Exploring Factors Associated with the Prioritization of South-to-South Partnerships by International Global Health Institutions in the Southern Hemisphere

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Abstract

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INTRODUCTION: Academic global health programs in North America have proliferated substantially since the turn of the century. Recent studies have sought to better understand the sustainability and impact of these programs and to evaluate the extent to which partnerships between global health academic institutions in North America and international institutions were mutually developed and are mutually beneficial, and to identify determinants of equity, benefit, harm, and sustainability. Of primary interest, at the conclusion of our 2016 study of North American Academic Institutions and their International partners, we reported that roughly 40% of international partnering institutions intend to prioritize South-to-South over South-to-North partnerships in the future. In this cross-sectional study, the UW researcher explored factors that may be associated with future prioritization of academic global health partnerships

METHODS: A cross-sectional study was used to explore factors that may be associated with South-to-South partnership prioritization and to test three different hypotheses:

1. **Dissatisfaction Hypothesis**: dissatisfaction with partnership collaboration and/or performance with institutions in the Northern Hemisphere is associated with an increased probability for international partners reporting future South-to-South partnership prioritization (SSPP) as opposed to South-to-North partnership prioritization (SNPP).
2. **Diversification Hypothesis**: having a predominance of current global health partnerships with North American academic institutions results in a desire to develop a more balanced global health partnership portfolio and thus prompts international partners to pursue future SSPP as opposed to SNPP.
3. **Maturation Hypothesis**: having a higher number of global health partnerships (total), is an indicator of an institution's higher level of global health development/maturity and creates capacity for future SSPP as opposed to continued SNPP.

Data were collected using surveys that included quantitative and semi-quantitative questions in the form of Likert scales. Surveys were disseminated through the use of Survey Gizmo, an online survey tool, and an electronic version (Microsoft Word) was disseminated via email. Original data collection took place from June 8 to October 15, 2015. Additional data collection took place from June 12th to August 11th of 2017. Overall, 87 international partnering institutions named by US academic institutions were invited to participate in the study, which achieved a 59% response rate.

To test the **Diversification Hypothesis**, the variable "North American Partnership Number-Proportion Matrix" was created as a composite indicator with 6 categories that reflected the number of North American partnerships that each international institution reported, coded dichotomously so that greater than or equal to 5 partnership with North American academic institutions = 1, and North American partnership proportion, coded such that North American partnerships represented less than 67% = 1, greater than or equal to 67% and less than 100% = 2, and 100% = 3.

To test the **Maturation Hypothesis**, “Total Partnerships” was coded as an ordinal level variable in which 1 to 3 partnerships = 1, 4 to 9 partnerships = 2, and 10 or more partnerships = 3. In the analyses, this variable was broken down into dummy variables with 1 to 3 partnerships serving as the reference group.

Testing the **Dissatisfaction Hypothesis** included four sets of independent variables. First, “Collaborations and Investment Expectations Not Met,” was coded into a dichotomous variable such that 1 = Meets Minimum or No Expectations. Second, five indicators were used to assess the extent to which international institutions perceived poor performance of their collaborations with North American academic institutions with respect to: assessing institutional needs; establishing mutual goals; addressing institutional needs; planning, monitoring, and evaluating impact; and providing feedback**.** These indicators were coded such that 3 = Poor or Not Done, 2 = Well or Fair, and 1 = Excellent or Very Well. Third, seven indicators examined the extent to which international institutions perceived that their needs were not being met by North American academic institutions with respect to: medical training, collaborative research, clinical or public health interventions, health systems development or capacity building, technology exchange, policy development and advocacy, and student learning and practicum experiences**.** These indicators were coded such that 3 = Poor or Not a Focus Area, 2 = Well or Fair, and 1 = Excellent or Very Well. Finally, “Ranking of Partnership by North American Partner” represented how the partnership between an international institution and a North American academic institution was perceived by the North American academic institution that identified them. The indicator was coded as 1 = High Performing Partnership, 2 = Middle Standing Partnership, 3 = Struggling Partnership.

Statistical Analysis

Statistical analyses included unadjusted logistic regression models to assess the relationship between the outcome variable *Partnership Prioritization* and indicators used to test the Dissatisfaction, Diversification, and Maturation hypotheses and multivariate logistic regression models to adjust the associations between the outcome variable *Partnership Prioritization* and indicators used to test the Dissatisfaction, Diversification, and Maturation hypotheses in order to contextualize these results by geographic region and the type of institutions represented in the data.

RESULTS:

Dissatisfaction Hypothesis

International institutions reporting higher levels of dissatisfaction with their North American partners with respect to how well their collaborations were assessing the needs of their institution (OR = 0.25 [95% CI = 0.07, 0.87]); planning, evaluating, and monitoring impact (OR = 0.23 [95% CI = 0.60, 0.85]), and providing systematic feedback (OR = 0.27 [95% CI = 0.09, 0.87]) were nonetheless less likely to report South-to-South partnership prioritization. Similarly, international institutions with higher levels of dissatisfaction with their North American partners with respect to having their collaboration and investment expectations met were nonetheless somewhat less likely to report future South-to-South partnership prioritization (OR = 0.34 [95% CI = 0.07, 1.70]). Institutions reporting poor needs fulfillment by their North American partners with respect to research collaboration were less nonetheless likely to report South-to-South partnership prioritization (OR = 0.29 [95% CI = 0.27, 1.00]). Finally, institutions that were reported as being part of a "struggling partnership" by North American academic institutions were nonetheless less likely to report prioritization of South-to-South over South-to-North partnerships in the future (OR = 0.27 [95% CI = 0.09, 0.88]).

Diversification Hypothesis

Adjusted analyses showed that international institutions having all of their current partnerships represented by partnerships with North American academic institutions and also having less than 5 current partnerships with North American academic institutions were less likely to report future South-to-South partnership prioritization (OR = 0.01 [95% CI = <0.01, 0.85]) than were institutions with a high, but not complete, proportion of their current partnerships with North American academic institutions, but also that had less than 5 partnerships with North American academic institutions. Likewise, international institutions that have all of their current partnerships represented by partnerships with North American academic institutions and have more than 5 partnerships with North American academic institutions were less likely to report future South-to-South partnership prioritization (OR = <0.01 [95% CI = <0.01, 0.74]).

Maturation Hypothesis

In the adjusted analysis, institutions with 4 to 9 total partners were more likely to report that they anticipate prioritizing South-to-South rather than South-to-North partnerships in the future compared to institutions with only 1 to 3 partners (OR = 2.82 [95% CI = 0.46, 17.24]). Institutions with 10 or more partners were only slightly more likely to report that they anticipate prioritizing South-to-South rather than South-to-North partnerships in the future compared to institutions with only 1 to 3 partners (OR = 1.23 [95% CI = 0.21, 7.20]), suggesting a non-linear association between number of partnerships and prioritization of South-to-South partnerships.

DISCUSSION: The results are not consistent with the Dissatisfaction Hypothesis, give mixed support for the Diversification Hypothesis, and show some support for the Maturation Hypothesis as explanations for the SSPP phenomenon. Of key importance, these findings provide evidence that prioritization for developing partnerships with other institutions in the Southern Hemisphere rather than with institutions in the Northern Hemisphere is not the result of dissatisfaction on the part of global health institutions in the Southern Hemisphere with past or current partners in the Northern Hemisphere.

