Commentary

Strengthening Policy-Relevant Tobacco Research Capacity in Low- and Middle-Income Countries: Challenges, Opportunities, and Lessons Learned

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This commentary aims to inform future efforts to strengthen the capacity to conduct policy-relevant tobacco research in low- and middle-income countries (LMICs). Specifically, this article distills key reflections on experiences from those engaged in policy-relevant tobacco research capacity building across LMICs who presented during a workshop at the 2016 Annual Meeting of Society for Research on Nicotine and Tobacco, sponsored by Society for Research on Nicotine and Tobacco's Global Research Network. Using a framework informed by Potter and Brough's¹ conceptualization of hierarchies of capacity-building needs, researchers in LMICs and high-income countries (HICs) presented case studies in order to describe challenges and opportunities to build research capacity in LMICs and distinguish between individual-, institutional-, and

national-level capacity and systems. According to the case studies, the largest barriers to capacity building and translation exist at the institutional and national levels; thus, we focus on the challenges and opportunities identified at these two levels (Table 1). Of particular note, although many of these challenges are not exclusive to tobacco control research capacity, others are specific to tobacco control.

Institutional-Level Factors

At the institutional level, three primary themes emerged. Specifically, those related to research infrastructure, dissemination, and translation were noted. However, lessons learned as a result of facing these

Table 1. Institutional- and National-Level Factors: Challenges and Opportunities

Level	Challenges	Opportunities
Institutional level		
<i>Infrastructure to support research</i>	<ul style="list-style-type: none"> • Limited research governance structures • Limited grant-funded research practices or processes • Less structured research training opportunities • Limited mentorship infrastructure • Limited options for research-focused careers 	<ul style="list-style-type: none"> • Collaboration with institutions with strong research infrastructure • Capacity-building efforts assisting with developing infrastructure • Formal research training (eg, courses, certificates, workshops) • Distance education • Informal research training • Embed mentorship into institutional roles, projects, and networking events • Ensure application of research skills to various topics (eg, NCDs)
<i>Research dissemination</i>	<ul style="list-style-type: none"> • High-impact journals often in English • Journal mismatch with manuscript content • Cost of publication (in some cases) • Lack of institutional and career support for research dissemination 	<ul style="list-style-type: none"> • Engage English-speaking coauthors • Work with more senior colleagues to advise on target journal selection • Journals taking measures to avoid rejection or exclusion of research from LMICs
<i>Research translation</i>	<ul style="list-style-type: none"> • The need for strategic institutional collaborations to facilitate research execution and translation • Priority areas historically not including NCDs or tobacco 	<ul style="list-style-type: none"> • Engage government and professional organizations, advocacy groups, and civil society • Leverage connections LMIC researchers have to such groups
National level		
<i>Political landscape</i>	<ul style="list-style-type: none"> • Political volatility impeding research efforts • The need for timely and relevant data to impact policy/practice 	<ul style="list-style-type: none"> • Plan for disruptions and to adapt to current political climate • Bolster efforts during climates receptive to tobacco control policy • Listen to local partners regarding priorities and data needs • Timely dissemination via academic channels and media • Leveraging robust evidence from across diverse contexts to refute tobacco industry claims aimed at undermining tobacco control policy
<i>Tobacco industry interference</i>	<ul style="list-style-type: none"> • Financial implications for government and policymakers related to tobacco-related revenues and lobbying • Commonly used antitobacco control messaging to undermine policy adoption 	
<i>National data regarding tobacco impact</i>	<ul style="list-style-type: none"> • Limited tobacco surveillance to illustrate the public health and financial burden 	<ul style="list-style-type: none"> • Advanced statistical modeling • Add key questions to other existing surveys • Strategic use of data from other countries
<i>Research funding</i>	<ul style="list-style-type: none"> • Little, if any, funding for research • Funding restrictions (eg, time, amount) 	<ul style="list-style-type: none"> • Increase recognition of (and funding to address) public health impact of NCDs in LMICs • Develop collaborations with those not focused specifically on tobacco control • Keep apprised of tobacco control research funding • Establish ongoing research collaborations with HIC researchers eligible for certain funding lines

LMICs = low- and middle-income countries; HIC = high-income country; NCDs = noncommunicable diseases.

challenges highlighted several opportunities that might inform future capacity-building efforts.

