



Beyond the OR doors: presidential address to the 48th annual meeting of the International Society for Pediatric Neurosurgery (ISPN)

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Introduction

Dear colleagues, let me begin by saying that I have truly missed you! It has now been 3 years since our world was turned about by this simple virus, and there is little doubt that we are now defining a new normal. Let me begin with a round of applause for Francisco Salamao, who deserves great credit as our president during this challenging time for keeping our society alive and productive for not just one but two consecutive terms of office. He will be remembered in the International Society for Pediatric Neurosurgery (ISPN) history for this distinction. Working with an exceptional executive board, this team developed alternative methods by which the ISPN could continue to advance its mission of education and improved care for the children of the world suffering from neurological diseases. The pandemic, along with Sandeep Chatterjee's shutter speed mind, produced the *Clash of the Titans* series, which has led to some of the most poignant discussions we have witnessed. If you get a chance, go back and look at the *Clash of the Titans* number 6, which is a point-counterpoint between Graham Fieggen and William Harkness in which they argued over how the pandemic might affect global neurosurgery in the future. Each "Titan" held strong to their studied opinions, and both were persuasive. I would also like to give a shout-out to Wan Tew and team Kenes for their fluidity in keeping our ship afloat and our hotel contracts secure over the past 3 years.

They successfully anticipated and avoided major penalties or contract cancellations.

Our Scientific Program Committee developed two virtual meetings, which were not only novel but recorded the largest registrations on record for the ISPN, with over 1200 registered attendees. Just as our journal, *Child's Nervous System*, recorded a record number of paper submissions during these trying times, the numbers of abstracts submitted were also unparalleled. As a consequence, our treasury has remained full, giving us the ability to re-invest in our future as Rick Abbott and his team work to publish a second edition of "The ISPN Guide to Pediatric Neurosurgery" [1], complete with updated chapters, edited videos, and new content designed to address the many changes our profession has witnessed since the first edition was published online a decade ago. "The Guide" has continued to receive between 1600 and 2000 visits per month from pediatric neurosurgeons, trainees, and families seeking insights into their children's disease.

Our faithful secretary, Tony Figaji, has kept us on task through regular Zoom meetings of the leadership council, dealing with new issues as they arise. Our membership committee, chaired by Shlomi Constantini, has set new records for membership, increasing the ISPN's ranks by over 20% in the midst of the pandemic. We have also worked to develop a new membership category for medical students who are interested in both a career and publishing research in pediatric neurosurgery. With our new clinical research committee, Johnathan Roth will work with these medical students and interested members, creating opportunities for involvement in clinical research trials, to help re-write content for "The Guide," and for participation in our online educational conferences.

Let me give a hand to Nelci Zanon and Jeff Blount for the outstanding work they have done with the education committee. They were successful in negotiating with the WFNS leadership such that there are no longer two parallel committees, but the ISPN officially serves as the WFNS pediatric neurosurgery committee. As the pandemic settled down this year, they

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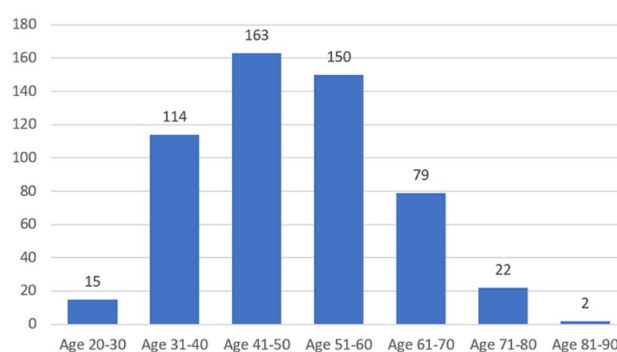
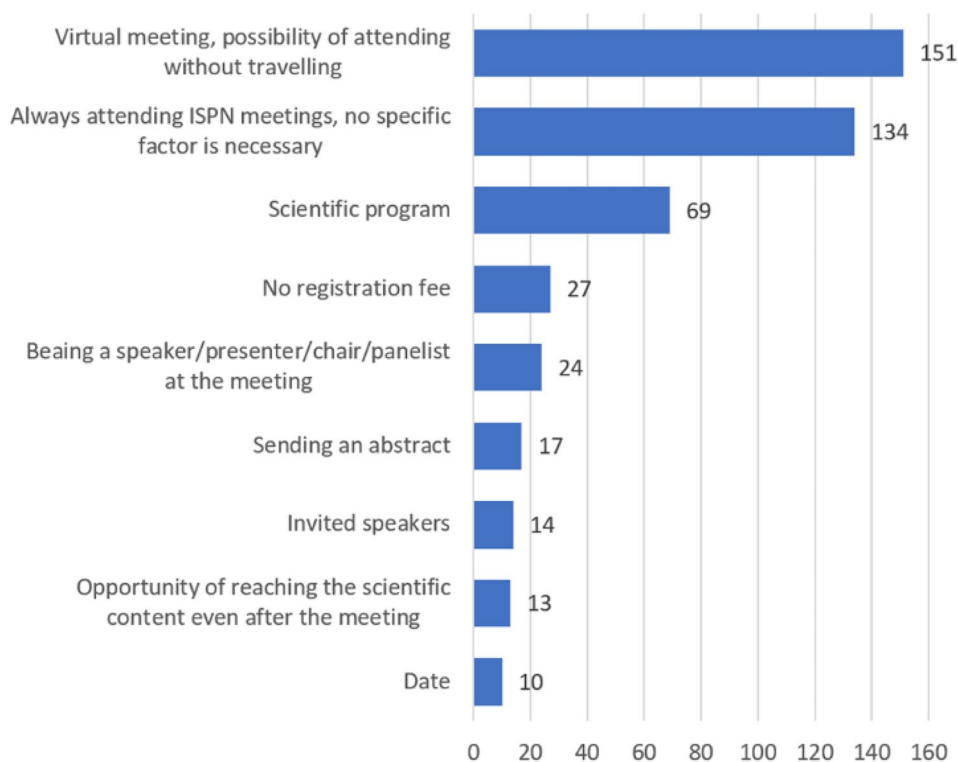
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Table 1 Attendee data for the 2021 ISPN virtual meeting

Total registrations	1256
Unique logins per day	
5 November 2021	527
6 November 2021	479
7 November 2021	392
Total survey respondents	459

