



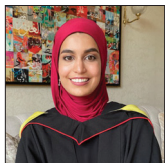
Letter to the Editor

Impactful medical school experiences and choosing a career in neurosurgery: A new beginning for the national undergraduate neuroanatomy competition

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Dear Editor,

Following successfully establishing the National Undergraduate Neuroanatomy Competition (NUNC) at the University of Glasgow, we wish to offer insights from the United Kingdom regarding how medical school experiences may positively impact specialty choices, with particular regard to neurosurgery, based on our experiences and those of our attendees.^[14] Widely known as a competitive field requiring consistent commitment from potential candidates, many neurosurgical careers now start in medical school.^[16] This article also mentions that students without a neurosurgery rotation had the “highest rate of selecting neurosurgery as a field of specialty;” this is a thought-provoking point, implying that specialty exposure can be crucial in deterring students from an ill-fitting career path as it is affirming for those who remain committed.^[3,5,6,14,18] For those not deterred, early exposure is known to have a sustained positive impact; in many instances, the first exposure some students may have to their career prospects comes through their own student body in the form of student-led interest groups, which can help students identify specialties suited to them and provide opportunities for further exploration.^[1,8,18] Shakir *et al.* touch on this and highlight the importance of educational opportunities and mentorship for students from a range of initiatives.^[14]

In the United Kingdom, student neurosurgical interest groups are predominantly individual, based at assorted British medical schools. There are exceptions to this – the NUNC being one; it is unique among student groups in that it offers the opportunity for students to win neuroanatomy-oriented undergraduate prizes at a national level – an achievement which can contribute significantly to developing a competitive application profile for surgical training.^[7]

NUNC moved to the University of Glasgow in 2022, with the first Glasgow NUNC held in June 2023. NUNC is open to all undergraduate students with a neuroanatomical component to their degree, but the predominant audience is medical students. All participants sit two examinations, written by the Primary Chair of NUNC and overseen by anatomy department staff and an external examiner. A single best answer (SBA) paper focuses on clinically applied neuroanatomy, while a spotter examination utilizes especially dissected specimens to examine participants’ knowledge of neuroanatomy *in situ*. Interest talks follow the examinations while marking occurs; in 2023,

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under the leadership of its first female Primary Chair, NUNC was proud to welcome Mr. Henry Marsh as keynote, with our first international speaker, Professor Fauzia Sajad and first pediatric speaker, Mr. Aswin Chari. Prizes were awarded in separate categories for clinical and pre-clinical students, with distinctions then awarded to the top 10 scorers across both groups.

Our experience as a local student-led group, establishing a national competition with no prior foundation in Scotland, proved both challenging and rewarding. NUNC offers its committee a chance to perform detailed dissections, build their own knowledge and fine motor skills, and work on specimens ranging from white matter tracts to brainstem nuclei. This is a rare opportunity for students interested in a neurosurgical career where neuroanatomical knowledge is arguably central, but access to suitable specimens/facilities is not always available.^[11] It has been widely shown that dissection has a direct, positive impact on student motivation, examination performance, and long-term retention of information.^[13,15] When it comes to NUNC attendees, opening our doors to students nationwide gives participants the opportunity to interact with and observe detailed dissections they may otherwise not see, substantially enhancing their appreciation for the three-dimensional nature and variability of neuroanatomy.

The SBA paper provides an opportunity for candidates to showcase their ability to relate their neuroanatomical knowledge to clinically relevant scenarios. For the NUNC committee, writing the SBA enables learning how to construct assessment material that is not part of mainstream medical school teaching, creating an alternative means of developing knowledge.^[9] In addition, it fosters close collaboration and mentorship with academic staff, enabling the NUNC committee students to gain more insights into the rigor and high standards expected of medical school assessments while simultaneously fostering their professional growth.^[4,17]

One of the most unique impacts NUNC creates is the chance to connect with like-minded students nationally; attendance at national events is often accompanied by significant costs that can make them inaccessible to students.^[12] NUNC's registration fee aims to be as low as possible (often below \$45 US Dollars), and we are fortunate to have support from the Anatomical Society to provide bursaries supporting students traveling from further afield and/or from low-income backgrounds. This enables medical students to come together and network, an opportunity which is vital for career development but has little awareness among the student body, as shown by our prior work.^[1,2,10]

The evolving narrative on this topic shows that the impact of student-driven learning opportunities is significantly increasing; these authors view this with profound enthusiasm. Being able to innovate and offer our peers the opportunity

to learn and achieve recognition for their dedication on a national scale is deeply rewarding; we hope that our work will further neurosurgery as a specialty by making it more accessible to junior members of the medical profession, challenge negative stereotypes, and provide opportunities for innovative learning.

Author's contributions

AG wrote the manuscript text; all authors reviewed the manuscript before publication.

