JOURNAL OF JPOSNA®

Volume 5, Number 4, November 2023

Original Research

POSNA-POGO Scholars Research Initiative: Capacity and Needs

Alvin W. Su, MD, PhD[1]; Collin J. May, MD, MPH[2]; Mihir Thacker, MD[1]; Rameez Qudsi, MD, MPH[3]; Apurva S. Shah, MD, MBA[4]; Karen Bovid, MD[5]

[1]Nemours (duPont) Children's Hospital, Delaware, Wilmington, DE; [2]Boston Children's Hospital, Boston, MA; [3]Dartmouth-Hitchcock Medical Center, Lebanon, NH; [4]Children's Hospital of Philadelphia, Philadelphia, PA; [5]Western Michigan University Homer Stryker M.D. School of Medicine, Kalamazoo, MI

Correspondence: Alvin W. Su, MD, PhD, Department of Orthopaedic Surgery, Nemours (duPont) Children's Hospital, Delaware, 1600 Rockland Road, Wilmington, DE 19803. E-mail: alvin.su@nemours.org

Received: August 27, 2023; Accepted: October 25, 2023; Published: November 15, 2023

DOI: 10.55275/JPOSNA-2023-780

Abstract

Background: The POSNA Pediatric Orthopaedic Global Outreach (POGO) Committee was established with its core mission of advancing children's musculoskeletal care around the world, with recent expansion of its scope toward furthering scientific research. POSNA sponsors international surgeons (POGO Scholars) to visit North America as part of the mutual outreach effort. Research results from North America may not be generalizable to other regions, where surgeons may see pathologies that are unique to the area. The purpose of the study was to identify the challenges and needs of the POGO Scholars when pursuing scientific research.

Methods: An online survey composed of nine questions was disseminated via email to all POGO Scholars from the years 2007-2020. The survey was anonymous, but the Scholars could voluntarily disclose their names and countries of practice. Descriptive statistics were performed.

Results: Thirty-four out of 76 identified Scholars responded to the survey (44.7% response rate), encompassing five continents and at least 15 countries worldwide. The major barriers to performing research were lack of funding (82.4%), insufficient training in research (70.6%), and issues relevant to study execution (64.7%). Most Scholars preferred to publish their results in internationally indexed journals (58.8%), followed by presentation at international conferences (17.6%), while the need for statistical assistance (56.3%), prohibitive publication costs, and difficulty with manuscript revisions (50% each) were the major challenges. POSNA could help the most in the areas of funding (64.7%), research writing support (55.9%), statistics support (52.9%), and research mentorship (50%).

Conclusions: The challenges the Scholars face are similar to those encountered by academic surgeons in North America but amplified by a limited resource environment. Mutually beneficial involvement including sharing POSNA resources in funding, networking, and a platform for research mentoring and equitable collaboration, can synergize the surgeons' efforts internationally as well as further the development of Scholar-centered local research programs while fostering long-lasting relationships. The POGO committee will use the results of this survey in the ongoing efforts to support research that improves global orthopaedic care for children.

Level of Evidence: Level IV

Key Concepts

- Local research programs led by international pediatric orthopaedic surgeons (POGO Scholars) can answer important questions and translate the results to address local clinical needs, including managing pathologies that are unique to their practice area.
- Upon building a research program, the challenges faced by the POGO Scholars are similar to those faced by academic surgeons in North America but further amplified due to limited resources in funding, research training, and study execution logistics.
- POGO Scholars prefer to publish their research results in internationally indexed journals, facing the barriers of statistical and revision difficulties in addition to the publication costs.
- POSNA as an organization could assist could assist by facilitating mutually benefial access to POSNA resources beneficial access to POSNA resources in the areas of funding, writing and statistics support, journal access, and research mentorship.

Introduction

Scientific research is essential in addressing unmet needs in orthopaedics and permitting future paradigm shifts in patient care. While the quality and quantity of pediatric orthopaedics research have been steadily advancing patient care in North America, the results from these studies are not always generalizable to other regions of the world, especially developing countries or resource-limited environments. Each geographic area has its own particular needs and challenges. For research to impact children across the world, it is important for North American institutions and organizations to work synergistically with researchers in other practice environments, sharing both research expertise and funding.

