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The Prevalence of Diabetes and Alcoholism in Indian Communities

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THE PREVALENCE OF DIABETES
AND ALCOHOLISM IN
INDIAN COMMUNITIES

A Capstone Experience Manuscript

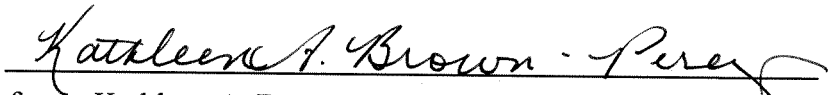
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ABSTRACT

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Author: John Collins

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Type II diabetes and alcoholism are more prevalent in the American Indian population than in any other population in the United States. Alcoholism is strongly correlated with other ailments, such as suicide, violence, and even death. Diabetes is often the result of poor diet and lack of exercise, and results in serious health implications. Together, these two afflictions have detrimentally influenced the mental and physical health of affected individuals and their communities. Although poor economic wellbeing bears strong influence over the prevalence of these diseases, the historical treatment of American Indians by European settlers and the United States government has proven to be the most important influence. Rum trading by British settlers introduced Indians to the poison which has yet to leave the veins of the majority of its users. In addition, redistricting of Indian civilizations and the depletion of natural resources has produced confined and destitute communities where diabetes and alcoholism are rampant as a result. Commodity foods that were high in fat and sugar became mainstays in many Indian homes. Attempts at assimilation via the General Allotment Act only made matters worse, as a cultural and identity crisis was created that has proven to be irreparable. The future outlook concerning these issues is uncertain, however it is evident that change will have to come from the community and tribal level rather than from the United States government.

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TABLE OF CONTENTS

CHAPTER ONE: INTRODUCTION	1
A Life of Struggle.....	1
The United States Government	2
The Odd Man Out.....	3
Poor Health: Type II Diabetes and Alcoholism	4
Chapter Summary	6
CHAPTER TWO: LITERATURE REVIEW	8
CHAPTER THREE: EXPLANATION OF CURRENT METHODOLOGY AND GOALS	22
Research Methods	22
Purpose and Scope.....	22
CHAPTER FOUR: A HISTORY OF MISTREATMENT	24
A Historical Introduction.....	24
Alcohol Trade	25
Redistricting of Tribes.....	27
Chapter Summary	29
CHAPTER FIVE: RESERVATION AND DEPLETION OF NATURAL RESOURCES	31
The Reservation Problem and Isolation	31
Manifestation of Alcoholism.....	34

The Klamath River	35
Illegal Wild Rice Competition.....	36
Chapter Summary	38
CHAPTER SIX: TYPE II DIABETES AND SOCIAL STRESS	40
A Manifestation of Epic Proportions.....	40
A Genetic Predisposition	41
The Caucasian Haplotype	42
A Cultural Perspective.....	45
Household Income.....	49
Education.....	51
Chapter Summary	52
CHAPTER SEVEN: ALCOHOL ABUSE	54
A Genetic Cause?	54
It All Starts With The Brain	55
Polymorphisms	57
Alcoholism: A Result of Circumstance?	60
Chapter Summary	61
CHAPTER EIGHT: FUTURE OUTLOOK AND CONCLUSIONS	63
Future Outlook.....	63
Misuse of DNA From Havasupai Tribal Members	63
Conclusions	66
Alcohol: Origins	67
Diabetes: Origins	68

CHAPTER ONE

INTRODUCTION

A Life of Struggle

Among the many different ethnic groups present in the United States, American Indians are among the most economically deprived of all. The unemployment rate for Indians is approximately ten times the national average for white Americans, and this includes all Indians, not just those on the reservation, which are worse off economically. Almost one-third of all American Indian households live below the poverty line, which is nearly double that of Caucasian Americans. This again does not factor in families on the reservation. Reservations tend to have higher levels of poverty, and are therefore simply one glaring example of how bad life is for many Indians (Pevar 3).

Money, of course, is not the only indicator of quality of life. Living healthy does not necessarily require large sums of money, with lavish foods and a personal trainer at one's disposal. However, money does shape food buying purchases, self-esteem, and to a larger extent, mental and physical health. For better or for worse, American society is constructed in such a way, that one's personal wealth determines the class of society in which a person or group of people fall into.

For some, this may not seem like a huge issue, as many view the "American Dream" as the cure-all for the majority of problems with society. If one is in a financial rut, hard work and dedication are the sole requirements for achieving success and comfortable living. After all, America is the land of opportunity. This is a topic of intense debate in itself and is clearly more applicable to some groups over others. The problem with using the "American Dream" concept when referring to American Indians is that

generally speaking, Indians are not strongly incorporated into the fabric of the United States despite the government's former efforts to do so.

The United States Government

Historically, the United States government has shown an ambivalent attitude toward the indigenous populations. In many instances, the government has shown a determination to essentially extinguish the Indian population in America. However, in other instances, the government has sponsored programs and federal laws such as the General Allotment Act of 1887 that aimed to assimilate Indians to the mainstream Euro-American culture (Pevar 9). The problem is that neither of these approaches works perfectly. Even to this day, many Indian tribes that are going through the process of becoming a federally recognized tribe, search for acceptance by the government and seek definition and identity. On the other hand, some tribes want nothing to do with the government in this respect and feel that sovereignty is inherent and should not be determined or granted by the United States government.

Not only is there disagreement between the collective tribes and the government, most tribes have differing views in the role that the federal government should have dealing with the tribes, and vice versa. In addition, the federal government itself is filled with alternative views and little consensus. Some parties are empathetic toward the plight of the American Indians, while still some members of the federal government are far less likely to side with Indians over disputes. As a result, governmental relations with Indian tribes have historically been complex and convoluted, and are largely shaped by the views of those in the three branches of the federal government, particularly the courts.

The Odd Man Out

As a result of this complex relationship, or lack thereof, the general population of American Indians is treated as the “odd man out” in society. The government does the very minimum in order to ensure the survival of the Indian population, yet does very little to better their predicament. It certainly is not a matter of making the Indian population strong or flourishing but a matter of giving equal care and opportunity to Indians. Even among other minorities, American Indians are the most impoverished and have a much lower life expectancy. Compared to American Caucasians, Indians have a life expectancy that is two-thirds as long (Pevar 3). This is a striking statistic considering that most Indians on reservations are reliant on the federal government for basic necessities such as running water, access to food, and electricity. Unfortunately, these basic necessities are either well below the national standard or nonexistent, as if the government is making a point that Indians need to join the general public or suffer the consequences.

Indians must struggle in order to survive in modern day America simply to remain autonomous. However, relying on a separate entity for autonomy is a contradiction in itself, one that the government seems more than happy to oblige. The government controls the means, whether it is money, electricity, food or other necessities that are basic for human existence. The federal government for a long time also controlled infrastructure including roads, educational facilities, and places to do business. It would be unfair to say that all Indians living on a reservation are subject to an extremely destitute lifestyle as a result of the government’s interference, but it is not outrageous to say that many, and in fact most of these individuals, live in substandard conditions resembling those of a second class society.

Poor Health: Type II Diabetes and Alcoholism

Figure 1.

Mortality Rates of “Native Americans” Versus the Total United States Population

Table 1. Age-standardized mortality rates for selected causes: Native Americans, 1989–1991 and total US population, 1990

Cause	ICD-9 codes	Native Americans	US population	Ratio
Heart diseases	390-8, 402, 404-29	132.1	152.0	0.9
Cancer	40-208	94.5	135.0	0.7
Unintentional injuries	E800-949	86.0	32.5	2.6
– motor vehicle	E810-825	48.4	18.5	2.6
– all other	E800-7, 826-949	37.6	14.0	2.7
Chronic liver disease/cirrhosis	571	30.3	8.6	3.5
Diabetes mellitus	250	29.7	11.7	2.5
Cerebrovascular disease	430-438	25.2	27.7	0.9
Pneumonia/influenza	480-487	20.5	14.0	1.5
Suicide	E950-959	16.5	11.5	1.4
Homicide	E960-978	15.3	10.2	1.5
Tuberculosis	010-018	2.7	0.5	5.4
All causes		571.7	535.5	1.1

All rates are per 100,000.

Source: Indian Health Service (1994a).

(Young 154).

a. Fig.1 demonstrates the mortality rate of “Native Americans” as defined by the Indian Health Service compared to the total United States population. The mortality rate for chronic liver disease/cirrhosis of the liver is 3.5 times higher than the total US population, and the rate of diabetes is 2.5 times higher than the total United States population as of 1994. It should be noted that diabetes mellitus includes all major types of diabetes, not just type II diabetes.

More importantly in the grand scheme of things are the results of such living arrangements and governmental reliance. Perhaps most important to survival and sustenance is emotional and physical health. As a result of low income, sparse resources,

and underdeveloped infrastructure, personal health takes an enormous hit. Furthermore, resources that would normally be available to white Americans are either nonexistent or difficult to obtain. Even if healthcare is provided for by the government, it is difficult to go to facilities that are far away, particularly when many reservations have unpaved road ways and where reliable transportation is not necessarily commonplace. Even if the provisions necessary to reach a healthcare facility are provided for, there is a pretty good chance that the facility will be nowhere near the quality that one would find in a bustling metropolis.

Among the primary mental and physical health conditions that are prominent in the general American Indian population, two stand out- diabetes and alcoholism. Diabetes is common throughout all populations in society and is classified in two main categories- either type I diabetes or type II diabetes. Type I diabetes involves beta cells in the pancreas, which are unable to make insulin as they would in a healthy adult. Type II diabetes is a result of insulin resistance, where fat, muscle, and liver cells do not utilize insulin properly (“Your Guide”). Among American Indians with diabetes, type II is by far more common (Rhoades, Vol. 13). Type II diabetes is often referred to as adult onset diabetes, a term that leads many into believing that this form of the disease is purely a result of poor or unhealthy lifestyle and food choice. While there is a certain truth to this, the issue is not simply black and white. More specifically, recent research has shown that American Indians have genetic precursors, which although they do not lead directly to insulin resistance, do in fact indirectly lead to some of the symptoms of type II diabetes.

Alcoholism would seem to be an obvious cause for type II diabetes and to some extent it is. However, alcoholism in itself is an extremely serious life-threatening illness.

The link between diabetes and alcoholism is simply one small part of the many serious problems alcoholism is linked with. Researchers estimate that the prevalence of alcoholism is as high as eighty percent in Indian men and fifty percent in Indian women (Rhoades, Vol. 8).

Alcoholism and diabetes are two of the most prominent health afflictions in the American Indian population, but are by no means the only ones. Such high rates of diagnoses raise the question- why are American Indians experiencing such high rates of alcoholism and diabetes compared to the non-Indian population, particularly whites? The answer is not necessarily clear-cut, as no issue of this nature is. However, American Indians are more likely to be afflicted with diabetes and alcoholism than white Americans as a result of years of abuse and oppression at the hands of European settlers and the United States government, which created an Indian people predestined for short, unhealthy lives. Both external stimuli as well as genetic factors contribute to these two diseases, as a result of years of exploitation, mistreatment, and segregation by the United States government.

Chapter Summary

Type II diabetes and alcoholism are two of the primary health afflictions affecting American Indians. The roots of these two diseases are similar, as they are argued from cultural and genetic perspectives. Both are extremely dangerous and often times result in death. While both diseases have known genetic precursors, neither of these diseases was prominent until European settlers inflicted their culture and control over Indian tribes. This included alcohol trade between British settlers and Indians, which introduced Indians to alcohol and its disastrous effects (Martin 67). In addition, Indians were moved

off of their natural land to reservations, many of which became reliant on unhealthy commodity foods that are still an integral part of Indian culture and cuisine. Such government mistreatment exploited genetic predispositions, and Indian naiveté resulting in an Indian population that experiences much higher than average rates of alcohol abuse and diabetes.

