Health of Indigenous Peoples

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Abstract

Indigenous populations worldwide are experiencing social, cultural, demographic, nutritional, and psychoemotional changes that have a profound impact on health. Regardless of their geographical location or sociopolitical situation, health indicators are always poorer for indigenous populations than for nonindigenous ones. The determinants of this gap are multiple and interactive, and their analysis requires a biocultural framework. Indigenous populations suffer from lower life expectancy, high infant and child mortality, high maternal morbidity and mortality, heavy infectious disease loads, malnutrition, stunted growth, increasing levels of cardiovascular and other chronic diseases, substance abuse, and depression. The devastating effects of colonization, the loss of ancestral land, and language and cultural barriers for access to health care are among the most salient themes characterizing the poor health situation of indigenous people. Anthropology is extremely well suited to address the interplay among social, economic, and political forces that shape the local experiences of illness.

INTRODUCTION

From the highlands of the Andes to the forests of Malaysia and the frozen circumpolar steppes, from subsistence farmers and herders to hunter-gatherer groups, indigenous populations are experiencing social, cultural, demographic, nutritional, and psychoemotional changes that have a profound impact on their health (Gracey & King 2009, WHO 2007). For some groups, these changes began a few centuries ago as a result of colonization forces from European and Asian countries (Coates 2004, Maybury Lewis 2001), whereas others are just beginning to experience the influence of Westernization and the power of globalization. Regardless of the geographical location of these populations, of their traditional subsistence patterns, and of the time spent in transitional processes, the almost 400 million indigenous peoples worldwide are all united by a common thread: their low standards of health compared with national averages and compared with nonindigenous counterparts in the same regions (Stephens et al. 2006).

The determinants of these health disparities are, of course, multiple, interactive, and synergistic (King et al. 2009). Furthermore, they vary across cultures and across ecologies, so generalizing the underlying causes of the gap in health status would be difficult at best. However, it is reasonable to propose that a salient feature in the ethnohistory of most indigenous populations is the powerful effect of colonization and domination. The invasion of outsiders, who not only brought microorganisms to which indigenous peoples had never been exposed but also dominated their social and economic dynamics, has profoundly and negatively affected the health of and sense of well-being in traditional societies.

In this review, we present an overview of the health of indigenous populations around the world. We begin with a brief description of the analytical framework we use to elaborate on the complex interactions underlying the current health situation of these groups. This introductory section also delves into the definition of indigenous peoples, the concept of indigeneity, and how these concepts are embodied in different ways across populations. We then describe the current status of the health of indigenous peoples, addressing major health topics such as nutritional and cardiovascular health, sexual and reproductive health, infectious disease, mental health, and aging. Finally, we elaborate on the role of anthropology and anthropologists in global health initiatives as they relate to indigenous groups.

DEFINITIONAL AND ANALYTICAL FRAMEWORKS

Before we delve into the intricacies of the health status of indigenous people today, it is necessary to define a few key concepts and analytical frameworks. There are different and sometimes complementary lenses through which we can focus on these issues (e.g., epidemiological, sociocultural, evolutionary) and, thus, it becomes important to spell out our approach and understanding.

Indigeneity

The concept of indigeneity is complex and loaded with political and social connotations (Coates 2004). Some countries refuse to acknowledge the presence of indigenous populations because of embarrassment (i.e., the belief that native peoples are backward or primitive) or for political reasons. For example, the Yakut (Sakha) and the Buryat of Northern Russia are considered to be indigenous by most researchers, but the Russian government does not recognize them as indigenous peoples and instead refers to them as ethnic minorities (Kozlov et al. 2007). When urged by the United Nations to recognize the rights of its indigenous peoples, Indonesia responded by denying the existence of the ~60 million indigenous peoples living in the country (Hum. Rights Counc. 2012).

In the past few decades the term indigenous has become internationalized and strategically used. Indigeneity can be conceptualized as a social construct, and, as such, its definitions are contingent and politically and historically contextualized. For example, genomic indigeneity, the perspective favored by most molecular anthropologists, emphasizes a common human genetic ancestry and a history of migrations. As such, an indigenous population becomes a biologically based category (TallBear 2013). In juxtaposition, according to TallBear (2013), indigenous articulations of indigeneity are grounded in political status and biological and cultural kinship "constituted in dynamic, long-standing relations with each other and with living landscapes" (p. 510). In an interrelated sense, Merlan (2009) proposes that the term indigenous has become a geocultural category that is grounded in a sense of unity among groups collectively called "indigenous peoples." This sense of globalized indigeneity, shaped often by political pressures and realities, is patent in institutions such as the United Nations and has been used as the basis for various activist movements. More local meanings, however, may have stronger implications for the production of health in different contexts because they influence power relationships and access to material resources.