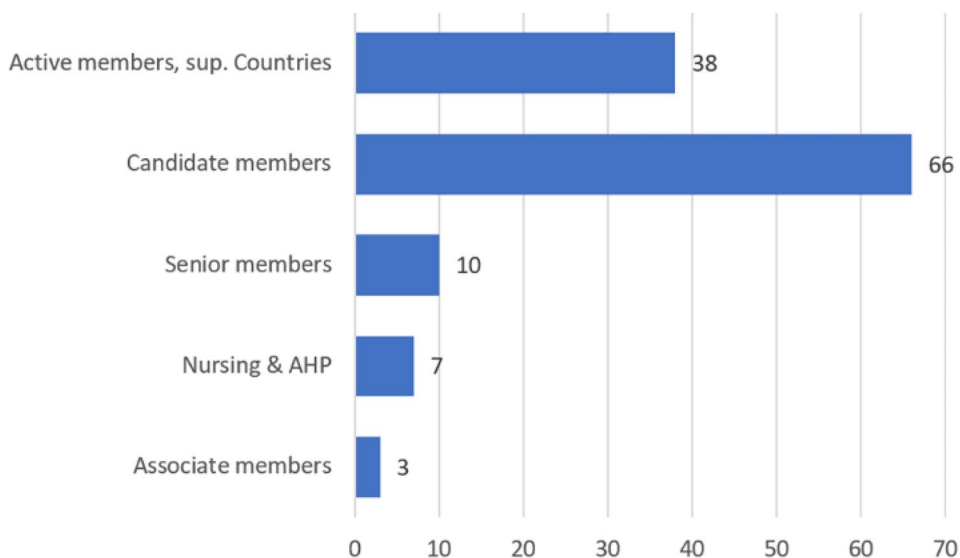
organized in-person educational courses in Lima, Peru, and Kolkota, India, with requests for seven additional courses next year. Our first monthly online educational course for medical students and residents was recorded over 1200 registrants from across the globe. Nelci and Jeff have been careful to include newer and younger speakers whenever possible and have recognized the importance of diversity and representation. Speaking of diversity, a note of thanks to Eylem Ocal and Martina Messing-Junger for their work to promote diversity, equity, and inclusion within the ISPN's rapidly growing ranks. Likewise, Jenny Sacree has worked hard to morph our ISPN nurses and advanced practice providers' group into something new and more relevant for this critical category of membership. Jenny has proposed a series of topical hybrid meetings throughout the year, which can engage nurses and neurosurgical advanced practice providers who have limited travel budgets. I hope each of you will contribute to their content.

Fig. 1 Attendee responses for the question: "What is your reason for attending the annual ISPN Meeting?"**Fig. 2** Age distribution of meeting attendees

I would also raise a glass to our communications team for the work they have done to facilitate the exchange of information amongst our membership through WhatsApp, the Internet, Twitter, and other social media platforms. They have also worked with Kenes to produce the meeting app that you should have all downloaded to facilitate voting during the upcoming business meeting.

Finally, the foundation to our society's success would not have been possible if it was not for the constant attention of our partners at Kenes. They have kept us abreast of which forums are successful or not, based upon their

Fig. 3 ISPN membership category of meeting attendees



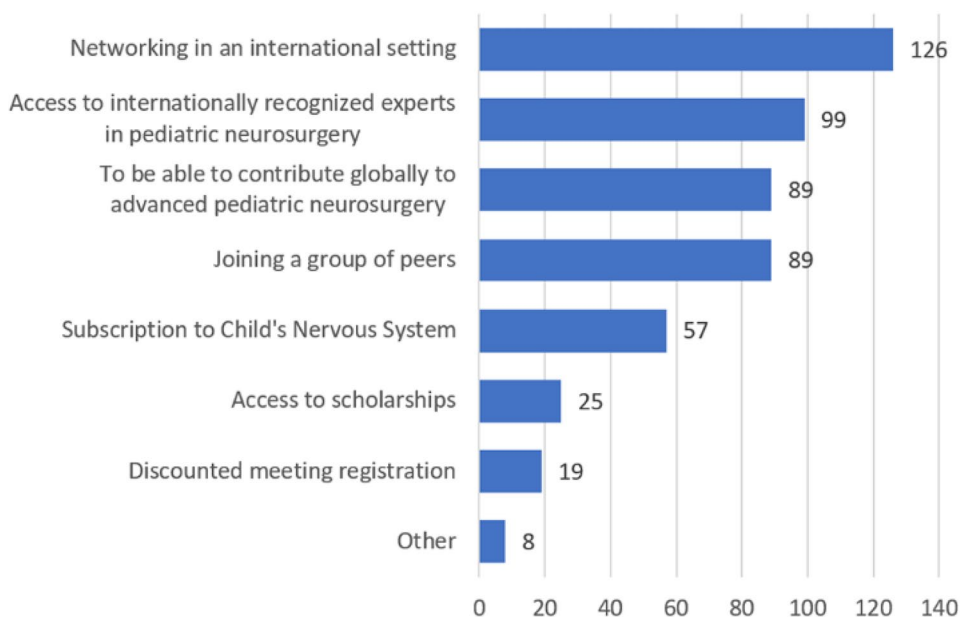
vast experience with similar societies of this size around the world. Thank you to Linda, Merve, Mojca, Sadiq, and others who have held the tiller as we sailed stormy waters.

Over the last 2 years, Linda has performed exit polls of those attending our virtual annual meetings. Last December, we also sent out a membership survey in an effort to understand how COVID-19 has affected your practice, how new opportunities created during the pandemic have influenced our society, and most importantly, how globalization that developed out of the pandemic has influenced what you desire from a professional society like the ISPN. I am grateful to those of you who took the time to return this survey and want to share with you my interpretation of where we stand.

Post-conference feedback

In 2021, we had over 1200 registrants with over 500 unique logins per day and 150–200 attendees logged in per session. Nearly 500 people took the time to complete the conference exit survey (Table 1). When queried as to preferences for 2021, a majority ($n = 151$) of our members favored a hybrid meeting in which members had the choice of attending our scientific sessions either in person or virtually, but 134 members said they planned to attend the ISPN annually regardless of whether the meeting was virtual or in person (Fig. 1). By 2022, 191 of you said you would prefer to attend the annual meeting virtually. Eighty-three

Fig. 4 Attendee responses for the question “What is the reason that you belong to the ISPN?”



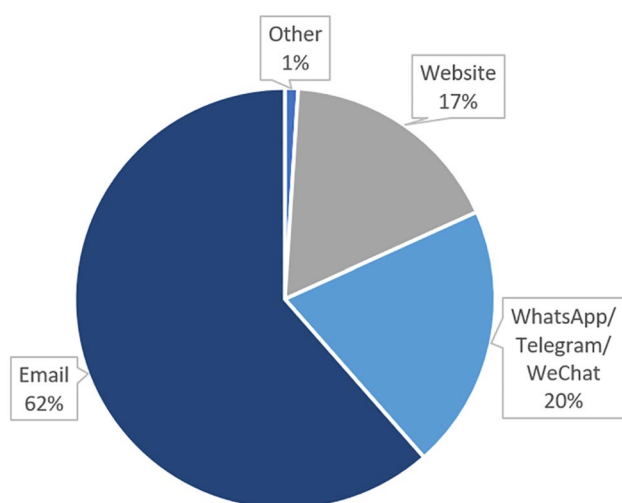


Fig. 5 Attendee responses for the question “How would you prefer communicate with the ISPN?”

respondents said they preferred only an in-person meeting, and 177 members said they would attend the annual meeting regardless of the format. The membership composition of those attending the meeting showed a normal distribution with a healthy share of both younger and older neurosurgeons, some even attending into their 80 s (Fig. 2). We had over 420 active members participating in last year’s meeting and—thanks to a strong membership committee—we now have over 540 active members (Fig. 3).