CHAPTER TWO

LITERATURE REVIEW

Among the many issues facing economically deprived minority groups in the United States, poor health care stands atop the list. As a result of low income and poor living conditions, healthcare is often insufficient or nonexistent, and when available, is often too costly. American Indians are no exception to these unfortunate circumstances. After hundreds of years of poor treatment and biological assault from European settlers, American Indians, as a group, are devastatingly poor and to this day remain an afterthought in governmental policy making. It is therefore no coincidence that American Indians are afflicted with both diabetes and alcoholism at an astounding rate, which research shows is much higher than that of white Americans.

Scholars tend to approach the prevalence of diabetes and alcoholism from varying perspectives. Genetics is an increasingly popular approach seen in many of the more recent research into American Indians' predisposition for these two diseases. Scientists look to investigate gene loci and potential mutations in the brain, which may be attributed to certain phenotypical characteristics that encourage the development of type II diabetes or alcohol abuse. Other research examines external factors in the environment, whether it be physical or cultural, which impact choices made as early as childhood. In particular, many scholars critically examine the cultural attributes of American Indians. This research tends to focus on the idea of choice, rather than a natural predisposition, as the cause of many of the health consequences observed in various tribal communities.

Research that focuses on the genetic link to type II diabetes in American Indians looks at genetic precursors, genes that a person is born with, that make the development

of type II diabetes more likely. In 1998, a study was done by Dr. Robert L. Hanson with a team of researchers to investigate the role of specific loci, particular places where genes are located on a chromosome, and their effects on the development of diabetes and increased body mass in the Akimel O'odham Indian population. The team found that there was a strong correspondence between the locus on chromosome 11, and increased body mass and type II diabetes. In addition the team found, via the genomic scan of 264 nuclear families, that there is a strong linkage to diabetes susceptibility from loci located on chromosomes 1 and 7 (Hanson et al., "An Autosomal Genomic Scan" 1133). Such conclusions suggest that there is an inherent genetic predisposition to type II diabetes in American Indians.

Another study, conducted by Dr. William C. Knowler of the National Institute of Health concluded that specific loci that were identified to be consistent with Caucasian heritage, namely the Gm^{3;5,13,14} haplotype, were determined to decrease the occurrence of type II diabetes in the Akimel O'odham and Tohono O'odham tribes of Arizona. In particular, there was a significant difference in the prevalence of diabetes in participants over forty-five years of age, where the prevalence percentage between participants with the Caucasian haplotype and those without the haplotype differed by more than 20%, as those with the Caucasian haplotype exhibited less prevalence for type II diabetes (Knowler et al. 522). The research is particularly credible, as Dr. Knowler has been studying the linkage between American Indians and diabetes for over thirty-five years, and is currently conducting his research with the National Institute of Health.

In contrast, many researchers have examined the eating habits and lifestyles of American Indian test subjects, and have pointed at particular cultural inclinations as

causation for type II diabetes. Dr. Joel Gittelsohn of Johns Hopkins' Bloomberg School of Public Health led a study on food purchasing decisions made by 270 randomly selected American Indian households. The research team's findings concluded that the test group was more inclined to purchase unhealthy, high sugar, and high fat foods. In particular, the participants were more inclined to purchase previously prepared foods over fresh alternatives (Gittelsohn et al. 164). The authors suggested increased food knowledge as well as self-efficacy as a means for making better, healthier food choices (Gittelsohn et al. 165). Unfortunately, the research team failed to confront the financial disparities in American Indian communities that may have prevented them from purchasing more healthy alternatives.

Other studies looked at the lifestyles of American Indian children as evidence that such behaviors contribute to an increased risk of diabetes and other health ailments in the future. Dr. Chery Smith of the University of Minnesota and co-author Amy Gray studied the fitness levels and dietary intake of American Indian youth aged five to eighteen. No correlation was found between dietary intake and activity levels in the test group, however, 63% of the test subjects were overweight, and 59% of the children were deemed sedentary (Gray and Smith 1187). Such findings indicate that continuously poor food choices made by children are influential in an unhealthy lifestyle that often continues into adulthood. Since there is a positive correlation between body mass index (BMI) and various future health ailments, the authors suggest a proactive approach with children targeted toward exercise and healthy eating habits (Gray and Smith 1190).

Further research is in agreement with the findings of Gray and Smith. Mary Story is a leading researcher in child and adolescent nutrition at the University of Minnesota,

and is currently a professor and associate dean for student life. Of particular interest is her research on diabetes, for which she was granted an Excellence in Diabetes Research award from the American Diabetic Association a decade ago. She, along with a team of doctors from the University of North Carolina at Chapel Hill, Johns Hopkins University, and several other research universities, investigated the epidemic of obesity in American Indian youth. The group's findings coincided with those of Amy Gray and Chery Smith, as it was determined that child obesity rates have increased over the past several decades in American Indian communities prior to the article's publication date in 2003. The authors suggested rapid cooperation in American Indian communities to promote healthy lifestyles amongst youth, citing the increased prevalence of type II diabetes and other health ailments in younger age groups (Story et al. S9).

Body mass index is generally considered to be a predictor of diabetes potential. Generally speaking, those with a higher BMI tend to be more likely to develop type II diabetes. This tends to be consistent with most demographics, including American Indians. However, research by the aforementioned Dr. Robert L. Hanson and a group of epidemiology experts suggests that although increased BMI is associated with the onset of type II diabetes, American Indians may not necessarily benefit from substantially decreasing their BMI's. The study, which included 814 diabetic and 1814 non-diabetic participants, found that weight loss amongst Akimel O'odham Indians caused higher rates of mortality than weight gain (Hanson et al., "The U-shaped Association" 903). The authors suggest that BMI in American Indians should be treated differently from the standardized BMI that most consult, which was developed for people of European descent. In particular, American Indians without diabetes were shown to have

significantly increased mortality rates when weight was lost, compared to no weight loss at all. The study took into consideration disease as a cause for rapid weight loss, yet the authors still conclude that American Indians in general need to be treated differently when determining a healthy BMI for their group compared to other non-Indians (Hanson et al., "The U-shaped Association" 913).

In relation to Hanson's findings on BMI, Janell Smith, an Alaska Department of Health worker, and Dr. Dennis Weidman of Florida International University published their findings on the nutritional value of American Indian frybread. Their study found that the fat content of the 12 American Indian frybreads tested were much higher than the values referenced from the Department of Agriculture Nutrient Database for Standard Reference. The authors suggest that frybread nutritional content be better reported to give American Indians an accurate representation of the content of their foods, so that healthier food choice decisions can be made (Smith and Wiedman 584).

Different methodologies are used for determining the causation factors of type II diabetes in American Indians. However, the issue becomes more entangled, as research suggests that the prevalence between different demographics of American Indians differs significantly. Nilka Burrows and a team of researchers from the Indian Health Service in Atlanta, Georgia compiled data from American Indians and Alaska Natives who were diagnosed with diabetes. The group found that the number of American Indians and Alaska Natives diagnosed with diabetes increased from 43,262 to 64,474 individuals from 1990 to 1997. The prevalence of diagnosed diabetes increased by 29% in those years. The study also found that woman are more likely to have diabetes in the affected groups, however men are being diagnosed at a rate of 37% compared to woman who are

seeing a diagnosis increase of 25% (Burrows et al. 1786). The group published the study for the Indian Health Service, which is a subgroup of the Center for Disease Control. The results are thus quite credible, and were heavily statistically oriented rather than hypothesis driven. It should be noted that the study attempts to classify all members of the American Indian and Alaska Native population, however, the study merely focuses on diagnosed cases due to its large-scale test population. Therefore, there is significant room for error in the groups' results, as many American Indians do not have access to frequent healthcare examinations, and thus a large portion of the demographic studied is not represented in the study's results.

Finally, research regarding diabetes in American Indians has extended past the potential causative factors of the disease itself, and instead focuses on other ailments that arise as a result of diabetes. Dr. Andrew Narva of the National Institute of Health and Dr. Thomas Sequist, an assistant professor at the Harvard School of Medicine, studied Chronic Kidney Disease (CKD) in American Indians. Kidney disease often results from diabetes, and is thus quite common in the American Indian community. Dr. Narva and Dr. Sequist suggest that the Indian Health Service has developed a chronic care model for dealing with kidney disease in American Indians that is so effective that it could be used as a model for dealing with CKD in other populations (Narva and Sequist19). This is particularly interesting, as it suggests that the Indian Health Service has developed a means for dealing with CKD, a byproduct of diabetes, yet has had no significant impact on diabetes itself, as evidenced by other research which details the disproportionate incidence of diabetes amongst American Indians.

Another pressing issue on American Indian health is alcohol dependence and abuse, which often leads to diabetes and contributes to numerous deaths in the Indian population. Dr. Janice Schuetz explores some of the cultural background to alcohol abuse in her book *Episodes in the Rhetoric of Government-Indian Relations*. Dr. Schuetz is a professor of communications at the University of New Mexico whose studies focus on communication. Her expertise in the scientific aspects of alcohol abuse is questionable, although her investigation of the social aspects of alcohol abuse is extremely relevant. She notes that American Indians view drinking as a great way of socializing and communicating with new people (Schuetz 256). This is seemingly a larger problem than one might consider, as American Indians are disproportionately affected by alcohol abuse.

Alcohol dependence is certainly impacted by the external environment, however current research focuses on the genetic components of alcoholism, indicating that there are specific components of many American Indians' genomic composition which contribute to a propensity toward alcohol abuse regardless of environmental stress. Dr. Cindy Ehlers is a professor at the Scripps institute, one of the largest not-for-profit research institutes in the nation. Ehlers acted as the primary investigator in a study to determine a correlation between spectral characteristics of the electroencephalogram (EEG), a test which records electrical activity in the brain of American Indians, and its relation to alcohol and marijuana use and abuse. The study found a strong correlation between certain types of electrical activity in the brains of the American Indian test subjects, and their use and abuse of alcohol and marijuana. This suggests that many, but

not all, American Indians display specific electrical brain characteristics, which are linked with alcohol and marijuana dependence (Ehlers et al. 107).

Other studies differ in their approach to the genetic component of alcohol abuse. While the team headed by Dr. Ehlers focused on EEG traits to investigate similarities in American Indians, researchers such as Dr. Tamara Wall instead focus on genetic mutations and abnormalities, which are distinct to American Indians. Dr. Wall is a clinical psychologist and professor at the University of California at San Diego, where she focuses her research on substance abuse. Two of her works, which were published six years apart, focus on genetic traits in American Indians, which allow for increased alcohol consumption without many of the side effects of intoxication that Caucasian non-Indians often experience.

The first study, published in 1997, advocates for increased research into *ADH2* and *ADH3* alleles in American Indians. These alleles are often responsible for alcohol abuse problems in various ethnic groups. In particular, Dr. Wall advocates studying polymorphisms at these loci, which could lead to increased alcohol metabolism in American Indians (Wall, et al. 131).

Dr. Wall's second investigation suggested that American Indians in her study were more likely to have a specific allele present, which has been shown to be related to increased alcohol consumption over a 24-hour period. The study suggests that because of this particular allele, American Indians are able to drink more drinks than a Caucasian non-Indian counterpart over the same timeframe. The study suggests that specific indicators of intoxication such as flushing of the skin, and a warmed feeling in the face were not experienced by many of the participants who contained this allele (Wall, Carr,

and Ehlers 44). Wall's conclusions certainly make a strong argument for the genetic predisposition of alcohol abuse, however it is important to consider the resulting implications of alcohol abuse to fully understand its significance on Indian life.

