COMMENTARY

TRANSDISCIPLINARY APPROACHES TO UNDERSTANDING AND ELIMINATING ETHNIC HEALTH DISPARITIES: ARE WE ON THE RIGHT TRACK?

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The public health community's struggle to combat domestic health disparities has occurred in a context of increasing implementation of transdisciplinary research approaches. While conceptually appealing, the focus on the multilevel framing of the causes of ethnic health disparities by large-scale transdisciplinary initiatives has, to date, resulted in few tangible products. Moreover, intervention and community engagement outcomes have received less attention than more process-oriented research outcomes, namely assessing levels of transdisciplinarity achieved during the research process. We argue that a renewed focus on the ultimate products of transdisciplinary approaches, namely effective multilevel interventions, specific health outcome improvements, and greater community involvement, will aid this promising research paradigm in carrying out its philosophical commitment to ending population health disparities. (*Ethn Dis*. 2012;22[4]: 504–508)

Key Words: Transdisciplinary, Health Disparity, Multilevel Intervention, Health Outcome, Evaluation

INTRODUCTION

Differences in disease incidence, prevalence, morbidity, and mortality between US population groups have been recognized since the 1970s.[1] Despite the development of targeted programs to narrow these gaps, less-than-adequate progress toward eliminating health disparities has been made, particularly for racial and ethnic minority populations. Between-group differences have even increased for some disease outcomes, eg, rates of new human immunodeficiency virus (HIV) diagnoses for Black and American Indian/Alaskan Native men.[2] The public health community's struggle to combat domestic health disparities has occurred in a larger context of increasing implementation of transdisciplinary (TD) research approaches broadly in the basic and social sciences.[3] Transdisciplinarity, a process in which conceptual and methodological frameworks from various disciplines are integrated to develop perspectives that transcend traditional disciplinary boundaries, has been described as the most transformative method of collaboration with the highest potential for innovative solutions to difficult scientific and social questions.[4] Traditional research approaches, ie, those employing simple, single-cause, single-discipline, and single-level-of-analysis, are now seen as insufficient for understanding and addressing ethnic health disparities.[5] Instead, TD team science is increasingly viewed as catalyzing a paradigm shift in methods aimed at elucidating and intervening on ethnic health disparities.[6]

Accordingly, there has been significant recent private and public resource investment in TD health disparities science, including funding applications for multi-year, multi-million dollar initiatives in which researchers from different disciplines, departments, institutions, and geographic locations work collaboratively to address specific health disparities questions.[7] Prominent examples of such projects include the National Institutes of Health (NIH) Centers for Population Health and Health Disparities (CPHHD) and the MacArthur Network on Socioeconomic Status (SES) and Health.[8,9] Additionally, TD approaches have also been integrated into the mission statements of the Federal Collaboration on Health Disparities Research (FCHDR), the Office of Behavioral and Social Science Research (OBSSR), and the National Center on Minority Health and Health Disparities (NCMHD, now National Institute on Minority Health and Health Disparities).[5,6,10] These initiatives, as well as those that focus on problems other than health disparities (eg, Transdisciplinary Tobacco Use and Research Centers (TTURCs), Transdisciplinary Research in Energetics and Cancer (TREC) centers), signal the broader research community's faith in the promise of transdisciplinarity as an effective research tool.[11]

The application of TD team science to the problem of ethnic health disparities, while promising, is also frequently called "a bold experiment".[7,12] This immediately begs the question of how we will know when, or indeed whether, the experiment has succeeded. At issue is the logic of how TD approaches are proposed to lead to progress in addressing persistent health disparities, and the immediate and longer-term outcomes of current large-scale TD projects. Evidence already suggests important differences between what TD approaches aspire to achieve and what they have accomplished to date. These differences may reflect the novelty and youth of these efforts; or, they may instead point to important misalignments between

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the logic and implementation of TD research. Whatever the explanation, it is important to reflect critically on such differences with the aim of informing future efforts. As we argue within this article, the success of TD health disparities initiatives demands a specific focus on the assessment of health benefit; to ignore this ultimate research outcome is an over-focus on more proximal measures and risks misdirecting scarce financial resources and squandering the contributions of researchers, community members, and study participants.