When asked what you wanted from the ISPN, most of you wanted fellowship and networking (Fig. 4), which happens best in an in-person format as we have in Singapore. Most active members wish to meet and develop relationships with other pediatric neurosurgeons around the world.

Regarding communication, most members expressed a preference for email or WhatsApp messaging (Fig. 5). Although low-cost virtual educational opportunities now abound, what we learned from our members is how important mentorship and personal communication is. Ninety-five percent of respondents acknowledge the importance of mentorship from their fellow pediatric neurosurgeons (Fig. 6A–C). Mentorship can take a number of different forms, but all require the development of personal relationships, which are lacking in our virtual sessions. When we look at who attended/enjoyed specific ISPN offerings over the last 2 years, there were large numbers of attendees for both online and in-person educational offerings (Fig. 7).

When asked if members were willing to participate in specific activities of the ISPN, 148 of 232 respondents were willing to author or help author chapters in the new Guide, and 146 were willing to contribute de-identified patient information through online research portals to help answer clinical research questions and co-author research publications (Fig. 8). One hundred fifty-six would like to serve as part of the annual meeting, either helping in the organization of the meeting, moderating or chairing sessions in the scientific program, or presenting on defined

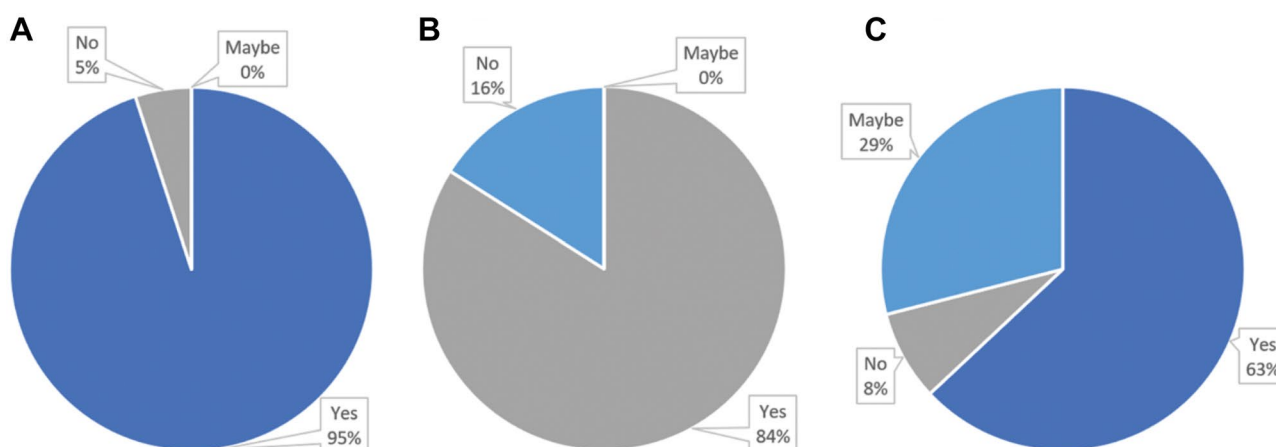
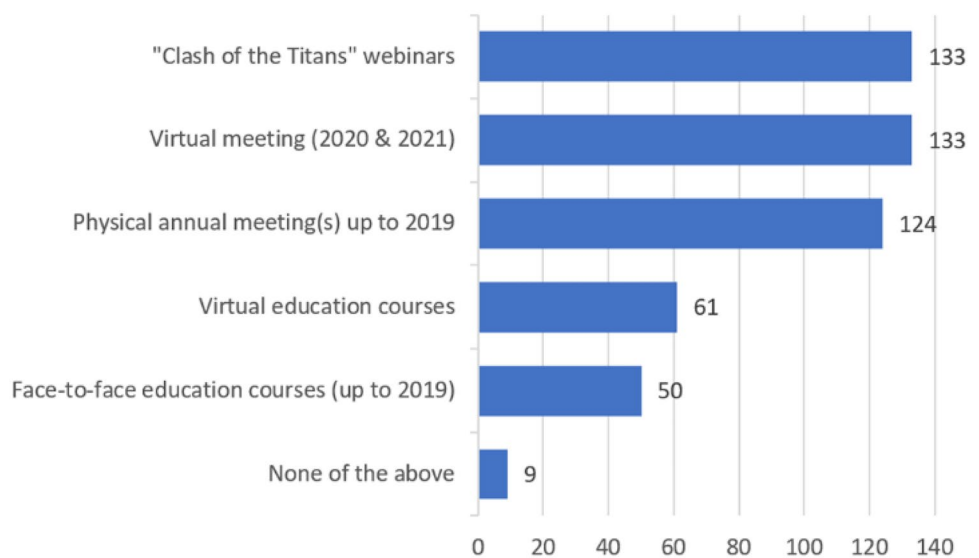


Fig. 6 **A** Attendee responses for the question “Would you encourage the availability of an ISPN Mentoring Program?” **B** Attendee responses for the question “Would you encourage the availability of

ISPN community/discussion platforms to directly interact with your peers?” **C** Attendee responses for the question “Would you actively participate in an ISPN community-based initiative?”

Fig. 7 Attendee responses for the question “In which ISPN activities have you participated?”



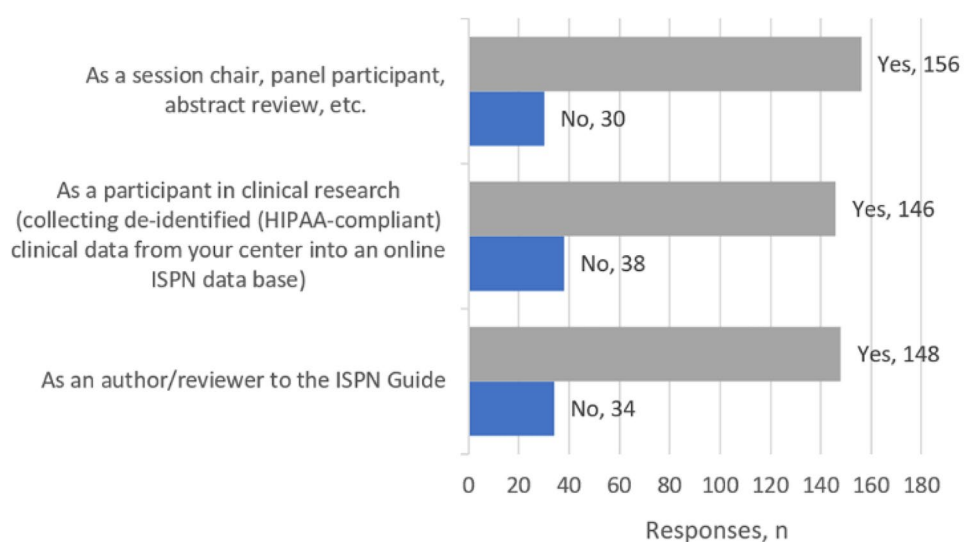
topics. Three-quarters of the membership support *Child's Nervous System* as the journal of choice in which to publish their work (Fig. 9).