Alcoholism contributes to many other problems in the American Indian community, including an increased prevalence of diabetes, high mortality rates, and is strongly correlated with depression. Many of the fatalities in the American Indian community are a result of suicide. Although it is easy to associate the alarming incidence of alcohol abuse by American Indians as a leading cause of suicide, Dr. Eva M. Garrouette proposes in her joint study published in *Social Science and Medicine* that suicide is associated with lack of strong cultural and spiritual orientations. Dr. Garrouette is a professor at Princeton University, and is an enrolled member of the Cherokee Nation. Garrouette and her co-authors go on to suggest that strong cultural spirituality must be developed in American Indian communities, and furthermore that it does not need to conform to the typical Judeo-Christian faiths that are very common in America (Garrouette et al. 1577).

As evidenced, diabetes and alcoholism are leading health concerns in the American Indian community. However, the United States government has historically shaped these issues. It seems obvious that the next step for the government would be to begin implementing health care programs to address these growing health concerns. This issue is quite complex, as the government has implemented many programs via government-created agencies in order to deal with the health care issues facing American Indians. Some say that this is progress in the right direction, while others argue that the government is not doing nearly as much as it could and should be doing.

One must first look at the government's relation with American Indians on key topics and examine some of the historical issues which shape these relations. Dr. Everett Rhoades is the former director of the Indian Health Service and an adjunct professor at Johns Hopkins University as well as at the University of Oklahoma. In the anthology *American Indian Health: Innovations in Health Care, Promotion, and Policy* edited by Dr. Rhoades, the development of the Indian Health Service is detailed. The organization, which was founded in 1955, was implemented to assist the health needs of American Indians who were members of federally recognized tribes (Rhoades, vol. 5). Although the entity was formed with the intention of delivering health care resources to enrolled tribal members of nationally recognized tribes, its effectiveness is greatly debated by scholars.

Similarly, analysis was conducted by a Jeanette Hassin, an assistant research scientist at the Native American Research and Training Center at the University of Arizona, and Robert S. Young a research associate at the University of Arizona. The authors studied participants in a self-empowerment program for American Indians conducted from 1995 to 1997. The pair noted that participants generally agreed that they were uncertain about health care. There was a general consensus that health affairs were not in balance, and that American Indians were not allotted the proper health care necessary to maintain a healthy life (Trafzer and Weiner, vol. 14). Their research was included in an anthology by Dr. Clifford E. Trafzer and Dr. Diane Weiner. Trafzer is a Professor of Indian affairs at the University of California, Riverside. Weiner is an Assistant Professor of Medical Anthropology and Cross-Cultural Practice at Boston University. The distinguished employment positions of the authors and editors adds credence to the participants' statements, however, it should be noted that this was not a

scientific study, and as thus, the conclusions are merely based on personal interviews with the participants.

Research by associates at the University of New Mexico and University of Colorado further justifies the participants' consensus feelings regarding healthcare in Hassin and Young's research. The research headed by Dr. Bonnie Duran, an associate professor of health services at the University of Washington's School of Public Health, was the primary investigator at the University of New Mexico at the time of the journal publication. The group found that cultural and communication barriers prevent American Indians from seeking the health care they require. The group argues that money is not the only limitation in the pursuit for health care, and notes that a general discrimination by Indians was observed regarding the procurement of primary and mental healthcare (Duran et al. 826). This serves as evidence of the government's need to further step in and more poignantly offer essential healthcare services to American Indians, and implement programs that promote acceptance of healthcare, rather than discrimination against health services.

However, not all studies find that the federal government is making insufficient progress toward dealing with Indian health concerns. A publication in the *Pediatric Clinics of North America* journal paints a different picture. The authors' interpretation of historical and current progress must be questioned, as the primary investigator, Dr. Judith Thierry, is the maternal and child health coordinator for the Indian Health Service. In addition, co-author Everett Rhoades was also previously affiliated with the Indian Health Service, as its director. The publication suggests that tribes as well as individuals have an increased participation in public policy-making compared to their previous role, which

was little to none. The group suggests that this increased participation indicates a positive outlook for Indian Health policy in the future (Thierry et al. 1555). This strongly contradicts other research, such as the study by Dr. Duran's group, which suggests that Indians are underrepresented in governmental policy-making due to cultural and communicational differences. According to Dr. Thierry and her co-authors, the government is now more strongly working with Indians to improve health care standards, and as such, there is a positive outlook for Indian health affairs in the future (Thierry et al. 1555).

T. Kue Young of the Department of Community Health Sciences at the University of Manitoba, Canada investigates the higher prevalence of alcoholism and type II diabetes in American Indians. The investigator's research shows that as of 1994, rates of many diseases including diabetes and alcoholism are much higher in American Indians than in the overall United States population (Young 154). Young concludes the report by noting that the problem of mortality has improved substantially since World War II, but that the problems afflicting the Indian population are always changing (164). Young advocates more research into trying to establish the general health status of Indians in general, rather than defining their well being simply by their mortality rates from a particular disease. As a result of such classifications, Young argues that more could be done in order to amend such problems (165). Overall, Young's research is relatively unbiased, however some opinions were noted throughout the context of his findings which were questionable, as Young is publishing the findings out of a Canadian university, but making opinions about the roots for some of these diseases in American Indian culture with little research to back up the assertions.

On a more grand scale, pollution of natural resources and corrupt competitive business practices that are having a detrimental effect on the communities in which they are occurring have been identified. Winona Laduke is an Anishinaabeg (Ojibwe) tribal member and is a long time environmental activist. As of the publication of her book *Recovering the Sacred: The Power of Naming and Claiming* in 2005, she was the program director of Honor the Earth, an organization that is focused on creating awareness for environmental problems in Indian communities.

Laduke describes two compelling cases of sabotage in Indian communities. One involves the depletion of fish in the Klamath River due to pollution from water runoff of fertilized farmland upstream. This resulted in loss of fisheries and far less fish for tribal consumption (Laduke 38). Laduke also describes the exploitation of her people, the Ojibwe, as big corporations attempted to drive her people out of business by using tribal imagery in order to unfairly compete with the tribe's rice product (Laduke 172-173). Although Laduke is undoubtedly somewhat biased toward the plight of Indians in their encounters with Euro-American culture, her accounts are very in depth and offer first hand opinion from those affected by such actions. However, her work is a very valuable compilation of primary sources and research and is by no means outwardly biased. She is also very accomplished in her field, having received numerous awards and acknowledgements for her progressive work in the environmental arena.

Overall, there is significant debate between experts regarding the causative factors for diabetes, and specifically whether it is more strongly influenced by genetics, eating and lifestyle trends, or both. Research on alcoholism is more one-sided as it does not discount cultural implications on alcohol abuse, but instead focuses on possible genetic

differences in the brains of study subjects as evidence for a predisposition to alcohol abuse in American Indians. The health care debate is also quite heated, as the majority of evidence indicates a clear lack of effort on the behalf of the United States government to address Indian Health care, while members of the Indian Health Service argue that Indian health policy has a positive future outlook. This research will be used to examine how Indians became significantly predisposed to alcoholism and diabetes, and what the government has done historically and in the present day, to combat the problems that were catalyzed by European inhabitation hundreds of years prior.

CHAPTER THREE

EXPLANATION OF CURRENT METHODOLOGY AND GOALS

Research Methods

The objective of this research is to investigate instances in American history where the United States government mistreated and exploited the American Indian population. It should be noted that the term American Indian, or simply “Indian,” will be used to describe the indigenous civilization that occupied the contiguous United States, excluding Alaskan Natives. Alaskan Natives will be distinctly referred to as such, should any research or relevant issues pertain to this indigenous group.

The overall goal is to include relevant scholarly research that clarifies the prevalence of alcoholism and diabetes in American Indian communities, as well as any historical research or primary sources that may be linked to these issues. Such research will include peer-reviewed journal articles, scholarly books by experts in their respective fields, as well as government database information. In addition, pertinent multimedia including, but not limited to video documentaries, will be used and have not been peer reviewed. Journal articles will be obtained via online databases and library catalogs. No field research will be used in the assembly of this work.

Purpose and Scope

Type II diabetes and alcoholism are affecting American Indian communities in epidemic proportions. The sources of these rampant diseases, which affect American Indians disproportionately compared to other populations, will be investigated. Research will include an investigation into historical practices carried out by European settlers and the United States government, which still affect Indians in modern times. Connections

will be drawn between such maltreatment, and the modern day results of these atrocities. Finally, the future outlook regarding health as it pertains to the prevalence of alcoholism and diabetes in Indian communities will be investigated.

CHAPTER FOUR

A HISTORY OF MISTREATMENT

A Historical Introduction

Before analyzing the prevalence of diabetes and alcoholism in American Indian tribes across the United States, it is important to understand the history of the people, and how their culture was disrupted and exploited by European settlers. The people that are known today by umbrella terms such as American Indians, Native Americans, or Alaskan Natives are descendants of groups that first made an appearance in North America between fourteen and twenty-thousand years ago (Rhoades, Vol. 1). All tribes were certainly different in their ways of life, some of which were drastically different from one another. It is impossible to know the exact means by which these groups provided for themselves over the thousands of years leading up to today. Historical records indicate that many of these groups were hunter-gatherers. Depending on location, members would gather fruits, berries, nuts, and seeds. Meanwhile, other tribal members would hunt animals in traditions such as Clovis and Folsom, where sharpened stones would be used to pierce the animal's skin and kill it (Rhoades, Vol. 1). These sharpened stones are what many today would refer to as arrowheads and were a key tool in sustaining life.

In addition, a sense of spirituality and connection was and to this day is a common attribute among many of these tribes ("Bad Sugar"). Although it is certainly inappropriate to make broad generalizations about the ten to twenty thousand year histories of many distinct tribes, it is safe to say that each tribe had its own distinct culture and way of life. These tribes occupied North America, and for the purposes of this paper, what is now known as the United States, for thousands of years with little disturbance from foreign

occupiers. Although the European settlers in that fateful year, 1492, were not necessarily the first to stumble upon the Americas, they did leave perhaps the most lasting impact on the continent's indigenous people (Wright 5).

Rather than attempting to enumerate all of the atrocities, which shape Indian life in modern day America, this chapter will focus on historical events that have shaped the epidemics of alcoholism and diabetes in the Indian population. These include the trading of alcohol with American Indians for fur, the historical redistricting of Indians, and the destruction of natural resources. These three occurrences are by no means a complete nor all-inclusive assessment of why health in Indian communities is far worse compared to other non-Indian demographics in the United States. However, these three events shaped the cultures and lives of many Indians, specifically on the reservation, in a negative and unhealthy manner.

Alcohol Trade

Alcoholism is a prominent issue among Indians in America today. The origins of alcohol in Indian tribes are traced back to May of 1718. At the time, there was an intense struggle between the French and English to obtain deerskins from Indian hunters. The French first started negotiations with Indians. Alabama Indians would trade hundreds to thousands of deerskins to French traders in return for "gifts." These gifts included common tools such as knives and hatchets, to more luxurious items such as cloth, and stockings. The amount and variety of gifts grew year after year, as the French attempted to keep their Indian trade partners happy in exchange for the thousands of skins they would receive from Indian hunters (Martin 61-62).

