ONLINE ONLY

Supplemental material

Mapping the global neurosurgery workforce. Part 1: Consultant neurosurgeon density
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DISCLAIMER The Journal of Neurosurgery acknowledges that the following section is published verbatim as submitted by the authors and did not go through either the Journal’s peer-review or editing process.
Supplementary Figure 1. Survey Instrument (sent as an online form)

1. What is your name?
2. What is your age?
3. What is your sex?
4. What is your email address?
5. What is your medical degree?
6. What is your current title? (ie: fellow/assistant professor/chairman/etc)
7. Where do you practice neurosurgery? (city, country)
8. Where did you train to become a neurosurgeon?
9. Are you affiliated with any organized professional neurosurgery society?
10. Which country will you be providing data for?
11. How many neurosurgeons are actively practicing in your country?
12. What percentage of practicing neurosurgeons do you estimate are female?
13. Is there a neurosurgery professional organization/society in your country? If so, what is it?
14. Is there a governing body that certifies neurosurgeons in your country? If so, what is it?
15. If a governing board exists, how many currently active neurosurgeons are certified by a governing board?
16. What percentage of surgeons do you estimate have consistent and dependable access to the following:
   a. Intra-operative navigation
   b. Operating microscope
   c. Operating endoscope
   d. Biplane angiography suite
   e. Ventriculoperitoneal shunts
   f. Spinal instrumentation (ie: pedicle screws, interbody cages
   g. Blood transfusion
17. How many neurosurgery training programs are there in your country?
18. How many neurosurgery trainees are there in your country?
19. If there is one, what is the minimum number of cases a trainee must complete to graduate?
20. Is there an accreditation board for neurosurgery training programs in your country? If so, what is it?
21. What percentage of training programs do you estimate have access to the following:
a. Cadaver dissection lab
b. Stipend to travel for neurosurgery conferences
c. Stipend to travel for overseas rotations

22. What are the number and types of neurosurgery training programs in your country?
   a. Neurosurgery residency programs after medical school
   b. Neurosurgery fellowship programs after a general surgery residency
   c. Informal neurosurgery apprenticeships (one-on-one training for a medical school graduate working with a practicing neurosurgeon)
   d. Other (please describe)

23. What percentage of training programs do you estimate include operative training in the following sub-fields:
   a. Trauma neurosurgery
   b. Neurocritical Care in the ICU
   c. Brain tumor surgery
   d. Open vascular surgery
   e. Endovascular neurosurgery
   f. Epilepsy/movement disorder surgery
   g. Pediatric neurosurgery
   h. Spine surgery
   i. Peripheral nerve surgery

24. Do you have any additional comments?
Supplementary Figure 2. The majority of countries have national neurosurgery societies, and their presence is strongly associated with growth in neurosurgery. Countries that have societies are indicated in dark teal; those without societies are indicated in orange; those for which it is unknown are indicated in light gray. This figure was created with Datawrapper (Datawrapper GmbH).
Supplementary Figure 3. The annual relative rates of growth are demonstrated mapped. This figure was created with Datawrapper (Datawrapper GmbH).
Supplementary Figure 4A-B. Univariate predictors of relative (A) and absolute (B) growth in the neurosurgery workforce density are demonstrated. *p<0.05; **p<0.01; ***p<0.001.