The Pediatric Orthopaedic Society of North America (POSNA) has been one of the prominent advocates of global health care.[1] The Children's Orthopaedics in Underserved Regions (COUR) Committee was initiated in 1999, and formally established in 2001, under the mission of bettering pediatric orthopaedic care in areas with limited resources.[2,3] The committee's name was officially updated to Pediatric Orthopaedic Global Outreach (POGO) in 2019 in light of the evolution of its mission. It has created and sponsored numerous educationa courses and symposia, online and in person, at the POSNA Annual Meetings, and served as a resource for surgeons leading outreach trips around the world. The POGO Committee also administers the POGO Scholars Program which supports pediatric orthopaedic surgeons from low- and middle-income countries to attend the POSNA Annual Meeting or International Pediatric Orthopaedic Symposium (IPOS®), as well as an observership with a POSNA member surgeon to further their educational goals.[3,4] A focus of the POGO Committee's work has been continuing to build mutually

beneficial relationships with these international surgeons after their POGO Scholar experience so that we can continue to learn from one another and support each other as colleagues.

In addition to clinical educational programs, successful research programs led by local surgeons can further provide evidence-based recommendations that are specific to their local population and pathology.[4-6] In light of facilitating global research in pediatric orthopaedics, the purpose of the present study is to understand the current needs and challenges of conducting research from the perspectives of international pediatric orthopaedic surgeons who have participated in the POGO Scholars Program (POGO Scholars).

Materials and Methods

Study Design

An electronic survey was created by the POGO Research Subcommittee under Google Forms® and was first posted in the POSNA Newsletter in 2021, calling for the international pediatric orthopaedic surgeons who were POGO Scholars ("the Scholars") to participate. Thirteen Scholars responded to the survey. In 2022, the survey was further disseminated via email to all Scholars of record from 2007 to 2020. The email was sent on behalf of the POSNA POGO Research Subcommittee.

The survey was composed of nine questions listed below. Details can be found in Appendix I.

1. What do you perceive to be the biggest barriers to performing academic research for orthopedists in your country?
2. What do you perceive to be the biggest barriers or challenges for you personally in performing academic research?
3. Where do you hope to publish your research?
4. Of the below options, which do you believe to be the most important for disseminating your research?
5. What do you perceive to be the biggest barriers or challenges for you to publish research?
6. What have been the most important resources or assets in supporting your research career thus far?
7. Additional support in which of the following areas would be most helpful for your research career?
8. In what area(s) could POSNA best support your research career?
9. Would you be interested in presenting your research in a POSNA POGO Online Symposium?

Data Analysis

Descriptive statistics were performed on the data collected by Google Forms®. The survey was anonymous and did not record the participant's email address or other personal information. However, they were given the option to voluntarily disclose their name and country of practice.

Results

The survey was sent to 76 past POGO Scholars who came from 38 different countries across the continents of Asia, Africa, Europe, and South America. A total of 34 responses were received (44.7% response rate). Nineteen respondents expressed interest in presenting their research in a POGO virtual symposium. Some Scholars also disclosed the geographic location of their clinical practice that encompassed the following countries: four in India, two in Kenya, and one each in Argentina, Brazil, Cameroon, Chile, Costa Rica, Ethiopia, Nepal, Nigeria, Panama, the Philippines, Tanzania, and Uganda.

The major barriers to performing research in the Scholars' countries were lack of funding (82.4%), insufficient training in research (70.6%), and issues relevant to study execution, including logistical issues, lack of research support and dedicated research time (64.7%). (Figure 1A) When asked about the Scholars' personal barriers to conducting research, the top three remained the same (Figure 1B).

In terms of disseminating the research findings, the majority of the Scholars considered it most important to publish their research in internationally indexed journals

