

# American Indian health disparities: psychosocial influences

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## Abstract

The American Indian (AI) population suffers from significant health disparities. Death rates from diabetes, cancer, infant mortality, and other causes are higher among AIs. Numerous psychosocial influences, including a history of genocide and boarding school experiences, have led to unresolved historical trauma and its associated poor health outcomes. Adverse childhood experiences are also a strong predictor of risk for numerous chronic and behavioral health conditions. Food programs for impoverished populations historically have led to high rates of formula feeding of infants and intake of high-calorie, low nutritional value foods. Adverse adulthood experiences, including poverty, racism, and substance abuse, lead to depression, anxiety, and poor health outcomes. These social circumstances can have an impact on the quality of parenting skills for the next generation, leading to continued intergenerational health disparities. Additional research into the psychosocial influences and social determinants of health is needed to ensure improved policy and program development.

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## Overview of American Indian Health Disparities

The American Indian (AI) population suffers from among the worst health disparities in the nation (Espy et al., 2014). Disproportionate death rates from numerous, largely preventable causes among AIs include infant mortality (Wong et al., 2014), suicide (Heme, Bartholomew, & Weahkee, 2014), diabetes (Cho et al., 2014), alcohol-attributable deaths (Landen, Roeber, Naimi, Nielsen, & Sewell, 2014), heart disease (Veazie et al., 2014), and unintentional injuries (Murphy et al., 2014). Additionally, significant regional differences in cancer mortality rates exist in the AI population (Espy, Paisano, & Cobb, 2014), with the highest rates of death among tribes in the Northern Plains region (White et al., 2014) where, not surprisingly, the highest rates of cigarette smoking also occur (Cobb, Espy, & King, 2014).

What factors create the basis for these appalling disparities in health? To understand the root causes of health inequities among AIs, it is important to understand the historical context in which this population has lived. Upon contact with Europeans in the late 15th century, population estimates of indigenous peoples living in North America are between 9 and 12 million people, and perhaps as high as 18 million (Dobyns, 1966). By the late 19th century, the AI population in the United States had reduced to less than 200,000 (Thornton, 1987). According to Thornton (1987), much of this decline in population was due to warfare, genocide, and infectious disease. These three factors came together in the French and Indian Wars between 1754 and 1767 in which blankets that had been used by smallpox patients were distributed to tribes located in what is now the northeastern United States. For the tribes affected by the intentional spread of smallpox, more than half of their populations died from the disease (Henderson et al., 1999). By the late 19th century, most tribal nations had been severely affected by smallpox, tuberculosis, trachoma, measles, and diphtheria (Moorehead, 1914). Dr Susan La Flesche-Picotte, the first female AI physician and a member of the Omaha tribal nation, stated in 1907

The spread of tuberculosis among my people is something terrible—it shows itself in the lungs, kidneys, abdominal track, blood, brain and glands. The physical degeneration in 20 years among my people is terrible (DeJong, 2008).

Between 1700 and 1900, these conditions were common to nearly all tribes in the United States, and they have been described as the AI Holocaust (Yellow Horse Brave Heart & DeBruyn, 1998) or genocide.

Although the AI population made a significant recovery in the 20th century in terms of population size – the U.S. Census estimates that the 2010 AI and Alaska Native population was more than five million people – (Norris, Vines, & Hoeffel, 2012), significant health disparities still remain. For example, AI death rates declined in the early to mid-1900s. However, this decline in death rate slowed down in the 1980s, while the health of the rest of the nation continued to improve (Kunitz, Veazie, & Henderson, 2014). While control of infectious diseases has improved, chronic diseases such as diabetes, cancer, and heart disease have escalated significantly in recent decades. In addition, deaths due to unintentional injuries (e.g. motor vehicle accidents), intentional injuries (e.g. homicide and suicide), and infant mortality have plagued many tribes and have a disproportionate impact on younger age groups. As a result, the average age at death is substantially younger for AIs. In the State of South Dakota, for example, the median age at death for AIs is 58 years as compared to 81 years for the White population (Christensen & Kightlinger, 2013). Could there be a connection between the severe historical injustices perpetrated against AIs and subsequent health disparities in the 21st century?

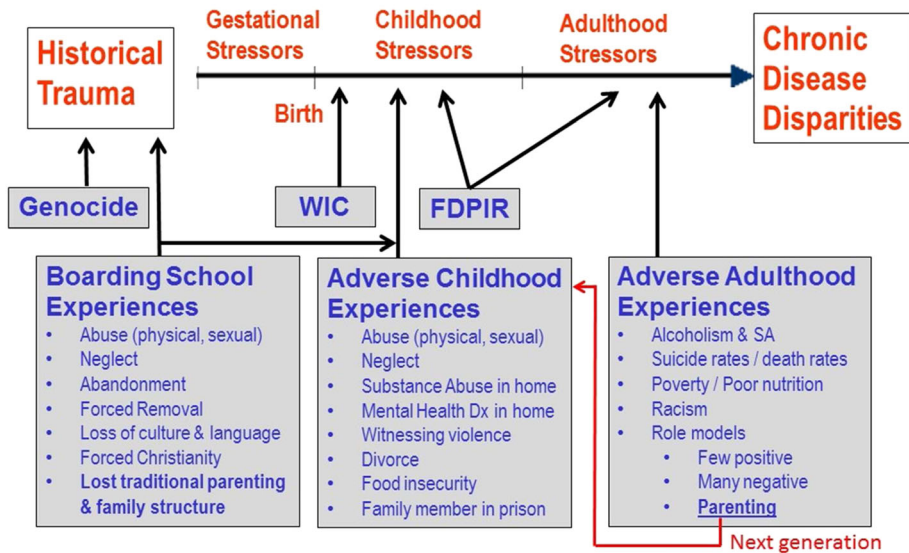
### **Intergenerational Basis for American Indian Health Disparities**