The British also wanted to trade with Indians for their furs, so they also began negotiating with Indian traders in Charlestown, Virginia. The negotiations with the British involved the typical items that the French offered as gifts, with one big addition, alcohol. This started with a symbolic gesture, a bottle of wine, to celebrate fruitful negotiations. Unfortunately, such gifts became very commonplace. As a result of human nature, or the British traders' sheer willingness to supply them, the Indians wanted and demanded more gifts for their continued trade with the English (Martin 62).

The British began to use the Indian traders' desire for liquor to their advantage. Not only would the liquor keep the Indian leaders happy, but it also had a beneficial result, as Indians became intoxicated and would negotiate foolishly. The British traders took advantage of this and would make deals with Indians, while they were inebriated, for skins and any other commodities they desired. They would completely exploit the naiveté of Indians regarding alcohol to their benefit, reaping maximum benefit in exchange for alcohol (Martin 67).

Rum became the alcohol of choice to trade. Not only did the British traders use rum as a means for trading goods, they also used it to put the tribes such as the Muskogees and Choctaws in debt. The traders would supply Indians with as much alcohol as they wanted in return for promised goods. The traders would then go back to the tribal traders, demanding their goods in return, and when the Indians could not supply them with those goods, the British would take Indian land as compensation. In addition, the population of deer was quickly dwindling in the areas surrounding many of these tribes, making it nearly impossible to supply the British even if they had the time and manpower to do so. This process proved beneficial, so much so, that there are stories of

British traders following Indian hunters into the woods and attempting to supply them with as much alcohol as they would take, only to later use it to exploit the Indians and take their land (Martin 67).

Redistricting of Tribes

When discussing the redistricting of Indians, the implication is that Indians were moved from original tribal lands to new lands that were not the original tribal lands of a given tribe. This was first witnessed in the Indian Removal Act of 1830. Congress authorized the President to negotiate the relocation of Indian tribes. There were essentially two options for the tribes, either move west, or stay in the east on a smaller reservation. If option two was selected, the government would take much of the tribal land for its using, leaving the tribe with only a fraction of the original land to use (Pevar 7).

Tribes that picked, or that were more realistically forced to comply with option one, moved west of the Mississippi River. Many died in the long moves westward, including the infamous “Trail of Tears” march, where at least fifteen thousand died in their travels to the Oklahoma Territory (Pevar 7). Tribes were now displaced from their land, with little to no say in the matter, and were expected to regroup and start life over in the west. This was much easier said than done. Many Indians did not make it all the way west, as they died in the long move. The significance of this move on the mental and physical well being of Indians cannot be overstated. Cultures changed, and to this day, the effects are still evident as tribes live much differently in their new locations. In addition, such a move likely had harsh effects on tribal unity and spirit, as trying events often do on a community. This is further discussed in chapter five.

Nearly fifty years later, in 1847, Congress passed the General Allotment Act (GAA). The GAA had three main goals: the destruction of tribal sovereignty, the removal of reservation boundaries, and Indian assimilation into American society (Pevar 8). By dissolving the reservations and allotting tribal members land parcels, the government not only disrupted many of the communities that now occupy reservation land but also created an identity crisis of sorts. Many tribal members were now individuals, fending for themselves rather than the well being of the tribe. Many tribes were left weakened and more financially deprived than ever. Despite the Indian Reorganization Act, which attempted to reverse the effects of the GAA, many tribes were undoubtedly left fragmented with much of their tribal identity eroded (Pevar 9-10).

Assimilation also affects spirituality. Naturally, as one assimilates into a new and very different culture, the original culture is strained. This was certainly variable, as many Indians attempted to cling to their culture while others attempted to assimilate and leave much of their tribal culture behind. While this may not have seemed as significant at the time, studies suggest that Indians with less cultural and spiritual orientations commit suicide at a higher rate (Garrouette et al.1571). Coupled with an already high prevalence for alcohol, this stripping of cultural and spiritual identity via assimilation has been a dangerous and even deadly combination.

On a similar note, the concept of the reservation may have seemed good in theory to the United States government. There are certainly some benefits to the reservation, as they allow for tribal communities to stay intact, and allow for self-government and tribal sovereignty. In addition, reservations are benefitted by the Self Determination and Education Assistance Act, which allows for the tribe to administer public programs such

as schooling and social programs that would otherwise be authoritatively run by the federal government (Pevar 64). Unfortunately, reservations also concentrate poverty and are not subject to the strict regulation that the United States government would apply to the general public infrastructure. This may not be a large issue for more successful tribes, which can operate self-sufficiently with little to no reliance on the government for funds. However most tribes are not economic powerhouses, and are generally far from it. As a result, many reservations are concentrated regions in economic despair, and have historically been reliant on government commodities for survival.

Chapter Summary

Together, reservation life, the redistricting of Indian populations, and constrained natural resources serve as the setting for the alcoholism and diabetes epidemics that are extremely prevalent in many tribes. Alcohol was first introduced by British settlers looking to have an upper hand on the French by trading with the Indians for valuable deerskins. Even in the eighteenth century, evidence suggested that Indian populations were becoming increasingly attracted to alcohol and saw it as a valuable commodity. Unfortunately, this was merely the beginning of Indian alcohol addiction, a problem that is worse in modern times than ever before.

The redistricting of Indians to far away reservations, forced assimilation, and the depletion of natural resources has also had a substantial effect on Indian culture. Eating tendencies have shifted away from natural foods, formerly obtained via hunting and gathering, and instead toward readily available government commodities that have resulted in unhealthy foods that are now a large part of the culture in many tribes. In addition, these reservations, most of which are not the indigenous lands of their

respective tribes, are concentrated regions of poverty and poor health. As a result, diabetes and alcoholism flourishes amongst Indians because of the actions of European settlers over hundreds of years up and through modern times.

CHAPTER FIVE

RESERVATION AND DEPLETION OF NATURAL RESOURCES

The Reservation Problem and Isolation

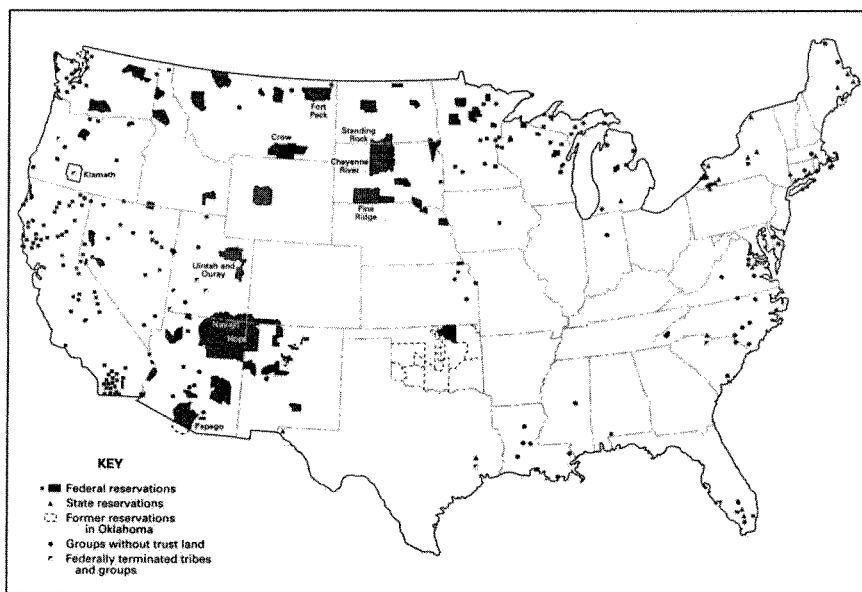
Consumption of natural resources has been a way of life for most Indian tribes. As a result of relocation, often times to worse plots of land, and big industry, such tribes have lost many of the natural resources they rely on. Industries pollute local rivers and streams, and Indians are subject to more regulations in terms of hunting and fishing, that is, if clean resources are even available to do so in. As a result of the GAA, many Indians became more assimilated to American culture and lost many of their traditional natural resources in the process. Many are left with little natural commodities to thrive on, and as a result, must survive on commodity foods. Such foods are highly processed, and far different from the natural foods that such tribes would have thrived on prior to European settlement in America.

To truly understand the impact of government actions on Indian tribes it is important to examine the impact of the reservation on Indian life. Reservations were created by federal measures such as a treaty, Congressional statute, or executive order for possession and beneficial use of an Indian tribe (Pevar 23-24). First off, the notion of beneficial use is very misleading. Regardless of the original intent of the federal measures used to create these reservations, evidence shows that poverty rates are highest in the American Indian demographic living on the reservation. With approximately one-third of Indians living below the poverty level and rates approaching nearly double that on the reservation, it is clear that these treaties, statutes and executive orders have done nothing in the way of benefiting Indian welfare (Pevar 3).

Clearly the intentions in creating such reservations were never noble and resulted in the exploitation of those who inhabited them. The result was the creation of a seemingly never ending cycle in which the people of each respective reservation were left to deal with different climates and terrain, reliance on federal commodities, and in most cases the tribes occupying these reservations were left with nothing but their culture and traditions to rely on for perseverance. Further generations were born into these living conditions and were often reliant on federal government aid for themselves and their community, which again resided in a federally established reservation.

Figure 2.

Geographical Location of United States Reservations



Source: Shumway and Jackson.

a. Fig. 2 shows the geographical distribution of reservations in the United States. More reservations are in the western half of the United States as a result of the Indian

Removal Act, which relocated tribes westward and away from urban settlement (Pevar 7).

The map above shows the distribution of tribes in the United States. It is important to point out that not only were most tribes forcibly moved to these locations, but also the many locations particularly in the Southwest were far from ideal locations to sustain life from. The lands were different and natural resources, albeit sparse, were often very different from the natural lands which most of these tribes previously occupied. Perhaps most importantly, a reservation is isolated. It is separate from the state or states in which it resides, and is subject to federal control and regulation. Two options are available for those living on the reservation. One can continue to live on the reservation with little to no opportunity for advancement, living as a second class citizen on a continent originally inhabited by his or her ancestors, or leave and join the masses off of the reservation. Option two, leaving the reservation and moving to more metropolitan areas, is one of the biggest modern trends in current times. Between 1985 and 1990, approximately 51% of American Indians changed their residence (Shumway and Jackson 195). Although most of these “migrations” were short distances, often times occurring within the confines of state boundaries, the most common trend was a movement out of the reservation and toward more urban areas (Shumway and Jackson 195).

Thus, for those living on the reservation, options are limited. Poverty perseveres through generations, and healthy choices for food are extremely limited. As previously mentioned, commodity foods from the federal government have shaped the diets and to a certain extent, the lifestyles of many people on the reservation. A diet of low cost

processed foods with high fat and sugar content is certainly not a recipe for a healthy lifestyle.

Again, the idea of isolation and confinement with respect to reservation life is key to understanding the epidemics of alcoholism and diabetes in the Indian demographic. Generation after generation is born into a lifestyle, which has been influenced for hundreds of years through current times. The beginning of such influence, or rather exploitation, can be traced back to the British settlers who traded alcohol with Indian tribes in exchange for animal furs and other items (Martin 67). It makes sense that such afflictions would continue to penetrate further generations of Indian descendants, as Euro-American rules and regulations enacted a never ending cycle of self destructive behavior, and forced its victims to either deal with the consequences, or assimilate into the Euro-American culture.