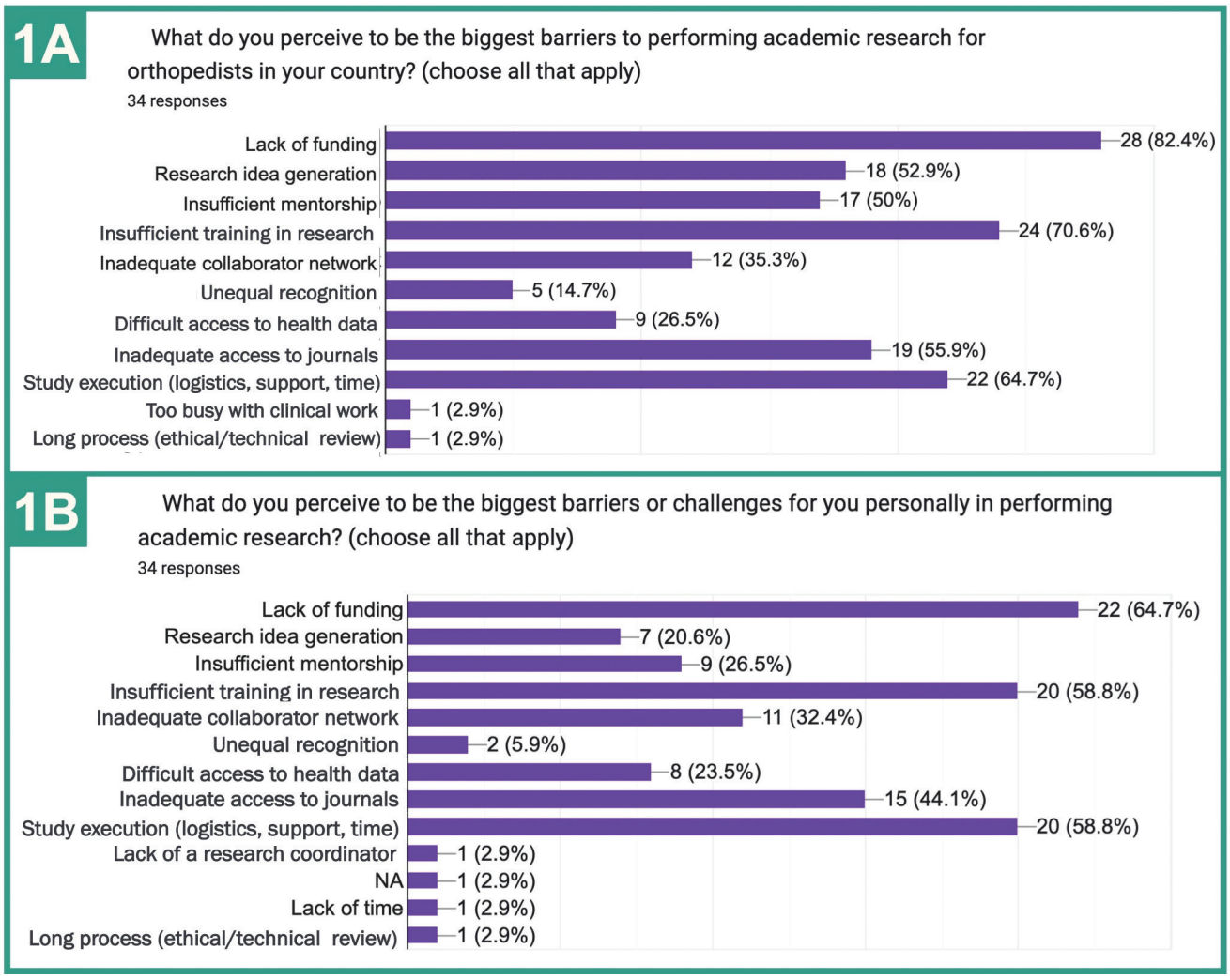

Figure 1. *The biggest barriers for the Scholars to conduct academic research: (A) in the Scholars' country, and (B) for the Scholars personally.*

(58.8%), followed by presentation at international conferences (17.6%) (Figure 2A). Similar priorities were expressed for their preferred platform of sharing their research findings, albeit with additional interest in presenting at their local conferences (Figure 2B). Upon trying to publish their research, the Scholars reported a multitude of challenges, including the need for statistical assistance (56.3%), prohibitive publication costs and difficulty with manuscript revisions (50% each), perceived bias against other countries (40%), perceived lower relevance to journals, and difficulties obtaining acceptance (37.5% each). Language barrier was reported by 9 of 34 (28.1%) Scholars (Figure 2C).