Figure 1 shows a proposed model for the intergenerational basis for chronic disease disparities among AIs. In addition to attempts at genocide of AIs, the boarding school system added to the depth of historical trauma experienced by the AI population. Possibly due to pervasive and unresolved trauma and poverty, AIs are also exposed to significant adverse childhood experiences (ACEs). In addition, food programs sponsored by the United States Department of Agriculture, including the Supplemental Nutrition Program for Women, Infants, and Children (WIC) and the Food Distribution Program on Indian Reservations (FDPIR), commonly called the “commodity food” program, exposed multitudes of AIs to poor-quality, high-calorie foods with inadequate nutritional value. Furthermore, adverse adulthood experiences, including high rates of substance abuse, poverty, racism, and other forms of strife, can have a role in diminished parenting skills and can have a negative impact on subsequent generations. These psychosocial factors and their potential linkage to present-day chronic disease disparities are further discussed below.

#### *Historical trauma*

Since Europeans reached the New World and unleashed a series of contagions among the indigenous population, AIs have experienced unremitting trauma and post-traumatic effects. These contagions spread across the entire continent over a 400-year time frame, killing up to 90% of the continental indigenous population rendering indigenous people physically, spiritually, emotionally, and psychologically traumatized by deep and unresolved grief. Scholars have suggested that the effects of these historically traumatic events are transmitted intergenerationally as descendants continue to identify emotionally with ancestral suffering, a cumulative emotional and psychological wounding, resulting from successive, compounding traumatic events perpetrated on a community over the life span and over generations (Wesley-Esquimaux & Smolewski, 2004). This collective trauma has also been characterized

## Inter-Generational Basis for Chronic Disease Disparities Among American Indians and Alaska Natives



**Figure 1** Proposed model for the intergenerational basis for chronic disease disparities among American Indians and Alaska Natives. A long history of genocide and the American Indian boarding school experience has led to pervasive and unresolved historical trauma and its associated poor mental health outcomes. Adverse childhood experiences are also a strong predictor of risk for numerous chronic and behavioral health conditions, including heart disease, diabetes, cancer, depression, suicide attempts, and tobacco use. Food programs for impoverished populations, including Supplemental Nutrition Program for Women, Infants, and Children (WIC) and the Food Distribution Program on Indian Reservations (FDPIR), historically have led to high rates of formula feeding of infants and intake of high-calorie, low nutritional value foods, respectively. Finally, adverse adulthood experiences, including poverty, racism, and substance abuse, lead to high prevalence of depression, anxiety, and poor health outcomes. These social circumstances can have an impact on the quality of parenting skills for the next generation, leading to continued intergenerational health disparities.

by scholars as the *soul wound*, knowledge of which has been present in AI populations for many generations (Duran, Duran, Yellow Horse Brave Heart, & Yellow Horse-Davis, 1998).

A variety of terms have been used to describe the multigenerational nature of distress in communities, including collective trauma, intergenerational trauma, multigenerational trauma, and historical trauma. Historical trauma, the term used most often by scholars of AI trauma, is conceptualized as a collective complex trauma inflicted on a group of people who have a specific group identity or affiliation – ethnicity, nationality, and religious affiliation. It is the legacy of numerous traumatic events that a community experiences over generations and encompasses the psychological and social responses to such events (Yellow Horse Brave Heart, 1999).

Most conceptualizations of historical trauma among AIs are based on reports of persistent trauma among Holocaust survivors (Bettleheim, 1943; Chodoff, 1969). Much of the research of historical trauma and its effects have been done regarding Jewish Holocaust survivors and their descendants (Yehuda et al., 1998; Lev-Wiesel, 2007; Kahane-Nissenbaum, 2011; Kellerman, 2001). Similar studies have been done with Japanese Americans after internment (Nagata, 1991; Nagata, Trierweiler, & Talbot, 1999) and victims of the Turkish genocide of Armenians (Kupelian, Klayjian, & Kassabian, 1998; Kalayjian & Weisberg (n.d.)). Brave Heart and DeBruyn (1998) reviewed the theoretical contributions from the Holocaust, trauma, and grief literature, which supported their concepts of historical trauma and unresolved grief relating to

AIs who “are victims of genocide much like victims of the Jewish Holocaust” (p. 61). Fogelman (1988a, 1988b) in her work with Jewish Holocaust survivors suggests intervention strategies similar to those incorporated in Brave Heart and DeBruyn’s (1998) model, which “emphasized the importance of groups oriented around the theme of generational trauma to aid in lifting the taboo against expressing painful feelings...” (p. 70).

Brave Heart (1999a, 1999b, 2000), and her collaborator Brave Heart & DeBruyn (1998), researched the impact of historically traumatic events on mental health among the Lakota, using the term “historical trauma response”, which is similar to the symptom pattern identified among Jewish Holocaust survivors and their descendants and includes “rumination over past events and lost ancestors, unresolved mourning, feeling numb in response to traumatic events, anger, depression, intrusive dreams and thoughts, and fantasies about saving lost ancestors” (Evans-Campbell, 2008, p. 324). Whitbeck, Adams, Hoyt, and Chen’s (2004) study conducted with elders from two AI reservations revealed responses to historical and contemporary events such as loss of tribal land, forced boarding school attendance, loss of language, loss of culture, discomfort around White people, shame, and rage.

Responses to such trauma have an impact at the individual, familial, and community level. Research among Holocaust survivors suggests that responses at the individual level fall within the context of individual mental and physical health and may include symptoms of post-traumatic syndrome disorder, guilt, anxiety, grief, and depressive symptoms (Barocas & Barocas, 1979). Responses at the familial level may include impaired family communication (Wardi, 1992) and stress around parenting (Yellow Horse Brave Heart & DeBruyn, 1998).