Manifestation of Alcoholism

The problem of alcoholism is a poignant example of the troubles with reservation life. One clinical psychology study by researchers at Oklahoma State University compared the drinking habits of Indian participants with a similarly sized group of Caucasian participants. The researchers noted that alcohol consumption, as a means of escape from “dominant white society”, as well as the dilemma of retaining cultural identity were both dominant factors. In addition, a stronger correlation was noted between familial drinking in Indian participants compared to Caucasian participants. The number of participants in the Indian and Caucasian groups was relatively small, with thirty-one and thirty-nine subjects in the respective groups (Jones-Saumty et al. 787). As such, the study is by no means an absolute indicator of Indian drinking habits. However,

it makes perfect sense that drinking would be much more prevalent in areas that are dealing with social and financial despair, and which are still adjusting to previously unknown lands and far worse infrastructure than any other area of the United States.

The Klamath River

However, this unfortunate dilemma becomes even worse when factors such as pollution and irresponsible industrial practices are factored in. One prime example is the contamination of the Klamath River Basin, a source of salmon for the Klamath tribes of southern Oregon (Laduke 47). At one time the third largest salmon population was found in the waters of the Klamath River, and to this day serves as a source of food and sustenance of culture (Laduke 59). The Klamath tribe, distinct from the collective tribes of the region, was promised the right to the water in their 1864 treaty as well as the termination act, restoration act, and in the *United States v. Adair* court case (Laduke 60). Winona Laduke, an accomplished author and program director for Honor the Earth, put it best in describing a scenario where a man was asked what the Klamath word for salmon was. His response was simply “gone” (Laduke 59).

Over 470,000 acres of contaminated run off from farmland has contaminated the river water. As a result, oxygen-absorbing algae are overrunning the river, depriving essential oxygen to the salmon and other fish that occupy the waters (Laduke 58). Problems such as these are by no means isolated. As a result, businesses are lost, primary food sources are depleted, and tribal culture is negatively impacted. This is especially significant considering that many tribes have a unique relationship with their land, one that has been severely exploited over the previous hundreds of years. Much of tribal identity is closely tied with the lands and water of the region or reservation that a tribe

occupies. This is in fact a human social characteristic. The immediate surrounding environment helps to shape personal and community identity. When others manipulate these sources of identity, especially as a result of irresponsible practices, social and economic security is jeopardized.

Illegal Wild Rice Competition

Similar stories exist with tribes such as Ojibwe whose survival and livelihood were based on the consumption and distribution of wild rice. Companies began to heavily compete with the Ojibwe by harvesting larger quantities of rice and charging less for it. The companies would even try to brand their rice to disillusion customers into thinking they were purchasing rice harvested by the Ojibwe tribe. The Ojibwe filed lawsuit against Busch Agricultural Resources challenging the company's ability to portray their product as Ojibwe rice, or as Indian rice in general. The case was settled out of court and Minnesota passed a law forbidding such practices in the future (Laduke 172-173). Nonetheless, the damage was already done. The tribe's primary source of income and its economy in general were severely hindered as a result of such practices. Such structural and cultural violence, on a grand scale, impacts the bodies and wallets of tribal members. On a reservation, when natural resources such as a river are polluted, and people rely on that river for health and well-being, problems obviously ensue. The health implications are numerous and are certainly beyond the scope of this paper, however alcoholism and type II diabetes are an obvious result.

This connection may seem a bit obscure at first glance. After all, what does environmental corruption, even if it is on Indian land have to do with alcoholism and diabetes? The psychological effects cannot be overstated. Alcoholism has a variety of

causes. Each individual battling the disease has his or her own explanation for what caused it. Hence it would be inappropriate to say that the Indians who drink do so simply because of external stimuli that have caused stress in their life. However, the aforementioned study comparing Indians who drink to Caucasians who drink is not an anomaly. Many do drink because of social and political stresses. This is further aggravated by ignorant governmental and business practices that jeopardize the life as many of those affected know it.

Furthermore, on a reservation where the far majority of the population is Indian, and often identify with specific ideals, the affects are concentrated and more severe. In addition, alcoholism as well as the stresses that cause it is ever-present on many reservations. Programs aimed at countering this trend are somewhat impractical, as the financial means to pay for such programs simply is not available on many reservations.

On the other hand, type II diabetes is more loosely a result of social stresses. One could argue that drinking, which is often a result of social stress, is related to weight gain, excess intake of sugar, and an unhealthy lifestyle overall. In this respect, type II diabetes is a result of social stress.

However, other causes affect the high prevalence of the disease in Indian communities. The environmental disregard outlined in the two case above, as well as numerous other examples of such malice that diminishes or eliminates the ability for the tribes occupying the area to obtain food and to economically prosper from these resources, have a negative impact on the diets and lifestyles of those involved. For one, the inability to thrive off of the natural resources encompassed in reservation or tribal lands leads to reliance on other, often processed, foods. Commodity foods are just one

example of the types of unhealthy foods that many reservations have had to rely on simply to support life. In addition, with natural foods such as fish being readily available, businesses often thrive, further supporting the community. When this is jeopardized, businesses shut down, and tribal members are without jobs and money.

With little to no money, purchasing healthy alternatives is not an option. Furthermore, what interest would most businesses have in selling groceries on a reservation where money is limited, and the potential for high profits is slim? As a result, cheaper and less healthy food choices are chosen that again contribute to the onset of type II diabetes. Because these reservations are often excluded from opportunities for outside advancement, the problem persists. Many of these reservations, such as those shown in the southwestern United States in figure two, were moved as a result of government initiatives, to relatively remote and arguably undesirable areas where urban areas for economic advancement are distant to say the least (Shumway and Jackson 193).

Chapter Summary

Life on the reservation is challenging in many ways. The reservation, as an entity, encompasses a given tribe, its lands, and its identity. Although this identity in most cases was forced upon many tribes, it is a present day reality for the tribes that live on these federally governed lands. Reservation life does not happen in a bubble and is dynamic in nature. That being said, the reservation represents a certain degree of isolation from outlying non-reservation society. As a result, economic and health problems persist with little means for resolution. More importantly, these problems are compounded from generation to generation, resulting in slowed progress and little opportunity for progression.

These problems associated with the reservation and its isolated nature are ironic, as they have been and continue to be caused by the United States government and big business. Even in modern times, stories of environmental pollution and monopolizing practices against Indians are not unheard of. Stories like those of the Klamath River tribes are not unique. Pollution is a problem throughout the United States, but is particularly troublesome when it affects reservations, where the communities often survive off of the natural resources and where money is often slim. Pollution in city streets is an annoyance, however pollution and exploitation of natural resources on the reservation is a matter of culture, identity, and life.

CHAPTER SIX

TYPE II DIABETES AND SOCIAL STRESS

A Manifestation of Epic Proportions

Type II diabetes is diagnosed at an alarming rate in American Indians, to a point where it is now of epidemic proportions. Diabetes is also being diagnosed at an increasing rate. From 1990 to 1997, 29% more American Indians and Alaskan Natives were diagnosed with diabetes over an inclusive eight year period (Burrows et al. 1786). The significance of this cannot be overstated. Nearly one-third of the total number of diagnosed cases was observed over an eight-year period.

Although it clearly seems that diabetes is becoming more prevalent, it is impossible to ignore other factors which may have contributed to this. First and foremost, there is no way of telling whether this was in fact a case of more people simply developing the disease, or if some external stimulus caused more people to go and get medical treatment for the illness which they may have been suffering from for an extended period of time without previous diagnosis. Just because the disease itself is being diagnosed at an alarming rate, does not necessarily indicate that it was not present before with a high prevalence, yet simply went undiagnosed. With all such statistics, it is important to err on the side of caution when interpreting such data, as it is only applicable when placed in specific context.

There are two schools of thought regarding the causation of diabetes in American Indians. Only type II diabetes will be addressed, as it is by far the most common form of diabetes affecting these tribes. One approach to the causative factors of diabetes includes an examination of lifestyle and eating habits. In particular, sedentary lifestyles with little

exercise, poor food choices, and lack of healthy food alternatives have been determined to be a leading of cause of type II diabetes in nearly all populations, and American Indians are no different in this respect. On the other, genetic factors have also been shown to contribute significantly to diabetes in these Indian populations. The majority of the evidence shows strong linkages between specific loci, which are points of genetic variation on a chromosome, and the development of increased body mass and diabetes (Hanson et al., "An Autosomal Genomic Scan" 1133).

A Genetic Predisposition

In this study of the effects of genetic variation at different loci, individuals from the Salt River Pima- Maricopa tribe were subjected to a genomic scan, which comprehensively determines genes present in tested individuals and determines the location of these genes on the various chromosomes. The research group, led by Dr. Robert L. Hanson of the National Institute of Health in Phoenix, determined that specific loci in the participants were strongly linked to increased body mass as well as diabetes. Chromosomes 1, 7, and 11 were determined to have loci with genes that are linked to diabetes and body mass (Hanson et al., "An Autosomal Genomic Scan" 1130).

Although the results are pretty straightforward, it would be ill advised to assume that Indians are simply predisposed to diabetes and therefore the development of diabetes in Indian populations is simply unavoidable due to genes. In "Bad Sugar," episode four of the documentary *Unnatural Causes: ...is inequality making us sick*, Dr. S. Leonard Syme notes that various minority and/or aboriginal populations around the world experience an increased risk of diabetes compared to the majority population, yet these minority populations do not necessarily have the same genetic precursors that American Indians

have (“Bad Sugar”). This begs the question, is genetics causing this increased prevalence? The study demonstrates a genetic predisposition, however this does not take into account external factors. If similarly disadvantaged populations throughout the world are also encountering increased rates of diabetes, external conditions must be considered and weighed against these genetic traits.

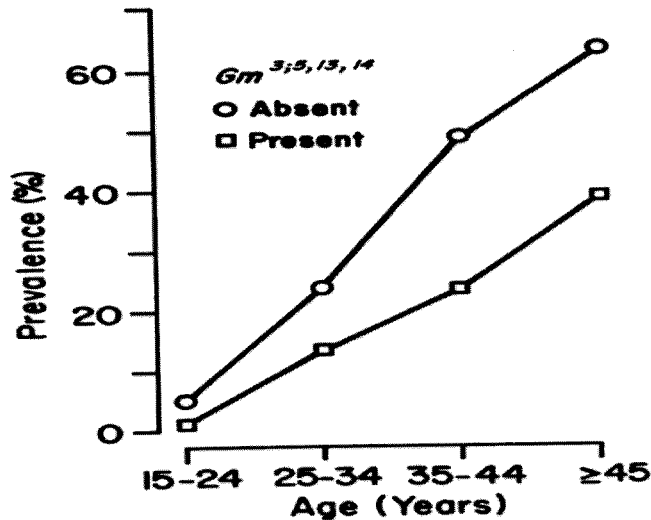
The Caucasian Haplotype

Another instance of genetics as a causative factor is demonstrated in studies regarding the Caucasian haplotype. These loci that scientists are studying are the location site for genetic variation. These variations come in the form of alleles, which are several different variations of a given trait. These alleles are a basic form of genetic variation in cross breeding organism. Offspring often inherit different alleles from their parents. For instance eyes in humans are different colors, as offspring obtain alleles from both parents, and the offspring will have eyes of a given color based on the combination obtained, and the dominant-recessive relationship between the alleles. This combination of different alleles at a particular locus is referred to as a haplotype.

Figure 3.

The Prevalence Percentage of Diabetes in American Indians with the $Gm^{3;5,13,14}$

Haplotype Versus Those Without The Haplotype



Source: Knowler et al.

a. Fig. 3 demonstrates the percentage prevalence of diabetes in Indians with the $Gm^{3;5,13,14}$ haplotype present, as indicated by the squares, compared to those who lack the haplotype which are indicated by circles.