Scholars reported they could benefit most from POSNA's support in the area of funding (64.7%), research writing support (55.9%), and statistics and data analysis (52.9%). In addition, research mentorship (50%), education on research methods (47.1%), and research networking (44.1%) were also emphasized (Figure 3A). These areas were reflected in the Scholars' personal needs should they further develop their research career, while "support for more equitable collaborations" was also highlighted (Figure 3B). The most important assets that have enabled the Scholars to do research were their educational background and research training (53.1%), local partners and mentors (46.9%), international partners and mentors

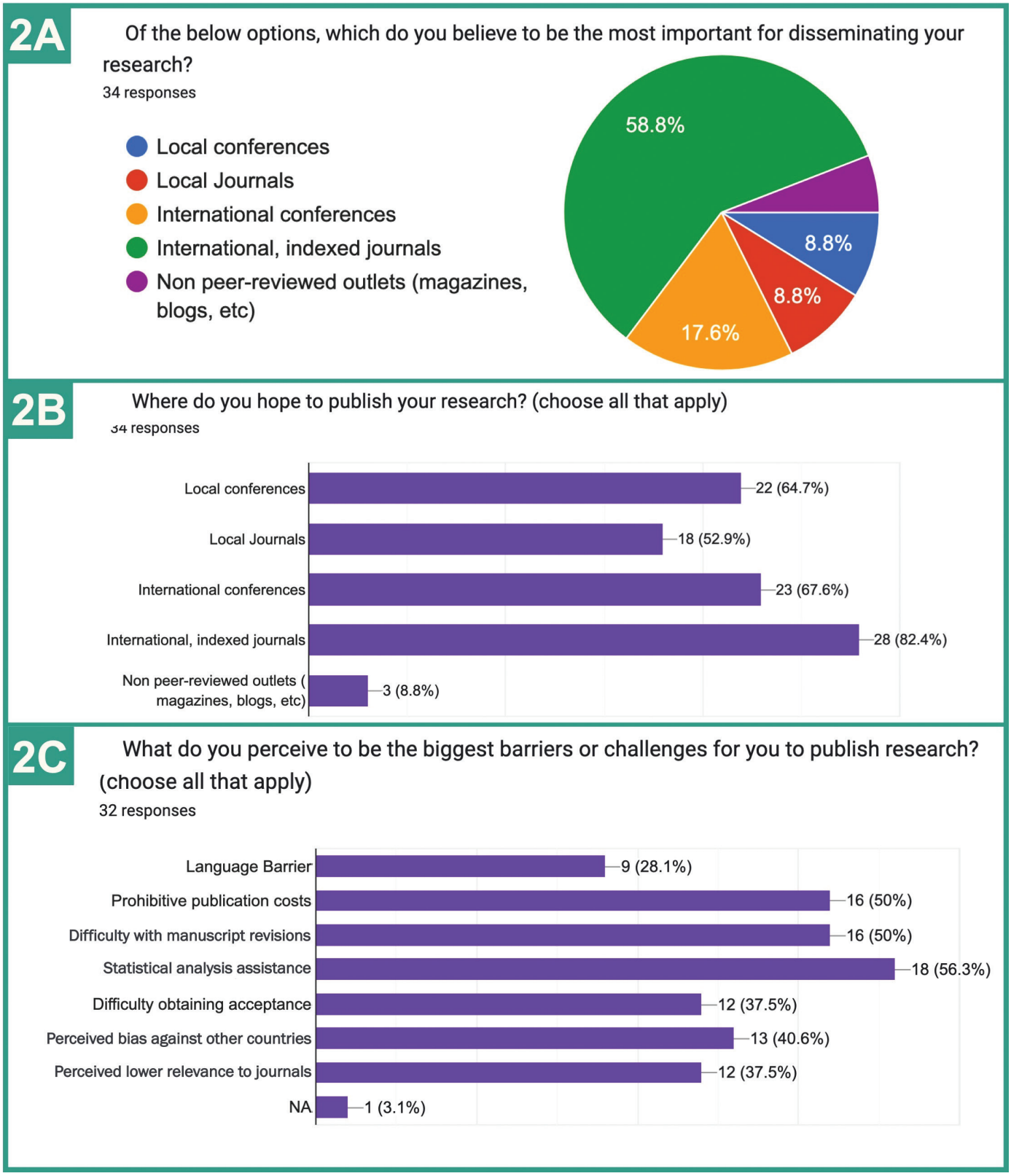

Figure 2. *The channels for the Scholars to disseminate their research results when prioritized by (A) the importance and level of impact of the channels, and (B) their personal preference, as well as (C) their perceived challenges of publishing their research findings.*

