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Evaluating Global Surgery Partnerships From Low and Middle Income Country Perspectives

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ABSTRACT

Introduction: Little is known about perceptions of low-income and middle-income country (LMIC) partners regarding global surgery collaborations with high-income countries (HICs).

Methods: A survey was distributed to surgeons from LMICs to assess the nature and perception of collaborations, funding, benefits, communication, and the effects of COVID-19 on partnerships.

Results: We received 19 responses from LMIC representatives in 12 countries on three continents. The majority (83%) had participated in collaborations within the past 5 y with 39% of collaborations were facilitated virtually. Clinical and educational partnerships (39% each) were ranked most important by respondents. Sustainability of the partnership was most successfully achieved in domains of education/training (78%) and research (61%). The majority (77%) of respondents reported expressing their needs before HIC team arrival. However, 54% of respondents were the ones to initiate the conversation and only 47% said HIC partners understood the overall environment well at arrival to LMIC. Almost all participants (95%) felt a formal process of collaboration and a structured partnership would benefit all parties in assessing needs. During the COVID-19 pandemic, 87% of participants reported continued collaborations; however, 44% of partners felt that relationships were weaker, 31% felt relationships were stronger, and 25% felt they were unchanged.

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Conclusions: Our study provides a snapshot of LMIC surgeons' perspectives on collaboration in global surgery. Independent of location, LMIC partners cite inadequate structure for long-term collaborations. We propose a formal pathway and initiation process to assess resources and needs at the outset of a partnership.

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Background

Globalization, trainee enthusiasm to reduce health disparities, and technological advances have contributed to the growth of Academic Global Surgery (AGS).[1,2] It is now estimated that up to 71% of surgical residency programs in the United States host global health activities.[3] Collaboration has shifted from short-term volunteerism to more sustainable efforts aimed at creating longer-term partnerships in education, training, and research.[4] Additionally, frameworks to achieve bidirectionality in the relationships between low-income and middle-income countries (LMICs) and high-income countries (HICs) have been devised and focus on themes of sensitivity, understanding local needs, and ensuring the sustainability of partnerships.[5-10] Despite these efforts, in practice, partners in LMICs often express feelings of intellectual isolation.[11]

Further exploration of the relationship in the authorship patterns in global surgery was performed by Grant *et al*[12] through a systematic review. This showed that 80% of AGS literature is published exclusively by HICs, 13% by HIC and LMIC partnerships, and only 7% exclusively by LMIC surgeons. This absence of LMIC academic input underscores the need to further elevate and understand the LMIC perspective in all facets of collaboration. In this study, we aim to address this deficit by understanding the LMIC viewpoint on AGS. A survey of LMIC surgical society members was conducted to investigate their perceptions of current partnership patterns. We hypothesized that from the perspective of LMIC partners, global surgical collaboration has increased but lacks suitable structure to promote balanced bilateral participation.

Methods

We performed a cross-sectional survey study with the target population being LMIC surgeons with active participation in global surgery-related civil societies including the Association of AGS, West Africa College Surgeons, College of Surgeons of Eastern, Central, and Southern Africa, and American College of Surgeons. The Checklist for Reporting Results of Internet E-Surveys guidelines for web-based surveys were used in implementing study design and data collection.[13] Data were collected anonymously and this study was considered exempted from the Oregon Health and Sciences University Institutional Review Board. A description of the study, consent for participation, and public survey link to a 45-question survey comprising six main categories was distributed electronically via e-mail to 75 selected participants using a Research Electronic Data Capture from June 2021 to February 2022. The initial 6-mo data collection period was extended a further 2 mo due to unstable internet connection in low resource areas during the pandemic which led to barriers in survey completion within the initially agreed upon timeframe. The survey was developed using expert opinion and consensus through a committee within the Association of AGS. Survey questions were stratified into the following categories: previous international collaborations, nature of previous collaborations, funding sources, benefits of partnership, communication between collaborators, and the effects of the COVID-19 pandemic on partnerships. Data were analyzed in Microsoft Excel and descriptive summarized.

Results

Survey cohort

We received 21 completed responses to the public survey link with a response rate of 28%. Surgeons who indicated they were practicing in non-LMIC countries were excluded. LMIC qualification was determined as defined by the World Bank. There were 19 completed surveys from LMIC surgeons included in the analysis. Respondents were from 12 countries on three different continents (Fig. 1) and consisted of five different surgical specialties. Across respondents, no geographic bias was apparent evidenced by no similar answer trends per geographic region.

