



Published in final edited form as:

Cancer. 2010 January 15; 116(2): 264–269. doi:10.1002/cncr.24765.

Addressing cancer health disparities using a global “biopsychosocial” approach Addressing global cancer health disparities

Denae King, PhD¹, Patricia Miranda, PhD, MPH¹, Beverly Gor, EdD¹, Robin Fuchs-Young, PhD¹, Janice Chilton, DrPH¹, Richard Hajek, PhD¹, Isabel Torres-Vigil, DrPH¹, Maria Hernandez-Valero, DrPH¹, S. Amy Snipes, PhD¹, and Lovell Jones, PhD¹

¹Department of Health Disparities Research, Center for Research on Minority Health, The University of Texas M. D. Anderson Cancer Center, Houston, Texas.

Abstract

The Center for Research on Minority Health (CRMH) has translated the biopsychosocial framework to address global cancer health disparities through the integration of biological (e.g., endogenous steroids, genetic susceptibility and pesticide levels) and behavioral (e.g., dietary interventions) determinants, along with community-based research (e.g., comprehensive involvement of community advisory boards) and educational approaches (e.g., kindergarten through postgraduate training). Evidence of successful implementation of this framework includes: health disparities training for over two thousand individuals ranging from elementary to postgraduate level, and conducting transdisciplinary projects that incorporate traditional and non-traditional health professionals to examine associations between biological and non-biological determinants of health. Examples and recommendations for implementation of the biopsychosocial approach as it applies to cancer health disparities research are described.

Keywords

cancer; prevention; health disparities; minority; multi-disciplinary; transdisciplinary; biopsychosocial; education

In 2000, the Centers for Disease Control and Prevention (CDC) developed objectives focused on disparities in disease mortality, screening and risk factors to achieve the Healthy People 2010 initiative ¹. More recently, the Institute of Medicine (IOM) convened roundtable discussions to advance the goal of eliminating health disparities. Their overall recommendations were to more efficiently share information about successful programs and implement them on a larger scale ². Likewise, the National Institutes of Health (NIH) convened a national summit on the science of eliminating health disparities. The summit offered examples of evidence-based efforts targeting the complexities of health disparities research ³. In this paper, we highlight ongoing health disparities projects and how we employ a biopsychosocial approach to transdisciplinary cancer disparities research in local and global settings.

Frameworks to address health disparities have included several approaches, such as the health-risk behavioral approach ⁴, cultural competency ⁵, ⁶, and organizational quality

Denae King, Ph.D., PO Box 301402, Unit 639, Houston, TX 77230-1402; Phone: (713) 563-2723; Fax: (713) 563-2765; dking@mdanderson.org.

There are no financial disclosures from any of the authors.

improvement models⁷. Though previous approaches have been well intentioned and studies using such frameworks have examined many of the determinants of the unequal burden of disease shared by ethnic minorities and underserved populations, cancer health disparities persist⁸. In the case of cancer, overall cancer rates have decreased, but cancer incidence, morbidity and mortality among ethnic minority groups have increased 9-11. The focus on the health-risk behavioral approach helped reduce incidence and prevalence of cancer risk factors at the population level⁴, and cultural competency has afforded health care workers the opportunity to better assess the needs of an increasingly diverse population^{5,6}. Moreover, organizational quality improvement models have improved the efficiency of health care organizations in the provision of health care services⁷. However, because previous approaches have not adequately addressed the complexity of health disparities^{12,13} they have failed to significantly reduce disparities in cancer, indicating the need to improve strategies and methodologies for reducing and ultimately eliminating disparities in cancer prevention, diagnosis, and treatment.

CHANGING THE PARADIGM

Health disparities exist at multiple levels¹⁴ and must be addressed through a multilevel transdisciplinary approach. To enhance progress toward addressing global cancer health disparities, we have transformed a multidisciplinary perspective into a biopsychosocial approach that incorporates three principles that stem from environmental justice movements. These principles include improving the science base, involving the affected populations and communicating the findings to all stakeholders, particularly community members, institutions and governmental agencies¹⁵.