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Working with King was an unexpected delight and privilege. It is not often that you hear someone referred to as illustrious, yet that was the only description I had heard of King prior to having the opportunity of working with him. The experience proved the description. He delighted my colleagues and I with his wit and knowledge—even a colorful phrase or two—all the while mentoring us with his sage wisdom. It's no wonder that he is known as the *King of Global Health*.

Beyond Steve and King, I am indebted to my friends and colleagues from the START Center. Many of my fondest memories of graduate school are of working with these choice individuals. Truthfully, working with START was one of the greatest experiences of my life—it was the people that I met and worked with that made all of the difference.

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INTRODUCTION

Academic global health programs in North America have proliferated substantially over the past 17 years (1–4). The number of North American schools with a "comprehensive" global health program increased from 6 schools in 2001 (5) to 78 in 2011, according to estimates by the Consortium of Universities for Global Health (CUGH). To better understand the sustainability and impact of the proliferation of these programs, the Strategic Analysis, Research, and Training (START) Center of the Department of Global Health at the University of Washington, in association with the Center for Strategic and International Studies (CSIS) and CUGH in Washington D.C., further studied and reported in 2014 on the *Sustainability and Growth of University Global Health Programs* (1).

That study documented the remarkable growth of global health at North American universities, the variations in size and scope of programs, core competencies associated with global health, training for students, funding, and leadership. However, the challenges of defining and realizing jointly beneficial partnerships with international institutions were not specifically studied and concerns were raised regarding this omission given that global health partnerships between North American academic institutions and institutions in low- and middle-income countries have increased in line with the growth of global health programs at US institutions and are vital to the success of the North American programs. Many of these partnerships developed "organically," often building on the international connections of an individual North American faculty member (5). As such, the extent to which partnerships have formal, strategic, or sustainable funding mechanisms differs substantially, and the functioning of these international partnerships varies from collaborative research to hosting students from partnering institutions. However, as of 2014 when the *Sustainability and Growth of University Global Health Programs* report was published, there had been limited evaluation of how these partnerships function and standardized methods for measuring impact had yet to be developed and applied (8).

Recognizing the need to further understand global health partnerships and in response to questions prompted by the original report (1), a follow up study, *Global Health Programs and Partnerships: Evidence of Mutual Benefit and Equity* (9), was undertaken in 2015 to address questions concerning how

international partnerships are defined and assessed, and how they may or may not be mutually beneficial (1). A primary aim of this follow-up study was to evaluate the extent to which these partnerships were mutually developed, whether they are perceived as mutually beneficial, and to identify determinants of equity, benefit, harm, and sustainability. While the study results were well received, several questions emerged as findings were presented at conferences in 2016.

Of primary interest, the *Global Health Programs and Partnerships: Evidence of Mutual Benefit and Equity* study reported in 2016 that when international institutions were asked "Which type of partnership will be your highest priority to develop in the future?" roughly 40% reported they would pursue South-to-South Partnership Prioritization (SSPP) over South-to-North Partnership Prioritization (SNPP) for the future. Representatives of the 37 international partner institutions reported a total of 516 international partnership, including 37.2% of them with the US, 11.6% with Canada, and 20.9% with Europe (a total of 69.7% with the Global North) and 10.7% with Asia/Pacific, 10.1% with Latin America, and 9.5% with African countries (30.3% with the Global South). Moreover, 97% of these respondents reported that South-to-North partnerships had been most beneficial for this institution to date.

With this information in mind, one of the UW researchers assessed what factors are associated with this prioritization. Questions raised included: Are international partners in the Southern Hemisphere dissatisfied with their current collaborations with partners in the Northern Hemisphere? Or, rather, do they perceive that their collaborations with partners in the Northern Hemisphere have hit a saturation point and seek to diversify their collaborations to include partners from other parts of the world that may share settings and challenges similar to their own? Or, could it be that different institutions have different goals or expectations for their partnerships at different stages of their growth and development?

In this cross-sectional study, the UW researcher explored factors that may be associated with future prioritization of academic global health partnerships. First, factors were broadly explored for their potential to influence global health institutions in the Southern Hemisphere in favor of prioritizing South-to-South over South-to-North partnerships in the future in a qualitative thematic analysis. Following this, three

hypotheses were generated and assessed in reaction to the 2016 study *Global Health Programs and Partnerships: Evidence of Mutual Benefit and Equity* (9). The three hypotheses considered include:

4. **Dissatisfaction Hypothesis**: dissatisfaction with partnership collaboration and/or performance with institutions in the Northern Hemisphere is associated with an increased probability for international partners reporting future South-to-South partnership prioritization (SSPP) as opposed to South-to-North partnership prioritization (SNPP).
5. **Diversification Hypothesis**: having a predominance of current global health partnerships with North American academic institutions results in a desire to create a more balanced portfolio and thus prompts international partners to pursue future SSPP as opposed to SNPP.
6. **Maturation Hypothesis**: having a higher number of total global health partnerships, as an indicator of an institution's higher level of global health development and maturity (e.g., creating and maintaining partnerships requires time and having a larger number of existing South to North partnerships may reflect how long an institution has been in operation and its stage of organizational development), is associated with the ability to undertake future SSPP as opposed to continued SNPP.

METHODS

This cross-sectional study (10) examined factors associated with the expressed future prioritization of South-to-South global health partnerships by international partners.

Setting and Subjects

The setting for this study included a sample of international global health institutions identified by 82 academic institutions in North America that were members of CUGH in 2015 and represented approximately 67.7% of the Association of American Universities (AAU) membership in 2016. Study subjects from the international institutions were identified through a survey completed by North American academic institutions who were asked to identify up to three of their international partnering institutions—one high-performing partnership, one middle-standing partnership, and one struggling partnership—as well as representatives to contact at these institutions and their contact information. The North American

academic institutions identified 87 partnering institutions that had sufficient contact information so that an invitation to participate could be sent. Fifty-one responses were received, including 22 from institutions in partnerships classified as high performing, 21 from partnerships classified as middle standing, and 8 from partnerships classified as struggling. Of the 51 respondents, 5 identified themselves as officers, coordinators, or site leaders; 20 identified themselves as either researchers, lecturers, senior lecturers, or assistant, associate, or full professors; 14 identified themselves as either the department head, assistant director, director, or executive director; and 10 identified themselves as either the chief executive officer, president, assistant dean, dean, or vice chancellor—some respondents reported several roles/positions.

Data

Data used in this study were gathered through web-based surveys designed to assess whether global health partnerships were mutually beneficial and equitable from the perspective of the international organizations partnering with academic institutions in North America (see Appendix A) and to assess factors associated with partnership prioritization (see Appendix B). These surveys were developed through an iterative process and were vetted by representatives of both North American and international institutions who reviewed the survey and provided comments for improvement prior to use. These surveys included a combination of quantitative and semi-quantitative questions in the form of Likert scales. Surveys were disseminated through the use of Survey Gizmo, an online survey tool. To help increase response rates from respondents who struggled with the online survey format, an electronic (Microsoft Word) version was also disseminated. Data collection took place from June 8 to October 15, 2015, and from June 12th to August 11th of 2017. Overall, 87 international partnering institutions were invited to participate in the quantitative portion of the study, which achieved a 59% response rate (51 respondents). However, some respondents did not complete all of the survey. This study was exempted from Human Subjects Review by the University of Washington Institutional Review Board.