Nature of collaborations

Most respondents (84%) had participated in global surgical collaborations within the last 5 y, 37% of which occurred virtually. Participants subjectively answered that most interactions remained occasional (69%) while some activities were regularly scheduled (44%). North America was the major HIC partner involved in 63% of all partnerships, Europe was involved in 50%, Asia (other than India or China) 37%, China (21%), Australia/South Pacific (21%), India (16%), other countries on the same continent (16%), South America (11%), Sub-Saharan Africa (11%), New Zealand (5%), and 5% of respondents did not know.

According to LMIC partners, HIC surgeons most commonly participated in partnerships by performing surgical operations in LMIC (74%). In addition to the planning and performance of operations, 71% of these surgeons participated in nonoperative clinical activities such as postoperative care and rounding on patients. By contrast, all LMIC partners were involved in these latter activities. HIC surgeons were involved in nonoperative educational work such as Grand Rounds, workshops, and lectures 93% of the time in their LMIC partner setting (Fig. 2).

Fig. 1 – Cohort geography.

LMIC perception of funding sources

Half of all respondents believed that partnerships were funded by the partnering HIC (50%), while 38% of partners reported that funding was secured from national/state/local governments, foreign governments, or competitive grants. Fewer LMIC partners reported that funding came from local nongovernmental organizations (25%), self-funded through the LMIC institution (12%), or did not know their funding source (13%).

Sustainability and value of partnerships

When LMIC partners were asked to rank what type of collaboration was most valuable (clinical, education and training, research), clinical partnerships related to patient care and healthcare delivery improvement were ranked number 1 by most participants (53%) (Fig. 3). However, such clinical partnerships were also considered the least sustainable with only 25% of respondents reporting achievement of sustainability.

When LMIC partners were asked about benefits of partnerships, provision of otherwise unavailable medical care was reported by only 21% of respondents. Most respondents reported benefits of opportunity for trainee education (95%), forum for faculty research or educational exchange/collaboration (63%), and access to latest technology and techniques (53%). When asked what respondents believe the largest benefits for their HIC partners are, the opportunity to enrich trainee education was cited as number 1 (68%), closely followed by giving back to the global community (58%), and recognition in academic and professional circles (63%).

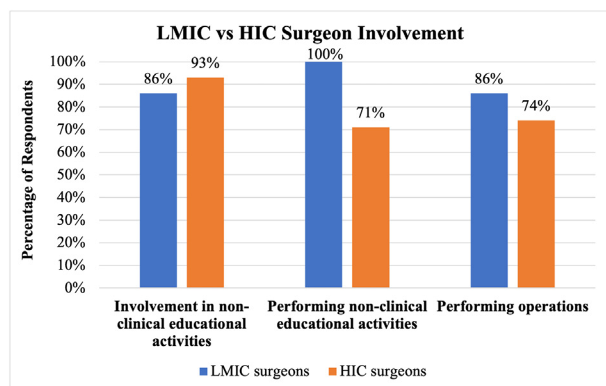

Fig. 2 – LMIC *versus* HIC surgeon involvement in different activities.

Impact of COVID on partnerships

Although most participants have been able to continue collaboration during the COVID-19 pandemic (87%), most of the collaboration occurred in the domains of education and research rather than clinical care. Half of the respondents (44%) felt that relationships were weaker because of the COVID-19 pandemic. However, 31% felt that relationships were stronger and 25% felt they were unchanged (Fig. 4). Partnership collaboration has often continued during COVID via electronic means, with 79% of participants meeting virtually for education and 50% meeting virtually for research. With regard to assistance combating the pandemic, 43% of respondents noted involvement in partnerships related to donations of personal protective equipment and supplies.