Established in 1999, the Center for Research on Minority Health (CRMH) at the University of Texas M. D. Anderson Cancer Center remains the only congressionally mandated center focused on minority health research. Its mission is to reduce the prevalence of cancer in ethnic minorities and medically underserved populations using effective integrated programs in prevention, patient care, research, and education. For the last ten years, the CRMH has addressed health disparities by utilizing an enhanced biopsychosocial, multi-factorial approach that incorporates the community and policymakers in addressing local and global health disparities. Our biopsychosocial approach integrates biological, behavioral, and community-based research with educational opportunities to prepare future researchers and healthcare professionals. Other studies have incorporated the biopsychosocial approach, which originated with programs aimed at extending physicians' psychosocial skills beyond the biomedical model^{16,17}. Recognizing the effectiveness of a collaborative biopsychosocial approach, we have expanded it to incorporate community input throughout the entire research process. By including a community advisory board as a core element of all research projects, we aim to overcome the inequalities often observed in health status through research participation¹⁸. Community partnership and trust are essential to addressing the unequal burden of disease that impacts people of color, as well as rural and poor individuals¹⁸. These elements of injustice are not unique to the United States (U.S.), but are observed globally¹⁹. Therefore, the task of reversing unequal burdens of disease can only be accomplished through collaborative, coordinated efforts and international linkages¹⁹.

The faculty and staff of the CRMH integrate the diversity of their training and research, along with their racial and ethnic identities to address cancer health disparities across the entire cancer spectrum, from primary prevention and treatment to supportive and palliative care. To effectively implement the biopsychosocial approach, the CRMH has developed the Community Relations, Educational, Clinical and Research core units, that work

collaboratively in incorporating the community in research projects aimed at understanding the underlying determinants of health disparities.

The Community Relations Core plays an integral part in developing and sustaining relationships with community members. Community outreach is a critical component of the CRMH's research endeavors. To ameliorate cancer disparities among ethnic minorities, members of the respective communities are included in identifying, prioritizing and addressing health concerns. Since its inception, the CRMH has partnered with community members who serve on community advisory boards to inform the research agenda and the design and implementation of research and educational projects. Staff members of the Community Relations Core are prominent members of their respective communities who currently or previously held leadership positions in the local African American, Asian American, Latino, and Native American Health Coalitions. Sustained relationships achieved through community outreach and involvements are integral to the success of local and international cancer research projects.

The Educational Core provides opportunities for science education and training to individuals from kindergarten to post-graduate level, focusing on health disparities research and linking trainees to existing programs and resources. The Science Center Inquiry-based Educational Activities iN Collaborating Elementary Classrooms (SCIENCE) Project targets kindergarten through fifth grade students and makes up the initial phase of the PIPELINE Scientific Training Program, which was formally established to target students in high school. The goal of these projects is not only to improve health literacy, but also to increase the number of minorities that pursue careers in biomedical science and health disparities research. In the last decade, the CRMH has successfully mentored over 2000 students. In addition to the annual Summer Workshop on Health Disparities²⁰ and a semester-long health disparities course entitled "Disparities in Health in America: Working Toward Social Justice," a key element of the Educational Core is the Health Disparities Education, Awareness, Research, and Training (HDEART) Consortium. HDEART, which presently consists of over 30 local, national, and international academic and health institutions, was created to foster the training of minority scientists and health disparities researchers and provides a basis for multidisciplinary institutional collaboration and support for research and education. The HDEART consortium also serves as a postdoctoral research training and mentoring resource for the Kellogg Health Scholars Program. The CRMH has also hosted a number of visiting scientists from Sri Lanka, Vietnam and Egypt, who observed how the CRMH utilizes the biopsychosocial approach, thus expanding the application of this approach globally.