In all, there seems to be consensus that there is no universally agreed on definition of indigeneity. Two definitional frameworks for indigeneity can be distinguished: relational and criterial definitions. Relational definitions highlight the relations between "indigenous" and their "others," whereas criterial definitions are grounded in "properties inherent only to those we call 'indigenous' themselves" (Merlan 2009, p. 305). That is, indigeneity is not defined by essential properties of its own but instead in relation to what is not considered indigenous (de la Cadena & Starn 2007). For example, words such as Aborigine in Australia "were European inventions for people already there, prior to the arrival of the colonizers" (de la Cadena & Starn 2007, p. 4). For mainly heuristic purposes, we follow criterial definitions such as the one provided by José Martinez Cobo for the United Nations (Martinez Cobo 1981, p. 10), who defined indigenous communities, peoples, and nations as "those which have a historical continuity with preinvasion and precolonial societies that develop on their territories, consider themselves as distinct from other sectors of societies now prevailing in those territories. . .and are determined to preserve and transmit to future generations their ancestral territories." However, when it comes to analyzing the health gaps between indigenous and nonindigenous populations, relational definitions offer a more nuanced, more pertinent framework because they refer to the complex dynamics between indigenous groups and hegemonic powers and the socioeconomic disparities these power differentials promote.

Indigenous Peoples: Health in Context

Indigenous peoples inhabit every corner of the globe, and the largest populations can be found in the most populated countries, China and India, as well as in the Siberian region of Russia (Coates 2004). However, most of the accessible information, in the form of scientific articles or published reports, about the health of indigenous groups comes from Western countries, particularly the United States, Canada, New Zealand, and Australia. This sharp bias, which may distort the overall overview of the health of indigenous peoples, is the consequence of many sociodemographic factors such as the geographical isolation of some communities or their seminomadic lifestyle that may take them across country boundaries, political factors (e.g., underreporting of unfavorable health indexes), and the structural difficulties of sustaining epidemiological surveillance in underresourced public health infrastructures (Stephens et al. 2006).

In general, as is described in more detail below, indigenous populations suffer from lower life expectancy, high infant and child mortality, high maternal morbidity and mortality, heavy infectious disease loads, malnutrition, stunted growth, increasing levels of cardiovascular and other chronic diseases, substance abuse, and depression (Gracey & King 2009, King 2009, Montenegro

& Stephens 2006, Ohenjo et al. 2006, San Sebastian & Hurtig 2007, Snodgrass 2013, Stephens et al. 2006). For example, in the 20 years between 1983 and 2003, the life expectancy at birth of Australia's indigenous population was 20 years lower than that of the general Australian population (Zhao & Dempsey 2006). In Brazil, infant mortality rates for the Xavante are more than twice those of the national average (Souza & Santos 2001). Similar gaps are found in many other Amazonian groups (Ferreira et al. 2011). It is clear that these health indicators are deeply rooted in social inequalities brought by the interaction among low socioeconomic status, marginalization, and social connectivity inadequacies and that many of the health problems suffered by indigenous peoples represent the embodiment of discrimination and poverty. However, rates of infant, child, and maternal mortality among indigenous peoples are even higher than those from other socioeconomically deprived populations in those countries. This forces us to ask, what differentiates indigenous populations from other poor, marginalized populations? Which indigenous-specific factors contribute to such dismal health landscape? These are fundamental questions on both theoretical and empirical grounds.

Three major emergent themes relate to the specific sociohistorical experience of most indigenous populations, which may be at least correlates, if not causative, of the current health gap between indigenous and nonindigenous populations. First, the impact of colonization, and the oppression that came with it, is pervasive. Furthermore, what gives many indigenous groups around the world, but particularly North American ones, a sense of unity is their colonial historical similarities and "a common cause against settler and other forms of colonialism" (TallBear 2013, p. 516). Entire indigenous nations have been dispossessed and subjugated, actively and passively, by colonizers and encroaching settlers. Second, related to colonizing and settling effects, is the loss of ancestral land and its resources, and the concomitant effects on traditional ways of life (Gracey & King 2009). The loss of land and traditional subsistence patterns can be directly related to the change in diet composition and in physical activity levels, which have resulted in dramatic epidemiological shifts toward, for example, high rates of obesity and related disorders (Lagranja et al. 2015, Lourenco et al. 2008, Nagata et al. 2011, Snodgrass 2013, Snodgrass et al. 2006). It is also related to a dramatic loss in cultural continuity that is affecting the mental and psychoemotional health of indigenous people, particularly men (Kirmayer et al. 2000, 2011). Third, language barriers affect indigenous peoples more than nonindigenous ones in contexts related to access to health care (Dell'Arciprete et al. 2014, Montenegro & Stephens 2006). Many indigenous people, particularly older generations and those living in more remote areas, are still monolingual in their native languages. This situation, coupled with a generalized lack of cultural sensitivity and appropriateness of the dominant public health system, discourages both recipients and providers of health care from developing an efficient partnership (Marrone 2007, Montenegro & Stephens 2006).