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Institutional Review Board approval is not required.

Declaration of patient consent

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Conflicts of interest

There are no conflicts of interest.

Use of artificial intelligence (AI)-assisted technology for manuscript preparation

The authors confirm that there was no use of artificial intelligence (AI)-assisted technology for assisting in the writing or editing of the manuscript and no images were manipulated using AI.

REFERENCES

1. Ashraf M, Ismahel H, Lub S, Gardee A, Evans VE, Middleton EE, *et al.* Role of a medical student neuro-society organized neurosurgical conference: The Glasgow neuro experience. *Surg Neurol Int* 2023;14:70.
2. Ashraf M, Ismahel H, Shah D, Middleton EE, Gardee A, Chaudhary A, *et al.* Shaping perceptions and inspiring future neurosurgeons: The value of a hands-on simulated aneurysm clipping workshops at a student-organized neurosurgical conference. *Asian J Neurosurg* 2024;19:26-36.
3. Burford C, Hanrahan J, Ansaripour A, Smith B, Sysum K, Rajwani K, *et al.* Factors influencing medical student interest in a career in neurosurgery. *World Neurosurg* 2019;122:e367-74.
4. Carter A, Findlay MC, Earl ER, Khan M, Bauer S, Farsi K, *et al.* Systematic review of research, mentorship, and career resources for medical students pursuing neurosurgical training. *World Neurosurg* 2023;179:28-36.
5. Dada OE, Ooi SZ, Bukenya GW, Kenfack YJ, Le C, Ohonba E,

- et al.* Evaluating the impact of neurosurgical rotation experience in Africa on the interest and perception of medical students towards a career in neurosurgery: A continental, multi-centre, cross-sectional study. *Front Surg* 2022;9:766325.
6. Guadix SW, Younus I, Winston G, ElJalby M, Xia J, Nario JJ, *et al.* Medical students' perceived interests and concerns for a career in neurosurgery. *World Neurosurg* 2020;139:e203-11.
 7. Hall S, Stephens JR, Myers MA, Elmansouri A, Geoghegan K, Harrison CH, *et al.* The career impact of the national undergraduate neuroanatomy competition. *World Neurosurg* 2020;133:e535-9.
 8. Hanrahan J, Burford C, Ansari-pour A, Smith B, Sysum K, Rajwani KM, *et al.* Undergraduate neurosurgical conferences - what role do they play? *Br J Neurosurg* 2019;33:76-8.
 9. Herrero JI, Lucena F, Quiroga J. Randomized study showing the benefit of medical study writing multiple choice questions on their learning. *BMC Med Educ* 2019;19:42.
 10. Hutton D, Ashraf M, Sescu D, Ismahel H, Hepburn K, Lumsden E, *et al.* Dundee annual neurosurgery skills event (DANSE)-improving the availability and affordability of neurosurgical skills workshops for medical students. *Asian J Neurosurg* 2024;19:63-72.
 11. La Rocca G, Mazzucchi E, Pignotti F, Galieri G, Rinaldi P, Sabatino G. Advanced dissection lab for neuroanatomy training. *Front Neuroanat* 2022;15:778122.
 12. O'Callaghan J, Mohan HM, Sharrock A, Gokani V, Fitzgerald JE, Williams AP, *et al.* Cross-sectional study of the financial cost of training to the surgical trainee in the UK and Ireland. *BMJ Open* 2017;7:e018086.
 13. Rae G, Cork RJ, Karpinski A, Farris H, Swartz W. Using the brains we have: Dissection of the human brain assists the medical student in learning and retaining neuroanatomy. *FASEB J* 2015;29:565-74.
 14. Shakir M, Irshad HA, Ali EA, Adil A, Altaf A, Enam SA. Impact of medical school experiences on the career choice of neurosurgery: A cross-sectional study from Pakistan. *BMC Med Educ* 2024;24:465.
 15. Shell K, Holt E, Kington A, Mohammed K, Black A, Troup C, *et al.* Motivation to learn neuroanatomy by cadaveric dissection is correlated with academic performance. *Clin Anat* 2020;33:128-35.
 16. Wadhwa H, Shah SS, Shan J, Cheng J, Beniwal AS, Chen JS, *et al.* The neurosurgery applicant's "arms race": Analysis of medical student publication in the Neurosurgery Residency Match. *J Neurosurg* 2020;133:1913-21.
 17. Zahra D, Robinson I, Roberts M, Coombes L, Cockerill J, Burr S. Rigour in moderation processes is more important than the choice of method. *Assess Eval High Educ* 2017;42:1159-67.
 18. Zuccato JA, Kulkarni AV. The impact of early medical school surgical exposure on interest in neurosurgery. *Can J Neurol Sci* 2016;43:410-6.

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