Analytic Approach

Statistical Analysis

Survey data were cleaned and analyzed using Stata. Statistical analyses include:

1. Unadjusted logistic regression models to assess the relationships between the outcome variable *Partnership Prioritization* (variables defined below) and indicators used to test the Dissatisfaction, Diversification, and Maturation hypotheses.
2. Multivariate logistic regression models to adjust the associations between the outcome variable *Partnership Prioritization* (variables defined below) and indicators used to test the Dissatisfaction, Diversification, and Maturation hypotheses by geographic region and type of the institutions represented in the survey data.

Visual Analysis

To help represent the relational distribution of global health partnerships of the institutions in the study sample a data visualization was prepared that presents both the country/region of each international global health institution as well as the country/region of the corresponding partner. The data visualization is a Circos style graphic (11), produced in R (12) using the package Circilize (13).

Measures

The outcome of interest was "Partnership Prioritization", which was coded as a dichotomous variable with South-to-South Partnership Prioritization (SSPP) = 1, South-to-North Partnership Prioritization (SNPP) = 0. Data for this variable came from question #7 in the survey, which asks "Which type of partnership will be your highest priority to develop in the future?" Possible answers were either (1) South-to-South or (2) South-to-North.

"North American Partnership Number-Proportion Matrix" was a composite indicator that combined the current number of North American partnerships that an institution reported with the proportion of the international institution's total partnerships that were represented by North American partnerships (i.e., the number of North American partnerships that an international institution reported divided by the total number of partnerships that an international institution reported). Current number of North American partnerships was coded into a dichotomous variable where greater than or equal to 5 partnerships with North American academic institutions = 1 and less than 5 partnerships with North American academic institutions = 0. North American partnership proportion was coded into a categorical variable such that a

North American partnership proportion less than 67% = 1, a North American partnership proportion greater than or equal to 67% and less than 100% = 2, and a North American partnership proportion of 100% = 3. Combining the two variables resulted in a six category indicator, North American Partnership Number-Proportion Matrix, in which “Low Number - Low Proportion” was having less than 5 NA partnerships and a NA partnership proportion less than 64%; “Low Number - Middle Proportion” was having less than 5 NA partnerships and a NA partnership proportion greater than 64%, but less than 100% (Reference Group); “Low Number - High Proportion” was having less than 5 NA partnerships and a NA partnership proportion of 100%; “High Number - Low Proportion” was having greater than or equal to 5 NA partnerships and a NA partnership proportion less than 64%; “High Number - Middle Proportion” was having greater than or equal to 5 NA partnerships and a NA partnership proportion greater than 64%, but less than 100%; and “High Number - High Proportion” was having more than 5 NA partnerships and a NA partnership proportion of 100%.

“Total Partnerships Worldwide” represents the total number of partnerships an institution has worldwide and was coded as an ordinal level variable in which 1 to 3 partnerships = 1, 4 to 9 partnerships = 2, and 10 or more partnerships = 3. In the analyses, this variable was broken down into categorical variables with 1 to 3 partnerships serving as the reference group. This variable was used as an indicator of an institution’s level of establishment.

“Collaborations and Investment Expectations Not Met” represented respondents’ perception of the extent to which their program’s expectations concerning collaborations and investments received were not being met by partnering North American academic institutions. The ratings for each area were originally organized as a Likert scale and recoded for analytic purposes so that 1 = Does not meet your expectations, 2 = Meets minimum expectations, 3 = Meets most of your expectations, 4 = Meets all of your expectations, 5 = Exceeds your expectations. These categories were recoded and collapsed into a dichotomous variable such that 0 = Meets Most, All, or Exceeds Expectations and 1 = Meets Minimum or No Expectations. Data for this variable came from question #13 in the quantitative survey which asks “On a scale of 1 to 5, rate the extent to which your institution’s expectations are being met with respect to the

overall adequacy and usefulness of collaborative investments received from your North American partners?"

A series of five indicators were used to examine the relationship between SSPP and the extent to which international institutions perceived poor performance of their collaborations with North American academic institutions with respect to: assessing institutional needs; establishing mutual goals; addressing institutional needs; planning, monitoring, and evaluating impact; and providing feedback**.** The ratings for each indicator were originally organized as a Likert scale and recoded for analytic purposes so that 1 = Not Done, 2 = Poor, 3 = Fair, 4 = Well, 5 = Very Well, and 6 = Excellent. These categories were recoded and collapsed such that 1 = Excellent or Very Well, 2 = Well or Fair, and 3 = Poor or Not Done. Data for these variables came from question #18 in the quantitative survey which asks "On a scale of 1 (Poor) to 5 (Excellent), please rate how well your institution is working together with its North American partner universities in the following areas: assessing your institution's needs; establishing mutual goals; addressing the needs of your institution; planning, monitoring, and evaluating the impact of collaborations; and systematically providing feedback to your North American university partners."

A series of seven indicators were used to examine the relationship between SSPP and the extent to which international institutions perceived that their needs were not being met by North American academic institutions with respect to: medical training, collaborative research, clinical or public health interventions, health systems development or capacity building, technology exchange, policy development and advocacy, and student learning and practicum experiences**.** The ratings for each indicator were originally organized as a Likert scale and recoded for analytic purposes so that 1 = Not a Focus Area, 2 = Poor, 3 = Fair, 4 = Well, 5 = Very Well, and 6 = Excellent. These categories were recoded and collapsed such that 1 = Excellent or Very Well, 2 = Well or Fair, and 3 = Poor or Not a Focus Area. Data for these variables came from question #21 in the quantitative survey which asks "For the following categories, please rate on a scale of 1 (Poor) to 5 (Excellent) how well your institution's needs are being met by your institution's North American partners."

"Ranking of Partnership by North American Partner" represented how the partnership between an international institution and a North American academic institution was perceived by the North American academic institution that identified them. The indicator was coded as 1 = High Performing Partnership, 2 = Middle Standing Partnership, 3 = Struggling Partnership.

Contextualizing Covariates

"Type of Institution" was a dichotomous variable with 1 = Academic Institutions and 0 = NGOs, government agencies, and other agencies.

"Region of Institution" was represented by categorical variables for Africa (used as the reference group), Asia Pacific, and Latin American and the Caribbean.

A series of 11 indicators were used to examine the relationship between SSPP and the importance of various funding sources (data not shown due to lack of statistical significance in analytic models). The ratings for each area were originally organized as a Likert scale and recoded for analytic purposes so that 1 = Essential, 2 = High Importance, 3 = Medium Importance, 4 = Low Importance, 5 = Not Important, 6 = Do Not Receive. These categories were recoded and collapsed into a dichotomous variable such that 1 = Essential or High Importance and 0 = Other.

RESULTS

Forty-one of 51 respondents answered the question regarding South-to-South versus South-to-North prioritization preference (see Table 1).