Communication and understanding local needs

Importantly, 74% of respondents reported that HIC teams performed surgery, but only 42% stated HIC teams understood

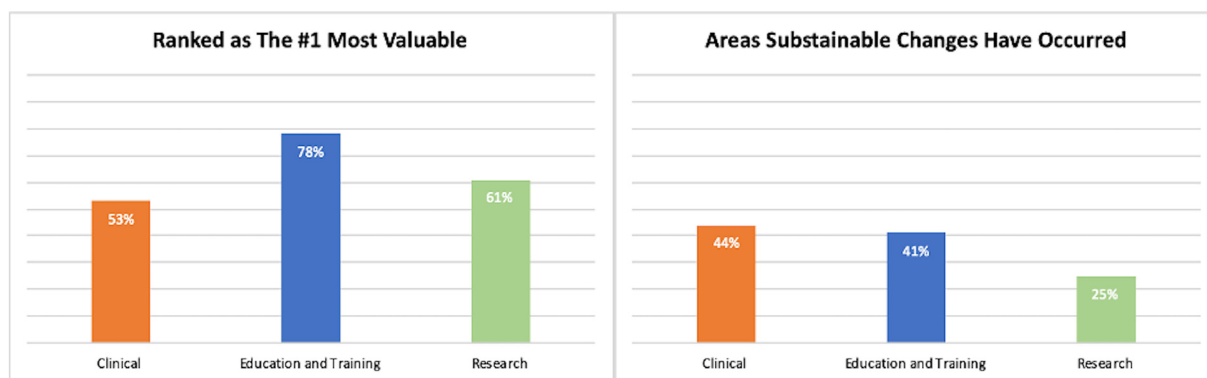

Fig. 3 – LMIC partner ranking of the value and sustainability of different types of partnerships.

the LMIC clinical/operating room environment well prior to arrival. Furthermore, while 78% of LMIC surgeons reported that they expressed their clinical needs before HIC visitor arrival, 57% stated they were the ones to initiate the conversation between partners. Overall, HIC partners were only felt to adequately understand the LMIC environment 47% of the time. This perception of poor initial communication was consistent across regions surveyed (Fig. 5). Almost all (95%) of respondents felt that a formal process would benefit all parties in assessing needs prior to collaboration. All respondents believed that a prearrival checklist would be most beneficial in assisting HIC institutions and surgeons to understand the LMIC environment (Fig. 6).

Discussion

Our survey helps to clarify the state of AGS. It is seen in this survey that collaborations are continuing to expand, with 84% of LMIC survey respondents participating in global surgery partnerships for operative engagement, research, or education.[14] Commonly, when HIC surgeons were engaged operatively, they were also involved in nonoperative educational activities (93%). Only 21% of LMIC representatives surveyed noted the provision of otherwise unavailable medical care as a core benefit to partnership, which is evidence that global surgical partnerships have evolved from their originating ideology in mission-based care.[4] The sustainability of partnerships is valuable to LMIC partners and needs to continue to be improved. Critically, clinical partnerships were deemed among the most valuable and the least sustainable by LMIC surgeons. As a testament to this, most HIC partners are performing surgery but about one-third of operating surgeons are perceived not to be involved in postoperative care. For collaborations to be truly longitudinal, guidelines governing HIC surgeon involvement in all phases of clinical care should be adhered to and expanded toward research and training partnerships. Additionally, partnerships should advocate for the transference of knowledge to build local independence and capacity.[4,12,15-18]

Existing evidence has shown that there is a lack of consensus on a set of best practices to guide new and evolving international partnerships.[19,20] A scoping review by Monnette *et al*[21] identified common themes between published guidelines which center around equity, agenda-setting, and capacity building. Nevertheless, the acknowledgment of obvious power dynamics and the entrenched history of paternalism in global medicine are lacking. The development of such principles is an important first step in attaining partnership equity, but more importantly, focus should be given to the implementation of these principles in meaningful way that empowers LMICs in this perspective shift.[21] Due to the unique barriers and needs of distinct communities, international organizations should collaborate to establish a flexible framework that can be individualized such that agreed upon principles translate into horizontal and symbiotic relationships. On a smaller scale, this concept of bidirectionality was indirectly explored in the survey through the evaluation of enrichment of both LMIC and HIC trainee education, which was identified by participants as the largest benefit of prior partnerships. The concept of teaching often has noble intentions, but teaching in global medicine has historically been