Analytical Framework

It should be obvious by now that the analytical framework we use in this review necessitates that we take a biocultural/biosocial perspective (Goodman & Leatherman 1998, Worthman & Kohrt 2005). Within this perspective, conceptual models that incorporate political economy (Goodman & Leatherman 1998) may provide the necessary nuance for a holistic understanding of the plight of indigenous communities. The health patterns we describe for indigenous populations are clearly the result of a deep, complex interaction among social, cultural, economic, ecological, and biological spheres that feedback on each other in dynamic and profound ways. This dynamic ongoing exchange shapes the local biology (Lock 2001) of individual indigenous peoples and groups and determines the health patterns observed today. For example, most indigenous populations are, to varying degrees, experiencing a process of Westernization of their diets, i.e., reliance on

mainly processed foods acquired in the market, which are high-fat and high-sugar food items. Westernized diets may be cheaper to obtain, but they are rich in calories and poor in micronutrients, which leads to serious nutritional disorders and cardiovascular disease (CVD). Westernized customs regarding child feeding practices often place formula above breast milk in quality of nutrients and convenience. This distorted image that women receive through the media (and from some doctors) may cause an increase in poorly managed bottle feeding with the subsequent impact on infants' nutritional and immunological health status (Dewey & Huffman 2009).

CURRENT STATUS OF THE HEALTH OF INDIGENOUS PEOPLES

Although subject to significant regional variations, the health of indigenous peoples is characterized by a relatively low life expectancy that is driven by a high burden of infectious disease, increasing chronic cardiovascular and metabolic conditions, and a high level of mental health disorders. Below is a brief overview of selected health concerns and their correlates.

Infectious Disease

The burden of infectious disease among indigenous groups is extremely high, particularly in tropical and subtropical countries (Hurtado et al. 2005), although the burden of infection is surprisingly high in indigenous circumpolar groups as well (Snodgrass 2013). As mentioned before, the impact of European colonization on the spread of infectious diseases among native populations is hard to overstate. Virgin soil epidemics of measles, smallpox, yellow fever, malaria, and tuberculosis caused by the entry of European explorers, colonists, and their African slaves were devastating in the Americas, Australia, and the Pacific Islands (Campbell 2002, Crosby 1976, Newman 1976). The risks of virgin soil epidemics continued well after the age of conquest and now continues into the present. Indigenous groups remain vulnerable to many infectious diseases, and uncontacted indigenous groups may be unprepared to face novel infections (Hurtado et al. 2005, Pringle 2014).

In addition to being susceptible to microorganisms to which they have never been exposed, many indigenous populations live in environments with high parasitic and infectious disease loads. Respiratory and gastrointestinal infections are extremely widespread, particularly among infants and children (Clark et al. 2014, Frommer et al. 2014, Souza et al. 2014, Torzillo & Chang 2014). Upper and lower respiratory infections, including bronchitis and pneumonia, are among the main causes of infant and child mortality and morbidity among indigenous groups in both affluent and developing countries (Chang et al. 2014, O'Grady et al. 2010, Redding & Byrnes 2009). Postinfectious sequelae, such as chronic lung disease and bronchiectasis, are especially prevalent among indigenous groups and have lifelong impacts on lung function (Chang et al. 2014).

Intestinal parasites and hepatitis infection are rampant among indigenous populations living in tropical environments (Escobar-Pardo et al. 2010, Hurtado et al. 2005, Lee et al. 2014, Lim et al. 2009). Intestinal parasites are transmitted though the oral-fecal route, and they reach adult stages in the host's intestines. Among the Yanomamo of Venezuela and Brazil, for example, the prevalence of *Ascaris lumbricoides* infection has been found to be 90–100%, whereas up to 96% of the Ticuna of Brazil were infected with *Necator americanus* (Hurtado et al. 2005). Coinfections with several parasites are extremely common, making the situation even more complicated to manage from a public health perspective (Belizario et al. 2011). Hepatitis is a viral infection that results in inflammation of the liver. In a comprehensive literature review, Hurtado et al. (2005) found that 87% of South American indigenous groups showed evidence of infection with at least one of the hepatitis viruses. The prevalence of hepatitis B is relatively high in indigenous Taiwanese

and Australian aborigines groups (Davies et al. 2014, Lin et al. 2000, Olsen et al. 2014). More information is needed from other regions and for other strains, but the pattern of higher rates in indigenous compared with nonindigenous populations remains unchanged.