Limited research infrastructure represents major challenges to developing or sustaining research capacity in LMICs. Limitations broadly include the following: (1) lack of adequate research governance structures necessary to procure funding (eg, institutional review boards, financial administration, grants management offices)²; (2) little (if any) training in grant-funded research practices and processes (eg, identifying requests for applications, presubmission grant reviews); (3) fewer and less structured research training opportunities than in HICs, therefore requiring proactive pursuit of learning opportunities by trainees and supervisors; (4) limited mentorship for LMIC researchers, particularly in their home institutions; and (5) limited financial support, incentive structures, and long-term options for maintaining a research-focused career, whether on tobacco or other topics, which can lead to “brain drain” (ie, seeking

employment outside of LMICs). Specific to tobacco control, public health efforts have historically (and until recently) focused on communicable diseases and other priorities in many LMICs, which has led to limited training and research focusing on noncommunicable diseases (NCDs) in general and, specifically, on tobacco. As such, there may be few structured research learning experiences or sources of mentorship relevant to tobacco control.

Several opportunities to overcome key infrastructure challenges have been identified. Aligning or collaborating with institutions with strong research support infrastructures, including those in HICs, may expand resources and processes that are most efficient and effective for any particular project. To address training challenges specific to tobacco control, such opportunities include the following: (1) integrating tobacco-related content into existing curricula³; (2) regional tobacco control conferences and events that facilitate access to short training workshops and provide opportunities for

networking, knowledge exchange, and relationship development, including mentoring; (3) online resources that provide supportive learning experiences⁴; and (4) general resources regarding research and research ethics (eg, US National Institute of Health's Protecting Human Research Participants). A particularly strategic opportunity involves integrating trainees and junior researchers into projects with intentional mentoring relationships, as they can ultimately take on greater leadership roles in future projects.⁵⁻¹⁰ Regarding limited research-focused options, a more viable and sustainable research career strategy may involve ensuring that research skills can be applied across a range of topics, including both communicable diseases and NCDs. Related to "brain drain," LMIC researchers who migrate to HICs may better be able to obtain resources, and thus support research in their home country/region.

Disseminating research generated in LMICs is critical to making an impact. Publications from LMICs in both locally relevant journals and higher-impact international journals are critical for advancing local policy and for advancing the state of the science.^{11,12} Unfortunately, LMIC researchers face several challenges to publishing in international journals, including (1) language barriers, as most international high-impact journals are published in English; (2) limited prior publication experiences, which, in some cases, make selecting an appropriate journal difficult; (3) cost-prohibitive publication charges for some journal publications; and (4) lack of institutional and career support for research dissemination. To address these challenges, respectively, LMIC researchers might consider partnering with English-speaking colleagues or enlisting services to aid in English translation, consulting with colleagues regarding appropriate target journals, and taking advantage of journals that do not charge for publication or provide waivers or cost reductions for LMIC researchers (eg, *Tobacco Control*).¹² However, institutional support for research dissemination among researchers remains a challenge.

Research translation is imperative to developing evidence-based policy and practice. Working with advocacy, governmental, and professional organizations, as well as civil society and media, can facilitate such translation. However, such stakeholders in LMICs have traditionally focused on other public health issues (eg, reproductive health, malnutrition, tuberculosis, HIV), thus, creating challenges to prioritize tobacco control. On the other hand, LMIC researchers can be found in many contexts outside of academic institutions, including governmental and professional organizations, which can expedite dissemination of results for policy impact.¹³⁻¹⁵

National-Level Factors

At the national level, four major themes emerged. These themes highlighted (1) challenges and opportunities related to potentially rapid shifts in political landscapes, (2) tobacco industry interference, (3) inadequate tobacco-related surveillance, and (4) limited research funding support. Opportunities to address these challenges were also identified.