THE TRANSDISCIPLINARY RESEARCH PROGRAM PARADIGM

A distinct logic justifying TD health disparities science is evident in the funding applications, reports, and peer-reviewed publications resulting from TD endeavors.[8,9,13,14] First, proponents argue that ethnic health disparities are complex and their causes are multilevel. Making progress toward understanding and addressing them therefore necessitates multilevel frameworks, which previous research approaches lacked. As representatives of OBSSR explain: "At the end of the day, the simple, single-cause, single-discipline, and now, even single-level-of-analysis models—whether predominantly biomedical or predominantly behavioral or social–ecologic—are increasingly viewed as necessary but insufficient."[5] Second, it is noted that multilevel methods require the participation of multiple disciplines and that TD collaboration has the potential to generate the greatest return on invested resources in the form of truly creative and novel research products. Namely, it enables researchers, "…to transcend and operate outside the boundaries and cultures of those disciplines to capture new realities, mutually inform one another's work, and address the multilevel determinants of health disparities and all their interactions."[14] Third, it is stated that the fruits of multilevel TD team science will improve scientists' capacity to understand and intervene at multiple levels to address ethnic health disparities. Applied to cancer, "More-effective interventions to reduce the burden of cancer can be developed and implemented by the adoption of a TD research framework that takes into account the social determinants of cancer and seeks to discover interactions among social, environmental, behavioral, and biological factors in cancer etiology."[12] Finally, it is asserted that TD science will develop multilevel interventions, as opposed to those targeting only a single level, and that these, over time, will lead to greater progress in narrowing health outcome gaps between racial and ethnic populations and eliminating health disparities. Taken together, this four-part pathway is used to detail the added value of TD team science approaches over traditional health disparities research programs.

With the advantages of TD approaches established, funding announcements and publications from TD health disparities initiatives articulate both long- and short-term goals guiding their work. TD initiatives' short-term goals are tailored to the individual research questions being explored by specific programs. To date, these have focused on developing an evidence base elucidating the complex causal pathways leading to health disparities. For example, the MacArthur Network on SES and Health was committed to finding an answer to their guiding question: "How does SES [socioeconomic status] get 'in to' the body to affect health?"[9] Similarly, the Centers for Population Health and Health Disparities (CPHHD) are charged with creating new paradigms to explore the determinants of health disparities and to conduct multilevel, TD research that combines population, social and behavioral, clinical, and biological theory and methods. Specific research questions explored by CPHHD-funded individuals during the first call for applications in 2003 included: How does population risk relate to individual risk? Why, despite the fact that White women are more likely to have breast cancer, are Black women more likely to die from it? How might interactions of neighborhood characteristics with genes and screening behaviors explain racial differences in prostate cancer outcomes?[13] In addition to the generation of empiric data, developing community partnerships is another short-term goal of many TD initiatives. This push for community involvement is grounded in the belief that collaborating with local public and private organizations will help facilitate the translation of multilevel interventions into practice and increase their sustainability. For this reason, community involvement throughout the research process is specifically required by some funders.[8,10]

The long-term goal of many TD approaches is the elimination of between-group health and health care disparities. For example, the NIMHD states: "Our research goals are ultimately to make things better not just for individuals, but for populations as well. We do not simply seek to improve health by informing individuals and populations of their health risks; we also seek to use science to influence society and the policies that shape health."[6] The essential mechanism to facilitate such changes, multilevel interventions, are grounded in the belief that interventions that are designed to target one level of influence without incorporating influences at other levels will almost always be unsuccessful.[14] Levels of influence that are important with

respect to health disparities range from the social (upstream) to the molecular (downstream), and include social conditions and policies, social and physical context, individual demographics and risk behaviors, and biological responses and pathways. As described in a recent publication of the Federal Collaboration on Health Disparities Research, "By recognizing and creating interventions that address systems of interconnected pathways that lead to health and health care disparities, we may be able to make significant inroads leading to the elimination of health disparities over time."[10] Thus, it is specifically through both the creation and implementation of multilevel interventions that the ultimate goal of health disparities-focused TD science will be achieved.

CURRENT PROGRESS TOWARD GOALS

While conceptually appealing, the focus on the multilevel framing of the causes of ethnic health disparities by large-scale transdisciplinary initiatives has, to date, resulted in few tangible products. New multilevel conceptual models that bridge disciplinary boundaries have been produced (eg, frameworks created by CPHHD grantees and the MacArthur Network on SES & Health to guide their future analyses of population health and health disparities).[8,9] Additionally, TD projects have developed new tools and measures to generate multilevel data and statistical methods that aid in its analysis.[9,15] However, few multilevel interventions have thus far been created by these initiatives. Several TD projects have built the groundwork for future comprehensive interventions that target national and local health policy, neighborhood health care organizations, providers, and individual patients.[8] Yet, interventions that have been developed and implemented are still primarily directed at only one level.[8] The early CPHHD projects report on interventions that incorporate consideration of the role of community and neighborhood level risk factors, but ultimately include such variables as components of educational, screening, and prevention strategies that target specific high-risk individuals and groups rather than intervene on upstream determinants.[12] This is despite assertions in TD publications that targeting upstream factors will save resources and heighten the effectiveness of interventions to reduce health disparities.[14] As a recent review calling for a new action-focused generation of disparities research confirms, "…to a large extent, we have yet to realize the promise of integrating our increasing understanding of structural determinants of health with comprehensive interventions that address multiple levels simultaneously."[16]