The Clinical Core conducts research related to the prevention and treatment of cancer in minority or medically underserved populations and assists in navigating community members to points of care. Project Facilitated Assistance, Research & Outreach Services (FAROS) is a 4-year randomized Cancer Prevention and Treatment Demonstration Project funded by the Centers for Medicare and Medicaid Services. The CRMH is one of six sites determining whether patient navigation services reduce costs and mortality of Medicare beneficiaries by decreasing barriers to screening, promoting timely diagnosis through enhanced follow-up on positive test results and enhancing access to treatment of cancers of the breast, cervix, colon, prostate and lung. Project FAROS targets older Latino Medicare beneficiaries from the greater Houston area and directs participants recruited in partnership with the Community Relations Core to clinical services. Participants are enrolled and randomized into: 1) intervention groups that provide either facilitated screening or treatment services via a trained patient navigator; or 2) comparison groups that provide standard or usual cancer prevention or treatment care. To date over 1,100 participants have enrolled in

Project FAROS. Findings from Project FAROS will inform policymakers about potential positive impacts of patient navigation services.

The Research Core integrates all four CRMH cores and focuses on studies related to the environment, nutrition, and access to healthcare, informed decision-making and palliative care. The overarching goal of the Research Core is to design and conduct research that is comprehensive, informative and culturally appropriate. Many factors influence cancer development, morbidity and mortality. Researchers at the CRMH examine how differences in biological and non-biological factors contribute to an increased risk of cancer.

THE BIOPSYCHOSOCIAL APPROACH IN PRAXIS

Praxis is advanced when critical theory and approaches intersect with research and practice²¹. Although each of the CRMH cores has succinct objectives, they also act as integrated components to facilitate and enhance research and practice of the biopsychosocial approach to address health disparities. Examples of CRMH research projects conducted locally and internationally that incorporate the biopsychosocial approach include Project FAROS, the Asian American Health Needs Assessment (AsANA), the Mexican-American Children's Gastric Cancer Risk Study, the Texas Nigeria Sisters Taking Action to Reduce Risk (STARR) Project and additional efforts to address equitable access to palliative care in diverse cultures.

Members of the CRMH's Community Relations Core were instrumental in conducting the Asian American Health Needs Assessment (AsANA) project which collected baseline health risk information on the rapidly growing Asian American population in the Houston area^{22, 23}. The Asian American population in Houston was dramatically affected in 2005 after Hurricanes Katrina and Rita. A large percentage of the estimated 15,000 Asian American evacuees that arrived in Houston after the hurricanes found significant cultural and language barriers to accessing services. Through community outreach efforts and in partnership with HOPE Clinic, a Federally Qualified Community Health Center Look-Alike coordinated by Houston's Asian American Health Coalition, the CRMH was able to review and compile data from the medical records of members of this displaced population to identify their health needs. Results from the AsANA study and the chart review of the Asian hurricane evacuees demonstrated that there was a great need for improved access to primary care and cancer screening. Therefore, the CRMH partnered with community-based organizations, such as the HOPE Clinic, to secure additional funds needed to address the health of this underserved population.

The Mexican Gastric Cancer Study was designed to examine potential biological and non-biological risk factors for gastric cancer in Mexican-American children residing in urban and agricultural areas in Texas (Baytown in the Houston metropolitan area and La Joya in the Texas-Mexico border region). Interviews are being conducted to assess environmental and cultural risk factors via a structured epidemiological questionnaire with 500 Mexican-American mothers and children. Additionally, in collaboration with Mexican researchers, we are conducting assessments of folate-vitamin B-12 and homocysteine levels and evaluating potential variants in a gene linked to DNA hypomethylation in gastric cancer. The children of Baytown and La Joya are also offered the opportunity to become part of SCIENCE and PIPELINE Projects conducted by the Educational Core. Additionally, local teachers can participate in a professional development opportunity provided by the Environmental Health Sciences Summer Institute²⁴. Moreover, the Clinical Core provides assistance with referrals for cancer screening and treatment for members of these communities.