Of the forty-one respondents, 16 (39.0%) indicated that they anticipate prioritizing South-to-South partnerships in the future, including 11 (52.4%) of 21 respondents that represented institutions from Africa, compared to only 1 (11.1%) of 9 from Asia Pacific and 4 (36.4%) of 11 from Latin America and the Caribbean. By type of institution, 11 (37.9%) of the 29 respondents that represented academic institutions indicated prioritizing South-to-South partnerships in the future, while 5 (41.7%) of the 12 respondents that

represented NGOs, government agencies, or other agencies indicated prioritizing South-to-South partnerships. Of the 11 respondents representing institutions with 4 to 9 partners, 6 (54.5%) indicated prioritizing South-to-South partnerships compared to 5 (35.7%) of the 14 respondents representing institutions with 1 to 3 partners. Similarly, of the 11 respondents representing institutions with 10 or more partners, 4 (36.4%) indicated prioritizing South-to-South partnerships compared to 5 (35.7%) of the 14 respondents representing institutions with 1 to 3 partners. None of the 6 respondents that represented international institutions from the Southern Hemisphere that were identified as part of a "struggling partnership" by a North American institution indicated prioritizing South-to-South partnerships, while 10 (47.6%) of 21 respondents that represented institutions identified as a "high performing partnership" indicated prioritizing South-to-South partnerships.

Dissatisfaction Hypothesis

Higher levels of dissatisfaction with North American partners were associated with lower likelihood of future South-to-South partnership prioritization. This pattern held for international institutions from the Southern Hemisphere that reported higher levels of dissatisfaction with their North American partners with respect to how well their collaborations were working to assess the needs of their institution (OR = 0.25 [95% CI = 0.07, 0.87]); how well their collaborations were working with respect to planning, evaluating, and monitoring impact (OR = 0.23 [95% CI = 0.6, 0.85]), and how well their collaborations were working with respect to providing systematic feedback (OR = 0.27 [95% CI = 0.09, 0.87]). Similarly, international institutions from the Southern Hemisphere that reported higher levels of dissatisfaction with their North American partners with respect to having their collaboration and investment expectations met were somewhat less likely to report South-to-South partnership prioritization (OR = 0.34 [95% CI = 0.07, 1.70]). International institutions from the Southern Hemisphere reporting poor needs fulfillment with respect to research collaboration from North American partners were likewise less likely to report South-to-South partnership prioritization (OR = 0.29 [95% CI = 0.27, 1.00]). Finally, international institutions from the Southern Hemisphere that were identified as part of a "struggling partnership" were nonetheless less likely to report prioritization of South-to-South over South-to-North partnerships in the future (OR = 0.27 [95% CI = 0.09, 0.88]).

Diversification Hypothesis

The institutions most likely to indicate South-to-South partnership prioritization in the future were those with a high proportion, but not all, of their current partnerships represented by partnerships with North American academic institutions, but these institutions also only had less than 5 partnerships with North American academic institutions. For testing the Diversification Hypothesis, this group of institutions was set as the reference group. Compared to institutions in the reference group, two groups of institutions were less likely to report South-to-South partnership prioritization in the future. The first group were the institutions that have all of their current partnerships represented by partnerships with North American academic institutions and also had less than 5 partnerships with North American academic institutions (OR = <0.01 [95% CI = <0.01, 0.74]). The second group were the institutions that have all of their current partnerships represented by partnerships with North American academic institutions and have greater than or equal to 5 partnerships with North American academic institutions (OR = 0.01 [95% CI = <0.01, 0.74]). In addition, institutions with a high, but not complete, proportion of their current partnerships represented by partnerships with North American academic institutions and that have greater than or equal 5 partnerships with North American academic institutions were somewhat less likely to report South-to-South partnership prioritization in the future (OR = 0.02 [95% CI = <0.01, 1.39]).

Maturation Hypothesis

In the adjusted analysis, institutions with 4 to 9 partners were somewhat more likely to report that they anticipate prioritizing South-to-South rather than South-to-North partnerships in the future compared to institutions with only 1 to 3 partners (OR = 2.82 [95% CI = 0.46, 17.24]), but the difference was not statistically significant. However, institutions with 10 or more partners were only slightly more likely to report that they anticipate prioritizing South-to-South rather than South-to-North partnerships in the future compared to institutions with only 1 to 3 partners (OR = 1.23 [95% CI = 0.21, 7.20]), suggesting a non-linear association between number of partnerships and prioritization of South-to-South partnerships.

Contextual Factors

Apart from the indicators analyzed in an attempt to test the three proposed hypotheses, three sets of contextual indicators were also assessed for possible association with SSPP: Region of Institution, Type of Institution, and indicators of Funding Importance (data not shown). Of these indicators, only Region of Institution had a statistically significant association with SSPP; e.g., international institutions from Africa were more likely to report South-to-South over South-to-North partnership prioritization compared to institutions from the Asia Pacific (OR = 10.76 [1.04, 111.73]). Similarly, international institutions from Latin America and the Caribbean were more likely to report South-to-South over South-to-North partnership prioritization compared to institutions from the Asia Pacific (OR = 4.94 [0.43, 56.90]). Both Region of Institution and Type of Institution were included in multivariate analyses as potential contextual confounders.

Visual Analysis

A total of 541 currently existing partnerships were also reported by respondents from international institutions from the Southern Hemisphere (Figure 1). Visualizing these partnerships provides evidence that when partnering with other institutions in the Southern Hemisphere, the largest proportion of these partnerships are with other organizations within the same geographic region and thus more likely to share similar health challenges and have stronger cultural similarities.

DISCUSSION

The results are not consistent with the Dissatisfaction Hypothesis, give mixed support for the Diversification Hypothesis, and show some support for the Maturation Hypothesis as explanations for the South-to-South partnership prioritization (SSPP) phenomenon identified in *Global Health Programs and Partnerships: Evidence of Mutual Benefit and Equity* (9).

The indicators analyzed to test the Dissatisfaction Hypothesis provide evidence of negative associations between measures of dissatisfaction and SSPP. If the Dissatisfaction Hypothesis was correct and these institutions were voicing their dissatisfaction with their partners in the Northern Hemisphere through

professing plans to prioritize Southern Hemisphere partnerships in the future, we would expect these associations to be positive, not negative. Furthermore, while there was not sufficient variability in the indicator to analyze formally, only one respondent reported that South-to-South partnerships had provided the greatest value to their institution, and yet they still indicated they were prioritizing South-to-North partnerships. In contrast, 16 respondents reported South-to-North partnerships as providing the greatest value to date and still indicated prioritizing South-to-South partnerships. Again, we would expect different results if the Dissatisfaction Hypothesis were correct. The consistency across the different measures of dissatisfaction provides unified evidence against the Dissatisfaction Hypothesis. In sum, these results provide some indication that the possible prioritization of South-to-South partnerships in the future by international global health institutions is not the result of low satisfaction with their partnerships with North American academic institutions. To the contrary, the institutions that were most likely to have reported an intention to prioritize South-to-South partnerships in the future were those that already experience moderate to high satisfaction with their current partnerships with North American academic institutions.