### *American Indian boarding schools*

By the early 1800s, the American public grew weary of the Indian wars and wanted a solution to the “Indian problem”. On March 3, 1819, the United States Congress passed the Civilization Fund Act to provide education “for the purpose of providing against further decline and final extinction of the Indian tribes...for the teaching of their children in reading, writing and arithmetic...” (Spring, 1994). Government officials

believed that if they carried out their educational program on a sufficiently large scale it would transmogrify whole tribal cultures and eventually assimilate Indians into the lower strata of American society (Hamley, 1994).

The so-called “Indian problem”, centuries old, would thus resolve itself (Reyhner & Eder, 2004). The federal government allowed school facilities, often run by churches and missionary societies to be situated close to the communities served (Smith, 2005). Assimilationists of the time viewed this as a disadvantage, as the students remained in their home communities under the influence of parents and tribal elders and often went “back to the blanket”, maintaining tribal traditions and language (Adams, 1995).

Rations, annuities, and other goods were withheld from parents and guardians who refused to send children to school after a compulsory attendance law for AIs was passed by Congress in 1891 (Trennert, 1988). The 1890s through the 1930s were the heyday of the off-reservation boarding schools. The majority saw their highest enrollments during the 1930s as a result of the economic conditions stemming from the Great Depression. In 1931, 29% of AI children in school were in boarding schools, and an estimated two-thirds of AIs had attended boarding school at some point in their life. The total number of off-reservation boarding schools by 1902 was 25, along with 157 on-reservation boarding schools (Adams, 1995).

Richard Henry Pratt, founder of the Carlisle Indian School in Pennsylvania, suggested that

The solution of the Indian problem hinges upon the destruction of the present systems and in the devising of means that will disintegrate the tribes and bring them into association with the best of our civilization.

The motto of the Carlisle Indian School was “Kill the Indian, Save the Man” (Prucha, 1978). Pratt believed that the solution to students reverting “back to the blanket” by living at home and attending reservation missionary schools was to remove Indian children, as young as four years of age (Child, 2000), to off-reservation boarding schools ensuring that they would be “thoroughly Christianized, individualized, and republicanized” (Adams, 1995).

Thus, the aim of boarding schools was for total assimilation and acculturation of AI children into the dominant society. Boys and girls as young as four and five years of age were taken from their homes and sent to off-reservation boarding schools usually located far from their homes, sometimes for as many as 12 years. Many never returned to their homes, and many died from disease and homesickness while in boarding school. Children were given inadequate food and medical care. Child (2000) states,

The anxiety the Indian parents felt regarding the health of their children in boarding school was exacerbated by the pervasiveness of serious diseases and by the fact that officials routinely concealed news of illness from family members.

School dormitories often failed to provide adequate sanitary facilities for students. Adams (1995) states,

...epidemics of tuberculosis, trachoma, measles, pneumonia, mumps and influenza regularly swept through overcrowded dormitories, taking a terrible toll on the bodies and spirits of the stricken... Thus, disease and death were also aspects of the boarding school experience.

Boarding schools have had devastating consequences for AI families and communities. In addition to physical illness and infectious diseases, many children were exposed to abusive behaviors, including physical, sexual, and emotional. When these children became adults, many were ill-prepared for raising their own children in a traditional AI context (Adams, 1995). The legacy left by coercive assimilationist policies adopted by boarding schools is one of the historical and generational traumas. The children who grew up in boarding schools were deprived of traditional parental role models, suggesting that boarding school experiences may have not only interrupted the intergenerational transmission of healthy child-rearing practices but also instilled new, negative behaviors. Increasingly, the damage from boarding school abuse, loneliness and lack of love, and lack of parenting is seen as a key factor in the illnesses that plague tribes today. The damage can pass from one generation to the next and manifest in high rates of poverty, substance abuse, domestic violence, depression, and suicide (Arbogast, 1995). Today, there are many boarding school-era students who have faced a loss of cultural identity, language, and tradition. They suffer from post-traumatic syndrome disorder due to the indignities and traumas linked to years in boarding school. Since the mid-1970s, these individuals have contributed to the high percentages of alcohol-related health statistics, including injuries, domestic violence, homicide, and suicide. Subsequently, they have passed this legacy on to their children and grandchildren and have never healed from those emotional wounds (La Belle, Smith, Easley, & Charles, 2005).

Shoshan (1989) determined that the magnitude of individual trauma was closely related to the intensity of sudden violent separation from close family members. Individuals, families, communities, and entire tribal groups suffered as the result of boarding schools. The experience affected AIs collectively. At the community level, responses may include the breakdown of traditional culture and values, the loss of traditional rites of passage, high rates of alcoholism, high rates of physical illness, and internalized racism (Duran et al., 1998). Unresolved trauma has been found to be intergenerationally cumulative, compounding the subsequent health problems of the community (Solomon, Kotler, & Mikulincer, 1988). Further, mourning that has not been completed or resolved and the ensuing depression can be passed from one generation to the next (Shoshan, 1989).

Lajimodiere's (2012) qualitative boarding school interview research revealed that those boarding school survivors who had parents still living did not want their real names used in any publications saying that parents felt an overwhelming sense of powerlessness, guilt, and shame, for not saving their children from being taken. Others said they had not spoken of abuse with siblings or other family members, and most said their family would be angry at them for revealing "secrets". The oldest of the boarding school interviewees said she sent all 14 of her children to boarding school because she could not feed them. Among the interviewees, a man and woman spoke of becoming alcoholic and physically abusing their children. Both went through addiction treatment and have maintained sobriety for many years and have repaired relations with their children. The remaining interviewees all spoke of being overprotective of their children and never considering sending them to boarding school, not wanting them to go through the physical, sexual, and emotional abuse that they experienced. Themes from Lajimodiere's study further reveal that the participants who attended boarding school experienced loss in the form of identity, language, culture, ceremonies, and traditions. In addition, they felt a lowered self-esteem and increasing loneliness due to loss of parents and extended family, feeling of abandonment by parent, and feeling lost and out of place when they returned home. Many experienced severe abuse in the form of corporal punishment as well as forced child labor, hunger/malnutrition, and sexual and mental abuse. Further, the participants experienced unresolved grief in the form of maintaining silence, mental health issues, relationship issues, and alcohol abuse.