The political landscape in many countries can shift rapidly, straining relationships among countries that hinder existing research collaborations; one example is the strain between the United States and Syria that delayed research activities within the Syrian Center for Tobacco Studies, a collaboration between United States and Syrian researchers.¹⁰ Moreover, political will can rapidly shift either in favor of or in opposition to tobacco control and related research in ways that are difficult to anticipate with traditional timelines for proposal writing, receiving funding, collecting data, and knowledge translation.¹⁶ Researchers' intimate familiarity with the local tobacco control

policy context is critical, particularly given limited research resources in LMICs. Thus, engaging with and listening to local partners are key in the process of developing timely and relevant research questions. Moreover, research project timelines should be structured to disseminate results in a timely manner and generate support among stakeholders about the longer-term vision for any research project.¹⁷

Tobacco industry interference is another key issue. The industry is often highly influential among government officials, as tobacco-related revenues may be perceived as important, and lobbying efforts may affect policymakers.¹⁸ Collectively, these dynamics may undermine legislative efforts to advance tobacco control policies. Moreover, the tobacco industry has developed a repertoire of antitobacco control arguments.¹⁸ For example, they have argued that smoke-free air policies go against public sentiment, would be difficult to enforce, have a negative economic impact on the hospitality industry, and ventilation systems sufficiently protect against second-hand smoke exposure.¹⁸ The industry has also argued that tobacco control threatens the economic livelihoods of small-scale tobacco farmers and that efforts to raise tobacco taxes lead to increased illicit trade. However, a vast body of research across different contexts can be leveraged to counter such arguments (C. J. Berg, et al., unpublished data),¹⁸ including in litigation, for example, the successful defense of Uruguay's warning size increase challenged by Philip Morris International via a bilateral investment treaty.¹⁹

Limited surveillance of tobacco use makes it difficult for researchers to emphasize the importance of tobacco use for public health and the economy. National priorities in LMICs have not historically included tobacco control and, more broadly, NCDs. The limited (or absent) systematic surveillance or epidemiologic studies to document the tobacco burden make it challenging to attract research or political attention to tobacco control issues. The Global Tobacco Surveillance System, the World Health Organization STEPwise approach to surveillance (STEPS), and Demographic and Health Surveys can provide some data. However, the availability and quality of data vary across LMICs. Some strategies to address these challenges include using advanced statistical modeling, adding key questions to other existing surveys, and using data from other countries to help support research and advocacy efforts.

Research funding is another national-level factor that is critical for addressing a broad range of the aforementioned challenges. Indeed, the most common sources of tobacco research funding are currently from HICs and international agencies, as LMICs often have little, if any, research funding. Furthermore, the little research funding available within LMICs may be earmarked for other priorities, often those regarding malnutrition, infant mortality, and infectious diseases, which have been (and in some countries still remain) serious public health issues. However, tobacco and NCDs are now included in the recently adopted United Nations Sustainable Development Goals.²⁰ This rising recognition of the importance of NCDs may provide opportunities for setting national health priorities, capturing resources for research, and building research teams that include seasoned researchers from other health and development areas. Moreover, given the potential for quick political shifts in favor of or opposition to tobacco control, it is important for nimble small grants programs to be available and promoted in order to conduct timely research that can respond to emerging opportunities that are likely to influence policy. Finally, establishing ongoing collaborations with researchers in other countries, particularly HICs, may provide opportunities to capture funding that LMIC researchers may not otherwise access.

Conclusions

This commentary aimed to highlight some research capacity-building and dissemination efforts in LMICs by identifying institutional- and national-level challenges and opportunities that may foster the design, implementation, and dissemination of research that advances tobacco policy and practice in LMICs and, ultimately, globally. Indeed, LMICs often innovate policies in ways that can inform policy development across a range of contexts. Using these lessons learned and opportunities may help research teams strategize for success when planning tobacco research and capacity-building in LMICs and how to best leverage research findings for global impact on the tobacco epidemic.

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Declaration of Interests

None declared.

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