The survey returned interesting information regarding how our membership currently practices. It suggests that, with globalization, our practices are becoming less disparate over time. The majority of survey participants practice in highly resourced settings, which is where the majority of children's hospitals exist; however, further analysis suggests the majority of our membership work in settings with similar resources regardless of whether they practice in a high-, middle-, or low-income country (Fig. 10).

As one might expect, given that children's hospitals and the resources necessary to perform high-quality

pediatric neurosurgery occur in larger cities with more available resources, most of the membership practice in urban settings (Fig. 11). We generally estimate that it takes a population of a million people to support one pediatric neurosurgeon. There were mixed responses as to those who work in public or private hospitals, and in fact, many pediatric neurosurgeons practice in both settings (Fig. 12A). There were also mixed results as to whether members practice in a free-standing children's hospital or one that exists within a larger general hospital (Fig. 12B). When asked how often ISPN members are on call, there were a variety of responses (Fig. 13A), but most pediatric neurosurgeons take call at least 1-in-4 days per month and are faculty at a teaching hospital (Fig. 13B).

Fig. 8 Attendee responses for the question “Would you be willing to participate in the following ISPN activities?”



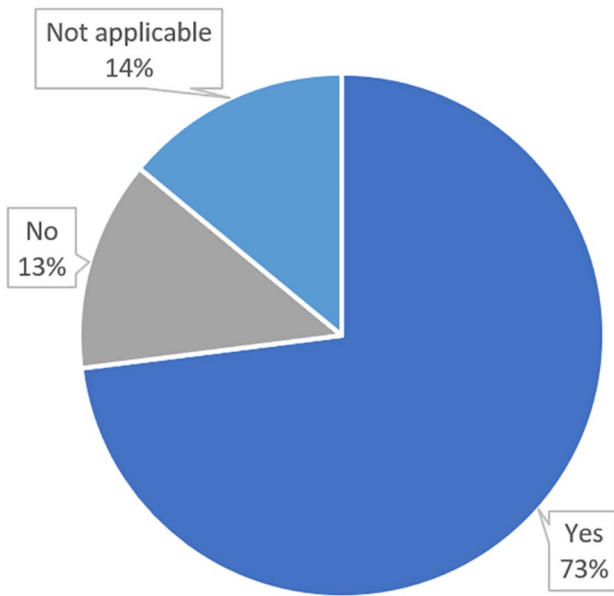


Fig. 9 Attendee responses for the question “When you publish peer reviewed manuscripts in Child’s Nervous System the journal in which you prefer to publish?”

Forty percent of our membership reports working with a fellow (Fig. 14A), but less than 15% have a twinning

Fig. 10 Country in which survey respondents reside

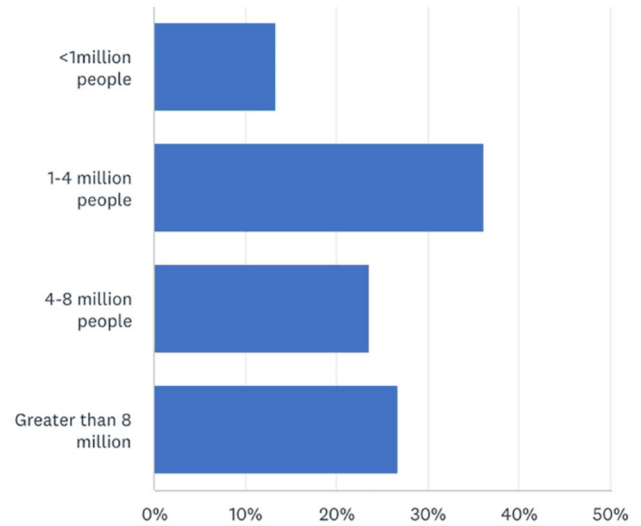
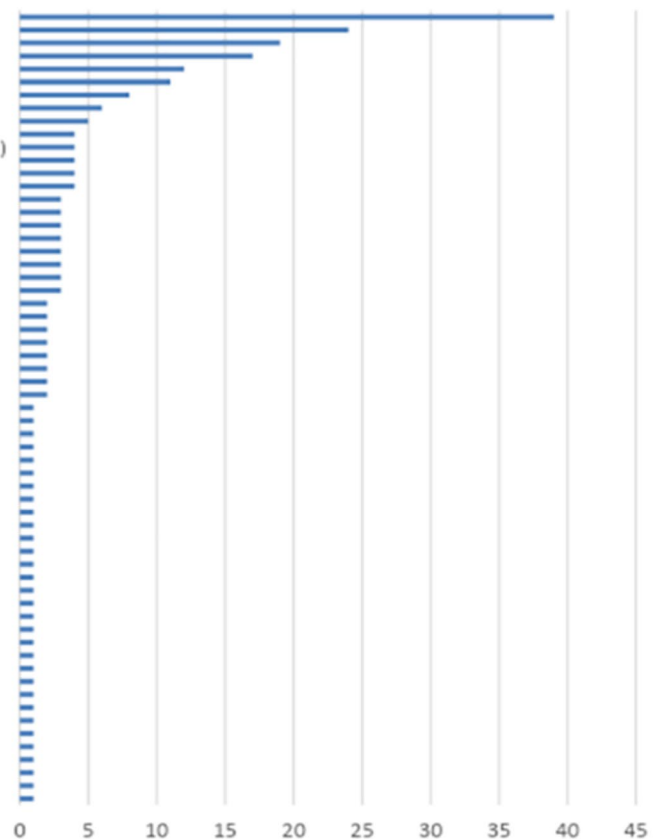


Fig. 11 Attendee responses for the question “What would you estimate is the population of your practice’s catchment area?”

program where we align ourselves with another pediatric neurosurgical teaching institution (Fig. 14B). The vast majority of the 235 respondents reported having a neonatal intensive care unit, pediatric neurosurgical ICU, and a dedicated pediatric neurosurgical ward (Fig. 15A). Most of the respondents reported having fellowship-trained emergency



room physicians, anesthesiologists, and critical care pediatricians to help care for their patients (Fig. 16). Seventy percent reported having a dedicated neonatal or pediatric transport system, and 40% have helicopter transport available for emergency transfer.

Over 90% of respondents stated that they have an operating microscope, 90% have endoscopes, and over 80% have intra-operative neuro-physiological monitoring capabilities (Fig. 17). More than two-thirds reported having frameless stereotactic neuro-navigation and intra-operative ultrasound. Only 15% reported having intra-operative MRI capability. Over 70% of respondents have a multi-disciplinary brain tumor conference at their hospital, 70% have a quality improvement program that tracks and trends complications and outcomes, and 60% have a spina bifida program (Fig. 18). Over 50% have a craniofacial program and epilepsy program. Over one-third reported having a dedicated research nurse.

Finally, when asked about their practice, it is no surprise that the number one disease that pediatric neurosurgeons treat is hydrocephalus (Table 2, Fig. 19). Likewise, the majority of respondents spend most of their time treating brain tumors, spina bifida, and trauma.

Discussion

Given these survey results, I would like to suggest the following. The vast majority of you are here because you want to meet and connect with like-minded pediatric neurosurgeons from around the world. You are here because you have a global mindset. Those colleagues who are not globally minded attend their local and national pediatric neurosurgical society meetings but do not take the time nor the expense to become active in an international society, such as the ISPN. These survey results have said that the majority of you want to be more active in the society, you are willing to work for the society, and you wish to contribute to our society's missions and goals.