Other studies have shown that centuries of encounters of Native peoples with European Americans in the United States frequently involved military conquest, reservation captivity, assimilation campaigns including boarding schools, and resource theft, and these experiences have collectively established and transformed the psychologies of contemporary tribal peoples by complicating, compromising, and confounding "mental health" in these communities (Gone, 2009). As Gone and Alcantara (2007) further state: "...the contemporary status of American Indian 'mental health' remains significantly caught up in history, culture, identity and (especially) spirituality all within the devastating context of European American colonialism" (p. 361). The forced removal of Native children to boarding school is currently associated with historical trauma, intergenerational trauma, and unresolved grieving (Brave Heart & DeBruyn, 1998). Her work showed the "Lakota collective ego identity as bereaved, victimized and traumatized" and "display unresolved grief in somatization, depression and substance abuse, elevated suicide rates" (p. 291). The historical psychological distress among Native people is referred to as boarding school trauma where children were taken from parents and reeducated so that their language, culture, and kinship patterns were lost to them (Whitbeck et al., 2004).

Boarding schools have had devastating psychological consequences for AI families and communities including abusive behaviors, physical, sexual, and emotional (Beiser, 1974; Brave Heart-Jordan, 1995). Spiritually and emotionally, the children were bereft of culturally

integrated behaviors that led to positive self-esteem, a sense of belonging to family...ill-prepared for raising their own children in a traditional Native context (Brave Heart & DeBruyn, 1998).

### *Adverse childhood experiences*

In addition to previous generations suffering from the abuse related to boarding school experiences and subsequent interruption of traditional parenting practices, many AI children are experiencing significant adversity today. The ACEs study showed a dose-response relationship between ACEs and poor health outcomes, including heart disease, diabetes, cancer, depression, substance abuse, suicide attempts, obesity, tobacco use, and other high-risk health behaviors (Felitti et al., 1998). An ACE score is calculated by adding the number of ACE categories that an individual has experienced. Remarkably, the patterns of poor health outcomes related to high ACE scores are consistent with the patterns of AI health disparities previously described.

The categories of ACEs include abuse (psychological, physical, and sexual), household dysfunction (substance abuse in the home, mental illness in the home, and a mother who was treated violently), and criminal behavior in the household (member of the household in prison). Unfortunately, rates of child abuse and neglect are high among AIs, and alcohol is associated with the vast majority of abuse cases (Lujan, DeBruyn, May, & Bird, 1989). In addition, children who are victims of sexual abuse are also at increased risk for depression, hopelessness, and suicide (Pharris, Resnick, & Blum, 1997). In terms of household dysfunction, high rates of alcohol abuse (Landen et al., 2014) and other forms of addiction are prevalent (Hawkins, Cummins, & Marlatt, 2004) in many AI communities. Domestic violence also can be common in AI communities (Evans-Campbell, Lindhorst, Huang, & Walters, 2006), and incarceration rates are disproportionate for AIs (Feldstein, Venner, & May, 2010). In addition, many incarcerated AIs also suffer from mental health diagnoses (Duclos et al., 1998). As a result, countless AI children grow up in homes in which they either directly suffer various forms of abuse or neglect or witness violence, substance abuse, and/or mental illness in the home. This puts these children at high risk for numerous poor health outcomes as adults, and high ACE scores may be a significant contributing factor to AI health disparities.

### *Food programs*

As a result of high rates of poverty, many AIs are dependent on food programs sponsored by the United States Department of Agriculture, such as the Supplemental Nutrition Program for WIC and the FDPIR, also commonly called the “commodity food” program. In recent years, the WIC program has focused efforts on promotion of breastfeeding and has attempted to distribute less infant formula. Breastfeeding has numerous benefits to both the infant and mother, and it has been shown to reduce diabetes incidence in AIs (Pettit, Forman, Hanson, Knowler, & Bennett, 1997). However, in previous years, enrollment in the WIC program was correlated to lower rates of breastfeeding (Ryan, Rush, Krieger, & Lewandowski, 1991), higher rates of formula feeding, and subsequently higher risk of diabetes as the infant becomes an adult. Therefore, populations who are impoverished, such as AIs, may have an increased risk for diabetes due to dependence on WIC and other related programs that might have inadvertently resulted in an increase in infant formula feeding as opposed to accessing the protective effects of breastfeeding.

The FDPIR has improved its nutritional quality in recent years, but little research has been conducted on the impact of FDPIR on health outcomes (Finegold et al., 2005). In the authors' experience, food distribution historically consisted of sugar, enriched flour, vegetable

shortening, canned meat, cheese, peanut butter, sugared juices, powdered milk, and pure corn syrup. Food insecurity and the types and quality of food that people eat are closely correlated to financial means and social class (Lucas & Buzzanell, 2011). The food choices and options historically available through FDPIR were not healthy, and they potentially have contributed to the significant chronic disease incidence and mortality disparities seen in AI populations (e.g. diabetes and other obesity-related disorders). As shown in Figure 1, one can see how the adverse outcomes of unresolved trauma in previous generations, including higher rates of poverty, can have an impact on access to health foods in subsequent generations – thus adding to the social environment of chronic disease disparities. More research is needed to accurately quantify the impact of these food programs on AI health disparities.