SSPP may result from desires to diversify or "balance the portfolio" of an institution's partnerships and/or from differing needs and expectations of an institution based upon their stage of organizational development. The results from the analysis for the Maturation Hypothesis suggest that institutions are more likely to prioritize South-to-South partnerships in the future after achieving a more advanced stage of organizational development or maturity. Similarly, institutions are more likely to prioritize South-to-South partnerships in the future after having established multiple partnerships with North American academic institutions and when those partnerships represent a substantial proportion of their total number of partners.

Considering the results, an institution that was mostly likely to report SSPP was one that had already established partnerships with academic institutions in the Northern Hemisphere, but didn't have all of their partners from the Northern Hemisphere; experienced high levels of satisfaction with these partnerships; and was likely further along in their stage of organizational development such that they were more self-

sustaining and independent and therefore seeking to prioritize partnerships with other institutions in the Southern Hemisphere. It is not unlikely that new South-to-South partnerships will be with institutions that share geographic proximity and therefore may share similar health problems and contextual challenges as well as representing “partnerships of equals”.

While this study contributes to the discussion on understanding factors associated with partnership prioritization for international global health institutions, it has several limitations. The first are the small sample sizes available and low participation. In addition to the small sample sizes, it is possible that there is selection bias within the sample. All respondents and their associated institutions were identified by academic institutions in North America that are members of CUGH. The membership of CUGH may not be representative of all academic institutions with global health related programs in North America; rather, they are more likely representative of established programs with greater institutional resources and time invested in developing partnerships with other global health institutions around the globe. Likewise, this method would not identify global institutions which currently only have relationships with partners in the Southern Hemisphere; i.e., institutions in our sample had to have at least one partnership with a North Academic institution in order to be identified. Additionally, as such they are also more likely to speak English. It is unlikely that these institutions are a representative sample of global health institutions worldwide. A further limitation is that there is a high likelihood of information bias due to the variation in respondents that completed the surveys (e.g., respondents held a variety of positions as mentioned earlier), which is likely associated with having differing perspectives on partnerships. Another potential source of information bias is that a large proportion of the respondents represent institutions that were part of high performing or middle standing partnerships rather than struggling partnerships. Missing data may also be problematic, as some respondents who began the survey failed to complete it, thus creating higher proportions of missing data for questions located near the end of the original survey. An additional limitation is that data were not collected for other information that may be relevant; e.g., size of institutions, institution finances, date of establishment, length of time doing global health, number of faculty or students, etc.

Despite these limitations, the findings from the study should be of high interest to stakeholders in global health and related disciplines as they contribute to a better understanding of some factors at play in influencing the prioritization preferences of international global health institutions in the near future. Of key importance, these findings provide evidence suggesting that prioritization for developing partnerships with other institutions in the Southern Hemisphere versus with institutions in the Northern Hemisphere is not the result of undisclosed dissatisfaction on the part of global health institutions in the Southern Hemisphere with past or current partners in the Northern Hemisphere. Hopefully, these findings will help assuage potential concerns that the findings from *Global Health Programs and Partnerships: Evidence of Mutual Benefit and Equity* (9) may have aroused.

The number of global health programs at North American academic institutions continues to grow. In 2017, there were 153 academic institutions that were members of CUGH (6) and 253 global health programs were listed in CUGH's 2017 Academic *Global Health Programs* database (7). Future research should continue to explore factors that may be associated with partnership prioritization in order to provide refined and robust results. Potential steps for furthering the discussion include: improving the rigor of results through increasing study sample size, diversifying the study sample to include a wider variety of international global health institutions, and/or attempting to track trends in partnership prioritization over time to see what factors remain salient over time.

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Table 1: Descriptive Characteristics of International Institutions Surveyed, N=41

	South to South Partnership Prioritization (SSPP) N = 16 (39.0%)		South to North Partnership Prioritization (SNPP) N = 25 (61.0%)	
	n	%	n	%
Region of Institution				
Asia Pacific (Reference Group)	1	11.1%	8	88.9%
Latin America & Carribean	4	36.4%	7	63.6%
Africa	11	52.4%	10	47.6%
Type of Institution				
Non-academic (Reference Group)	5	41.7%	7	58.3%
Academic	11	37.9%	18	62.1%
Total Partnerships				
1 to 3 Partnerships (Reference Group)	5	35.7%	9	64.3%
4 to 9 Partnerships	6	54.5%	5	45.5%
10 or More Partnerships	4	36.4%	7	63.6%
North American Partnership Number-Proportion Matrix				
Low Number - Low Proportion	2	50.0%	2	50.0%
Low Number - Middle Proportion (Reference Group)	3	75.0%	1	25.0%
Low Number - High Proportion	3	30.0%	7	70.0%
High Number - Low Proportion	3	75.0%	1	25.0%
High Number - Middle Proportion	3	37.5%	5	62.5%
High Number - High Proportion	1	16.7%	5	83.3%
Partnership's North American Ranking				
High Performing	10	47.6%	11	52.4%
Medium Standing	6	42.9%	8	57.1%
Struggling	0	0.0%	6	100.0%
Partnerships of Greatest Value to Date				
South to South	0	0.0%	1	100.0%
South to North	16	40.0%	24	60.0%
Collaboration and Investment Expectations Not Met				
Does Not Meet Expectations	0	0.0%	1	100.0%
Meets Minimum Expectations	3	27.3%	8	72.7%
Meets Most Expectations	7	41.2%	10	58.8%
Meets All Expectations	4	66.7%	2	33.3%
Exceeds Expectations	1	20.0%	4	80.0%

Note: All variables except for Partnership's North American Ranking are from the perspective of international institutions in the Southern Hemisphere and are in reference to partnerships that they have with North American academic institutions when referring to their partnerships.

Table 1 (Continued): Descriptive Characteristics of International Institutions Surveyed, N=41

	South to South Partnership Prioritization (SSPP) N = 16 (39.0%)		South to North Partnership Prioritization (SNPP) N = 25 (61.0%)	
	n	%	n	%
Collaborations Meet Minimum or do not Meet Expectations				
Assessing Institutional Needs				
Not Done	1	25.0%	3	75.0%
Poor	0	0.0%	3	100.0%
Fair	2	66.7%	1	33.3%
Well	3	21.4%	11	78.6%
Very Well	4	50.0%	4	50.0%
Excellent	4	66.7%	2	33.3%
Establishing Mutual Goals				
Not Done	0	0.0%	1	100.0%
Poor	2	66.7%	1	33.3%
Fair	2	40.0%	3	60.0%
Well	3	37.5%	5	62.5%
Very Well	2	16.7%	10	83.3%
Excellent	5	55.6%	4	44.4%
Addressing Institutional Needs				
Not Done	0	0.0%	2	100.0%
Poor	0	0.0%	2	100.0%
Fair	4	57.1%	3	42.9%
Well	3	30.0%	7	70.0%
Very Well	5	41.7%	7	58.3%
Excellent	2	40.0%	3	60.0%
Planning, Monitoring, and Evalutating Impact				
Not Done	0	0.0%	2	100.0%
Poor	1	33.3%	2	66.7%
Fair	4	44.4%	5	55.6%
Well	0	0.0%	10	100.0%
Very Well	5	83.3%	1	16.7%
Excellent	4	50.0%	4	50.0%
Providing Feedback				
Not Done	0	0.0%	3	100.0%
Poor	2	28.6%	5	71.4%
Fair	2	28.6%	5	71.4%
Well	2	22.2%	7	77.8%
Very Well	6	75.0%	2	25.0%
Excellent	2	50.0%	2	50.0%

Note: All variables are from the perspective of international institutions in the Southern Hemisphere and are in reference to partnerships that they have with North American academic institutions when referring to their partnerships.

