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**Examining the prevalence of Urban American Indians
with uncontrolled diabetes in Nebraska.**

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Abstract

Diabetes is a major public health problem in American Indian Alaska Native (AI/AN) population which contributes to an increased number of morbidity and mortality.

Diabetes was largely unknown in AI/AN communities before the World War II but soon after the WWII Indian Health Service (IHS) providers began reporting diabetes among this population. (McLaughlin, 2010). A group of researchers in 1963 identified the first type II diabetes epidemic in Pima Indiana community of Arizona among AI/AN population. (Shultz, LO, et al, 2006). Soon, cases of diabetes in AI/AN more than doubled in prevalence rate compared to the general U.S. population, resulting in one in six AI/AN adults to be diagnosed with the disease. (McLaughlin, 2010).

Nationally, according to US Department of Health and Human Services, AI/AN are more than twice as likely to be diagnosed with diabetes as their non-Hispanic white counterparts (2.3 times higher). (DHHS, 2012). AI/AN in Nebraska are 4.4 times as likely to die from diabetes in comparison to non-Hispanic Whites (Nebraska DHHS Office of Health Disparities and Health Equity, 2015). Having an uncontrolled diabetes, defined as hemoglobin A1c \geq 8.0%, for more than one year, despite the standard care they receive, is associated with a high risk and serious long-term complications such as cardiovascular disease, neuropathy, retinopathy, and nephropathy, (Crowley, et al, 2014). These complications are especially critical when diabetes is diagnosed at the end-stage renal failure (ESRF) which happens 2.7 times more in AI/AN than in non-Hispanic whites, (USDHHS). As recently as 2009, diabetes became the fourth leading cause of death among AI/AN populations. (McLaughlin, 2010). Therefore, diabetes in AI/AN results in a higher mortality rate for the population and it is growing much faster

than it grows among the general U.S. population (62% vs 10%, respectively). (McLaughlin, 2010).

My project focuses on urban American Indian and Alaska Native (AI/AN) patients at Nebraska Urban Indian Medical Center (NUIMC), as NUIMC has identified uncontrolled diabetes as a priority health issue. Based on their 2018 report, from 106 adult male and female patients, 38% of patients had A1c level of greater than 9.0%. (NUIMC presentation/report 2018). Goal: The long-term goal of this project is to decrease the prevalence of uncontrolled diabetes in urban AI/AN patients seen at NUIMC by suggesting improvements and interventions as well as conducting literature review and evidence based researches. Specific aims: My study aims were a) to examine the prevalence of Urban American Indians' uncontrolled diabetes at an urban AI/AN-serving clinic in Nebraska, the Nebraska Urban Indian Medical Center and b) to conduct a literature review to identify best practices for managing the disease. Methods: To assess the prevalence of diabetes, a manual chart review of the "IHS Diabetes Care and Outcomes Audit, 2019" was conducted. For the literature review, I used Google Scholar and PubMed.

Results:

The results of the data for 46 diabetic patients that I reviewed from the IHS Diabetes Care and Outcomes Audit, indicated 29% of the patients were diagnosed with prediabetes, 71% of patients had type II diabetes (from this group, 38% of them had uncontrolled diabetes, $A1c \geq 8.0\%$). In addition, 60% of the female diabetes patients were diagnosed with active depression.

The outcomes of the literature review defines the importance of lifestyle changes through behavior modifications, changes in diet and exercise, weight management, and mental health modifications as best practices in order to manage uncontrolled diabetes.

Impact of the study: The outcome of this study will inform Nebraska Urban Indian Medical Center staff about the prevalence of uncontrolled diabetes in a sample of AI/AN patients, in addition to best practices and community based interventions for managing diabetes in urban AI/AN. In addition, my study informs the clinic about what appears to be a high prevalence of depression (60%) in diabetic women.

Introduction

Briefly describe the placement site

The Nebraska Urban Indian Medical Center (NUIMC) is a non-profit, tax-exempt charitable organization. NUIMC offers a wide range of services to meet the health needs of AI/AN population in Lincoln. NUIMC serves the community regardless of race, background or religion, and their services are available to both insured and uninsured patients. NUIMC also accepts most insurance plans including Medicaid, Medicare, and Kids Connection. (NUIMC website, link). NUIMC has served Omaha and Lincoln's urban AI/AN clinic with outpatient primary care, outreach and referral services since 1986, and is a group practice with one location in Lincoln, Nebraska. Currently, NUIMC specializes in Family Medicine with four practicing physicians. They work together with other healthcare professionals to achieve optimal levels of care. The mission of the NUIMC is to elevate the health status of Native Americans to the highest possible level

as well as those persons who are underserved and/or uninsured in the community. (NUIMC website, link). NUIMC offers services and programs that emphasize promotion of health, prevention of disease, and serves the health needs of the communities as a whole, (NUIMC website, link).