The burden of tuberculosis, an infection caused by various strains of mycobacteria, is substantial in indigenous populations worldwide, from the Amazon to the circumpolar regions (Bloss et al. 2011, Coimbra & Basta 2007, Hurtado et al. 2003, Tollefson et al. 2013). A systematic review conducted by Tollefson and colleagues (2013) shows that where data exist, indigenous peoples were found to have higher rates of tuberculosis than did nonindigenous peoples. In Brazil, for example, indigenous groups have an incidence of tuberculosis that is at least 20 times higher than that of the general population. Amazonian natives and selected groups in Southeast Asia (Saharia, Hmong, Tibetans) and Africa (Fulani, Peul, Dogon) have the highest incidence and prevalence of tuberculosis. Most studies highlight the need for proper surveillance and treatment, particularly in developing countries.

It is important to discuss the synergistic relationship between infectious disease and nutritional insufficiency. A chronic infection, such as tuberculosis or macroparasitic infestation, drains the body of nutrients and much-needed energy. Chronic infections have been associated with stunted growth in indigenous children (Belizario et al. 2011, Blackwell et al. 2010, Lewnard et al. 2014, Tanner et al. 2009, Tanner & TAPS Bolivia Study Team 2014). Chronically infected adults have a diminished work capacity, which may result in less access to food resources and which, in turn, weakens the body further (Hurtado et al. 2001, 2005).

Reproductive and Sexual Health

In general, indigenous women have high parities and high rates of adolescent fertility and unintended pregnancy (Gracey & King 2009, Wurtz 2012). Although the reproductive health inequity gap is widespread, the experience of reproductive-age indigenous women changes with the degree of economic development (or market integration). In more traditionally living populations, undernutrition, high levels of physical activity (farming, gathering food and fuel, carrying loads), and heavy infection burdens combine to determine unfavorable perinatal and neonatal outcomes (Gracey & King 2009). Maternal mortality in these groups is several times higher than the country's average. In Ecuador, for example, maternal mortality was 74.3 per 100,000 people nationally, whereas it is 250 in remote indigenous communities (Montenegro & Stephens 2006). In Mexico, the maternal mortality rate (MMR) was six times higher for indigenous women than for nonindigenous ones (Gamlin & Hawkes 2015), whereas in the southwestern Yunnan province of China, which has a large indigenous population, the MMR ranged between 2 and 5 times higher than the national average (Li et al. 2007). The main proximate causes of maternal mortality are obstetrical complications: hemorrhage, infections, and complications related to childbirth and to abortion. However, structural limitations such as access to prenatal care (distance to health posts, costs) and to skilled birth attendants are playing a significant role in maternal health (Berry 2006).

Women in rapidly transitioning populations may enjoy the benefits of better access to pregnancy care and safer deliveries, but they are also at risk of incorporating detrimental habits such as smoking, alcohol abuse, and a sedentary lifestyle (Sayers & Boyle 2010, Scott et al. 2005). In addition, structural violence issues, so patently affecting indigenous communities, may increase maternal stress with the concomitant immediate effects on pregnancy and birth outcomes and the longer-term embodiment of stress in children (Walters & Simoni 2002).

The high fertility rates in indigenous communities are intimately related to few family-planning options and to social norms and attitudes regarding sexual protection and fertility control. Protection against sexually transmitted infections (STIs; e.g., syphilis, gonorrhea, chlamydia,

