backgrounds of its citizens, in any context. Conversely, this absolute equality approach prevents collation of data or statistics on minorities, which, in itself, would mask the presence of any existing or developing problems. Thus, the term URM is slightly varied in Europe as compared to North America, and it could be argued that there are more heterogeneous groups.

After careful definition of URM, based on international organizations (Home, 2023) and European commissions (Simon, 2007), we were able to identify URM leaders in neurosurgery. The leading countries with the largest URM in neurosurgical leadership are Switzerland (62.5%), United Kingdom (26.83%), Norway (16.67%), and Germany (11.76%)

which also exhibit long-established immigration. Conversely, countries with a small percentage of or no immigration demonstrated significantly lower representation of minorities and/or immigrants in their neurosurgical leadership. Thus, our study established a direct correlation between those countries with internally heterogeneous populations and long-standing immigration and an increase in URM representation in neurosurgical leadership ($p = .001$).

These results are likely attributable to the socio-economic status, language proficiency, and networking opportunities for people from URM in countries which, historically, have had more diverse populations and/or have been confronted with immigration for extended periods (Perkins and Wiley, 2014), (Turton and González Ferras, 1999), (Ball et al., 2022). On the other hand, countries such as the Balkan ones and former Yugoslavia have been involved in recent geopolitical conflicts and war, which accounts for little to no immigration and, as a result, greater emigration rate. This, in turn, could be a reason for the lack of diversity within neurosurgical leadership roles.

Beyond the purely demographic make-up of the individual countries, discrimination might be another cause behind the lack of URM in neurosurgical leadership roles in different countries. This opens the discussion on potential multiple discrimination, whereby an individual may experience discrimination for multiple reasons (such as race, gender, education, disability, age, etc.) in any given situation or period. Based on the European Union Minorities and Discrimination Survey from 2010 (Union, 2010), women from URM have experienced discrimination differently to their male counterparts. Gender discrimination was also evident in a study by Saleem et al. which showed that females from URM have very little representation at higher academic ranks (Saleem et al., 2021). Although our study did not collate any data on gender, this is certainly an important topic that should be explored further in future studies, as women from URM seem to be particularly vulnerable to discrimination when attempting to climb the career ladder, and neurosurgery is no exception (Asfaw et al., 2022), (Bryant et al., 2021). A study from the United Kingdom showed that black surgeons were promoted far less than white colleagues. Black men who were junior surgeons in 2010 were 27% less likely to be promoted to consultant than white men between 2016 and 2020, while black women were 42% less likely (Medical Workforce Race Equality Standard). Some of the factors that have been identified to contribute to the gross underrepresentation of women from URM are lack of role models, work-life imbalance, lack of mentorship, communication barriers, and lack of camaraderie among residents (Bryant et al., 2021), (Odell et al., 2019; McNutt et al., 2020; Chaudhary et al., 2020).

There are multiple advantages of having a diverse healthcare workforce, which include improved healthcare access, better communication, and more culturally appropriate quality of care for URM patients (Medical Workforce Race Equality Standard), (Maqsood et al., 2021), (Explaining AP style on Black, 1056). Recognising the factors contributing to multiple discrimination and promoting diversity from an early stage, such as in medical school, can increase diversity in medical subspecialties, such as neurosurgery. This can be aided by medical schools reviewing their current policies and recruitment processes to transform and move towards a more diversified faculty delivering teaching programs, for example (Page et al., 2011), (Faculty Diversity in U. S.).

It is crucial to consider the development and implementation of strategies that allow skilful URM people equal opportunities for professional growth. Drake et al. (2023) pointed out that an important challenge in addressing health disparities is ensuring inclusive excellence in the leadership of healthcare systems and medical education. They highlighted the incorporation of diversity training into the curricula as a key solution in promoting equity, since enhancing professional development while creating opportunities for individuals from all backgrounds within academic medical centres will lead to further positive changes in leadership equity and inclusion.

To achieve the former, institutions need to acknowledge and increase awareness of the lack of diversity within leadership roles. Developing communication between senior level leaders and/or mentors and URM is essential for understanding the root of the problem. To facilitate these discussions, organizations should be held accountable, and this is why the EANS DC has initiated this first step to open the dialogue on URM in European neurosurgical leadership.

To increase the probability of diverse senior leaders within neurosurgery, equal opportunities should start very early in neurosurgical training and continue throughout the rest of the individual's career i.e., from the interview process through enrolment into the residency program and on to the more senior years as a neurosurgeon.

Furthermore, refined data on the ethnicity of doctors is required to picture and improve awareness of potential discrimination and biases. These should be prerequisite steps before considering affirmative action, to avoid its failure to improve inclusion in the long term. Inclusion of URM is a complex challenge which will need continuous efforts to include and promote skilful people with heterogeneous cultural histories, experiences, health and socioeconomic profiles (Khunti et al.).

5. Limitations

Our study has several limitations. Firstly, department chairs were not directly contacted to establish their potential URM background, thus subjecting the assessment to bias. While we attempted to overcome this potential bias by recruiting and consulting collaborators native to the countries to be evaluated, omissions or false allocations could have occurred.

Additionally, while we attempted to define URM on objective criteria for each European country, there are nuances in the demographic make-up of each country that might have been obviated by clustering the countries based on the ECRI criteria. Of the 44 European countries, this study was carried out in only 32.

Furthermore, we did not evaluate potential obstacles encountered by individuals from URM backgrounds in attaining a position in European neurosurgical leadership; our study merely represents a cross-sectional glimpse into the demographic make-up of European neurosurgical leadership.

The authors' intention is to set a template for dialogue and to further elucidate factors contributing to leadership diversity in European neurosurgery.

6. Conclusion

The results from this study suggest that URM do not have the same opportunities for professional development and leadership positions in their neurosurgical careers in certain European countries. The role of the EANS and its DC in the future should be to collect further data on URM participation and attitudes towards URM in European neurosurgery and monitor developing trends. Concurrently, hospitals on a microlevel could play a significant role in developing their own strategies to ensure equity.

Ethics approval and consent to participate

Not applicable.

Consent for publication

Not applicable.

Availability of data and materials

The datasets used during the current study are available from the corresponding author upon reasonable request.

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Declaration of competing interest

The authors declare that they have no competing interests.

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