### *Adverse adulthood experiences*

Numerous social factors have a negative impact on the health of AI adults. Socioeconomic status, social class, and race/ethnicity have been shown to be significant social determinants of health (Blane, 1995), and AIs have lived in poverty at a much higher rate than other populations for many years (Centers for Disease Control and Prevention (CDC), 2003). Both poverty and poor educational attainment are correlated to poor health status. In addition to having among the highest poverty rates, AIs also suffer from among the lowest educational attainment in the nation (Beckles & Truman, 2011). Racism and discrimination are also linked to poor health outcomes (Williams & Mohammed, 2009). In the authors' experience, many AIs remain subjected to discrimination, poverty, poor nutritional status, addiction, abuse, and strife, and all of these factors may play a synergistic role in the perpetuation of chronic disease disparities in this population.

The proposed model of intergenerational causes of chronic disease disparities shown in Figure 1 reveals a host of complex, interconnected, and multigenerational forces across the continuum of unresolved historical trauma to social determinants of health that combine to create significant health disparities among AIs. These forces and social determinants of health include historical events, childhood events, access to healthy food, adulthood experiences, and subsequent parenting practices. The authors propose that addressing any of these issues in isolation will not provide an accurate framework to understand and address AI health disparities and that the intergenerational framework shown in Figure 1 needs to be understood in the context of its holistic nature.

### **Recommendations and Conclusion**

According to Whitbeck et al. (2004), the current health and social conditions, coupled with continued discrimination, act as reminders of, and are a continuation of, the historical traumas that persist in the thought of Native peoples and continue to impact them. Moving forward, we need to recognize that we cannot change the events of the past; however, we need to acknowledge, validate, and respect the emerging science of historical trauma. Perhaps the field of epigenetics will provide the scientific link between the stressors of previous generations and the impact of ACEs on adult health. Epigenetics is the scientific field that studies changes in gene expression caused by various stressors or chemical reactions (Bird, 2007). It is possible that gene expression has been altered among those populations that have suffered through the stressors of unresolved trauma and ACEs. Robust scientific studies on the potential role for epigenetics in historical trauma, boarding school experiences, and ACEs are needed to provide a better understanding into the scientific basis for the linkage between psychosocial influences and AI health disparities. In addition, the potential role of maternal stress during pregnancy on the fetal environment has shown to yield adverse



outcomes (Engringer, Epel, Kumsta, Lin, Hellmammer, Blackburn, Wust, & Wadhwa, 2011), and these factors need to be studied and better understood in AI populations in order to develop appropriate interventions.

Additionally, accurate data are needed to determine the prevalence, role, and impact of ACEs in AI communities. Some of these efforts are underway in limited settings. If we can quantify the impact of ACEs on AI health disparities, perhaps we can redistribute and/or pursue additional health resources to intervene further upstream in chronic disease prevention. Perhaps preventing ACEs will be more important to health promotion and chronic disease prevention than having access to physicians and medications as adults. With limited resources and high rates of poverty, AI communities are faced with significant challenges in determining priorities for health resources, and accurate, locally applicable data are essential to ensure that appropriate policies, programs, and interventions are developed.

Gone and Trimble (2012) recognize an alternative pathway toward future elimination of AI mental health disparities. They suggest a pathway that is grounded in local AI knowledge, activities, and institution in the context of community projects of cultural reclamation and tribal self-determination. Gone (2009) also proposed "...Native healing offered through distinctively Aboriginal therapeutic services..." These services would be based in culturally grounded therapies (Duran, Firehammer & Gonzalez), culturally sensitive therapies, systemic assessments with family, and community-level interventions (Brave Heart, Chase, Elkins, & Altschul, 2011). Brave Heart and Debruyn further state,

Individuals can continue the healing process through individual, group and family therapy as well as attending to their own spiritual development. Tribes need to facilitate communal grief rituals, incorporating traditional practices. (p. 70).

AIs as individuals and communities also look to a decolonization agenda as a vehicle to healing (Duran, 2006; Mussell, 2008). Decolonization is the intentional, collective, and reflective self-examination undertaken by formerly colonized peoples that result in shared remedial action. The key to decolonization is community emancipation from hegemony of outside interests (Duran, 2006; Mussell, 2008; Wilson & Yellow Bird, 2005). Wilson and Yellow Bird (2005) state, "The challenging of colonialist versions of history, the restoration of Indigenous spirituality to facilitate healing and draw on the strength of our ancestors...are all part of a larger decolonizing agenda" (p. 192).

Finally, as a society, we need to recognize that the way we treat marginalized populations has a direct impact on their health status. Everyone has a role in ensuring social justice and health equity. People and their actions create the social determinants of health, and much unnecessary human suffering occurs today because as a society, we have not made it a priority to treat each other in a humane and respectful manner. Lakota Medicine Man Black Elk teaches us that

Peace...is that which comes within the souls of people when they realize their relationship, their oneness, with the universe and all its powers, and when they realize that at the center of the universe dwells *Wakan-Tanka* (Great Spirit), and that this center is really everywhere, it is within each of us (Brown, 1953).

In future generations, perhaps it will be the strength and wisdom in the collective history of AIs that will serve as a positive force to promote healing from unresolved historical trauma and subsequent chronic disease disparities.

## Short Biographies

Donald Warne, MD, MPH, is a member of the Oglala Lakota tribe from Pine Ridge, South Dakota, and he serves as Associate Professor and Chair of the Department of Public Health at North Dakota State University. As a family physician and public health professional, Dr. Warne has worked in American Indian health for over 20 years in numerous capacities, including primary care medicine, academics, research, advocacy, administration, and policy development. He also serves on the National Board of Directors of the American Cancer Society.