trichomoniasis, and HIV/AIDs) is often omitted because of a lack of access or for cultural reasons, which may result in an increase in the risk of contracting STIs. Data on the prevalence of STIs among indigenous people is extremely limited, and gaps in available data are considerable, especially in databases from developing countries (Minichiello et al. 2013). However, it is becoming clear that the prevalence of STIs is an emerging public health concern. Chlamydia, the most widespread STI in the world, affects many indigenous populations. Although the vast majority of reports focus on Australian aboriginal populations (Bandea et al. 2008, Graham et al. 2012, O'Connor et al. 2014), high rates of Chlamydia infection have been described for other indigenous groups (Deluca et al. 2011, Gorgos et al. 2008, Mendoza et al. 2013, van der Helm et al. 2013). In addition to increasing the risk of pelvic inflammatory disease and infertility, Chlamydia infections may predispose women to other STIs such as human papilloma virus (Deluca et al. 2011, Mendoza et al. 2013). This may be part of the reason why indigenous women have a markedly higher risk of cervical cancer morbidity and mortality than do nonindigenous women in Latin America (Mendoza et al. 2013, Moore et al. 2014, Stieglitz et al. 2012, Tonon et al. 2003), Africa (Parkin et al. 2008), Australia (Shannon et al. 2011, Vasilevska et al. 2012), and North America (Vasilevska et al. 2012).

It is important to note that, at least for some groups, it does not seem that indigenous populations are inherently vulnerable to STIs, but rather that structural, social, cultural, and individual barriers to screening and treatment are the main determinants of the reported higher rates (Vasilevska et al. 2012, Wynne & Currie 2011). Social, including sexual, dynamics change dramatically in rapidly modernizing indigenous populations, which may bring about an increase in STIs (Stieglitz et al. 2012).

Nutritional Health

Indigenous peoples worldwide are experiencing the impact of the nutritional transition (Popkin 2009, Uauy et al. 2001). Regardless of the geographical region and of the traditional subsistence pattern, changes in the way of life of indigenous populations are accompanied by dramatic shifts in the composition of their diet. The nutritional transition inexorably involves a Westernization of the diet, which is characterized by its high-calorie, high-fat, high-salt, and low-fiber content, a decline in physical activity levels, and a change in infant feeding practices from breast to bottle feeding. As a result, the prevalence of overweight and obesity is increasing steadily in most populations. The prevalence of obesity in Inuit adults was found to be 36% (Zienczuk et al. 2012). Similarly, between 2004 and 2008, almost 40% of adults in American Indian and Alaskan Native populations were classified as obese (Barnes et al. 2010). In a peri-urban population of Toba/Qom in northern Argentina, the prevalence of adult obesity increased from 20% to 45% in just 10 years (between 2000 and 2010; Valeggia et al. 2015). Similar rates are found in indigenous populations in Brazil (Gimeno et al. 2009, Lourenco et al. 2008). In most cases, the prevalence of obesity is higher among indigenous people than among nonindigenous ones living in similar ecological and socioeconomic environments.

Obesity in adults is very frequently found alongside undernutrition in children. This situation, called "the double burden of malnutrition," is prevalent in indigenous peoples at both the population and the household levels (Gracey & King 2009). In Guatemala, for example, child growth stunting and maternal overweight were identified in 28.2% of the indigenous households compared with 14.4% in nonindigenous ones (Ramirez-Zea et al. 2014). A recent review of the prevalence of the double burden of malnutrition in Southeast Asia and the Pacific also indicated high levels of this public health challenge (Haddad et al. 2014).

Cardiovascular and Metabolic Health

Chronic diseases related to obesity, particularly diabetes and CVD, have become the most important cause of morbidity and mortality for many indigenous populations around the globe, particularly the ones in affluent countries (Stoner et al. 2012). The prevalence of CVD risks is high in North American, Australian/New Zealander, and circumpolar native groups (Chateau-Degat et al. 2010, Cunningham 2010, Hutchinson & Shin 2014, Kritharides et al. 2010) and is increasing rapidly in indigenous groups in Central and South America (Gimeno et al. 2009, Liebert et al. 2013, Orellana-Barrios et al. 2015, Valeggia et al. 2015), Africa (Vorster & Kruger 2007), and South Asia (Kusuma et al. 2001, Raza et al. 2013). Although genetic factors likely play a role in the etiology of CVD among indigenous populations (Busfield et al. 2002, Neel 1962), CVD risk factors are strongly shaped by sociocultural and behavioral factors. The most relevant factors are related to the nutritional transition most indigenous people are undergoing: a sharp increase in the caloric content of the diet and a decline in physical activity levels (see above). Excessive alcohol consumption and cigarette smoking are also frequent correlates of acculturation that have an impact on the development of CVD risk. These so-called modifiable behavioral factors have been the focus of several studies on indigenous health (Kritharides et al. 2010, Rodríguez-Morán et al. 2008, Stoner et al. 2012). In addition, there seems to be an association among acculturation, psychosocial stress, and CVD risks such as hypertension that, although not sufficiently explored, may play a synergistic role with dietary and physical activity habits (Dressler 1999, Steffen et al. 2006).