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Furthermore, while there have been concerted efforts to develop community partnerships to aid in the future integration of interventions into practice, the majority of community engagement has been limited to report-backs and educational initiatives based on early research findings and the creation of community advisory boards.[8] Implementation of a fully formed multilevel intervention in a community setting has not yet been reported by any of the large-scale TD endeavors. Still, awareness of the future goal of translating research into interventions targeted at local and national policy has led some TD projects to consider the broader implications of their research. Specifically, the MacArthur Network published "*Reaching for a Healthier Life,*" which used research findings to identify and advocate for broad social and health policy changes that could lead to reductions in health disparities, eg, reducing financial barriers that prevent qualified students from attending college, assuring new job training for downsized workers, and banning the sale of soft drinks and junk foods in schools.[17] Additionally, CPHHD investigators from the University of Chicago, University of Illinois at Chicago, and the RAND Corporation briefed key policy makers in Congress and the Department of Health and Human Services on the implications of their research findings around breast cancer and access to health care.[13] Though important, these efforts have been piecemeal and have followed traditional formulas for effecting policy change, ie, scientists share their research results in hopes that they will inform policy decisions. The novel, transformative, active approaches to policy-making and community involvement aspired to by TD health disparities proponents have yet to emerge.[18]

These intervention and community engagement outcomes have, interestingly, received less attention than more process-oriented research outcomes, namely assessing levels of transdisciplinarity achieved during the research process. Metrics and methodologies for measuring the success of TD team science initiatives primarily document the activities of the researchers participating on TD teams, such as the number of publications made in journals outside of investigators' home disciplines and the development of collaborative partnerships. The CPHHD, for example, has employed social network methods to identify changes in research partnerships and cooperation

resulting from this NIH initiative.[13,15] Efforts to successfully operationalize transdisciplinary collaboration have identified milestones such as: listening across disciplinary gulfs; learning the language and methods of other disciplines at sufficient depth for meaningful exchange of ideas; developing common language for conceptual translation among researchers; and conducting research that reflects integration and generates novel explanatory hypotheses.[7] These goals have been embraced by TD initiatives; although when referring back to the pathway toward progress on health disparities used to justify transdisciplinary approaches, it is clear that evaluation approaches that only measure TD collaboration do not provide data to assess progress achieved toward long-term outcomes and ultimate health benefit.

REFLECTIONS ON A WAY FORWARD

As our brief review illustrates, progress-to-date in TD research goes only part of the way toward achieving the objectives articulated by key TD proponents. In reviewing the logic that undergirds TD health disparities science, the short- and long-term goals of specific TD initiatives, and the tangible outcomes of current projects, there is evidence of misalignment. Despite an overarching philosophical commitment to ending population health disparities and a pathway toward achieving this goal that relies on the implementation of multilevel interventions, the primary focus of TD projects, to date, has been on achieving and perfecting TD collaboration. This attention to process over outcomes has been attributed to the novelty of the research approach and the fact that TD health disparities science is in an early stage of development.[4,15] Nonetheless, this recognition should not obscure the fact that theory and evidence linking the various arguments that comprise the logic of how TD science will lead to progress on health disparities is underdeveloped. Support for individual components of the added-value argument is not enough to justify open-ended investment in TD approaches. Nor should TD science be pursed solely for the sake of achieving transdisciplinarity. By no means, though, does this mean that TD health disparities science is bankrupt. Instead, it suggests a need for critical reflection on the steps needed to ensure that this approach achieves progress toward the ultimate goal of eliminating ethnic health disparities. We propose three such steps.

Step 1: Clarity on the Concept of Multilevel Interventions

First, greater clarity around the concept of multilevel interventions needs to be achieved, including: how are levels defined; does it matter at which level multilevel interventions begin; do multilevel interventions have a greater effect on desired outcomes than level-specific interventions; and are multilevel interventions more sustainable and cost-effective than single level interventions?[19] Consensus on whether TD projects should be building an evidence base for future multilevel interventions, developing new multilevel interventions, or focusing on tailoring and implement existing interventions is also needed.[20]

Step 2: Evaluation Strategies

Second, a concerted effort to develop evaluation strategies that prioritize progress toward the ultimate goal of ethnic health disparities research, ie, improved health outcomes, is overdue. Evaluation, even in early stages, needs to be focused on the entire pathway to health benefit, not just intermediate outcomes.

Step 3: Role of Community Partnership

Finally, additional consideration of the optimal role of community partnership in TD health disparities science should be made a priority. This is not a new call. As David Abrams cautioned in 2006: "TD research strategies…will fulfill the promise of eliminating disparities and improving population well-being to the extent that TD teams embrace a broad participatory community-based philosophy."[7] Greater focus on community involvement will not only aid in translation and dissemination of research products, but will also force TD teams and their funders to maintain ultimate health benefit as a primary objective.

Reflection in these three areas will help put TD health disparities science back on track. Efforts in this direction will ideally allow this novel research approach to live up to claims that it can succeed where other approaches have failed and begin to narrow persistent gaps in health outcomes between ethnic groups within the United States.

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