The CRMH coordinated the first educational cancer conference in Abuja, Nigeria focused on identifying areas of need in the diagnosis and treatment of cancer in Nigeria and the

African continent²⁵. The conference led to the development of collaborative cancer prevention efforts through the CRMH's Clinical Core that include timely health education resources and training opportunities for Nigerian physicians and scientists. An international project between researchers at the CRMH and those in Ibadan, Nigeria is the Texas Nigeria STARR Project. This collaborative biopsychosocial study will assess a potential link between hormones and breast cancer risk among distinctly different, yet genetically similar groups of women. Three groups of pregnant women, 16 to 37 years of age are being recruited into this study, including African Americans living in Houston, West Africans living in Houston and West Africans living in Ibadan, Nigeria. The participants are being followed from early pregnancy to delivery and data on demographic characteristics, dietary, cultural, and behavioral practices are being collected. In addition, the study will assess the overall health of the participants, as well as serum hormone levels before and during pregnancy and upon delivery. These data will provide clues to understanding why these women experience increased risk of aggressive, early onset breast cancer and poor outcomes.

The CRMH also collaborates on international and local efforts that promote the development of and equitable access to quality palliative care. In collaboration with MD Anderson's Department of Palliative Care and Rehabilitation Medicine (PCRM), the CRMH is conducting a National Cancer Institute funded study entitled "Caregiver Assessments of the Quality of Home Hospice Care: A Comparison Across 3 Ethnic Groups" in the Houston area to address an understudied area in cancer health disparities research. In addition, the CRMH and PCRM are collaboratively developing two new studies on parenteral hydration at the end-of-life in Latin America. Results of these efforts are shared with Latin American colleagues at the biennial Latin American Congress on Palliative Care and have included findings from the first international study on advanced-cancer care conducted in Latin America^{26, 27}. The CRMH is also represented in the Latin American Association of Palliative Care Research Commission.

These projects illustrate how we exemplify praxis through the implementation of the biopsychosocial approach in order to more comprehensively and effectively address cancer health disparities. Based on our experiences, we offer four key recommendations for implementing the biopsychosocial approach to address global health disparities.

Recommendation #1

An individual's perceptions greatly influence their health and well-being. Therefore, research that is guided and framed by the perceptions of the target populations rather than the researcher is likely to be more informative. Community members should be considered valued collaborators that contribute to the design and implementation of research and interpretation of findings. Furthermore, effective translation of research challenges into solutions should occur through the lens of the community and involve community partners in disseminating research findings.

Recommendation #2

A transdisciplinary perspective that integrates multiple individuals, communities, and institutions will likely enhance success in eliminating cancer health disparities. Modifiable behavioral risk factors and genetic profiles of individuals to accurately tailor cancer prevention methods or treatment are important individual level components. This perspective, accompanied by engagement at a community level, which includes partnering with community-based organizations, local health departments and creating dedicated community-focused staff positions, will garner trust with the targeted communities.

Institutions should recognize risk factors that are unique to specific populations, while also providing personalized quality healthcare.

Recommendation #3

To improve the science base, researchers should take on the burden of demonstrating the relevance of their studies and findings to the overall goal of reducing cancer health disparities. What is publishable may not be relevant, but what is relevant can always be made publishable. If community-driven research is prioritized over researcher-driven research, then the findings are more likely to be relevant, generalizable, and publishable.

Recommendation #4

Policymakers should be perceived as stakeholders in research and members of the affected community. Effective communication of relevant study findings directly to policymakers will ensure that research results will inform policies and lead to relevant funding mechanisms and solutions.

Acknowledgments

Sources of Support: This work was supported by the Centers for Disease Control and Prevention [5U13DP000665 and 5U48CCU609653], the Centers for Medicare and Medicaid Services, the Community Outreach and Education Core of the Center for Research on Environmental Disease [P30 ES07784], Exxon Mobil Foundation, the MIDAS Project [R25 RR018634], the Morehouse School of Medicine Regional Coordinating Center for Hurricane Response, the National Cancer Institute [5R01CA122292], the National Cancer Institute Asian American Network for Cancer Awareness, Research and Training [5U01CA086322], the National Center on Minority Health and Health Disparities [5P60MD000503], Purdue Pharma [CS2004-00010347HM ID02-140], The State of Texas Office for the Elimination of Health Disparities, Susan G. Komen for the Cure [POP100006], The Texas Higher Education Coordinating Board, the United States Department of Defense [W81XWH-07-1-0257], and the W.K. Kellogg Foundation.