In the COVID-19 era, we have learned the power of online educational forums, but we have also learned how crucially important it is for us to meet in person, to share our ideas, to learn from one another by direct communication, and to enjoy our fellowship (mentorship).

We are currently living in a world in which four babies are born per second or 140 million new children born per year [2]. Although it remains high in certain parts of

Fig. 12 **A** Attendee responses for the question "Do you work primarily in a public or private hospital setting?" **B** Attendee responses for the question "Is your children's hospital free-standing, or within a general adult hospital?"

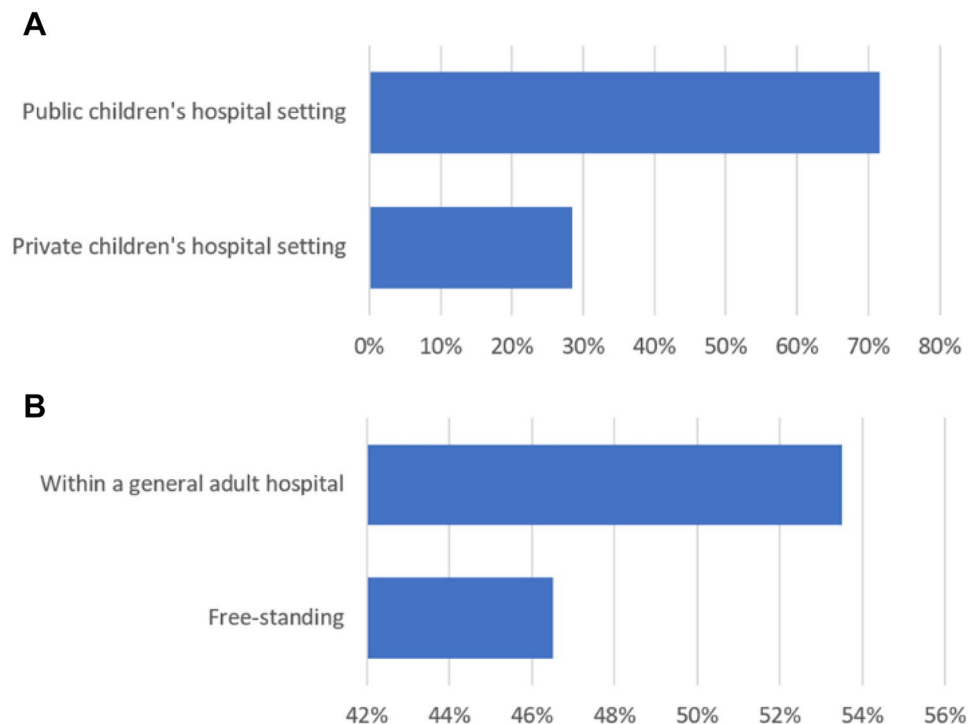
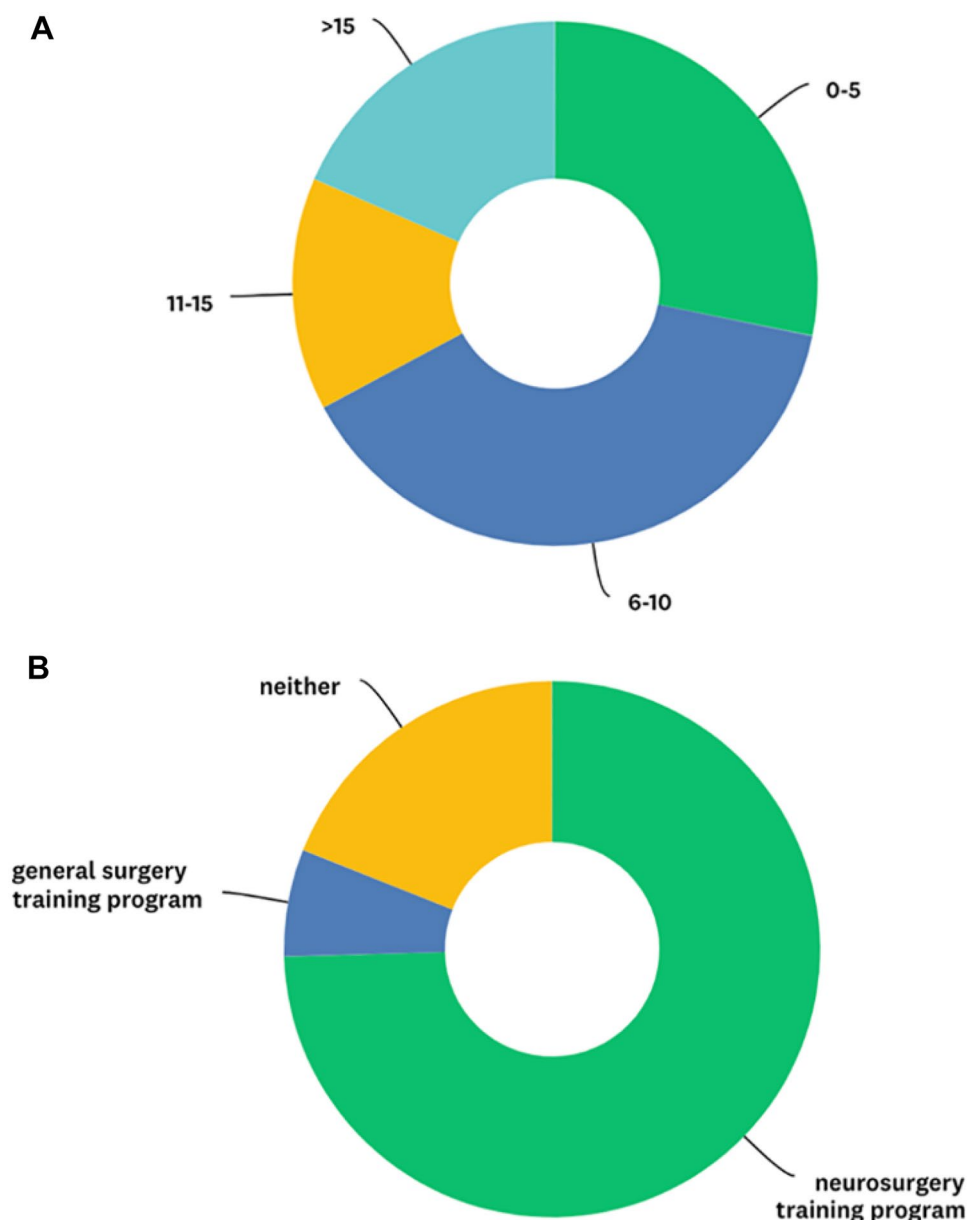


Fig. 13 **A** Attendee responses for the question “How many days per month do you take call?” **B** Attendee responses for the question “Does your practice involve a neurosurgical training program, general surgery training program or neither?”