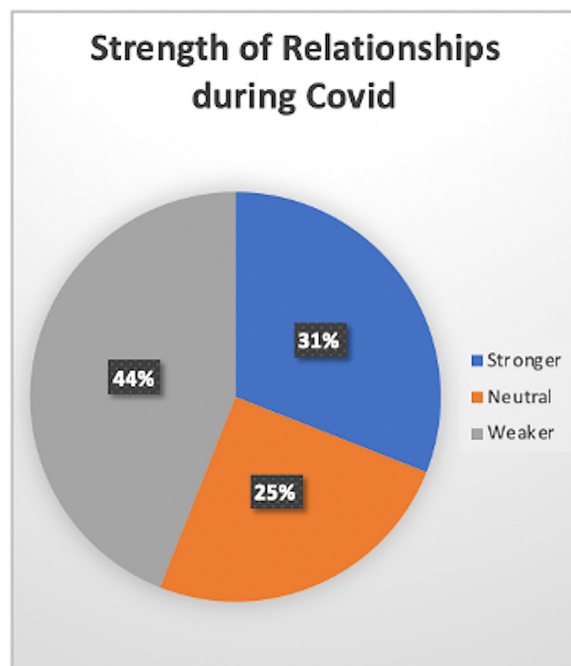

Fig. 4 – Relationship strength during COVID-19.

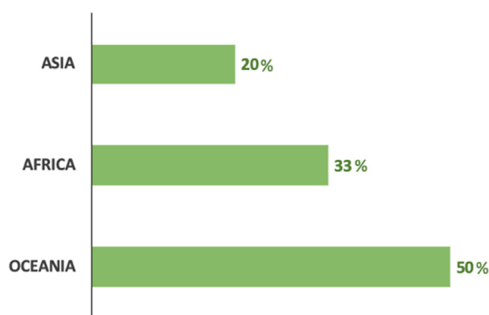

Fig. 5 – Visiting teams understanding of the environment well prior to arrival by region.

laden with problematic white saviorism and reliant on the misconception that only HIC surgeons play the role as 'teacher,' while LMIC surgeons serve the role as 'learner.' Bolstering bidirectionality must be fostered by the understanding that both sides of the partnership can learn distinct pathophysiologies and surgical techniques that may not be common in their respective parts of the world. To address this, surgical training programs from both HICs and LMICs should restructure global surgery tracks to include a more formalized system of funding and scheduling exchanges for both trainees and consultants such that experiences are intentional and truly mutually beneficial.

Along with the enrichment of trainee education, LMIC partners believed that the greatest benefit to successful global partnerships is recognition in academic and professional circles. Simultaneous career advancement from both LMIC and HIC surgeons is necessary and can be done equitably through shared authorship and grants, allowing both sides to benefit. One example of a shared educational and research-focused initiative funded by various grants is the development of an online, case-based simulation platform used for teaching and testing called ENTRUST.[22-25] The platform was co-created by Stanford, the University of Global Health Equity in Rwanda, and the College of Surgeons of Eastern, Central, and Southern Africa and has resulted in international conference presentations and publications by both LMIC and HIC surgeons alike. Holistic efforts such as the aforementioned project require extensive planning phases and thoughtful budgeting

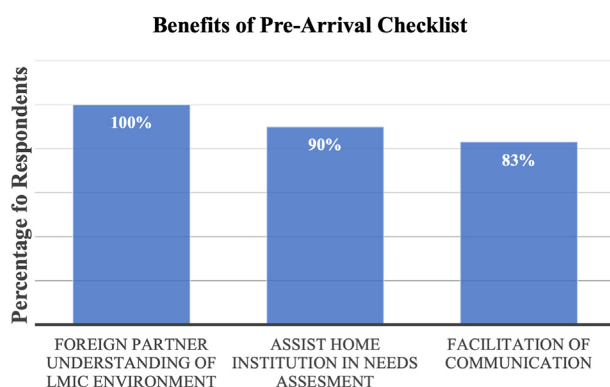

Fig. 6 – LMIC partner perspective on benefits of a prearrival checklist.

that allows for specified funding to serve as inspiration for what true collaboration across continents can represent. One of the major steps to upheaving the power dynamic between partners is availing more funding sources for LMIC surgeons and institutions. Without independent funding, LMIC partners are forced to rely on their HIC counterparts for allocation of money to pursue collaboration; however, the HIC sees fit. There is evidence from a case study in Rwanda that LMIC independence and authorship improves after long-term funding is secured.[9] An emphasis on securing independent funding for LMIC collaborators will promote independence, bidirectionality, and the longevity of partnerships. Given the inconsistencies in funding sources in this study, with some participants noting they did not even know the funding source for collaboration, identifying and discussing funding prior to the initiation of partnerships can increase transparency and longevity of relationships. Public organizations like the World Health Organization and private entities like the Bill and Melinda Gates Foundation need to pave the way in leveling the funding playing field. Travel grants hosted by civil societies such as the International Society of Surgery are a worthy first step, but without scaling these efforts, LMIC partners will continue to be at a disadvantage.