Figure three depicts the prevalence percentage of the $Gm^{3;5,13,14}$ haplotype, also referred to as the Caucasian haplotype. This haplotype, present only in Caucasian blood, indicates Caucasian ancestry in those individuals that are found to have it present. The scatter plot designated by circles represents individuals in the Akimel O'odham and Tohono O'odham tribes of Arizona that lack the Caucasian haplotype, while the scatter plot points represented by squares represent individuals from those populations that have the Caucasian haplotype (Knowler et al. 522).

Such genetics is very complex, however, these basic principles were used in forming the objective of experimentation on the Akimel O'odham and Tohono O'odham

tribes of Arizona. Scientists investigated the effects of Indian-Caucasian cross breeding. Results of the testing showed that those individuals who had the haplotype Gm^{13;5^{13,14}} had a decreased risk for developing diabetes when compared to individuals who did not contain the haplotype. Individuals aged forty-five and older who contained the Caucasian haplotype were more than twenty percent less likely to develop diabetes compared to those without the haplotype. As displayed in figure 1, the gap in the prevalence for diabetes increase proportionally with age between the two test groups (Knowler et al. 522).

This investigation indicates that the presence of Caucasian ancestry lowers the risk of developing type II diabetes in the tested Indian populations. More importantly the study directly compares the effects of having Caucasian ancestry versus having no Caucasian ancestry. The test does not however include haplotypes from other non-Caucasian ethnic groups. For instance, Indians with black, Latino, or Asian ancestry might have been helpful in showing the increased risk for diabetes in Indians. If such tests had been performed, and results from study participants were similar to those from the Caucasian haplotype testing, one could more affirmatively argue that Indians have a higher predisposition to diabetes versus many other ethnicities, rather than just Caucasians. Nonetheless, the results cannot be simply ignored or considered inconclusive, as a clear correlation has been established. Furthermore, even Indians with the white haplotype in these communities that are over the age of forty-five, still showed a much higher prevalence for diabetes compared to their non-Indian, white counterparts.

One major side effect to diabetes is kidney disease. As a result of the high prevalence of diabetes in many Indian communities, Chronic Kidney Disease has

simultaneously manifested in the population. There are certainly plenty of critics regarding Indian healthcare, as the Indian Health Service (IHS) for many Indians is the only option for obtaining health care (Rhoades, Vol. 3). Despite its reputation, the Indian Health Service has developed a chronic care model for Chronic Kidney Disease that is renowned for being one of the best in treating individuals affected by the disease. The model is so successful that the National Institute of Health has examined its usefulness in other communities, where Chronic Kidney Disease is prevalent. If the IHS can implement a system for dealing with kidney disease, one of the byproducts of diabetes, that is credited with being one of the most successful so far in dealing with the disease, why has the diabetes epidemic gone largely unresolved (Narva and Sequist 19)?

This is not to imply that there is a cure-all for the disease, because there certainly is not. However, for the most part, Indian populations are not dealing with Type I diabetes. As such, a significant amount can be done in the way of preventing the disease, whereas with Type I diabetes little can be done at this time to prevent the disease. It seems that approaching diabetes in a similar manner as has been done with Chronic Kidney Disease may be effective in combatting the issue. By taking a distinct group, American Indians, and combatting the diabetes epidemic on a smaller scale, a model could be created for the greater population that could significantly reduce the prevalence of diabetes.

A Cultural Perspective

The genetic argument for diabetes is certainly valid, however, it is certainly not the only contributor. Type II diabetes is also a result of poor diet and lack of exercise. No matter what one's genetics are, leading an unhealthy, sedentary lifestyle will certainly

increase the risk of developing diabetes. As a result, many scholars focus their research on the lifestyle of American Indian individuals, as it relates to nutrition. Such studies investigate food purchasing habits, nutritional habits in Indian children, food consumption, and seek to compare average Indian body mass to non-Indians in the United States.

Body mass is commonly discussed right along with diabetes for several reasons. Body mass is commonly judged in the parameters of the Body Mass Index (BMI), which has set intervals into which individuals fall according to their body mass. BMI is calculated based on height and weight, and although it is certainly not perfect, it acts as a reliable indicator of a person's weight and is a standard in many scientific and medicinal fields.

Obesity is as much a problem in Indian children as it is in adults (Story et al. S3). In a study conducted to assess BMI in American Indian children of the Anishinaabe tribe, researchers asked children questions about 21 different activities and then categorized their fitness levels with the help the Presidential Physical Fitness Awards criteria (Gray and Smith 1188). The study classified 59% of the children as sedentary and an astounding 63% of children as overweight in the tribe. Although there are plenty of arguments against the validity of such testing procedures, the fact remains that the BMI's of Indian children are higher on average than their white counterparts (Gray and Smith 1187). Even more troubling is the fact these lifestyle choices as children often times carry over into adulthood.

It is perhaps misleading to say that these are choices, as living in a low income household and community truly constrains how much actual choice one has over his

nutrition. If healthy food alternatives are available and economically obtainable, it might be appropriate to investigate why such unhealthy food choices are being made. However, years ago, many reservations received commodities including flour, sugar, and oil (Smith and Wiedman 584). It is safe to say that these commodities, provided by the United States government, were not chosen for their nutritional content, and were far from their natural state. Many tribes still rely on these directly from the government, or as a result of years of living with these main food groups, have adapted them into their cultures via their cuisine.

One such example of these food groups coming together into a commonly recognized Indian recipe is frybread. It is a staple food in many tribes, particularly for social occasions, and is so popular with Alaskan Native groups that it has been added to Alaska's Food Guide Pyramid (Smith and Wiedman 582). In a study conducted by Janell Smith and Dr. Dennis Wiedman, twelve samples of frybread from South Florida were analyzed (Smith and Wiedman 584). The frybread originated from different recipes used by tribes in this region and was tested for fat and average mass per serving. The average amount of fat in a 100 gram serving of frybread was determined to be 15.5 grams, and the average portion size was determined to be 132.7 grams. This means that over 15% of the weight of these frybread recipes was fat. Furthermore, the average amount of fat in a typical piece of frybread is more than 20 grams. The Food and Drug Administration (FDA) guidelines suggest a daily total fat intake of 65 grams. Hence, one piece of frybread is nearly one-third of the recommended daily value of fat that an individual should take in within a day ("Guidance for Industry").

Frybread and other foods like it have high fat content but provide little other nutritional value. After all, there is only so much nutrition you can get out of processed foods, and fats. However, if these are the only resources available, people make the best of what they have and can get. This is the situation on many tribes, as sparse natural resources and limited income force reliance on government provided commodity foods.

For many of these children, these foods are normal and what they are accustomed to. This translates over to much of the household food purchasing as well. As of today, such trends have now been occurring for generations as a result of life on the reservation, and governmental actions that have restricted Indians from living as they were accustomed to prior to European settlement. Primary shoppers in Indian households have been shown to purchase unhealthy foods that are high in fat and sugar, even when healthier alternatives are available. The groups studied were two tribes in Arizona, as is the case in many of these studies (Gittelsohn et al. 163). Tribes such as the Akimel O'odham in Arizona are among the tops in the nation in terms of being afflicted with diabetes, even when compared to other Indian tribes.

One possible argument for these purchasing factors is culture. Generally speaking, people buy products that they are comfortable with. If one grows up in a household that utilizes high fat and high sugar ingredients, it seems only natural that the individual would be more likely to target these foods when shopping.

Another consideration is cost. These two tribes had unemployment rates of approximately 20% at the time that the study was done (Gittelsohn et al. 163). Unemployment leads to less household income. As a result, one might tend to purchase lower priced "junk foods" that tend to be lesser in price, with little nutritional value.

Realistically, both culture and financial stability likely play into such decisions. It is, however, interesting to note that more often than not, the primary purchaser ignored the healthy food groups that were available at the shopping centers. This is in contrast to the reality of living on many reservations, where healthy food alternatives are sparse or located far away.

The historical mistreatment of Indians began with European settlement and colonization and continued at the hands of the United States government with policies such as the General Allotment Act, Indian Reorganization Act, and House Concurrent Resolution Number 108, up until and including modern issues that are still largely unaddressed (Pevar 8-11). Concurrent Resolution No. 108 is also known as termination, a term coined by the Hoover Commission in which federal benefits and services were to be abolished in a rapid manner (Pevar 11). Issues such as economic well being and education are to this day prominent factors affecting the ability of many Indians to receive treatment for ailments, such as diabetes, which occur at much higher frequencies in the Indian population.

Household Income

As aforementioned, Indians are regarded as one of the most disadvantaged groups in the United States. Census data collected in 1969, 1979, and 1989 was collected for Indians, blacks and whites. Incomes were adjusted for inflation to the current dollar valuation in 1989. According to the United States Bureau of the Census, median household income in Indian families declined from 1979 to 1989, however, income statistics were unavailable for Indians in 1969. Household income declined from \$20,933 to \$20,025. Blacks experienced an increase in household income from 1969 to 1989, as

the median household income increased from \$15,739 to \$19,758, and an increase in median income from 1979 to 1989 of more than \$1,000 dollars compared to the decrease of over \$900 seen in the census data for the Indian demographic. Whites on the other hand had an average household income of \$31,672, more than \$10,000 more than Indians. The increase from 1979 to 1989 was nearly \$1,500, again while the Indians experienced a net loss of more than \$900 (Rhoades, Vol. 3).

Census data from the 2000 Census shows that American Indian and Alaskan Natives are still ahead of blacks in terms of median household income, still by approximately \$1,000. However, the difference in terms of mean household income is less than \$300 between blacks, and American Indian and Alaskan Natives. Of the racial groups surveyed in the census, Indians and blacks have by far the lowest average and median household income. In fact, both groups had median household incomes that were over \$10,000 less than the average of all households included in the census data. Furthermore, the mean household income for all households was more than \$15,000 above those documented for blacks, and American Indian and Alaskan Natives (Welniak and Posey). One must also consider the underrepresentation of Indians on the reservation with little to no income that would further lower statistics for the American Indian demographic. With the reservation considered, Indians are the most impoverished demographic in the United States.

It is of no coincidence that these two groups, which have both experienced atrocities at the hands of the United States government, including relocation and exploitation, are the two lowest income groups in the nation. Recorded mean incomes would likely be much lower if the statistics were to include a demographic for Indians

living on the reservation, as the mean income there would undoubtedly be lower than that of the overall Indian population. Some might also argue that the gaming industry has contributed significantly to the Indian community, boosting income and job opportunities, while bringing additional funds to the reservation. Most tribes however do not entertain gaming practices, and the few successful gaming tribes obscure the fact that most tribes that take part in gaming are not the cash juggernauts that one would believe them to be (Rhoades, Vol. 3).

Education

Education is, of course, a very strong indicator of potential income in a population. As of 1990, only 9.3% of Indians aged 25 and over had attained a baccalaureate degree or higher, compared to 21.5% of whites who had. An astounding 14% of Indians had not made it to the ninth grade in their education. Even compared to blacks who, according to the most recent census data from 2000, have the lowest household income, a higher percentage of Indians have not reached the ninth grade, while a lower percentage of Indians have achieved a baccalaureate degree or higher (Rhoades, Vol. 3).

Such census data is far from perfect, as it could potentially exclude certain individuals. In addition, the census is only taken every 10 years, and therefore does not reflect on recent changes or trends in a particular population. However, approximately 35% of Indians twenty-five years of age and over had not graduated college as of 1990, compared to 22% of whites (Rhoades, Vol. 3). Naturally, lacking a degree means that higher paying jobs, particularly off of the reservation, are nearly impossible to attain. Even with affirmative action in place, lacking a high school diploma will essentially

negate any competitive advantage one might have over white competition. As a result, the low income trend is likely to perpetuate unless education is more strictly regulated in Indian communities. Less income also results in poorer food choices, as evidenced by the two tribes from Arizona whose shopping habits leaned toward the purchase of unhealthy foods that were high in fat and sugar over healthier alternatives.