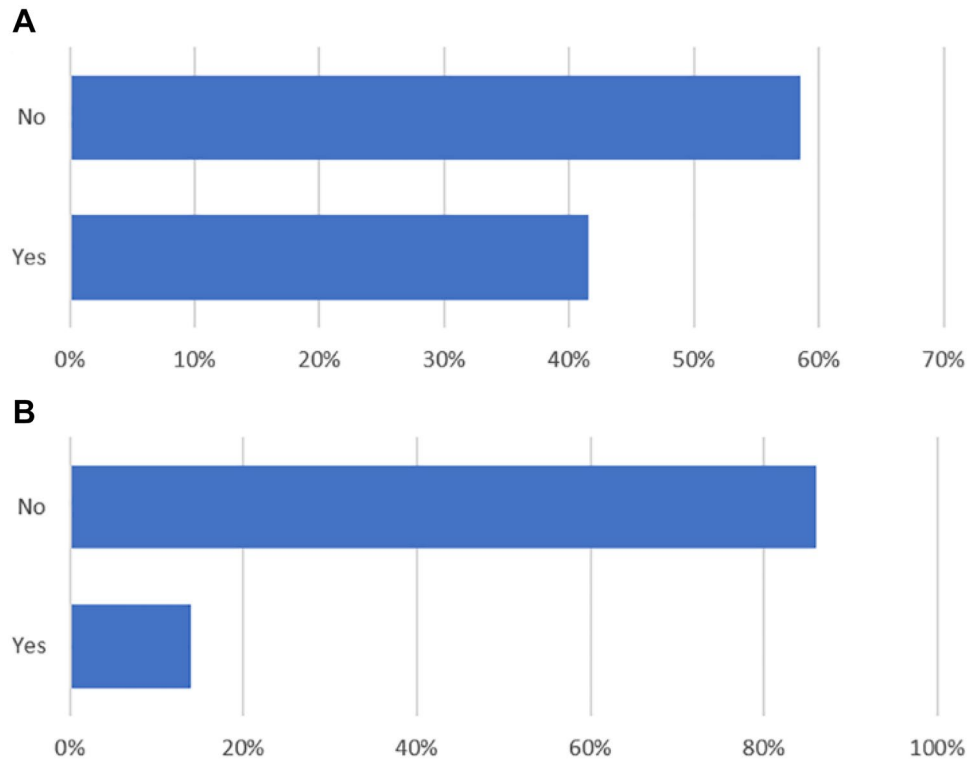
the world, childhood mortality—defined as death before 5 years of age—has plummeted over the past three decades. Since 1990, the total number of deaths under age 5 has dropped from 12.6 million per year to 5 million per year or a 60% decline [3].

We must recognize that there are fewer than 3000 dedicated pediatric neurosurgeons in the world [4]. Given that it takes nearly a decade to train a pediatric neurosurgeon, it becomes crucial that we, as pediatric neurosurgeons, have a vision beyond our operating room doors. We learn early in our neurosurgical training that the operating room is our sanctum. It is a place where we are in charge, away from the chaos of the emergency room, the intensive care unit,

upset mothers, and bothersome administrators. We spend our days and nights there, relatively protected from the outside world. However, *if we limit our world view to one patient at a time, we will never be able to meet the expanding needs of our world.* It is critically important that neurosurgeons learn to serve as advocates for our patients and to work with our government officials to meet the needs of our patients beyond the operating theater.

Let me end with three scenarios in which we, the members of the ISPN, should effect change. First, the most common cause of childhood mortality worldwide is from accidents and injuries [5]. The number one cause of traumatic death in children is from a head injury, a

Fig. 14 **A** Attendee responses for the question “Do you have a pediatric neurosurgery fellowship program?” **B** Attendee responses for the question “Does your hospital have a “twinning” initiative with a hospital in another country?”



neurosurgical disease [6]. The World Health Organization has called for all countries to work to cut the number of deaths from trauma in half over the next decade [7]. In the USA, by building better cars, better roads, and safer drivers, we have succeeded in reducing childhood mortality from road traffic accidents by over 50% in the past two decades. Unfortunately, our children have been plagued by a culture of violence in which the number one cause of death in children in the USA is now a gunshot wound [8]. This is another disease for which we must advocate.

It is important to note that when a primary care physician, a pediatrician, or a parent speaks out about medical issues, they have a small voice and little ability to affect change. *When a neurosurgeon speaks, people listen, and there is no one who is better positioned to advocate for global improvement in neuro-trauma than those of us who are in the trenches, in the emergency rooms, and in the ICUs providing care for these children.*

The same holds true with the number two cause of death in children—cancer [9]. Now that the blood-borne cancers

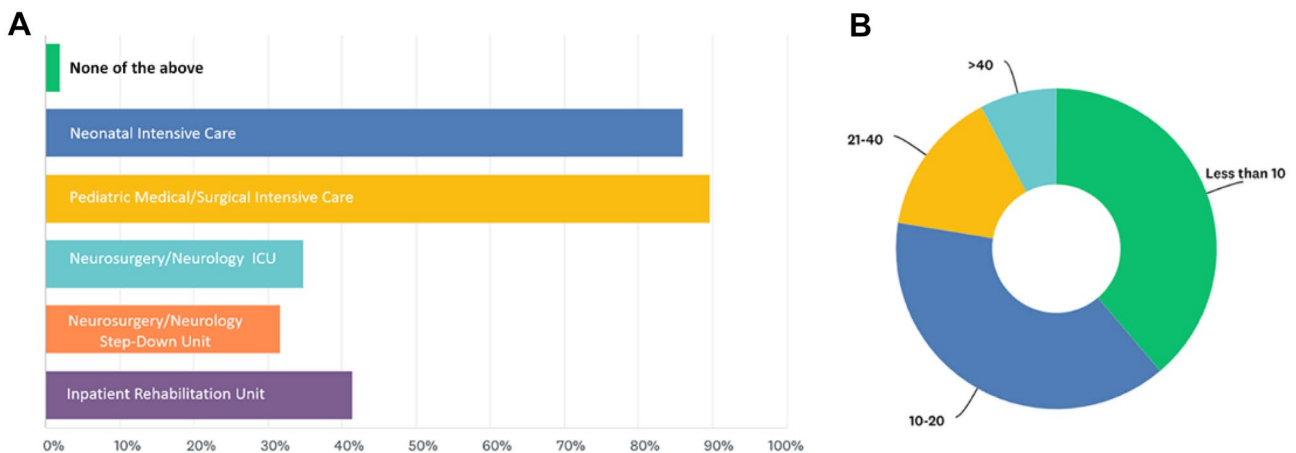


Fig. 15 **A** Attendee responses for the question “Which of the following do you have at your hospital?” **B** Attendee responses for the question “How many dedicated pediatric neurosurgical beds does your service have?”

Fig. 16 Attendee responses for the question “Which of the following support systems does your hospital have?”