Evaluating the strength of partnerships in withstanding the COVID global pandemic yielded mixed results. Although a large proportion of participants (47%) felt that the pandemic had weakened relationships, 31% felt relationships were stronger and 25% felt they were unchanged. Although not directly asked about in this study, recent literature suggests partnerships that became stronger during the COVID-19 pandemic can be attributed to the global adoption of online video conferencing and teaching methods, with many fields offering international skills workshops and research meetings through the use of cell phones and video conferences.[26-28] Reasons for weakened relationships include loss of funding due to shifting of funds to cover more immediate needs and logistical challenges such as canceled operations due to limited resources.[28,29] In a time when innovation is a vital international response to a novel pandemic, global surgery partnerships that have remained successful may advance care and promulgate evidence-based guidelines. The partnerships that were successful during COVID serve as a model for future-oriented relationships that can withstand the rapidly changing global environment.

Limitations of our study include a small sample size which may not reflect the view of LMIC surgeons not involved in surgical societies or connected to AGS, making generalization potentially problematic. However, this study was not meant to be a comprehensive perspective. Rather, the aim was to perform a needs assessment to introduce the current landscape of global partnerships in the aftermath of a global pandemic, and ultimately to identify gaps in the way partnerships are currently being conducted. Our follow-up study currently ongoing and spearheaded by leaders in the West African College of Surgeons is a deeper investigation into the creation of a set of best practice guidelines that can serve as a flexible framework for new and evolving global partnerships. Most importantly, we acknowledge the fact that the majority of the authors on this manuscript practice in HICs and that the concept of neo-colonialism should not be perpetuated. Current literature commenting on global partnership principles

stem mostly from papers written by HIC authors, with only one manuscript to our knowledge that was published by a set of LMIC authors*. We are thus conducting a subsequent study that dives deeper into this topic which will be headed by surgeons from LMICs.

The academic global surgical community has identified important ethical standards for global surgical partnerships but is yet to achieve these best practices.[14,15] Results of this survey redemonstrate deficiencies in both equitable collaboration between HIC and LIMC partners and in the long-term sustainability of partnerships. A formal structure for partnerships will be an important step in the evolution of AGS from its foundations in paternalistic approaches to a more bidirectional, ethical practice. Therein, we propose a formal process to structure AGS partnerships before their outset for subsequent success, sustainability, and equity (Fig. 7). This will be spearheaded by a tool that would initiate communication and critically evaluate individual needs, encourage transparent communication and pursuit of funding sources, and establish authorship agreements among other metrics.[9,16] We further propose that there is benefit in advancing this structure longitudinally beyond partnership initiation with scheduled intervals to meet, check-in, and discuss the status of the partnership and obstacles members may be facing. Once collaboration has begun, continued reflection will be important to promote problem prevention in addition to problem solving. Discussion of each of the partner's perspectives during the interval check-ins will be crucial to maintain communication beyond the initial onset. This allows for a better understanding of one's own position along with the position of one's partner. Specifically, guided reflection with feedback from partners is likely to be most effective.[17] Cultivating adaptability through such a process will be especially important in the ever-changing global environment in which these relationships take place. Furthermore, clear outcome measures need to be established to ensure that success is met for both partners. Finally, if partnerships were to dissolve, a debrief session should be included as a final termination of the partnership. Both partners should reflect on the lessons learned and decision to terminate the partnership, preventing this from occurring in the future. The end goal is a self-propagating relationship that can withstand challenges, with the long-term partnership structure outlasting any of the individuals. This approach will further promote a shift away from HIC-dominated collaboration.[5,11] It will also allow further development of the research and educational capacity in the LMIC, thereby addressing the paucity of LMIC perspective and research in the published literature.[18]

As a next step, we are conducting a mixed-methods review through focus groups to determine best practices to encourage success, sustainability, and equity. Additionally, we are exploring characteristics of partnerships that thrived during the COVID-19 pandemic and identifying problems within existing relationship structures that could be solved or prevented by means of a more formal structure. This process will be repeated with HIC collaborators to create a well-informed instrument for deployment prior to onset of an AGS collaboration, and to inform a truly bidirectional, sustainable framework for AGS partnerships.