Table 1 (Continued): Descriptive Characteristics of International Institutions Surveyed, N=41

	South to South Partnership Prioritization (SSPP) N = 16 (39.0%)		South to North Partnership Prioritization (SNPP) N = 25 (61.0%)	
	n	%	n	%
Poor Needs Fulfillment				
Medical Training				
Not a Focus Area	7	41.2%	10	58.8%
Poor	0	0.0%	3	100.0%
Fair	1	100.0%	0	0.0%
Well	2	25.0%	6	75.0%
Very Well	2	50.0%	2	50.0%
Excellent	2	50.0%	2	50.0%
Collaborative Research				
Not a Focus Area	0	0.0%	5	100.0%
Poor	0	.	0	.
Fair	2	28.6%	5	71.4%
Well	3	37.5%	5	62.5%
Very Well	4	50.0%	4	50.0%
Excellent	5	55.6%	4	44.4%
Clinical or Public Health Interventions				
Not a Focus Area	5	55.6%	4	44.4%
Poor	0	0.0%	3	100.0%
Fair	1	12.5%	7	87.5%
Well	5	62.5%	3	37.5%
Very Well	1	25.0%	3	75.0%
Excellent	2	40.0%	3	60.0%
Health Systems Development/Capacity Building				
Not a Focus Area	1	25.0%	3	75.0%
Poor	0	0.0%	2	100.0%
Fair	2	20.0%	8	80.0%
Well	9	90.0%	1	10.0%
Very Well	2	33.3%	4	66.7%
Excellent	0	0.0%	5	100.0%
Technology Exchange				
Not a Focus Area	4	66.7%	2	33.3%
Poor	1	20.0%	4	80.0%
Fair	3	33.3%	6	66.7%
Well	2	28.6%	5	71.4%
Very Well	4	50.0%	4	50.0%
Excellent	0	0.0%	2	100.0%
Policy Development and Advocacy				
Not a Focus Area	6	37.5%	10	62.5%
Poor	1	20.0%	4	80.0%
Fair	3	30.0%	7	70.0%
Well	1	100.0%	0	0.0%
Very Well	2	50.0%	2	50.0%
Excellent	1	100.0%	0	0.0%
Student Learning and Practicum Experience				
Not a Focus Area	1	33.3%	2	66.7%
Poor	1	33.3%	2	66.7%
Fair	3	75.0%	1	25.0%
Well	3	42.9%	4	57.1%
Very Well	1	11.1%	8	88.9%
Excellent	5	45.5%	6	54.5%

Note: All variables are from the perspective of international institutions in the Southern Hemisphere and are in reference to partnerships that they have with North American academic institutions when referring to their partnerships.

Table 2: Indicators Associated in Univariate and Multivariate Analysis with South-to-South Partnership Prioritization

	Univariate Model		Multivariate Model 1**	
	Odds Ratios	95% Confidence Intervals	Odds Ratios	95% Confidence Intervals
Region of Institution				
Asia Pacific (Reference Group)	1.00	.	1.00	.
Latin America & Carribean	4.57	0.41, 51.14	4.94	0.43, 56.90
Africa	8.80	0.93, 83.35	10.76	1.04, 111.73
Type of Institution				
Non-Academic	1.00	.	1.00	.
Academic	0.86	0.22, 3.37	0.53	0.11, 2.56
Total Partnerships Worldwide				
1 to 3 Partnerships (Reference Group)	1.00	.	1.00	.
4 to 9 Partnerships	2.16	0.43, 10.84	2.82	0.46, 17.24
10 or More Partnerships	1.03	0.20, 5.33	1.23	0.21, 7.20
North American Partnership Number-Proportion Matrix*				
Low Number - Low Proportion	0.33	0.02, 6.65	0.12	<0.01, 13.54
Low Number - Middle Proportion (Reference Group)	1.00	.	1.00	.
Low Number - High Proportion	0.14	0.01, 2.00	0.01	<0.01, 0.82
High Number - Low Proportion	1.00	0.04, 24.55	0.33	<0.01, 27.47
High Number - Middle Proportion	0.20	0.01, 2.91	0.02	<0.01, 1.36
High Number - High Proportion	0.07	<0.01, 1.51	<0.01	<0.01, 0.72
Partnership's North American Ranking				
High Performing	1.00	.	1.00	.
Middle Standing	0.83	0.21, 3.22	0.58	0.12, 2.78
Struggling	<0.01	0, -	<0.01	0, -
Collaboration and Investment Expectations Not Met				
Meets Most, All, or Exceeds Expectations	1.00	.	1.00	.
Meets Minimum or does not Meet Expectations	0.44	0.10, 2.00	0.34	0.07, 1.70
Collaborations Meet Minimum or do not Meet Expectations				
Assessing Institutional Needs	0.34	0.12, 0.99	0.25	0.07, 0.87
Establishing Mutual Goals	1.36	0.52, 3.57	1.29	0.44, 3.79
Addressing Institutional Needs	0.55	0.19, 1.59	0.45	0.13, 1.63
Planning, Monitoring, and Evalutating Impact	0.25	0.07, 0.84	0.23	0.06, 0.85
Providing Feedback	0.31	0.11, 0.88	0.27	0.09, 0.87
Poor Needs Fulfillment				
Medical Training	0.76	0.34, 1.73	0.62	0.24, 1.59
Collaborative Research	0.29	0.09, 0.95	0.27	0.07, 1.00
Clinical or Public Health Interventions	0.84	0.34, 2.04	0.78	0.29, 2.08
Health Systems Development/Capacity Building	0.79	0.29, 2.16	0.80	0.27, 2.39
Technology Exchange	0.88	0.36, 2.13	0.93	0.35, 2.44
Policy Development and Advocacy	0.64	0.25, 1.60	0.52	0.18, 1.52
Student Learning and Practicum Experience	1.30	0.54, 3.14	1.13	0.42, 3.03

Notes: *For the North American (NA) Partnership Number-Proportion Matrix, Low Number - Low Proportion is having less than 5 NA partnerships and a NA partnership proportion less than 64%; Low Number - Middle Proportion is having less than 5 NA partnerships and a NA partnership proportion greater than 64%, but less than 100% (Reference Group); Low Number - High Proportion is having less than 5 NA partnerships and a NA partnership proportion equal to 100%; High Number - Low Proportion is having greater than or equal to 5 NA partnerships & NA partnership proportion less than 64%; High Number - Middle Proportion is having greater than or equal to 5 NA partnerships and a NA partnership proportion greater than 64%, but less than 100%; and High Number - High Proportion is having greater than or equal to 5 NA partnerships and a NA partnership proportion equal to 100%. **The multivariate model adjust for type and/or region of institution in addition to the indicator of interest to contextualize the associations from the unadjusted models. For region and type of institution, the multivariate model only adjusts for either type or region of institution.