It is interesting to note, from a human biology perspective, that the response to increased obesity levels has not been homogenous among indigenous groups in transition. The Pima of the United States, for example, have high obesity levels (around 70% of the adult population) and a prevalence of Type 2 diabetes in 41% of women and 34% of men (Schulz et al. 2006). The Toba/Qom of Argentina have similar prevalence of obesity, but their prevalence of impaired glucose levels is less than 10% (Valeggia et al. 2015). However, the prevalence of metabolic syndrome among Toba/Qom adults is 38% (Lagranja et al. 2015), related mainly to high blood lipid levels. Circumpolar indigenous populations also have pronounced variation in CVD risk factors. Indigenous Siberians have extremely high rates of hypertension (~20–35%), whereas other groups such as the Canadian and Greenland Inuit have somewhat lower levels (19% and 22%, respectively; see Snodgrass 2013).

Mental Health

Despite being an integral part of an individual's well-being, mental health has been sorely neglected all over the world, in terms of both research and funding devoted to it. Although mental, neurological, and substance-use disorders constitute 13% of the global burden of disease (Collins et al. 2011), efforts to integrate mental health as part of the global health agenda are incipient and rather sporadic (Collins et al. 2013; Patel et al. 2011a,b). For indigenous populations, the situation is even more pressing and alarming, given the rapid cultural change they are undergoing and, painfully relevant, the violence and colonial oppression to which they have been subjected. The low degree of autonomy many indigenous people feel in their lives is directly related to high levels of psychosocial stress (Bartlett 2003, McDade & Nyberg 2010). The situation is even more complicated by the difficulty in understanding indigenous mental health constructs, which may not be the same as those used in nonindigenous settings (King et al. 2009, Walters et al. 2002). Thus, data on indigenous-specific mental health is scarce. However, it has been increasingly patent that native populations suffer from a disproportionately high burden of mental illness that includes high

rates of depression, substance abuse, violence, and suicide (Cohen 1999, Incayawar & Maldonado-Bouchard 2009, Lehti et al. 2009, Snodgrass 2013). The suicide rate among Canadian Inuit, for example, is 6–11 times greater than that for other Canadians. Unfortunately, other psychological issues remain largely unexplored.

Although the specific mental health issues vary with the socioecological context of the population, common patterns have emerged. First, some determinants do not seem to be specific to being indigenous, such as the effects of poverty and urbanization. It is well known that urbanization, when compounded with poverty, causes residential and family instability (King et al. 2009), which is associated with violence, depression, suicide, and substance abuse in both indigenous (Gracey & King 2009, Incayawar & Maldonado-Bouchard 2009, Stieglitz et al. 2011) and nonindigenous populations (Harpham 1994, Ludermir & Harpham 1998). Second, and related specifically to indigenous identity, mental health disorders are associated with a lack of local control and cultural continuity. For example, profound changes in traditional social roles, particularly in men, have been associated with high rates of suicide and substance abuse (Golias 2013, Kirmayer et al. 2000), which point to problems of identity and self-esteem. Challenges to and repression of culture have also been great obstacles for achieving a positive and effective dialog between indigenous communities and public health providers (Cohen 1999). Furthermore, greater involvement with the native culture has shown to be a protective factor against anxiety, depression, and suicide in several indigenous communities (Caqueo-Urizar et al. 2014, Lehti et al. 2009, MacDonald et al. 2013, Walters et al. 2002). Violence, both structural and as part of colonial oppression, has been a hallmark in the history of indigenous populations. The legacy of violence against indigenous peoples is inexcusable, and the consequences of this legacy are tangible in the mental health of children and adults in these populations (Kohrt et al. 2012, Kohrt & Worthman 2009, Melville & Lykes 1992, Miller & Billings 1994, Panter-Brick et al. 2009).

Aging

Studies of health and aging among indigenous populations are extremely limited, with no systematic reviews of the topic. Large-scale epidemiological studies have generally not focused on indigenous health, instead typically concentrating on country/region, level of economic development, and gender. Recent reviews of indigenous health, such as in a recent series in *The Lancet* (e.g., Montenegro & Stephens 2006, Ohenjo et al. 2006), have not explicitly considered health among older adults. This neglect is unsurprising given the focus on what has been described as normal aging, defined on the basis of majority populations in wealthy nations, and gives limited attention to divergences from this pattern and to underlying sociocultural, economic, and evolutionary factors that contribute to this diversity (Ice 2005).