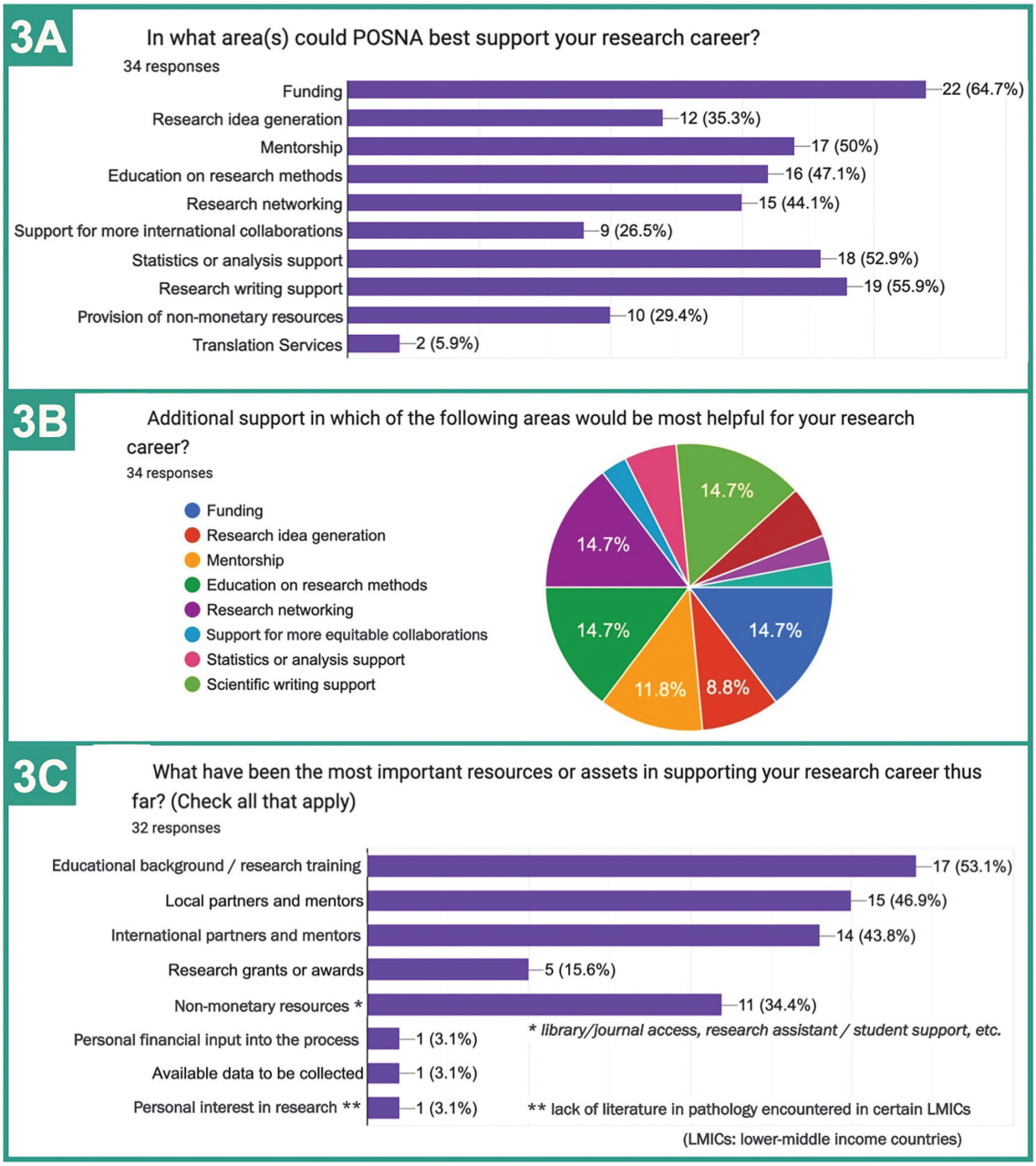

Figure 3. *Responses for continued development of the Scholars' research careers, across areas that can be supported by (A) POSNA, (B) in general, and (C) resources and assets that have supported the Scholars thus far in their research.*

(43.8%), followed by other resources such as library and journal access or research staff support (34.4%) (Figure 3C).

Discussion

All the POSNA POGO Scholars surveyed in this investigation expressed interest in conducting academic research. Half of the respondents were eager to share their results in an international virtual symposium, particularly if sponsored by POSNA. The challenges of securing research funding and resolving logistical and scientific methodologic issues are similar to those encountered by orthopaedic surgeons in North America but can be amplified in areas with limited resources.

