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Neurosurgery Virtual Education in the COVID-19 Pandemic Era: Results of a Global Survey

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INTRODUCTION

Neurosurgical education across the globe has undergone a significant change as a result of the novel coronavirus (COVID-19) pandemic.

Social distancing requirements have resulted in rapid transition to virtual meetings/symposia, grand rounds, lecture presentations, journal clubs, and case conferences.

These changes also come with a reduction in operative volumes, with up to a 50% decline in neurosurgical elective cases during the peak of the COVID-19 pandemic.

Despite some initial studies published during the past few months, it remains unclear how these resources are perceived by residents and attendings globally.

OBJECTIVES

The present cross-sectional survey study was performed to characterize perceptions of neurosurgical community globally towards neurosurgical online educational resources that emerged during the COVID-19 pandemic.

MATERIALS AND METHODS

A 21-question anonymous REDCap-based online survey was distributed to faculty, fellows, and residents in neurosurgical residency programs in US and across the globe between February 12, 2021 and March 16, 2021.

Statistical comparisons were performed employing Chi-square test, Mann-Whitney U test, Kruskal-Wallis test followed by Dunn’s multiple comparison test, and Wilcoxon matched-pairs rank test, as indicated. For all comparisons, a p-value of <0.05 was considered statistically significant.

RESULTS

1. Square pie chart with global number of responses by country

![Square pie chart with global number of responses by country](chart1)

2. Characteristics of survey respondents

![Characteristics of survey respondents](chart2)

3. Comparison of opinions of neurosurgery attendings and trainees regarding virtual education during COVID-19 pandemic from high-income, upper-middle-income, and lower-middle countries

<table>
<thead>
<tr>
<th>Variable</th>
<th>High-income countries</th>
<th>Upper-middle-income countries</th>
<th>Lower-middle-income countries</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall</td>
<td>80% (50.8%)</td>
<td>85% (55.9%)</td>
<td>70% (56.9%)</td>
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<td>Faculty</td>
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<td>Residents/fellows</td>
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<td>86% (54.9%)</td>
<td>64% (53.9%)</td>
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</tr>
</tbody>
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19 participants didn’t respond to this question

*Proportions of positive responses are depicted as number (percent) and compared using Chi-square test

Continuous variables with skewed distribution are presented as median with inter-quartile range (IQR) and, for multiple groups, compared employing Kruskal-Wallis test followed by Dunn’s multiple comparison test

Response for this question was restricted to neurosurgical trainees (residents/fellows) only

4. Comparison of opinions of neurosurgery attendings vs trainees (residents/fellows) regarding virtual education during COVID-19 pandemic

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Continuous variables with skewed distribution are presented as median with inter-quartile range (IQR) and, for multiple groups, compared employing Mann-Whitney U test

Response for this question was restricted to neurosurgical trainees (residents/fellows) only

SUMMARY & CONCLUSIONS

Majority (91.9%) found newly emerged virtual meetings/conferences during the COVID-19 pandemic to be useful

Majority (78.3%) agreed that after COVID-19 social restrictions are over, the neurosurgery meetings/conferences should remain virtual.

The overall median Likert score for participants satisfaction with neurosurgery virtual education during the COVID-19 pandemic was 4 (satisfied).

Majority of trainee (Residents/fellows) participants agreed that COVID-19 has negatively affected their training (median Likert score = 4).

The opinions regarding neurosurgery virtual education during the COVID-19 pandemic didn’t differ between respondents from high-income, upper-middle-income, and lower-middle-income countries or between neurosurgical attendings and trainees (Residents/fellows).

The percentage of overall time spent on virtual education was significantly higher during the COVID-19 pandemic year as compared to pre-COVID year.