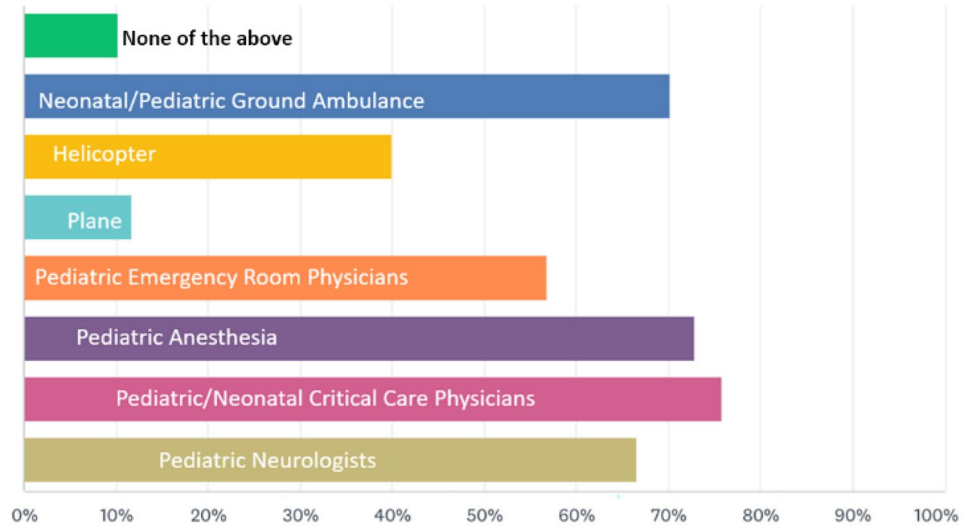


Fig. 17 Attendee responses for the question “Which of the following does your operating room have?”

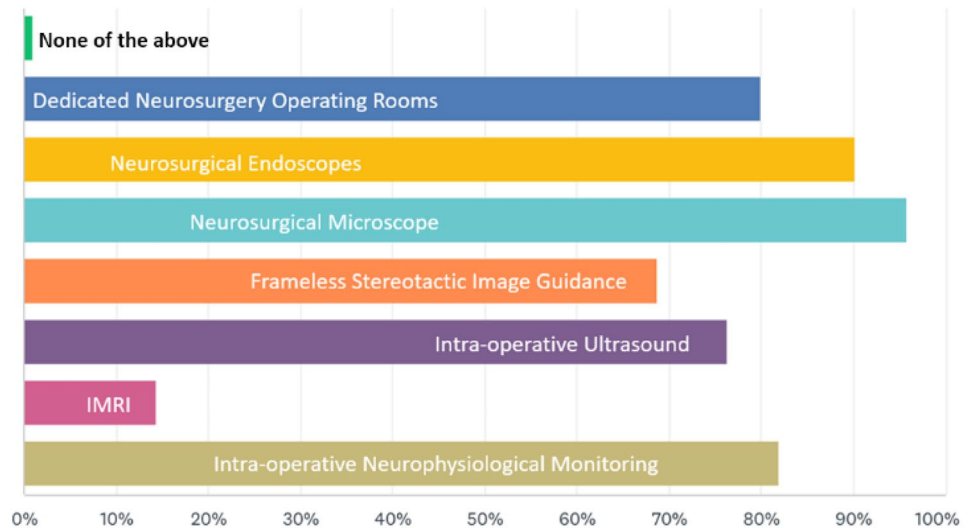


Fig. 18 Attendee responses for the question “Which of the following does your children’s hospital have?”

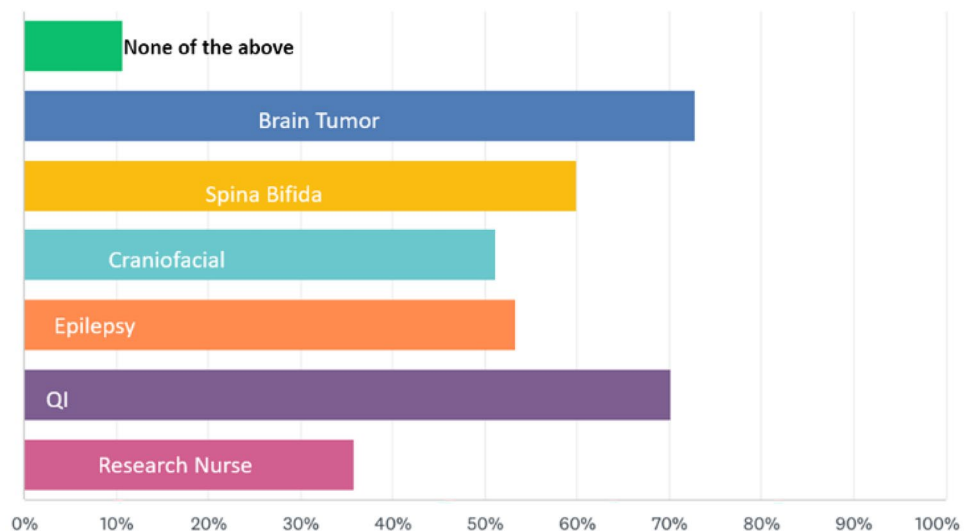


Table 2 Responses showing the pediatric neurosurgical practice of conference attendees

Answer choice	Average No	Total No	No. of responses
Shunts, shunt revisions, external ventricular drains	111	21.486	194
Myelomeningocele repairs or dysraphism surgeries (complex tethered cord, etc.)	36	6.88	193
Trauma-related surgeries	34	6.431	191
Brain tumors	64	12.365	193
Spasticity-related procedures (selective dorsal rhizotomy, baclofen pump, destructive procedures)	11	2.038	180
Epilepsy surgeries	24	4.33	183
Craniofacial surgeries for synostosis	32	5.96	189

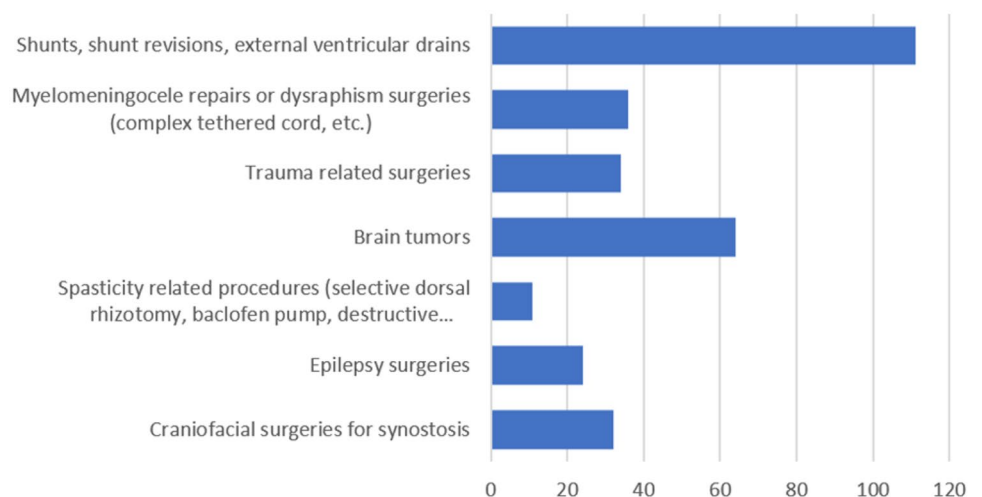
have become highly curable, the leading cause of cancer-related mortality in children is brain tumors—again, a neurosurgical disease. In high-income countries, most childhood brain tumors have an 80% chance for cure. Unfortunately, the vast majority of children worldwide with a brain tumor currently die. The survival of the child with a brain tumor is currently most heavily influenced by what we do as neurosurgeons. It behooves us to improve survival rates and decrease surgical morbidity.