References

1. Healthy People 2010: Objectives for improving health 3.0 Cancer. Centers for Disease Control and Prevention, and The National Institutes of Health; 2001.
2. Challenges and successes in reducing health disparities: Workshop summary. Institute of Medicine; 2008.
3. NIH Summit: The Science of Eliminating Health Disparities HeaalthCast. The Henry J. Kaiser Family Foundation;
4. Lantz PM, Lynch JW, House JS, Lepkowski JM, Mero RP, Musick MA, et al. Socioeconomic disparities in health change in a longitudinal study of US adults: The role of health-risk behaviors. *Social Science and Medicine*. 2001; 53(1):29–40. Available from <http://www.scopus.com/scopus/inward/record.url?eid=2-s2.0-0035019354&partnerID=40>. [PubMed: 11380160]
5. Betancourt JR, Green AR, Carrillo JE, Ananeh-Firempong Ii O. Defining cultural competence: A practical framework for addressing racial/ethnic disparities in health and health care. *Public Health Reports*. 2003; 118(4):293–302. Available from <http://www.scopus.com/scopus/inward/record.url?eid=2-s2.0-0038346584&partnerID=40>. [PubMed: 12815076]
6. Brach C, Fraserirector I. Can cultural competency reduce racial and ethnic health disparities? A review and conceptual model. *Medical Care Research and Review*. 2000; 57(SUPPL. 1):181–217. Available from <http://www.scopus.com/scopus/inward/record.url?eid=2-s2.0-0033785758&partnerID=40>. [PubMed: 11092163]
7. Fiscella K, Franks P, Gold MR, Clancy CM. Inequality in quality: Addressing socioeconomic, racial and ethnic disparities in health care. *Journal of the American Medical Association*. 2000; 283(19): 2579–84. Available from <http://www.scopus.com/scopus/inward/record.url?eid=2-s2.0-0034679055&partnerID=40>. [PubMed: 10815125]