Conclusions

AGS collaborations are increasingly diverse, with the most sustainable collaborations currently taking place in the domain of clinical partnerships. However, the greatest benefit is thought to be in sustainable educational and research collaboration. Operating HIC surgeons are not perceived to be involved in postoperative care, and poor initial communication yields inadequate understanding of LMIC clinical environments. The COVID-19 pandemic has had mixed effects on these relationships. We propose a longitudinal framework for the commencement and maintenance of partnerships between HIC and LMIC collaborators to promote greater bidirectionality and sustainability.

Disclosure

Dr Nwomeh is an Associate Editor for the Journal of Surgical Research; as such, he was excluded from the entire peer-review and editorial process for this manuscript.

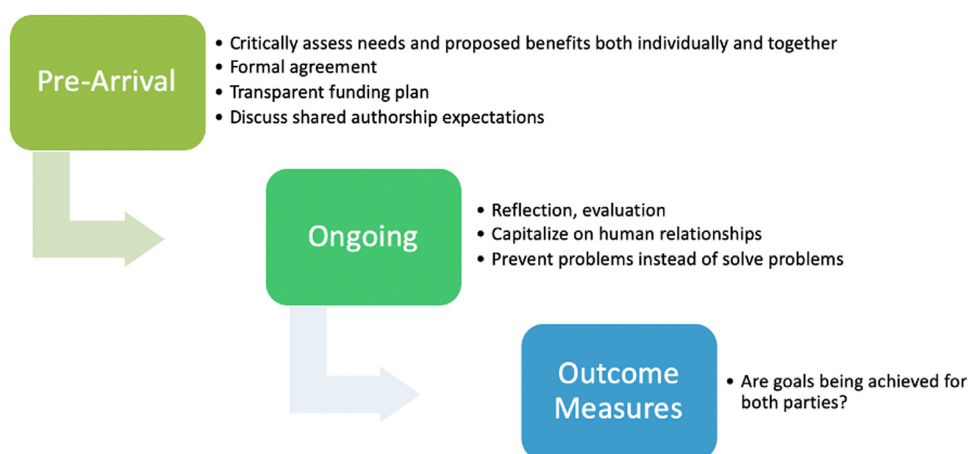

Fig. 7 – Longitudinal pathway for successful partnerships.

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None.

CRediT authorship contribution statement

Kelsi N. Krakauer: Conceptualization, Data curation, Formal analysis, Investigation, Methodology, Validation, Visualization, Writing – original draft. **Lye-Yeng Wong:** Formal analysis, Investigation, Methodology, Project administration, Resources, Software, Supervision, Validation, Visualization, Writing – review & editing. **Joseph Tobias:** Data curation, Formal analysis, Methodology, Project administration, Supervision, Writing – original draft. **Olubunmi Majekodunmi:** Conceptualization, Data curation, Investigation, Methodology, Validation, Visualization. **Darius Balumuka:** Data curation, Investigation, Methodology, Resources, Software, Validation. **Kali Bravo:** Investigation, Methodology, Resources, Software, Validation, Visualization, Writing – review & editing. **Emmanuel Ameh:** Conceptualization, Data curation, Investigation, Methodology, Project administration, Resources. **Samuel Finlayson:** Conceptualization, Formal analysis, Investigation, Methodology, Project administration, Resources, Supervision. **Benedict Nwomeh:** Conceptualization, Data curation, Methodology, Project administration, Resources, Supervision. **Ziad Sifri:** Conceptualization, Investigation, Methodology, Project administration, Resources, Supervision, Visualization. **Anthony Charles:** Conceptualization, Project administration, Resources, Software, Supervision, Writing – review & editing. **Sanjay Krishnaswami:** Conceptualization, Data curation, Investigation, Methodology, Project administration, Resources, Validation, Visualization, Writing – review & editing.

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