Although anthropologists are increasingly involved in cross-cultural and multidisciplinary studies of aging, relatively little attention in biological anthropology has focused on aging (Ice 2005); the majority of existing studies have focused on the evolution of senescence and physiological mechanisms of aging and associated disease. For example, cross-cultural research on longevity among foragers (Gurven & Kaplan 2007) has calculated demographic parameters across diverse indigenous hunter-gatherer and forager-horticulturalists to consider aging as part of the evolution of the unique human life-history pattern, yet this study and others do not foreground how aging among indigenous groups such as the Tsimane of Bolivia is experienced vis-à-vis dominant populations in the region. In contrast to the situation in biological anthropology, a substantial cultural/medical anthropology literature focuses on health among indigenous older adults, but that literature concentrates primarily on case studies, considering topics such as cultural views of the aging process and indigenous belief systems around aging (e.g., Collings 2001, Rosenberg 2008).

Despite data limitations, several trends are evident. First, indigenous people live shorter lives, with shorter life expectancy at birth, which is largely the product of relatively high infant and childhood mortality, an elevated infectious disease burden, and high maternal mortality, as well as a growing disease burden from cardiovascular and metabolic diseases, mental health challenges, and substance abuse (Gracey & King 2009). Second, the demographic trend of population aging, which is occurring worldwide across levels of economic development, is also affecting indigenous populations globally (Kinsella 2008). Indigenous populations, similar to the situation seen in many developing nations, are experiencing rapid population aging that is likely to precipitate conflicts related to health care and societal safety nets; for example, rapid population aging in China has already led to changes in population policies as necessitated by the need for a sizeable young population to support the large old-age demographic (Kinsella 2008). Third, as with indigenous health generally, myriad factors shape health and disease risk among indigenous older adults, but this vulnerability is primarily related to severe socioeconomic and political challenges and to the breakdown of traditional lifeways. Urbanization, emigration, racism, and lifestyle change often lead to a greater chronic psychosocial stress burden and consequent increasing mental health challenges and struggles with substance abuse (Gracey & King 2009). Furthermore, indigenous elders are often seen as the keepers of common or sacred knowledge in their societies, but changing lifeways often lead to diminished roles and increasing marginalization for these older adults, with consequences for health and well-being (King et al. 2009). Lack of access to medical services also contributes to health disparities, especially coupled with the erosion of traditional knowledge and healing practices. Conversely, cultural revitalization movements can help preserve the social roles of indigenous elders, which in turn can contribute to improved health (Fitton 2005). Finally, the erosion of traditional cultural practices and forced entry into Western biomedical systems can shift perspectives on age-related health conditions such as dementia from a culturally defined normalized perspective to one that is more pathologically focused and potentially harmful to health and well-being (Hulko et al. 2010).

GLOBAL HEALTH INITIATIVES AND THE ROLE OF ANTHROPOLOGY

Over the past decade, global health initiatives (GHIs) have become a major focus for research, public health practice, and program development, particularly at large international health organizations [e.g., the World Health Organization (**http://www.who.int/trade/glossary/story040/en/**), The Global Fund to Fight AIDS Tuberculosis and Malaria (**http://www.theglobalfund.org/**)], governmental offices [e.g., the United States (**http://www.ghi.gov/**), Canada (**http://www.ghri.ca/**), Australia (**http://aid.dfat.gov.au/aidissues/health/Pages/home.aspx**)], and many universities in the Northern Hemisphere. These GHIs, presented mainly as humanitarian efforts dedicated to improving and protecting the health of the world's populations (Biesma et al. 2009), have emphasized communicable diseases and have mobilized billions of dollars in financial resources. Although more independent longitudinal evaluations are needed, it is clear that GHIs are having both positive and negative effects on the health systems of the countries they aim to assist. Included among the positive effects are greater stakeholder participation and a rapid scale-up service delivery (Biesma et al. 2009). However, concerns about the governance, coordination, and oversight of GHIs have been escalating (Pfeiffer et al. 2008). The list of negative effects includes wasteful spending, verticalization of planning, managing and monitoring, and lack of coordination with local health systems, which cause a distorted public-private health care delivery balance (Biesma et al. 2009, Pfeiffer et al. 2008). Criticisms also include the potential for a new form of colonialism that takes the form of thousands of students in academic programs in global health,

located primarily in the global North, who travel to resource-poor countries to get training in global health matters (Janes & Corbett 2009).