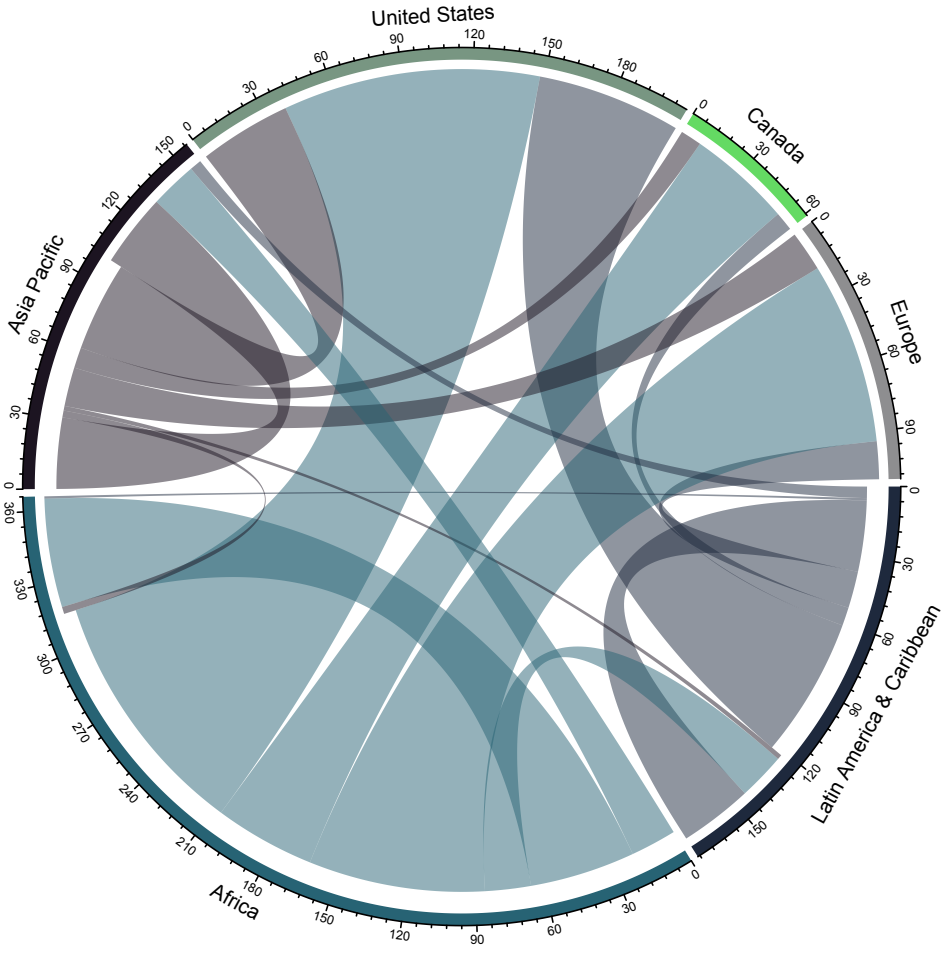

Figure 1. Visualizing Global Health Partnerships of International Global Health Institutions.

A total of 541 partnerships were reported by 41 respondents representing International Global Health Institutions. These partnerships were organized by country/region of the corresponding partner (e.g., Africa, Asia Pacific, Canada, Europe, Latin America & the Caribbean, and the United States). For each individual partnership, Figure 1 presents both the country/region of the International Global Health Institution as well as the country/region of the corresponding partner in a Circos style graphic (11), produced in R (12) using the package Circilize (13). The partnership connections are represented by colored bands between two country/regions that are scaled to represent the number of partnerships between these country/regions. All International Global Health Institutions were from either Africa, Asia Pacific, or Latin America & the Caribbean, with Africa representing the region with the largest number of partnerships (316). The relationships represented in Figure 1 provide evidence that when partnering with other institutions in the Southern Hemisphere, International Global Health Institutions are mostly likely to partner with other institutions from their own region. For example, there are three bands connecting to Africa on the left side of the graphic (around number marks 330 to 360), the largest source for these bands traces back to Africa on the bottom right corner of the graphic. Similar relationships are presented for the Asia Pacific and Latin America & the Caribbean, where the largest proportion of partnerships trace back to each respective region with the next largest proportion coming from Africa.

Appendix A: International Institution Quantitative Survey

In this survey we are using the definition of Global Health published by *Koplan, et al. Lancet, 2009 Jun 6; 373(9679): 1993-5: "…global health is an area for study, research, and practice that places a priority on improving health and achieving equity in health for all people worldwide. Global health emphasizes transnational health issues, determinants, and solutions; involves many disciplines within and beyond the health sciences and promotes interdisciplinary collaboration; and is a synthesis of population-based prevention with individual-level clinical care."*

In addition, we define partnerships as mutually beneficial collaborations among two or more entities who are acting cooperatively toward one or more specific shared goals related to global health.

General information

What is your name?

What is the name of the institution where you are primarily based?

Select the type of institution (e.g., private academic institution, public academic institution, NGO, government agency, or other agency)

In what country or countries does this institution operate?

What is your title or position?

Do you have a specific responsibility for global health at your institution?

If so, what is that responsibility?

What is your e-mail address?

What is your phone number?

1. If you represent an academic institution, which of the following degrees and programs with a focus on global health are offered by your own academic institution? Check all that apply.

One or more global health courses	
Certificate	
Undergraduate minor	
Undergraduate major	
Dual or joint undergraduate major	
MPH with global health concentration or track	
Masters (non-MPH) with global health concentration	
Doctoral (e.g., PhD, DrPH, etc.) with global health concentration	
Joint PhD with global health concentration	
Health professional (e.g., nursing, vet, medical) with global health concentration	
Post-graduate (e.g., fellowships, residency) with global health concentration	
Dual or joint graduate degree including global health	
Joint degree offered by a high-income country	
Other (free text)	

2. If you represent an academic institution, what are the health-related education and training programs your academic institution needs to augment?

3. Approximately how many global health partnerships does your institution have with universities in the following countries and/or regions:

Country / region	**Number of partnerships**
United States	
Canada	
Europe	
Latin America & Caribbean	
Africa	
Asia/Pacific	
Other:_____	

4. What are the key focus areas of your global health partnerships with universities in the following countries and/or regions? Check all that apply.

	Not a focus area	**United States**	**Canada**	**Europe**	**Latin America & Caribbean**	**Africa**	**Asia/ Pacific**	**Other**
Medical professional education and training program								
Public health education and training program								
Collaborative research								
Development or delivery of interventions and services								
Health systems development/capacity building								
Technology exchange								
Policy development & advocacy								
Learning and practicum experience for North American students								

Learning and practicum experience for your own students								
Maximizing global health impact								
Other (specify): _____ _								

Comments:

5. On a scale of 1 to 5, please evaluate the overall strength and value-added of the partnerships that your institution has with the academic institutions listed below.