Chapter Summary

Diabetes is a bit of a double-edged sword in that it is largely affected by both genetics and culture. Genetics is certainly a viable criterion for investigating diabetes by. However, it is no coincidence that other impoverished indigenous groups throughout the world have high rates of diabetes with different genetic histories. As such, it is more important to focus efforts on combatting the external stimuli that have shaped these health dilemmas, and are to this day still influencing the manifestation of diabetes.

There is clearly a problem, when what many consider to be traditional food that is a strong part of culture and identity, accounts for nearly one-third of an individual's fat intake for a day. In addition, the effects on children cannot be overstated. Issues with diabetes and body mass are not getting any better in most Indian communities. As such, children are developing many of the unhealthy eating habits and tendencies that have become something of tradition in many tribes. Frybread is merely an example, however many other foods like it, comprised of highly processed ingredients including fats and sugars will only make the issue worse. In addition, the implications of a sedentary lifestyle are too significant to ignore. Unfortunately, the reality for many tribes on the reservation is that there is no infrastructure to foster significant change.

Little has been done to combat this issue from a governmental level. There is some hope, however, as the IHS has been successful in creating a model for Chronic Kidney Disease. This model has been so successful, that many are advocating its use on other populations where the disease is rampant. If such a model could be created for diabetes, it is foreseeable that the incidence of diabetes could be diminished significantly, although certainly not overnight. Only time will tell if such a model will come to fruition, but unfortunately time is not on the side of tribes such as the Akimel O'odham and Tohono O'odham, where the risk of developing diabetes is approximately fifty percent (Knowler et al. 522).

CHAPTER SEVEN

ALCOHOL ABUSE

A Genetic Cause?

Alcoholism is a bit different from diabetes in the respect that it has long established roots in many societies and has a large variety of reasons for its prevalence. Instead of focusing on the cultural causes of the disease, it is more conducive, for the purpose of this paper, to examine the genetics of the disease in more depth. This is not to say that the cultural stimuli that give rise to alcoholism are insignificant, as this is certainly not the case. However, the spectrum of the issue is so widespread that social, psychological, and anthropological perspectives together still could not easily nor completely address the issue. Instead, it is more appropriate to let history explain the development and manifestation of the issue, and examine recent studies regarding society and genetics to discern how this disease continues to affect Indians today, and the ramifications associated with the disease.

Perspectives on alcohol differ between tribes, and even on a person-by-person basis. However, for some, the consumption of alcohol is a sociable thing to do (Schuetz 256). It helps with communication and is not necessarily a threat to culture or society. Unfortunately, this is not necessarily the general outlook on alcohol for most tribes. It certainly may be an idealistic way of viewing the matter, yet statistics show that alcoholism is a very large issue in many Indian communities, and as such is more than just a way of socializing and instead is a way of life. This is even more troubling considering that alcohol related deaths in American Indians occur at a rate that is five times that of all other ethnicities in American combined (Rhoades, Vol. 16). In addition,

alcoholism is correlated with three of the ten leading causes of death in Indian communities: accidents, homicide, and suicide (Rhoades, Vol. 26).

Much of the research into alcoholism in Indians has focused on the genetic aspect of the disease's manifestation. However, is it possible that this is simply a coping mechanism used to deal with social injustice? Research suggests that to a certain extent it is. In one study, the test group of Indians reported that two of the main reasons for their drinking were for mental benefit and to change one's mood (Jones-Saumty, et al. 789). This problem is further complicated when the idea of genetics is introduced. Do Indians have different genetics that cause their behavior and interaction with alcohol to be different from other non-Indians? This is a popular question in the scientific community today.

Many studies have arose in the previous ten to fifteen years which have given rise to the idea that there is a genetic precursor, similar to those discussed with type II diabetes that quite simply, causes Indians to drink. Scientists looked to spectral brain activity, otherwise known as the electrical activity that occurs in a given section of the brain, and compared it with expectations. Specific frequencies of electricity in a given region of the brain are known to be linked with many behaviors. Scientists developed a list of biomarkers, or easily identifiable characteristics, that have been linked to alcoholism (Ehlers et al. 105).

It All Starts With The Brain

The tests were conducted with the electroencephalogram (EEG), a device that is able to monitor electrical activity in the brain. Characteristics identified by the EEG are often linked with increased heritability. In total six hundred and twenty-six Indian

participants were studied. According to EEG result, 65% of men and 54% of woman were identified as alcohol dependent (Ehlers et al. 105). Those numbers alone are staggering. Of course, there are some questions pertaining to the validity of the results. Can an electrical brain scan really tell if one is alcohol dependent? The device certainly cannot with absolute certainty, however, in this sample of participants, over half had the telltale brain wave characteristics observed in alcohol dependent individuals.

Perhaps most troubling is the heritability involved with such brain characteristics. The heritability of these characteristics has been estimated to be between 76% and 89%. This only accounts for the genetic basis of alcohol, and includes no reference to external stimuli that could increase or decrease these odds. Simply put, these numbers are scary in a population that already has an extremely high prevalence of alcoholism. The IHS estimates that between 1992 and 1994, the rate of death attributable to alcoholism in Indians was 6.8 times that of all other races in the United States (Rhoades, Vol. 16). With an approximately seven-fold risk of dying from an alcohol related death, and evidence of heritability, the prognosis is very bad for Indians unless quick and drastic change begins to occur in order to combat the issue.

In addition, recent evidence suggests that specific brain abnormalities may be responsible for the abundance of alcohol consumption problems. Generally speaking, the body has internal cues that tell a person when to stop drinking. For instance, if a person has been drinking a significant amount of alcohol over a short period of time, nausea and a feeling of hotness often set in. This is often followed by postural instability, dehydration, and in some cases vomiting. Alcohol is toxic to the body and needs to be filtered out by various mechanisms. As part of a normal metabolism, any nutrients in an

alcohol beverage that can be absorbed will be, and toxic contents such as alcohol, are removed and then excreted when one goes to the bathroom later.

Polymorphisms

However, specific mutations, known as polymorphisms have been investigated in Indians, which researchers believe could be responsible for quicker alcohol metabolism. The ADH2 and ADH3 loci contain alleles that are of particular interest, as changes in these alleles have been shown to be responsible for alcohol addiction in previous studies (Wall et al. 131). These alleles are responsible for the production of alcohol dehydrogenase, an enzyme used to degrade alcohol that has accumulated in the body (Wall et al. 129). Any change in the degradation of alcohol affects a person's metabolism of an alcoholic beverage. As such, small changes at the ADH2 and ADH3 loci, the locations where the alleles that control alcohol dehydrogenase production are located, can result in excess amounts of the enzyme or in some cases too little amounts of the enzyme.

Most ethnicities have small differences at these loci, which account for the phenotypical variation seen in how much alcohol different ethnic groups can consume. Research suggests that such variations likely account for a hyper metabolism of alcohol in some Indians, resulting in faster degradation of alcohol (Wall et al. 131). This, at least hypothetically, would indicate that the effects of alcohol consumption would be less pronounced in these individuals.

There are, however, some loose ends with the results. The study was done on American Indians who were of mixed ethnicity. All participants were of American Indian descent, however, the minimum criteria for the test was that an individual must have at least 12.5% Indian heritage. Of the participants in the study, 58% were identified as

having a mixed Latino background, and 44% were identified as having a Caucasian background (Wall et al. 130). As such, there was no indication of whether these additional ethnic qualifiers may have influenced the finding. Such polymorphisms may have resulted, at least in some participants, from genetic factors contributed from their mixed heritage, excluding their Indian ancestry.

In addition to these investigations into the rapid metabolism of alcohol, studies suggest that many Indians can drink more alcohol than other non-Indian drinkers, without experiencing the telltale signs of intoxication (Wall, Carr, and Ehlers 44). This seems reasonable since increased metabolism of the alcohol would likely diminish the effects experienced with alcohol consumption. However, investigations into this occurrence suggest that there may be more responsible for this.

One particular study investigated the number of drinks that Indian participants could consume over a twenty-four hour. The researchers classified the participants according to criteria for alcohol dependence (Wall, Carr, and Ehlers 41). As such, participants were determined to be alcohol dependent or non-alcohol dependent. The researchers concluded that those who were deemed to be alcohol dependent had a much higher chance of having the ADH2*3 allele present. Some participants that were deemed by the researchers' criteria to be non-alcohol dependent possessed the allele as well, however such participants were far less likely to have the allele compared to those labeled as alcohol dependent.

It should be noted that participants were characterized according to alcohol dependency prior to the investigation of which alleles may be responsible. This is significant, as the conclusions from the study were not that those with this mutated allele

were more likely to be drinkers, but instead that the allele was found to be far more prevalent in the previously classified alcohol dependent subjects.

Many of the alcohol dependent subjects with the allele were found to be much less likely to show signs of intoxication such as flushing of the skin and warming of the face (Wall, Carr, and Ehlers 44). This ties in with the polymorphism investigations, which show increased metabolism of alcohol. The similarity between the studies is not coincidental, as they were carried out by research teams headed by the same person, Dr. Tamara L. Wall.

These studies suggest that there are two underlying genetic precursors that affect the consumption of alcohol in some Indians. First of all, the alcohol is metabolized more quickly due to polymorphisms at particular alleles that control the production of the alcohol dehydrogenase enzyme. This alone can account for an increased tolerance of alcohol. The alcohol is consumed, rapidly processed by the body and then excreted in a quick and efficient manner. On top of this, the feeling that many people get when consuming alcohol such as the warming of the face, is not experienced as early on in the drinking process, if at all. As a result, more alcohol can be consumed without getting any feeling of intoxication. Therefore, one can drink more and more without any experiencing any of the warning signs to slow down or stop the consumption (Wall, Carr, and Ehlers 44).

In examining such research, it is easy to come to the conclusion that some Indians are simply naturally predisposed to drinking. While this is not entirely wrong, there are some important factors to consider. First of all, having a genetic predisposition to consume larger quantities of alcohol than non-Indians does not necessarily indicate that

there would be a genetic inclination to commence drinking. There is no reason to believe that having the ability to drink alcohol with less of the side effects, would in any way promote the consumption of alcohol in the first place. If anything, it would have the opposite effect as the alcohol would have a diminished intoxication effect.

Alcoholism: A Result of Circumstance?

Being alcohol dependent is not simply a lifestyle choice but instead an addictive disease. Genetic factors may play into the amount one can drink, however the addiction has to start somewhere, and no genetic factors have been identified which have been shown to make alcohol consumption more enticing for American Indians. Additionally, the ADH2*3 allele is not unique to American Indians. Prior to the allele being identified in Indians, it was identified in subjects of African heritage (Wall et al. 130). However, the level of addiction and alcohol related death in Indians is not witnessed in those of African descent.

In 1993, the number of alcohol related deaths in Indians was determined to be approximately forty deaths for every one hundred thousand in the population. This is compared to all other races in the United States, including African Americans who possess the same ADH2*3 gene identified in American Indians, where it was determined that approximately eight individuals die from alcohol related complications for every one hundred thousand in the population (Rhoades, Vol. 16). When one particular group is dying from alcohol related complications at a rate that is five times that experienced by all other ethnicities combined, it becomes apparent genetics alone cannot be the only cause. Reservation life, the destruction of natural resources on Indian lands, and the

alcohol trade have all influenced such alcohol dependence to a much greater extent than genetics can account for.