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## References

- Adams, D. W. (1995). *Education for Extinction: American Indians and the Boarding School Experience, 1875–1928*. Lawrence, KS: University Press of Kansas.
- Arbogast, D. (1995). *Wounded Warriors: A Time for Healing*. Omaha, NE: Little Turtle Publications.
- Barocas, H. A., & Barocas, C. B. (1979). Wounds of the fathers: The next generation of Holocaust victims. In H. A. Barocas & C. B. Barocas (Eds.), *International Review of Psycho-analysis*, *6*(3), 331–340.
- Beckles, G. L., & Truman, B. I. (2011). Education and income – United States, 2005 and 2009. *Morbidity and Mortality Weekly Report*, *60*(01), 13–17.
- Beiser, M. (1974). Editorial: A hazard to mental health: Indian boarding schools. *American Journal of Psychiatry*, *131*(3), 39–47.
- Bettleheim, B. (1943). Individual and mass behavior in extreme situations. *Journal of Abnormal Social Psychology*, *38*, 417–452.
- Bird, A. (2007). Perceptions of epigenetics. *Nature*, *447*, 396–398.
- Blane, D. (1995). Social determinants of health – socioeconomic status, social class, and ethnicity. *American Journal of Public Health*, *85*(7), 903–905.
- Brave Heart-Jordan, M. Y. H. (1995). The return to the sacred path: Healing from historical trauma and historical unresolved grief among the Lakota. Unpublished Doctoral Dissertation. Smith College: Northampton, MA
- Brave Heart, M. Y. H. & DeBruyn, L. M. (1998). The American Indian Holocaust: Healing historical unresolved grief. *American Indian and Alaska Native Mental Health Research*, *8*(2), 60–82.
- Brave heart, M. Y. H. (1999a). Gender differences in the historical trauma response among the Lakota. *Journal of Health and Social Policy*, *10*(4), 1–21.
- Brave Heart, M. Y. H. (1999b). Oyate Ptayela: Rebuilding the Lakota Nation through addressing historical trauma among Lakota parents. *Journal of Human Behavior in the Social Environment*, *2*(1–2), 109–126.
- Brave Heart, M. Y. H. (2000). Wakiksuyapi: Carrying the historical trauma of the Lakota. *Tulane Studies in Social Welfare*, *21*–22, 245–266.
- Brave Heart, M. Y. H., Chase, J., Elkins, J., & Altschul, D. B. (2011). Historical trauma among indigenous peoples of the Americas: Concepts, research, and clinical considerations. *Journal of Psychoactive Drugs*, *43*(4), 282–290.
- Brown, J. E. (1953). *The Sacred Pipe: Black Elk's Account of the Seven Rites of the Oglala Sioux*. Norman, OK: University of Oklahoma Press.
- Centers for Disease Control and Prevention (CDC) (2003). Health disparities experienced by American Indians and Alaska Natives. *Morbidity and Mortality Weekly Report*, *52*(30), 697.
- Child, B. J. (2000). *Boarding School Seasons: American Indian Families 1900–1940*. Lincoln, NE: University of Nebraska Press.
- Cho, P., Geiss, L. S., Burrows, N. R., Roberts, D. L., Bullock, A. K., & Toedt, M. E. (2014). Diabetes-related mortality among American Indians and Alaska Natives, 1990–2009. *American Journal of Public Health*, *104*(S3), S496–S503.