Originally, POGO was formed with the core mission of improving pediatric orthopaedic care in lower and middle income countries (LMIC),[2,3] as paralleled by other initiatives in orthopaedic surgery.[7-11] In addition to direct support of professional personnel (e.g. surgeons, staff, etc.) and materials (e.g., implants, medications, equipment, etc.), establishing a sustainable local team through education and training has always been emphasized.[12-14] The Scholars may see a wide variety of pathologies that are not commonly seen in North America; to adapt to the local culture and resources, they may develop unique approaches to the same clinical problem or do the same procedures using alternative techniques.[15] Instead of being a unilateral supporting program, the Scholars and surgeons from North America have learned mutually from each other.[3,14]

The Research Subcommittee expanded the spectrum of POGO's mission in light of the need of the Scholars to develop scientific evidence for their practice. The representation of their research in indexed orthopaedic journals is disproportionately low relative to their patient population, which is much larger than that in North America.[16,17] Similar to the clinical model, the approach of research outreach should be mutually beneficial and resource-sharing,[2,18] with the goal of establishing locally sustainable research programs that produce studies that can guide surgeons caring for patients all over the world.[19,20] Although quite a few Scholars have built outstanding research records in their home countries, many Scholars can still benefit from international collaboration, research mentorship, as well as resources from POSNA.

Based on the results of this survey, the POSNA POGO Committee is exploring strategies for continuing to collaborate with past POGO Scholars and supporting better-targeted strategies to build sustainable research programs (Table 1).

Exploring additional channels for the Scholars to access POSNA resources can be instrumental. The Scholars should be the principal investigator (PI) to truly build a locally driven research program. Enabling them access to POSNA research grants and other POSNA resources, such as social networking with POSNA members, could mitigate certain major challenges they are facing. Presenting or publishing their research findings or unique surgical techniques in journals or virtual symposia that are affiliated with POSNA could also facilitate research results dissemination and future funding allocation.

An online platform to match international research mentors and mentees may foster the development of research

Table 1. Suggested Strategies to Facilitate POGO Scholars Research Activities

Enable better access to POSNA resources for the Scholars to • Apply for POSNA research grants as the principal investigator • Social network with POSNA members • Present research findings in POSNA-affiliated journals and virtual symposia
Offer an online platform for research mentors-mentees matching • The Scholar can be either a mentor or a mentee • Mentorship on both scientific and "real-life" challenges
Expand one-on-one research collaborations to international research consortia • Multi-center resource sharing and brainstorming • Challenges: higher cost and effort to manage, including multiple IRBs, consistency of data collection, various time zones for meetings
Recognize the contribution of international orthopaedic surgeons • Share equitable credits in publications and presentations for the Scholars' effort • Recognize impactful international orthopaedic innovations

expertise. An experienced Scholar can mentor another Scholar or a POSNA member, and this does not necessarily need to be the traditional academic model of surgeons from high income countries (HIC) mentoring LMIC surgeons. Similar to what has been done domestically in multiple professional societies in North America, the mentor can be consulted for scientific rigors such as study design, data collection and statistical analyses, as well as real-life problem solving, such as staff support, time management, and strategies for collaborations and publications. This can also turn into a resource-sharing research collaboration between the two surgeons.

The one-on-one model can also be expanded to an international, multi-center research consortium that involves multiple surgeons across the continents.[18] This structure provides a wide base of study population and brainstorming capacity. It is more resilient because it does not rely on the personal connection between two surgeons. The tradeoff, however, is the higher cost and effort to manage a multi-center collaboration, which can be further complicated by its international nature when mitigating the institutional review board requirements, consistency of data collection, and regular group meetings across various time zones.

The POSNA POGO Committee has a dedicated history of building strong relationships with the Scholars. The COVID-19 pandemic, though unfortunate, did boost the use of technologies for academic endeavors, including virtual conferences and presentations. Engaging the Scholars frequently via these channels can further strengthen the bonds formed during in-person visits to North America. Appreciating the research effort the Scholars have been exercising by providing equitable credits in virtual symposia and publications can be instrumental for building a Scholar-led research program and the continued growth of future collaborations. This POSNA-driven model may strike a balance between the personal one-on-one versus the traditional international multi-center model.

