**Mobile application usage among Canadian neurosurgery residents – A national cross-sectional study from the Canadian Neurosurgery Research Collaborative**

**Introduction**

The Canadian Neurosurgery Research Collaborative (CNRC) is a new consortium of neurosurgery residency programs set-up to facilitate the planning and implementation of multi-center studies. As a trainee-led organization, it focuses on resident-initiated, resident-driven projects.

The goals of this study are:

* Assess the demographics of Canadian neurosurgery residents, with particular focus on their academic and subspecialty interests;
* Assess resident satisfaction, well being and quality of life within the context of a neurosurgical residency;
* Assess general mobile application usage by neurosurgery residents;
* Identify the neurosurgery-specific applications used by neurosurgery residents.

The individual responses to this survey will be completely anonymous and will not be shared or published in any way that allows identification. Aggregated results will be published in a peer-reviewed journal and presented at national meetings.  This study has been approved by the Research Ethics Board of the Centre Hospitalier Universitaire de Sherbrooke. This study is performed by residents and is not funded by any party or organization.

This survey will take less than 10 minutes to complete. Completing the survey constitutes implicit consent to study participation.

Thanks for your participation.

The Canadian Neurosurgery Research Collaborative

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**Demographics**

1. Are you male or female?
   * Male
   * Female
2. How old are you?
3. What is your marital status? (Statistics Canada Classification)
   * Married (and not separated)
   * Living common law (This category includes persons who are living with a person of the opposite sex or of the same sex as a couple but who are not legally married to that person. It includes situations where the members of such a couple are living apart temporarily because of illness, work or school.)
   * Widowed (not living common law)
   * Separated (not living common law)
   * Divorced (not living common law)
   * Single (not living common law)
4. How many children do you have?
5. What is your current level of NEUROSURGICAL training? If you are pursuing a Clinician Investigator program or similar research extension, choose the level corresponding to the standard 6-years neurosurgery program.
   * PGY-1
   * PGY-2
   * PGY-3
   * PGY-4
   * PGY-5
   * PGY-6
   * Fellowship year 1
   * Fellowship year 2
   * Fellowship year 3
6. What is your neurosurgical program?
   * Dalhousie University
   * McGill University
   * McMaster University
   * Université Laval
   * Université de Montréal
   * Université de Sherbrooke
   * University of Alberta
   * University of British Columbia
   * University of Calgary
   * University of Manitoba
   * University of Ottawa
   * University of Saskatchewan
   * University of Toronto
   * University of Western Ontario

**Resident interests and satisfaction**

1. Was Neurosurgery your first choice of specialty when you applied in Carms?
   * Yes
   * No
2. How did you rank your **program** among the other neurosurgery programs when you applied in Carms?
   * First choice
   * Second choice
   * Third choice
   * Fourth or more choice
3. What research experience did you have prior to entering neurosurgical residency? (Check all that apply)
   * No research experience
   * Summer research projects
   * B.Sc.
   * M.Sc.
   * Ph.D.
   * Other: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
4. Have you completed or are you pursuing an additional degree during your residency?
   * No
   * M.B.A.
   * M.Sc.
   * Ph.D.
   * Other: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
5. How strongly do you agree with the following statements regarding career planning:  
   (Strongly disagree, Disagree, Neutral, Agree, Strongly agree)
   * I would **like** to complete a fellowship
   * I would **accept** to complete a fellowship if required by my preferred department
   * I would **accept** to complete **two** fellowships if required by my preferred department
   * I would **like** to incorporate research as part of my practice
   * I would **accept** to incorporate research as part of my practice if required by my preferred department
   * I would like to work in an academic institution
   * I would like to have a community hospital
   * I am confident in finding a job
6. If you had to complete a fellowship, what would be your subspecialties of interest:
   * First choice:
     + Neurocritical Care
     + Cerebrovascular Neurosurgery
     + Neuroendovascular Surgery
     + Spinal Neurosurgery
     + Neurosurgical Oncology
     + Pediatric Neurosurgery
     + Peripheral Nerve Neurosurgery
     + Stereotactic and Functional Neurosurgery
     + Other: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   * Second choice:
   * Third choice:
7. If you had to complete a fellowship, where would you plan on doing it?
   * Same institution as your residency-program
   * In-province, but different institution
   * Out of province
   * United States
   * Europe
   * Other:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   * Unsure
8. Where would you like to practice after residency?
   * Same institution as your residency-program
   * In-province, but different institution
   * Out of province
   * United States
   * Europe
   * Other:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   * Unsure
9. How would you rate your average level of… (1 = Not at all, 5 = Extremely high, Decline to answer)
   * Happiness
   * Stress
   * Sense of accomplishment
   * Anxiety
   * Fatigue
   * Workload
   * Quality of life
10. How strongly do you agree with the following statements regarding satisfaction with residency:  
    (Strongly disagree, Disagree, Neutral, Agree, Strongly agree)
    * I am satisfied with my choice of specialty
    * I am satisfied with my choice of program
    * I am satisfied with my surgical exposure
    * I am satisfied with my clinical exposure
    * The work ambiance is good
    * I am confident I will successfully complete my residency
    * At the end of residency, I will be a capable and competent neurosurgeon
    * I have a good personal life / work balance
11. How many hours do you work (calls included) in a typical week?
    * < 50h
    * 50-59h
    * 60-69h
    * 70-79h
    * 80-89h
    * 90-99h
    * >100h
12. How many days are you on call in a typical month?
13. How do you feel about your number of… (1 = Not enough, 5 = Too much)
    * Worked hours per week
    * Days on call per month
14. Have you been victim of intimidation during residency? (Answer completely confidential and anonymous)
    * Yes
    * No
    * Decline to answer
15. Have you suffered depression during residency? (Answer completely confidential and anonymous)
    * Yes
    * No
    * Decline to answer
16. Have you considered suicide during residency? (Answer completely confidential and anonymous)
    * Yes
    * No
    * Decline to answer
17. What is the total anticipated length of your residency?
18. Regarding the length of your residency, check all that apply:
    * I plan on completing residency in the standard 6 years
    * Residency extended for additional degree/research
    * Residency extended for personal reason
    * Residency extended for mental health reason
    * Residency extended for physical health reason
    * Residency extended for repeat rotations