- Chodoff, P. (1969). Depression and guilt among concentration camp survivors. *Existential Psychiatry*, *7*, 19–30.
- Christensen, M., & Kightlinger, L. (2013). Premature mortality patterns among American Indians in South Dakota, 2000–2010. *American Journal of Preventive Medicine*, *44*(5), 465–471.
- Cobb, N., Espey, D. K., & King, J. (2014). Health behaviors and risk factors among American Indians and Alaska Natives, 2000–2010. *American Journal of Public Health*, *104*(S3), S481–S489.
- DeJong, D. H. (2008). 'If You Knew the Conditions': A Chronicle of the Indian Medical Service and American Indian Health Care 1908–1955. In D. H. DeJong (Ed.) Lanham, MD: Lexington Books.
- Dobyns, H. F. (1966). Estimating aboriginal American population: An appraisal of techniques with a new hemispheric estimate. *Current Anthropology*, *7*(4), 395–416.
- Duclos, C. W., Beals, J., Novins, D. K., Martin, C., Jewett, C. S., & Manson, S. M. (1998). Prevalence of common psychiatric disorders among American Indian adolescent detainees. *Journal of the American Academy of Child & Adolescent Psychiatry*, *37*(8), 866–873.
- Duran, E., Firehammer, J., & Gonzalez, J. (2008). Liberation psychology as the path toward healing cultural soul wounds. *Journal of Counseling and Development*, *86*, 288–295.
- Duran, E. (2006). *Healing the Soul Wound: Counseling with American Indians and Other Native Peoples*. New York: Teachers College.
- Duran, E., Duran, B., Yellow Horse Brave Heart, M., & Yellow Horse-Davis, S. (1998). Healing the American soul wound. In Y. Danieli (Ed.), *International Handbook of Multigenerational Legacies of Trauma*. New York: Plenum Press.
- Enginger, S., Epel, E. S., Kumsta, R., Lin, J., Hellhammer, D. H., Blackburn, E. H., Wust, S., & Wadhwa, P. D. (2011). Stress exposure in intrauterine life is associated with shorter telomere length in young adulthood. *Proceedings of the National Academy of Sciences*, *108*(33), E513–E518.
- Espey, D. K., Jim, M. A., Cobb, N., Bartholomew, M., Becker, T., Haverkamp, D., & Plescia, M. (2014). Leading causes of death and all-cause mortality in American Indians and Alaska Natives. *American Journal of Public Health*, *104*(S3), S303–S311.
- Espey, D. K., Paisano, R., Cobb, N. (2014). Regional patterns and trends in cancer mortality among American Indians and Alaska Natives, 1990–2001. *Cancer*, *103*(5), 1045–1053.
- Evans-Campbell, T., Lindhorst, T., Huang, B., & Walters, K. L. (2006). Interpersonal violence in the lives of urban American Indian and Alaska Native women: Implications for health, mental health, and help-seeking. *American Journal of Public Health*, *96*(8), 1416–1422.
- Feldstein, S. W., Venner, K. L., & May, P. A. (2010). American Indian/Alaska Native alcohol-related incarceration and treatment. *American Indian Alaska Native Mental Health Research*, *13*(3): 1–22.
- Felitti, V. J., Anda, R. F., Nordenberg, D., Williamson, D. F., Spitz, A. M., Edwards, V., Marks, J. S. (1998). Relationship of childhood abuse and household dysfunction to many of the leading causes of death in adults. *American Journal of Preventive Medicine*, *14*(4), 245–258.
- Finegold, K., Pindus, N., Wherry, L., Nelson, S., Triplett, T., & Capps, R. (2005). Background report on the use and impact of food assistance programs on Indian reservations. *USDA Economic Research Service*, *4*, 1–100.
- Folgelman, E. (1998a). Therapeutic alternatives for Holocaust survivors and the second generation. In R. L. Brahm (Ed.), *The Psychological Perspectives of the Holocaust and of its Aftermath* (pp. 79–180). New York: Columbia University Press.
- Folgelman, E. (1988b). Intergenerational group therapy: Child survivors of the Holocaust and offspring survivors. *The Psychoanalytic Review*, *75*(40), 619–640.
- Gone, J. P. (2009). A community-based treatment for Native American historical trauma: Prospects for evidence-based practice. *Journal of Counseling and Clinical Psychology*, *77*(4), 751–62.
- Gone, J. P. (2009). Encountering professional psychology: Re-envisioning mental health services for Native North America. In L. J. Kirmayer & G. Valaskakis (Eds.), *Healing Traditions: The Mental Health of Aboriginal Peoples*. Vancouver: University of British Columbia.
- Gone, J. P., Alcantara, C. (2007). Identifying effective mental health interventions for American Indians and Alaska Natives: A review of the literature. *Cultural Diversity and Ethnic Minority Psychology*, *13*(4), 366–363.
- Gone, J. P., & Trimble, J. E. (2012). American Indian and Alaska Native mental health: Diverse perspectives on enduring disparities. *Annual Review of Clinical Psychology*, *(8)*, 131–60.
- Hamley, J. (1994). Cultural genocide in the classroom: A history of the federal boarding school movement in American Indian education, 1875–1920 (unpublished doctoral dissertation). Harvard University, Cambridge, MA.
- Hawkins, E. H., Cummins, L. H., Marlatt, G. A. (2004). Preventing substance abuse in American Indian and Alaska Native youth: Promising strategies for healthier communities. *Psychological Bulletin*, *130*(2), 304–323.
- Henderson, D. A. Inglesby, T. V., Bartlett, J. G., Ascher, M. S., Eitzen, E., Hahrling, P. B., Hauer, J., & Tonat, K. (1999). Smallpox as a biological weapon: Medical and public health management. *Journal of the American Medical Association*, *281*(22), 2127–2137.
- Herne, M. A., Bartholomew, M. L., & Weahkee, R. L. (2014). Suicide mortality among American Indians and Alaska Natives, 1999–2009. *American Journal of Public Health*, *104*, (S3), S336–S342.