Lastly, it is imperative to recognize that a lot of the innovations in orthopaedic surgery were pioneered outside of North America, and we have learned from the Scholars and other international surgeons as much as they learned from us. For example, in certain HIC where metal prostheses are disfavored, recycled autograft has shown comparable outcomes in treating malignant bone tumors.[21] Gluteus fibrosis is more commonly seen in areas outside of North America. The synergic effort from local and North American orthopaedic surgeons led to good functional recovery of the young children while introducing unique opportunities to study the pathophysiology of the condition.[22]

Limitations

The present study has obvious limitations. Responding to the survey was voluntary, and we had only half of the past Scholars who filled out the survey. However, a near 50% response rate is considered remarkable given that some Scholars came to POSNA more than 10 years ago. The questionnaire did not particularly ask for the specifics on the challenges each Scholar was facing, and this is where a well-matched research mentor could further investigate and advise.

Conclusions

The Scholars face similar challenges as academic surgeons do in North America but with the added challenges inherent to a limited resource environment. Their research endeavors may be synergized by mutually beneficial involvement such as sharing POSNA resources in research collaboration, grant funding opportunities, networking, and other areas. Collaboration as equitable partners fosters long-lasting relationships and may provide the groundwork for both local research program development and future networking. The POGO Committee will use the results of this survey in their ongoing efforts to support research as a way of improving care for children with orthopaedic needs around the world.

Acknowledgements

The authors would like to acknowledge Jason Young, MD, for his assistance in developing the survey questionnaire.

Disclaimer

No funding was received. The authors report no conflicts of interest related to this manuscript.

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Appendix I

1. What do you perceive to be the biggest barriers to performing academic research for orthopedists in your country? (choose all that apply)

    - ○ Lack of funding
    - ○ Research idea generation
    - ○ Insufficient mentorship
    - ○ Insufficient training in research methods
    - ○ Inadequate collaborator network
    - ○ Unequal partnerships or unfair recognition when working with international colleagues
    - ○ Difficulty with access to health/patient data
    - ○ Inadequate access to journals and primary literature
    - ○ Barriers to study execution (logistical delays, lack of support, insufficient time)
    - ○ Other:

2. What do you perceive to be the biggest barriers or challenges for you personally in performing academic research? (choose all that apply)

    - ○ Lack of funding
    - ○ Research idea generation
    - ○ Insufficient mentorship
    - ○ Insufficient training in research methods
    - ○ Inadequate collaborator network
    - ○ Unequal partnerships or unfair recognition when working with international colleagues
    - ○ Difficulty with access to health/patient data
    - ○ Inadequate access to journals and primary literature
    - ○ Barriers to study execution (logistical delays, lack of support, insufficient time)
    - ○ Other:

3. Where do you hope to publish your research? (choose all that apply)

    - ○ Local conferences
    - ○ Local journals
    - ○ International conferences
    - ○ International, indexed journals
    - ○ Non-peer-reviewed outlets (magazines, blogs, etc.)
    - ○ Other:

4. Of the below options, which do you believe to be the most important for disseminating your research?

    - ○ Local conferences
    - ○ Local journals
    - ○ International conferences
    - ○ International, indexed journals
    - ○ Non-peer-reviewed outlets (magazines, blogs, etc.)
    - ○ Other:

5. What do you perceive to be the biggest barriers or challenges for you to publish research? (choose all that apply)

    - Language barrier
    - Prohibitive publication costs
    - Difficulty with manuscript revisions
    - Lack of statistical analysis assistance
    - Difficulty obtaining acceptance
    - Perceived bias against research from low- and middle-income countries
    - Perceived lack of relevance to international journals
    - Other:

6. What have been the most important resources or assets in supporting your research career thus far? (check all that apply)

    - Educational background or training in research methods
    - Local partners and mentors
    - International partners and mentors
    - Research grants or awards
    - Non-monetary resources (Library/journal access, research assistant or student support, etc.)
    - Other:

7. Additional support in which of the following areas would be most helpful for your research career?

    - Funding
    - Research idea generation
    - Mentorship
    - Education on research methods
    - Research networking
    - Support for more equal/equitable international partnerships or collaborations
    - Statistics or analysis support
    - Scientific writing support
    - Provision of non-monetary resources (access to primary literature, personnel support)
    - Translation Services
    - Other:

8. In what area(s) could POSNA best support your research career?

    - Funding
    - Research idea generation
    - Mentorship
    - Education on research methods
    - Research networking
    - Support for more equal/equitable international partnerships or collaborations
    - Statistics or analysis support
    - Research writing support

- Provision of non-monetary resources (access to primary literature, personnel support)
- Translation services
- Other:

9. Would you be interested in presenting your research in a POSNA POGO Online Symposium?

- Yes
- No

My name is: (optional)

Which country are you currently practicing in? (optional)