**Mobile application usage**

1. Do you own a SMARTPHONE? (If you own more than one, select your primary one)
   * No
   * iOS device (ex: iPhone)
   * Android device (ex: Google Nexus, Samsung Galaxy, etc)
   * Blackberry device
   * Windows phone device
   * Other: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. Did the prospect of using your SMARTPHONE for professional/clinical work influence your choice of platform?
   * No
   * A little
   * Completely
3. How often do you use your SMARTPHONE for clinical work?
   * Never
   * Monthly
   * Weekly
   * Daily
   * Hourly
4. Do you own a TABLET? (If you own more than one, select your primary one)
   * No
   * iOS device (ex: iPad)
   * Android device (ex: Google Nexus, Samsung Galaxy Tab, etc)
   * Amazon device (ex: Kindle)
   * Barnes & Nobles device (ex: Nook)
   * Blackberry device (ex: Playbook)
   * Windows device (ex: Surface)
   * Other: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
5. Did the prospect of using your TABLET for professional/clinical work influence your choice of platform?
   * No
   * A little
   * Completely
6. How often do you use your TABLET for clinical work?
   * Never
   * Monthly
   * Weekly
   * Daily
   * Hourly
7. Please list the NEUROSURGERY-SPECIFIC apps you use most often for residency-related work along with the number of times you use it in a typical month (ex: - App XYZ (10 times/month))
8. Please list the non-neurosurgery apps you use most often for residency-related work (for instance, note taking applications, pdf managers, etc.) along with the number of times you use it in a typical month
9. As per your OFFICIAL hospital policy, is the use of cellphones allowed within the hospital?
   * Yes
   * No
   * I don’t know
10. How often do you… (Never, Monthly, Weekly, Daily, Hourly)
    * …take pictures of patients
    * …take videos of patients
    * …take pictures/videos of patients CT/MRI/Radiographs
11. Where do you store the pictures/videos of your patients?
    * In the photo app that came with the phone (same folder as my personal pictures)
    * In the photo app that came with the phone (separate folder from my personal pictures)
    * In a separate app
    * In a separate password-protected app
    * Other: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
12. How long do you keep the pictures?
    * I delete them immediately after use
    * I delete them when I think about it
    * I don’t usually delete them
    * Other: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
13. How is smartphone photography/videography regulated in your hospital?
    * Officially prohibited
    * Allowed with specific rules
    * Allowed, unregulated
    * I don’t know
14. In a professional setting, do you use SMS to… (Never, Monthly, Weekly, Daily, Hourly)
    * …communicate with clerks
    * …communicate with residents
    * …communicate with staff
    * …send patient pictures/videos
    * …send CT/MRI/radiographs
15. What is your main messaging application?
    * Native device messaging application
    * Other: \_\_\_\_\_\_\_\_\_\_\_\_
16. What problem do you have in your clinical work that you would like an app to solve?
17. Do you have any additional comment/question/feedback?