These issues are highly relevant to indigenous peoples because these groups are many times the recipients of GHI attention and aid. With anthropologists' long-standing interest in and history of working with indigenous communities, what, then, is their role in the global health landscape? How can anthropology, as a field of scholarship and practice, contribute to a better understanding of the health situation of indigenous peoples in a global context? Several publications have explicitly addressed the issue of anthropology and global health, particularly from the field of medical anthropology. In their excellent review article, Janes & Corbett (2009) propose that "the ultimate goal of anthropological work in and of global health is to reduce global health inequities. . ." (p. 169) and, thus, discuss four contributions of anthropology to global health: (*a*) ethnographic studies of health inequities, (*b*) analyses of the impact of global science and technology on local worlds, (*c*) critiques of global health programs, and (*d*) analyses of the health consequences of the reconfiguration of the social relations of international health development. Anthropology, when a biocultural/biosocial approach is emphasized, is extremely well suited and in a unique position to address the interplay among social, economic, and political forces that shape the local experience of illness (Worthman & Kohrt 2005). Community-based ethnographies of health care delivery, for example, can help evaluate the effectiveness of competing strategies (Pfeiffer et al. 2008). Ecosocial approaches to epidemiology, which focus on the constructs of embodiment, the cumulative interplay of exposure, susceptibility, and resistance, and accountability and agency (Krieger 2001, 2012) have been used successfully by medical and biological anthropologists to understand the pathways of health and disease in different populations, including indigenous ones (Cass et al. 2004, Valeggia 2014). Although facing an extremely challenging task, anthropologists are in an excellent place to be brokers between local indigenous communities and public/private health care providers, especially when community-engagement strategies are utilized (Senior & Chenhall 2013, Tindana et al. 2007, Wallerstein & Duran 2010).

Anthropologists are also finding a home in global health programs at academic institutions and research organizations. This provides a great opportunity to train large cohorts of students in cultural competence and mixed-methods approaches that offer a more nuanced understanding of the lived experiences of health and disease in different sociocultural and ecological contexts. Furthermore, an anthropological approach to, for example, university-sponsored, short-term medical (or student) volunteering in developing countries can provide the much-needed lens through which we can evaluate whether we "did good" (Berry 2014) and assess the long-term impact of (bio)medical interventions in indigenous populations. This way, the tools and knowledge of anthropology can both enrich the experiences of students in global health programs and, to a certain extent, mitigate the dangers of medical colonialism.

There are at least two major stumbling blocks in the contribution of anthropology to global health. First, anthropologists working on human health issues must go beyond a critique of global health programs, a practice that tends to remain within the closed circles of academic debate (van der Geest 2006). Denouncing the biopolitics of health care delivery is laudable, indeed, but few academic publications reach the audience who can actually and effectively make a difference in the communities we study. We need more community-engaged anthropologists who can see their own positions and their roles in the production of health in the populations they are studying and act accordingly. However, applied anthropological work is not always encouraged as a worthy scholarly pursuit, and it is seldom supported by research-financing agencies (Hurtado et al. 2001, Hurtado & Salzano 2004). This stifling atmosphere is something that must be changed from within our discipline, with the implementation of new guidelines for research, publication, and native health initiatives (Hurtado & Salzano 2004).

Second, and related to the above-mentioned challenge, anthropologists need to find a way to translate their research so that it reaches the study communities, their health care providers, and the key stakeholders in global health discussions and actions (Pfeiffer et al. 2008). Issues of translation are not extraneous to indigenous communities and, as noted above, are crucial determinants of the current health inequities. Presenting our findings to the study population in a useful and respectful way may provide them with tools for having their voices heard. This action, coupled with the development of timely and compelling arguments, stemming from our research, to public health officials and policy makers will hopefully help bridge the health disparities gap affecting the communities we study.

SUMMARY POINTS

1. The more than 370 million indigenous people worldwide are all united by a common thread: their low standards of health compared with national averages and compared with nonindigenous counterparts in the same regions.
2. The possible determinants and correlates of the health of indigenous peoples can be properly understood only within an analytical framework that combines both biological and sociocultural perspectives.
3. Three emergent themes connect the ethnohistory of indigenous populations with their current health situation: (*a*) the devastating effects of colonization, (*b*) the loss of ancestral land and its associated loss of resources, and (*c*) language and cultural barriers for access to health care.
4. Infectious disease is still a major burden in most indigenous populations, including those living in developed countries.
5. Diseases of affluence, such as cardiovascular and metabolic diseases, are becoming increasingly prevalent among indigenous peoples.
6. Mental health disease, including depression, suicide, and substance abuse, is highly prevalent and can be related to marginalization and a lack of cultural continuity and the lack of a sense of autonomy.
7. Anthropology is extremely well suited to address the interplay among social, economic, and political forces that shape the local experiences of illness.

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