- Kahane-Nissenbaum, M. C. (2011). Exploring intergenerational transmission of trauma in third generation Holocaust survivors. Doctorate in Social Work (DSW) Dissertations. Paper 16.
- Kalayjian, A., & Weisberg, M. (nd). Generational impact of mass trauma: The post-Ottoman Turkish genocide of the Armenians. Retrieved from <http://www.humiliationstudies.org/documents/KalayjianGenerationalTransmissionChapter.pdf>
- Kellerman, N. P. (2001). Psychopathology in children of Holocaust survivors: A review of the research literature. *Israel Journal of Psychiatry & Related Sciences*, **38**(1), 36–46.
- Kunitz, S. J., Veazie, M., & Henderson, J. A. (2014). Historical trends and regional differences in all-cause and amenable mortality among American Indians and Alaska Natives since 1950. *American Journal of Public Health*, **104**(S3), S268–S277.
- Kupelian, D., Klayjian, A., & Kassabian, A. (1998). The Turkish genocide of the Armenians: Continuing effects on survivors and their families eight decades after massive trauma. In Y. Danieli (Ed). *International Handbook of Multigenerational Legacies of Trauma* (pp.191–210). New York, NY: Plenum Press.
- Lev-Wiesel, R. (2007). Intergenerational transmission of trauma across three generations. *Qualitative Social Work*, **6**(1), 75–94.
- La Belle, J., Smith, S., Easley, C., & Charles, G. (2005). *Boarding School: Historical Trauma among Alaska's Native People*. National Resource Center for American Indian, Alaska Native, and Native Hawaiian Elders. Anchorage, AK: University of Alaska Anchorage.
- Lajimodiere, D. (2012). Stringing rosaries: A qualitative study of 16 northern plains American Indian boarding school survivors. *Journal of Multiculturalism in Education*, **8**(1), 1–8.
- Landen, M., Roeber, J., Naimi, T., Nielsen, L., & Sewell, M. (2014). Alcohol-attributable mortality among American Indians and Alaska Natives in the United States, 1999–2009. *American Journal of Public Health*, **104**(S3), S343–S349.
- Lucas, K., & Buzzanell, P. M. (2011). It's the cheese: Collective memory of hard times during deindustrialization. In J. M. Cramer, C. P. Greene, & L. M. Walters (Eds.), *Food as Communication/Communication as Food* (pp. 95–113). New York: Peter Lang.
- Lujan, C., DeBruyn, L. M., May, P. A., & Bird, M. E. (1989). Profile of abused and neglected American Indian children in the southwest. *Child Abuse and Neglect*, **13**(4), 449–461.
- Moorehead, W. K. (1914). *The American Indian in the United States, 1850–1914*. Andover, MA: The Andover Press.
- Murphy, T., Pokhrel, P., Worthington, A., Billie, H., Sewell, M., & Bill, N. (2014). Unintentional injury mortality among American Indians and Alaska Natives in the United States, 1990–2009. *American Journal of Public Health*, **104**(S3), S470–S480.M
- Mussell, B. (2008). Cultural pathways for decolonization. *Visions: BC's Mental Health And Addictions Journal*, **5**(1), 4–5
- Nagata, D., Trierweiler, S., & Talbot, R. (1999). Long-term effects on interment during early childhood in third generation Japanese Americans. *American Journal of Orthopsychiatry*, **69**(1), 19–29.
- Nagata, D. (1991). Transgenerational impact of the Japanese-American interment clinical issues in working with children of former internees. *Psychotherapy*, **28**(1), 121–128.
- Norris, T., Vines, P. L., & Hoefel, E. M. (2012). The American Indian and Alaska Native population: 2010. *2010 Census Briefs*, **C2010BR-10**, 1–21.
- Pettit, D. J., Fomman, M. R., Hanson, R. L., Knowler, W. C., & Bennett, P. H. (1997). Breastfeeding and incidence of non-insulin-dependent diabetes mellitus in Pima Indians. *The Lancet*, **350**(9072), 166–168.
- Pharris, M. D., Resnick, M. D., & Blum, R. W. (1997). Protecting against hopelessness and suicidality in sexually abused American Indian adolescents. *Journal of Adolescent Health*, **21**(6), 400–406.
- Prucha, F. P. (1978). *Americanizing the American Indians: Writings by the "friends of the Indian" 1880–1990*. Lincoln, NE: University of Nebraska
- Reyhner, J., & Eder, J. (2004). *Indian Education: A History*. Norman, OK: University of Oklahoma Press.
- Ryan, A. S., Rush, D., Krieger, F. W., & Lewandowski, G. E. (1991). Recent declines in breast-feeding in the United States, 1984 through 1989. *Pediatrics*, **88**(4), 719–727.
- Shoshan, T. (1989). Mourning and longing from generation to generation. *American Journal of Psychotherapy*, **43**, 193–207.
- Smith, A. (2005). *Conquest: Sexual Violence and American Indian Genocide*. Cambridge, MA: South End Press.
- Solomon, Z., Kotler, M., & Mikulincer, M. (1998). Combat-related posttraumatic stress disorder among second-generation Holocaust survivors: Preliminary findings. *American Journal of Psychiatry*, **145**, 865–868.
- Spring, J. (1994). *Deculturalization and the Struggle for Equality: A Brief History of the Education of Dominated Cultures in the United States*. New York: McGraw-Hill, Inc.
- The Evans-Campbell. (2008). Historical Trauma in American Indian/Native Alaska Communities: A Multilevel Framework for Exploring Impacts on Individuals, Families, and Communities, *Journal of Interpersonal Violence*, **23**(3), 316–338.
- Thornton, R. (1987). *American Indian Holocaust and Survival: A Population History since 1492*. Norman, OK: University of Oklahoma Press.
- Trennert Jr., A. R. (1988). *The Phoenix Indian School: Forced Assimilation in Arizona, 1891–1935*. Norman, OK: University of Oklahoma Press.

- Veazie, M., Ayala, C., Schieb, L., Dai, S., Henderson, J. A., & Cho, P. (2014). Trends and disparities in heart disease mortality among American Indians/Alaska Natives, 1990–2009 (2014). *American Journal of Public Health*, **104**(S3), S359–S367.
- Wardi, D. (1992). *Memorial Candles: Children of the Holocaust*. London: Routledge, Chapman and Hall, Inc.
- Wesley-Esquimaux, C. C., & Smolewski, M. (2004). *Historic Trauma and Aboriginal Healing*. Ottawa, Ontario: Aboriginal Healing Foundation.
- Whitbeck, L. B., Adams, G. W., Hoyt, D. R., & Chen, X. (2004). Conceptualizing and measuring historical trauma among American Indian people. *American Journal of Community Psychology*, **33**(3/4), 199–130.
- White, M. C., Espey, D. K., Swan, J., Wiggins, C. L., Ehemann, C., & Kaur, J. S. (2014). Disparities in cancer mortality and incidence among American Indians and Alaska Natives in the United States. *American Journal of Public Health*, **104**(S3), S377–S387.
- Williams, D. R., & Mohammed, S. A. (2009). Discrimination and racial disparities in health: Evidence and needed research. *Journal of Behavioral Medicine*, **32**(1), 20–47.
- Wilson, W. A. W., & Yellow Bird, M. (Eds.) (2005). *For Indigenous Eyes Only: A Decolonization Handbook*. Santa Fe, NM: School of American Research.
- Wong, C. A., Gachupin, F. C., Holman, R. C., MacDorman, M. F., Cheek, J. E., Holve, S., & Singleton, R. J. (2014). American Indian and Alaska Native infant and pediatric mortality, United States, 1999–2009. *American Journal of Public Health*, **104**, (S3), S320–S328.
- Yehuda, R., Schmeidler, J., Elkin, A., Wilson, S., Siever, L., Binder-Brynes, K., Wainberg, M., & Afariot, D. (1998). Phenomenology and psychobiology of the intergenerational response to trauma. In Y. Danieli (Ed.), *International Handbook of Multigenerational Legacies of Trauma* (pp. 639–655). New York, NY: Plenum Press.
- Yellow Horse Brave Heart, M., & DeBruyn, L. M. (1998). The American Indian Holocaust: Healing historical unresolved grief. *American Indian and Alaska Native Mental Health Research*, **8**, 56–78.
- Yellow Horse Brave Heart, M. (1999). Oyate Ptayela: Rebuilding the Lakota Nation through addressing historical trauma among Lakota parents. *Journal of Human Behavior in the Social Environment*, **2**(1–2), 109–126.