	No such partnership 0	**Poor 1**	**Fair 2**	**Good 3**	**Very good 4**	**Excellent 5**
North American partner universities						
European partner universities						
Latin American & Caribbean partner universities						
Asia/Pacific partner universities						
African partner universities						
Other (specify): _____						

Comments:

6. Overall, which of the following global health partnerships have been most valuable to you so far?
   - ☐ South-North partnerships
   - ☐ South-South partnerships

7. Which type of partnership will be your highest priority to develop in the future?
   - ☐ South-North partnerships
   - ☐ South-South partnerships

8. On a scale of 1 to 5, rate the extent to which the following areas are priorities for your institution's global health partnerships.

	Not a priority 1	**Low priority 2**	**Medium priority 3**	**High priority 4**	**Highest priority 5**
Knowledge acquisition for students					

Knowledge acquisition for faculty & administrators					
Financial support					
Research support					
Health systems strengthening support					
Interventions or services implementation support					
Technology & equipment transfer					
Reciprocal student exchanges					
Maximizing global health impact					
Other: (specify)					

Comments:

9. On a scale of 1 to 5, please indicate the degree of importance of different sources of North American funding and other funding that have been particularly critical for the success of your partnerships with North American academic institutions.

	Do not receive 0	**Not important 1**	**Low importance 2**	**Medium importance 3**	**High importance 4**	**Essential 5**
Your North American academic partner(s)						
International research agencies (e.g., NIH, Fogarty, Canadian IDRC, other - please specify)						
PEPFAR						
Medical education partnership initiative (MEPI)						
Other North American government funding (e.g., CDC, USAID, CIDA, etc.)						
Non-federal government funding /						

other external grants or contracts						
UN Agencies (e.g., WHO, UNAIDS, UNICEF, World Bank)						
International Non-governmental organizations						
Private donors						
Foundations (e.g. Gates, Rockefeller, Clinton)						
Private philanthropy						
Other: (specify)						

Comments:

10. On a scale of 1 to 5, for your institution's partnership with a North American university that you know the most about, please indicate the extent to which the partnership is beneficial for your institution in the following areas.

	Not applicable 0	**Harmful 1**	**Not beneficial 2**	**Somewhat beneficial 3**	**Beneficial 4**	**Very Beneficial 5**
Knowledge acquisition for students						
Knowledge acquisition for faculty & administrators						
Financial support						
Research support						
Health systems strengthening support						
Interventions or services implementation support						
Technology & equipment transfer						
Reciprocal student exchanges						
Maximizing global health impact						

Comments:

11. What health-related skill sets are most needed in your country and how can North American institutions help to develop and retain these skill sets?

12. What are the primary types of collaborations and investments that your institution receives from its university partners in the United States and/or Canada? Please describe what is supported by these investments.

	Y/N	**Provide specific examples of how each type of investment is utilized by your institution**
1. Cash resources		
2. Collaborative research grants		
3. Our students receive training		
4. Students and trainees from the North American partners help with education, research or service at our institution		
5. Provision of advisors for our faculty		
6. North American academic support for Global Health educational curriculum development and/or delivery		
7. Other (specify): _____		

13. On a scale of 1 to 5, rate the extent to which your institution's expectations are being met with regards to the overall adequacy and usefulness of collaborative investments received from your North American partners?

Does not meet your expectations 1	**Below your expectations 2**	**Meets some of your expectations 3**	**Meets all your expectations 4**	**Exceeds your expectations 5**

14. What have been the administrative and/or operational barriers, if any, to the success of your partnership(s)? (e.g. MOUs, legal registration, visas, taxation policy, or other policies)?

15. Beyond financial and administrative support, what are the **top two or three** types of innovative support that your North American partners could provide that would be most useful in strengthening the impact of your partnerships on global health (e.g. joint courses or degrees, distance learning,

assistance in grant writing, fellowships, mentoring of faculty, policy development, implementation science, etc.)?

Partnership management

16. On a scale of 1 to 5, for the following categories, how adequate is the preparation of **North American** students hosted by your institution?

	Very inadequate 1	**Somewhat Inadequate 2**	**Somewhat Adequate 3**	**Adequate 4**	**Very Adequate 5**
Ethical practices and our country's institutional requirements					
Sociocultural aspects of life in our country					
Cultural awareness for engaging in health work in low- and middle-income countries					
Language training					
Understanding of role, scope of tasks, and supervision while in our country					
Prepared for the challenges of providing care or working in under-resourced settings					

Comments on preparation of North American students or trainees:

17. What kind of preparation is most important for North American students participating in global health projects and what can North American Universities do to better prepare students participating in global health partnerships?

Evaluating success

18. On a scale of 1 to 5, please rate how well your institution is working together with its North American partner universities in the following areas.

	Not done	**Poor 1**	**Fair 2**	**Well 3**	**Very well 4**	**Excellent 5**
Assessing your institution's needs						
Establishing mutual goals						
Addressing the needs of your institution						
Planning, monitoring, & evaluating the impact of collaborations						

Systematically providing feedback to your North American university partners						

Comments:

19. For each type of partnership listed below in which your institution has engaged, describe what specific characteristics and critical factors were necessary to make it **successful?**

Medical professional trainee program (e.g. medicine, nursing public health, pharmacy – please specify)	
Collaborative research	
Capacity building	
Learning and practicum experience for North American students	
Learning and practicum experience for your students	
Other (specify): _____	

20. For each type of partnership listed below that your institution has engaged in, what are the specific factors that may have made it **less successful**?

Medical professional trainee program (e.g. medicine, nursing public health, pharmacy – please specify)	
Collaborative research	
Capacity building	
Learning and practicum experience for North American students	
Learning and practicum experience for your students	
Other (specify): _____	

21. For the following categories, please rate on a scale of 1 to 5 how well your institution's needs are being met by your institution's **North American partners**.

	Not a focus area	**Poor 1**	**Fair 2**	**Well 3**	**Very well 4**	**Excellent 5**
Medical professional training program						
Collaborative research						
Clinical or public health Interventions or services						
Health systems development/capacity building						
Technology exchange						
Policy development & advocacy						
Learning and practicum experience for students						
Other (specify): _____						

Comments:

22. In your current partnerships with North American universities, what are the most important needs and interests that are not being adequately met by any of your partnerships and **what can be done to address what is lacking?**
23. What is the most exciting new opportunity for your institution's global healt partnerships and how do you think your partnerships could jointly address this new opportunity?
24. In conclusion, can you identify specific areas of focus from the list below that your program is working on? Check all that apply.

__HIV/AIDS
__Malaria
__Tuberculosis
__Neglected tropical diseases
__Reproductive, maternal/neonatal, and child health
__Road traffic injuries
__Chronic non-communicable diseases
__Development of policies that address tobacco and alcohol
__Health systems
__Air pollution
__Violence
__Mental health
__Other Please enter an 'other' value for this selection

Thank you for your time

Please indicate if you would like to be personally recognized for your participation in the study (You will not be linked to any specific responses).

Yes ☐ No ☐

It will be extremely helpful to have a brief telephone conversation about topics presented in the surveys. Please indicate if you or another representative from your institution might be willing to participate in a 30 minute telephone follow-up interview to further discuss topics.

Yes ☐ No ☐