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Letter to the Editor: The Use of Telemedicine by Neurosurgeons During the Covid Era: Preliminary Results of a Cross-Sectional Research



Telemedicine has many definitions. However, the World Health Organization¹ has defined telemedicine as follows:

The delivery of health care services, where distance is a critical factor, by all health care professionals using information and communication technologies for the exchange of valid information for diagnosis, treatment and prevention of disease and injuries, research and evaluation, and for the continuing education of health care providers, all in the interests of advancing the health of individuals and their communities.

Because of the coronavirus disease 2019 (COVID-19) pandemic and the consequences of either complete lockdown or milder measures, adaptation of our consultation methods became necessary.²⁻⁵ With a shift from outpatient visits to online consultations to respect the required social distancing, it would be valuable to examine the use of telemedicine within the neurosurgical field. Thus, we would like to share the preliminary results of our research, which was aimed at evaluating the use of telemedicine by neurosurgeons.

From a search of the reported data, a survey of 29 questions was developed that covered demographics, the current situation owing to COVID-19, and the experience of working with telemedicine.⁵⁻⁸ The survey was distributed among the members of the Congress of Neurological Surgeons using SurveyMonkey (Palo Alto, California, USA). The survey was first sent on May 3, 2020, with reminders sent afterward.

As of mid-May, 287 survey replies had been received, of which 67.6% were from the United States (Table 1). The COVID-19 pandemic has led to a decrease in the average number of outpatient visits on weekly basis, from a mean of 44.0 to a mean of 15.1, and a decrease in the mean number of surgical procedures performed weekly, from 6.8 to 2.4.

Of the respondents, 87.1% were consulting with patients using telemedicine. For 94.6%, this represented an increase in usage compared with before the COVID-19 pandemic. The average percentage of regular consultations that had been converted to telehealth visits was 60.1%, which was greater for the respondents employed in the United States compared with that for our colleagues (66.8% vs. 47.6%; $P < 0.001$). Although 75.5% had estimated that their patients would be receptive to telemedicine consultations, only 52.0% of the respondents themselves were comfortable with consultations and planning surgery on the basis of such consultations. The proportions of patients receptive to and surgeons comfortable with telemedicine were higher among the respondents employed in the United States (81.0% vs. 62.7% and 58.8% vs. 36.8%, respectively).

Most of the respondents believed that the use of telemedicine would decrease the quality of the relationship between themselves and new patients (55.7%). The use of telemedicine, however, would also increase their ability to quickly meet patients for urgent appointments (70.1%; Figure 1). The greatest difficulties encountered with the use of telemedicine included the limited capabilities of performing physical examinations (41.4%),

working with the elderly (20.8%), and the privacy and confidential concerns of the patients (20.8%; Figure 2).

With the current COVID-19 pandemic, the use of telemedicine to conduct responsible patient care has been inevitable. However, the use of telemedicine also has its own limitations for both patients and caregivers.^{4,5} The results from our survey have shown some areas of telemedicine that should receive further attention. The first area of concern is the differences between neurosurgeons employed in the United States and neurosurgeons employed elsewhere in the world. Cultural differences and financial reasons might well explain the differences found between these 2 groups. The second area of concern is the discomfort that can accompany consulting and planning surgery through telemedicine. The discomfort might be a result of the shift toward telemedicine consultations; however, further research should focus on exploring the reasons for the discomfort among surgeons and alleviating it. Finally, an adherent disadvantage of telemedicine is the inability to perform physical examinations and the possible limited ability of the elderly to use telemedicine. Until a proper solution has been found for these last 2 categories, patients requiring a physical examination and those unable to use telemedicine should necessitate a clinical evaluation when necessary.

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Pravesh S. Gadjraj¹, Roshni H. Matawlie¹, Biswadji S. Harhang²

From the ¹Department of Neurosurgery, Leiden University Medical Center, Haaglanden Medical Center, and Haga Teaching Hospital, Leiden, The Hague; and ²Department of Neurosurgery, Erasmus Medical Center, University Medical Center, Rotterdam, The Netherlands

To whom correspondence should be addressed: Pravesh S. Gadjraj, M.D.

[E-mail: p.gadjraj@erasmusmc.nl]

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Table 1. Survey Responses Stratified by Employment Before and During Coronavirus Disease 2019 Pandemic

Variable	Employed in the United States		P Value
	Yes (n = 194)	No (n = 93)	
Function	194 (100.0)	93 (100.0)	NS
Neurosurgeon	183 (94.3)	90 (96.8)	
Neurosurgeon in training	9 (4.6)	3 (3.2)	
Other	2 (1.0)	0 (0.0)	
Age (years)	193 (100.0)	93 (100.0)	NS
20–29	1 (0.5)	2 (2.2)	
30–39	28 (14.5)	11 (11.8)	
40–49	42 (21.8)	23 (24.7)	
50–59	65 (33.7)	27 (29.0)	
>60	57 (29.5)	30 (32.3)	
Gender	193 (100.0)	93 (100.0)	NS
Male	171 (88.6)	85 (91.4)	
Female	22 (11.4)	8 (8.6)	
Weekly visits before COVID-19 crisis (n)	40.02 ± 26.1	52.2 ± 58.9	0.017
Weekly surgical procedures before COVID-19 crisis (n)	7.2 ± 5.6	6.2 ± 5.0	NS
Weekly visits during COVID-19 crisis (n)	16.2 ± 14.9	12.9 ± 14.1	NS
Weekly surgical procedures during COVID-19 crisis (n)	2.3 ± 2.2	2.5 ± 3.1	NS
Self or colleagues requested for COVID-19–related guard duties (e.g., ICU, COVID-19 floor)	34 (17.8)	25 (27.2)	NS
Consulting with patients using telemedicine			NS
Respondents (n)	181	90	
Yes	163 (90.1)	73 (81.1)	
No	18 (9.9)	17 (18.8)	
Comfortable consulting and planning surgery using telemedicine?			0.002
Respondents (n)	153	68	
Yes	90 (58.8)	25 (36.8)	
No	48 (32.0)	39 (57.4)	
Other	14 (9.2)	4 (5.9%)	
Currently seeing patients	164 (85.4)	77 (83.7)	NS
Type of patients seen*			
Trauma	79 (40.7)	29 (31.2)	

Continues

Table 1. Continued

Variable	Employed in the United States		P Value
	Yes (n = 194)	No (n = 93)	
Infection	68 (35.1)	20 (21.5)	
Emergency	98 (50.5)	42 (45.2)	
High-grade oncology	77 (39.7)	38 (40.9)	
All patients who come	80 (41.2)	31 (33.3)	
Patient receptiveness to telemedicine			0.012
Respondents (n)	153	67	
Receptive	124 (81.0)	42 (62.7)	
Neutral	20 (13.1)	17 (25.4)	
Not receptive	5 (3.3)	7 (10.4)	
Other	4 (2.6)	1 (1.5)	

Data presented as mean ± standard deviation or n (%).
NS, not significant; COVID-19, coronavirus disease 2019; ICU, intensive care unit.
*Multiple answers possible.