Finally, I have asked Kemel Ghotme, MD, PhD, in his presidential lecture to speak regarding the third issue for which we should advocate, and that is spina bifida. It has been three decades since we were given class I evidence that micronutrient supplementation of general diets with folic acid could prevent over 70% of spina bifida births [10], and yet, less than one-quarter of the countries in our world to date have adopted folic acid supplementation as a national strategy to help these children be born without a neural tube defect. We, as pediatric neurosurgeons, spend our nights and holidays in the operating room fixing broken shunts, repairing myelomeningoceles, and untethering spinal cords; but how many of us have taken the time to speak

to our elected officials in support of legislation that could change our world and the world of our patients in less time than it takes for us to train one new neurosurgeon? We all appreciate how costly and labor intensive it is to provide neurosurgical care to spina bifida children, but only through a commitment to advocacy we can change these kids' world.

In short, I have given but three examples of our most commonly treated diseases—diseases that could be impacted by our voices. When Francisco Salamao and our ISPN produced a formal position statement on folic acid supplementation for spina bifida just a few years ago, it quickly sparked interest from the G4 Alliance, led to the development of the GAPSBI-F effort, whose advocacy quickly led to a resolution being introduced at the World Health Assembly in Geneva this past spring. With your support, we hope this resolution will be adopted this next year. We need each of you to make time to speak out, be vocal, and help raise public awareness of this important opportunity. Any of you who are interested in joining GAPSBI-F, co-founded by Jeff Blount and Gail Rosseau, you will find 60 others who meet by Zoom every other week to advance this cause, I am glad to make the connection for you.

Fig. 19 Data showing the breakdown of the conference attendees' pediatric neurosurgical practice (average number of responses)



Conclusion

It has been a tremendous honor for me to serve as your president this past year. As we emerge from the COVID-19 pandemic, we find ourselves battered and bruised, but we have gained a new appreciation of our world, our patients, and, most importantly, our need for one another. Thank you for your continued membership in this tremendous organization and for your offer to serve this society in so many ways. Our organization is rapidly approaching its 50th anniversary, and we must recognize that we have been fortunate to have practiced neurosurgery in a time of relative global prosperity. We have enjoyed the rapid advancement of science, a better understanding of the diseases for which we care, and the excitement of new technologies that help us provide care for our patients more safely and efficiently.

I would like to close with the words spoken by one of my favorite American presidents at his inaugural address in 1961 [11]. When President Kennedy gave his inaugural address, his previous half century had survived two world wars, and a similar—but more morbid—pandemic than the one we have just endured. The Spanish flu had a propensity to infect young children rather than the elderly and killed an estimated 30–50 million people. It was followed by the Great Depression, which challenged the greatest economies of the time. In that era, neurosurgeons had very few diagnostic tests, very few adjuvant therapies upon which to draw, and only a rudimentary understanding of our most common neurosurgical diseases. As we count our blessings, we should remember this paraphrasing of President Kennedy's words when he said “ask not what your [Society] can do for you, but what you can do for your [Society].”

Abbreviations ISPN: International Society for Pediatric Neurosurgery

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Author contribution Frederick A. Boop: design of the work, analysis and interpretation of data, drafting the manuscript, and agreement to be accountable for all aspects of the work (RB).

Availability of data and material No additional data are available.

Declarations

Ethics approval and consent to participate The post-conference exit survey featured in this address was done for quality improvement of the conference program and therefore not subject to institutional review board oversight.

Consent for publication Not applicable.

Conflict of interest I have no competing interests relevant to this publication.

References

1. International Society for Pediatric Neurosurgery (2022) The ISPN Guide to Pediatric Neurosurgery. International Society for Pediatric Neurosurgery. Available at: <https://www.ispn.guide/>. Accessed 30 Sept 2022
2. TheWorldCounts (2022) The world counts. Available at: <https://www.theworldcounts.com/>. Accessed 30 Sept 2022
3. World Health Organization (2022) Child mortality and causes of death. World Health Organization. Available at: <https://www.who.int/data/gho/data/themes/topics/topic-details/GHO/child-mortality-and-causes-of-death>. Accessed 30 Sept 2022
4. Dewan MC, Baticulon RE, Rattani A, Johnston JM, Warf BC, Harkness W (2018) Pediatric neurosurgical workforce, access to care, equipment and training needs worldwide. *Neurosurg Focus* 45:E13. <https://doi.org/10.3171/2018.7.FOCUS18272>
5. Park KB, Johnson WD, Dempsey RJ (2016) Global neurosurgery: the unmet need. *World Neurosurg* 88:32–35. <https://doi.org/10.1016/j.wneu.2015.12.048>
6. Dewan MC, Rattani A, Fiegggen G, Arraez MA, Servadei F, Boop FA, Johnson WD, Warf BC, Park KB (2018) Global neurosurgery the current capacity and deficit in the provision of essential neurosurgical care. Executive Summary of the Global Neurosurgery Initiative at the Program in Global Surgery and Social Change. *J Neurosurg*. <https://doi.org/10.3171/2017.11.JNS171500>
7. World Health Organization (2019) 72nd World Health Assembly adopts resolution on emergency and trauma care. World Health Organization. Available at: <https://www.who.int/news/item/27-05-2019-72nd-world-health-assembly-adopts-resolution-on-emergency-and-trauma-care>. Accessed 30 Sept 2022
8. Goldstick JE, Cunningham RM, Carter PM (2022) Current causes of death in children and adolescents in the United States. *N Engl J Med* 386:1955–1956. <https://doi.org/10.1056/NEJMc2201761>
9. Steliarova-Foucher E, Colombet M, Ries LAG, Moreno F, Dolya A, Bray F, Hesselting P, Shin HY, Stiller CA, IICC-contributors (2017) International incidence of childhood cancer, 2001–10: a population-based registry study. *Lancet Oncol* 18:719–731. [https://doi.org/10.1016/S1470-2045\(17\)30186-9](https://doi.org/10.1016/S1470-2045(17)30186-9)
10. Kancherla V, Botto LD, Rowe LA, Shlobin NA, Caceres A, Arynchyna-Smith A, Zimmerman K, Blount J, Kibruyisfaw Z, Ghotme KA, Karmarkar S, Fiegggen G, Roozen S, Oakley GP Jr, Rosseau G, Berry RJ (2022) Preventing birth defects, saving lives, and promoting health equity: an urgent call to action for universal mandatory food fortification with folic acid. *Lancet Glob Health* 10:e1053–e1057. [https://doi.org/10.1016/S2214-109X\(22\)00213-3](https://doi.org/10.1016/S2214-109X(22)00213-3)
11. Kennedy JF (1961) Inaugural Address, Kennedy Draft, 01/17/1961. Papers of John F. Kennedy: President's Office Files, 01/20/1961–11/22/1963. US National Archives and Records Administration, Washington, DC

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