Alcoholism in Indian groups is the direct result of greed and the notion of manifest destiny. The United States government believed in ruling the continental United States from ocean to ocean, as if it was an obligation from God. As a result, anything that got in the way of that would be displaced or even killed as the government saw fit. With a little help from early English settlers who had exploited the Indians by trading them alcohol for fur, an Indian culture was born that was, at least in many tribes, heavily influenced by alcohol consumption. Even in modern times, alcohol and other drugs like it are used as a bit of a crutch for many people in times of sorrow or depression. After being moved from indigenous tribal lands, stripped of resources and freedoms, and made to assimilate to a culture where Indian tribes were treated in many regards as second-class citizens, it is no wonder that alcohol abuse remains prevalent to this day amongst Indians.

Chapter Summary

Much like diabetes, alcoholism can be explained culturally and genetically. Studies have shown via EEG brain analysis and with the examination into the alleles that control the production of alcohol dehydrogenase, that a significant portion of American Indians do indeed have precursors which may affect the consumption of alcohol. One major problem with this notion is that some of these genetic precursors, specifically the ADH2*3 allele, are also present in previously studied individuals of African descent. Yet the prevalence of alcoholism and alcohol related deaths is remarkably higher in Indians than it is in all groups, including those of African descent.

Although there is a genetic component to the drinking, one must wonder if this is a naturally occurring trait in the Indian population, or rather a genetic coping mechanism, resulting from hundreds of years of alcohol consumption in some tribes. It is logical that, much like the idea of natural selection, the Indian body would have naturally evolved and adapted over the years to cope with the symptoms of increased and prolonged alcohol consumption. Unfortunately, DNA analysis was non-existent in the time before the European settlers invaded North America. As such, there is no genetic record for comparison to see if these traits are indeed native to many of these Indian individuals, or rather the result of years of adaptation.

As such, it is evident that much of the historical atrocities that have shaped America, while simultaneously exploiting Indians and attacking their culture, have left a lasting impact. Alcohol was first widely traded with Indians by English settlers interested in the fur trade (Martin 66). To this day, alcohol remains a demon in many tribes where lives are being lost due to alcoholism. Little is being done to combat these problems from the federal government, and thus it seems apparent that any actions to combat these issues will have to come internally from the tribes.

CHAPTER EIGHT

FUTURE OUTLOOK AND CONCLUSIONS

Future Outlook

Although the government has a large role in assisting Indian tribes and individuals with their needs, evidence suggests that some Indians are reluctant to receive the care and assistance, even when it is available. Money is often thought to be a major reason as to why Indians cannot obtain the services, such as healthcare, that they need. However, culture and communication are even bigger players (Duran et al. 826). For many American Indians, there is a preconception that obtaining health care services, particularly mental healthcare, is unnecessary or wrong. It may be due to lack of trust in government agencies, with the assumption that they would not provide anything beneficial to the tribes after so many years of mistreatment.

Misuse of DNA From Havasupai Tribal Members

It is certainly understandable that the members of many of these tribes would be apprehensive about cooperating with a government that has historically exploited their ancestors, as well as current generations of American Indians. Although the argument could be made that United States social policies and health care have improved, cases as recent as 2010 suggest that health care research and social relations with some American Indian tribes has been anything but progressive (Capriccioso).

Rob Capriccioso of *Indian Country Today* reported that a case was settled in 2010 regarding the use of blood samples taken from the Havasupai people, a small Grand Canyon tribe. According to the report, the Havasupai tribal members consented to giving

their blood to Arizona State University researchers and were led to believe that their blood samples would be strictly used for diabetes research. Instead, the samples were allegedly used for research into schizophrenia, inbreeding, and the hypothesis of early populations in North America migrating via the Bering Straight Land Bridge. A settlement of seven hundred thousand dollars was reached between the forty-one tribal members and the Arizona Board of Regents (Capriccioso).

This settlement is likely very little consolation for these tribal members who put what little trust they still had into these researchers hands. Ideally this case will serve as a precedent for further cases of exploitation on Indian tribes. Consenting to having one's blood used in research for diabetes only to have it be used for research into culturally specific phenomenon is a glaring example of invisible cultural violence and is simply unacceptable. If the government itself were responsible for this study, rather than the research institution that was instead blamed, it would be safe to assume that the fallout and repercussions would be far more severe.

The fact remains that Arizona State University, a public institution of research, likely receives funding from governmental agencies for its research. Although the federal government is not directly tied to this case, it is only logical to question what direct or indirect input the government may have had toward the use of these samples for the studies in question. Even if there was no initiative from the federal or local governments to pursue additional testing on the samples, a cloud of suspicion has unfortunately grown darker regarding such research practices. It is hard for one to seek healthcare and be invested in research to cure communal health ailments when there is little to not trust in the supervising agencies responsible for both the research and treatment.

Regardless of the reasons, in many areas, Indians are not obtaining the healthcare that they require and are suffering as a consequence. Government initiatives must be undertaken that target these communication and cultural barriers and instead seek to promote trust and belief in the healthcare system. This alone could help thousands of individuals that would otherwise be uncared for due to fear and trust issues with the health care system.

Despite the fact that many Indians are prejudiced against some of the healthcare services available to them, Indians are not necessarily unaware of the healthcare options that exist. Instead, a group of Indians interviewed by Jeanette Hassin, an assistant research scientist at the Native American Research and Training Center at the University of Arizona, and Robert S. Young, a research associate at the University of Arizona showed a keen understanding of the issues going on around them. There was certainly some confusion as to how the healthcare system would turn out in the long run, as it relates to Indians. More often than not, Indian participants indicated that the healthcare system was not balanced, and that Indians were not getting the healthcare necessary for maintaining a healthy life (Trafzer and Weiner vol. 14).

Overall, evidence suggests that healthcare is far from perfect in Indian communities and that, generally speaking, Indians are knowledgeable of the healthcare issues surrounding them. However, according to Judith Thierry, the maternal and child health coordinator for the Indian Health Service, Indians are showing an increased participation in governmental health policymaking (Thierry et al. 1555). One has to certainly question the nature of this statement, first and foremost, because of Thierry's involvement with the Indian Health Service. As she is employed by an organization

responsible for the health care of Indians, a bias could very well be present, as to not tarnish the name of the Indian Health Service or those that it aims to help. However, if her assertions were in fact truthful, this would serve as a glimmer of hope for progressive Indian policies and lawmaking.

Thierry's view, that Indian participation in health care policymaking is increasing, certainly contradicts studies that suggest that culture and communication are largely preventing Indians from attaining healthcare. Needless to say, Thierry's view is obviously the most favorable, although the validity of it is questionable.

Conclusions

A combination of factors has historically shaped American Indian civilization. These factors include the British rum trade throughout the eighteenth century, the redistricting of tribes, and the destruction of natural resources that many tribes rely on for survival. These factors combined, directly contributed to the epidemic diabetes and alcoholism that persist in the American Indian population today.

The reservation has contributed to the consistent manifestation of alcoholism and type II diabetes. Because of the isolating nature of the reservation, problems are confined to the boundaries of the reservation. As such problems on the reservation have little opportunity to diffuse out of the culture. As a result many of these phenomenon become normalized violence, and are seen as a way of life. In the vast majority of cases, the reservations are financially depleted, meaning that social programs to advise on these pressing issues are impractical and generally nonexistent. Although some, such as Thierry, make the argument that the government's participation in Indian health care

policy is improving, there is some concern as to how untrusted external sources can assist problems that are concentrated on the reservation.

Alcohol: Origins

The origins of alcohol in American Indian tribes can be traced back to tribes such as the Muskogees and Choctaw, who naively traded away deerskins and other furs for so-called gifts from French and English traders (Martin 66). Such trading began a competition of sorts between the French and English traders, as each attempted to bring appropriate compensative packages to the table that would influence Indians to continue trading with them. The English found a key commodity, alcohol, worked very well. Not only did Indians want alcohol, but the British also realized that alcohol could be used to take advantage of Indians who would drink until intoxicated and continue to negotiate. The English built up debt with their trading partners, so much so, that Indian trade partners could not supply enough animal skins to pay their debts. As a result, the deer population became dangerously low in the surrounding areas, and Indians lost much of their land to English traders who took it as compensation (Martin 67).

These activities have contributed to the epidemic alcohol problems that face many Indians today. Unfortunately, there is no evidence to directly link the actions of the English settlers with the genetic predisposition to alcohol that has been seen in a considerable number of participants studied (Wall et al. 131). Nonetheless, action by English settlers started a trend of drinking that may or may not have resulted in a genetic predisposition to alcohol consumption in the decedents of their Indian trade partners. This problem was then exacerbated by years of discriminatory lawmaking, statutes, and executive orders that resulted in a never-ending self-destructive cycle on the reservation.

Diabetes: Origins

The origin of diabetes is less discrete. However, factors such as the General Allotment Act and the Indian Removal Act contributed to its prevalence. Indians were given little choice but to move from their original tribal lands to faraway lands with different geographic compositions as a result of the Indian Removal Act. They were then encouraged to assimilate via propositions set forth in the General Allotment Act. Identity and culture were stripped in the process. Poverty became more widespread, and reliance on commodity foods ensued up and through current times.

Reservation life largely contributed to this, as the population of impoverished individuals was now concentrated onto lands that lacked many of the geographical and climate characteristics observed on previous tribal lands. The government supplied commodity foods, which were typically high in fats and sugars, and highly processed. These foods were far different from the more natural alternatives that had been a large part of Indian diets prior to European settlement and the commencement of the United States government.

One need only look at Indian frybread to see the results of many of these commodity foods. Frybread is popular in many American Indian communities. The uses are endless, as the bread can be adapted for breakfast, lunch, and dinner. It is easy to make, consisting mainly of commodity items. The problem is these commodity items are highly processed and stripped of many natural nutrients that may have previously been present. What remains are chemically processed fats and sugars that are very bad for one's body.

Many of the frybreads are over fifteen percent fat (Smith and Wiedman 584). In some of these frybreads, one serving is equivalent to one-third of an adult's daily value for fat intakes as recommended by the Food and Drug Administration ("Guidance for Industry"). Although frybreads are only common in some American Indian communities, they are a prime example of how such cheap and unhealthy foods have become commonplace and to a certain extent, culturally significant. This is all a result of federal interference first by relocating Indians from their native lands, which resulted in different oftentimes less desirable terrain to work with, and in the end many poor Indian communities reliant on government aid.

Such contributing factors are merely the roots of these issues. As a result of the government's standoffish demeanor when dealing with Indian tribes, little has been done to dramatically change these health afflictions, which plague many Indian individuals. Indians are still one of the most impoverished demographics according to United States census statistics, and when all things are considered including those not represented by census statistics, they are the most impoverished demographic. As a result, the Indian Health Service generally administers health care services, as few can afford private supplemental insurance. Most importantly, alcoholism and diabetes are more prevalent in Indians than in any other demographic in the United States by a large margin.

The future outlook for Indians is better in some respects, however still by no means one that inspires a great deal of optimism. If programs are put in place which target the cultural and communication barriers that have been a problem for Indians, and government healthcare policy making by Indians is indeed promoted, the future outlook is quite positive. Without change, the future will involve more of the same. A major

problem arising is that Indians are aware of the health woes affecting themselves and their families, however there is reluctance to go and receive the healthcare treatment that is available to them. These are not issues that will repair themselves, and some intermediary or change in the social environment, must present itself, otherwise such problems will persist making for a quite dismal future health outlook.

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