8. Voelker R. Decades of work to reduce disparities in health care produce limited success. *JAMA - Journal of the American Medical Association*. 2008; 299(12):1411–13. Available from <http://www.scopus.com/scopus/inward/record.url?eid=2-s2.0-41149111368&partnerID=40>.
9. DeLancey JOL, Thun MJ, Jemal A, Ward EM. Recent trends in black-white disparities in cancer mortality. *Cancer Epidemiology Biomarkers and Prevention*. 2008; 17(11):2908–12. Available from <http://www.scopus.com/scopus/inward/record.url?eid=2-s2.0-55849135195&partnerID=40>.
10. Edwards BK, Brown ML, Wingo PA, Howe HL, Ward E, Ries LAG, et al. Annual report to the nation on the status of cancer, 1975-2002, featuring population-based trends in cancer treatment. *Journal of the National Cancer Institute*. 2005; 97(19):1407–27. [PubMed: 16204691]
11. Greenlee RT, Hill-Harmon MB, Murray T, Thun M. Cancer Statistics, 2001. *Ca-A Cancer Journal for Clinicians*. 2001; 51(1):15–36. Available from <http://www.scopus.com/scopus/inward/record.url?eid=2-s2.0-0035114558&partnerID=40>. [PubMed: 11577478]
12. Syme SL. Reducing racial and social-class inequalities in health: The need for a new approach. *Health Affairs*. 2008; 27(2):456–59. Available from <http://www.scopus.com/scopus/inward/record.url?eid=2-s2.0-41749106211&partnerID=40>. [PubMed: 18332502]
13. Preventive Care: A National Profile on Use, Disparities, and Health Beliefs. 2007.
14. Holmes JH, Lehman A, Hade E, Ferketich AK, Gehlert S, Rauscher GH, et al. Challenges for Multilevel Health Disparities Research in a Transdisciplinary Environment. *American Journal of Preventive Medicine*. 2008; 35(2 SUPPL.) Available from <http://www.scopus.com/scopus/inward/record.url?eid=2-s2.0-46449133837&partnerID=40>.
15. Justice, CoE. *Toward Environmental Justice: Research, Education, and Health Policy Needs*. Institute of Medicine; 1999.
16. Engel GL. The biopsychosocial model and the education of health professionals. *Annals of the New York Academy of Sciences*. 1978; VOL. 310:169–81. Available from <http://www.scopus.com/scopus/inward/record.url?eid=2-s2.0-0018200338&partnerID=40>. [PubMed: 290321]
17. Engel GL. The clinical application of the biopsychosocial model. *American Journal of Psychiatry*. 1980; 137(5):535–44. Available from <http://www.scopus.com/scopus/inward/record.url?eid=2-s2.0-0018892606&partnerID=40>. [PubMed: 7369396]
18. Israel BA, Schulz AJ, Parker EA, Becker AB. Review of community-based research: Assessing partnership approaches to improve public health. *Annual Review of Public Health*. 1998; 19:173–202. Available from <http://www.scopus.com/scopus/inward/record.url?eid=2-s2.0-0031839915&partnerID=40>.
19. Jones LA, Chilton JA, Hajek RA, Iammarino NK, Laufman L. Between and within: International perspectives on cancer and health disparities. *Journal of Clinical Oncology*. 2006; 24(14):2204–08. Available from <http://www.scopus.com/scopus/inward/record.url?eid=2-s2.0-33646576857&partnerID=40>. [PubMed: 16682740]
20. King DW, Torres Vigil I, Herrera AP, Hajek RA, Jones LA. Working toward social justice: Center for Research on Minority Health Summer Workshop on Health Disparities. *Californian Journal of Health Promotion*. 2007; 5(Special Issue):1–8.
21. Freire, P. *Pedagogy of the Oppressed*. Herder and Herder; New York: 1970.
22. Gor BJ, Hoang TV, Yi JK, Esparza A, Hernandez-Valero M, Jones LA. Cancer screening practices among Chinese and Vietnamese in the Greater Houston Area. *Californian Journal of Health Promotion*. 2007; 5(Special Issue):105–12.
23. Gor BJ, Shelton AJ, Esparza A, Yi JK, Hoang TV, Liang JC, et al. Development of a health risk factors questionnaire for Chinese and Vietnamese Residents of the Houston, Texas Area. *Journal of Immigrant and Minority Health*. 2007
24. 9th Annual Environmental Health Sciences Summer Institute. Vol. vol. 2009. University of Texas M. D. Anderson Cancer Center, Center for Research on Environmental Disease; Smithville, TX:
25. First Africa Educational Cancer Conference. Africa Cancer Care Inc.; Houston, TX: 2006.
26. Torres Vigil I, Aday LA, De Lima L, Cleeland CS. What Predicts the Quality of Advanced Cancer Care in Latin America? A Look at Five Countries: Argentina, Brazil, Cuba, Mexico, and Peru. *Journal of Pain and Symptom Management*. 2007; 34(3):315–27. Available from <http://>

www.scopus.com/scopus/inward/record.url?eid=2-s2.0-34548471731&partnerID=40. [PubMed: 17616337]

27. Torres-Vigil I, Aday LA, Reyes-Gibby C, De Lima L, Herrera AP, Mendoza T, et al. Health care providers' assessments of the quality of advanced-cancer care in Latin American medical institutions: a comparison of predictors in five countries: Argentina, Brazil, Cuba, Mexico, and Peru. *Journal of pain & palliative care pharmacotherapy*. 2008; 22(1):7–20. Available from <http://www.scopus.com/scopus/inward/record.url?eid=2-s2.0-60549086020&partnerID=40>. [PubMed: 19042817]