Issue addressed importance to the organization, the scientific community, and policy makers.

In this project, I will present the NUIMC with information about the prevalence of uncontrolled diabetes in a sample of their AI/AN patients, and identify best practices for managing uncontrolled diabetes in urban AI/AN population which may help lowering the number of patients with uncontrolled diabetes in this community. In light of the high prevalence of diabetes in AI/AN, nationally and locally, the NUIMC has identified diabetes management in AI/AN patients attending the clinic, as one of the clinic's top priorities. The NUIMC is one of 301 community directed diabetes prevention programs in 25 states who participate in the Special Diabetes Programs for Indians (SDPI). The SDPI was established in 1997 through the Balanced Budget Act by Congress and the most recent authorizations for this program has been \$150 million per year. (SDPI), (IHSDD, 2010). In addition, this project will utilize the Community Oriented Primary Care (COPC) method in the community primary care setting and hopefully; this project will be able to serve as an example for other clinics utilizing the COPC method in order to improve their patients' health in the community.

Who are urban American Indians?

Urban American Indian population represent the majority of the AI/AN population in U.S. They are a multi-tribal population who live in cities, either as permanent, long-term residents or medium, short-term residents. Permanent long-term residents are those who have been in the city for several generations. Historically, they may have been forced to relocate to urban centers by the government policymakers or due to a need for specialized healthcare services for the population. The AI/AN populations who are medium or short-term residents are those who come to the city for a variety of reasons, such as, visiting family members or attending school. (Census, 2010). In 2010, out of the 5.2 million AI/AN population, 71% of them lived in Urban areas. Urban AI populations showed a 33% increase in population growth since 2000 (Census, 2010). Urban AI make up 2/3 of the population but they receive less than 1% of the Indian Health Service funding. (USDHHS).

Relevance to public health and history of diabetes in AI/AN

Diabetes was largely unknown in AI/AN communities before the World War II. It was after the WWII when Indian Health Service (IHS) providers began reporting diabetes among this population and as recently as 2009, diabetes became the fourth leading cause of death among AI/AN populations. (McLaughlin, 2010). AI/AN experience health disparities manifested as a higher prevalence of diabetes and higher mortality rates in comparison to Whites. National statistics indicate that 17.5% of AI/AN adults were diagnosed with diabetes while only 6.6% of White adults were diagnosed with diabetes. (CDC, 2010). See Table 1.

Table 1. At a glance – Diagnosed Cases of Diabetes: National Health Interview Survey, NHIS

Age-adjusted percentages of persons 18 years of age and over with diabetes, 2004-2008			
	American Indian/Alaska Native	White	American Indian/Alaska Native/ White Ratio
Men and Women	17.5	6.6	2.7
Men	18.2	7.2	2.5
Women	16.2	6.2	2.6

Source: CDC 2010. [Health Characteristics of the American Indian and Alaska Native Adult Population: United States, 2004-2008.](#)

Furthermore, diabetes in AI/AN is a great concern for public health due to a higher incidence of long-term complications and a higher mortality rate that is growing faster in AI/AN than the general U.S. population (62% vs 10%, respectively), (McLaughlin, 2010). In AI/AN populations in Nebraska, disparities are present and show that AI/AN are 4.4 times more likely to die from diabetes in comparison to Whites (Nebraska DHHS Office of Health Disparities and Health Equity, 2015). Diabetes data from a report on Urban AI/AN at the NUIMC showed that from a total of 106 male and female adult patients, 61% of patients had a hemoglobin A1c level of less than 8.0%, while 25% had a hemoglobin A1c level of greater than 9.0%, and 13% of patients had A1c level of greater than 11.0%. (NUIMC 2018 report/presentation).

Potential causes for the high prevalence of diabetes in AI/AN

Low socioeconomic status represent a reason for the high prevalence of diabetes in AI/AN. (DHHS, 2013). National Health Interview data indicate that having less than a high school degree is associated with twofold mortality rate from diabetes in comparison to adults with a college degree or higher education level. (Saydah S, et al, 2010). With regard to school enrollment, 36.6% of non-Hispanic Whites were enrolled in school compared to 13% of AI/AN, (U.S. Census B, 2009-2011). Nationally, AI/AN experience additional socioeconomic disparities at a higher rate in comparison to non-Hispanic Whites. Nebraska AI/AN were 3.5 times more likely than non-Hispanic Whites to be unemployed, their median household income was almost half of the non-Hispanic Whites' income (\$27,228 and \$52,683 respectively), and more than 3 times as many AI/AN as non-Hispanic Whites reported being below the poverty level (36.9% and 9.5% respectively). In addition, 32.4% of AI/AN had no health insurance coverage compared to 9% of non-Hispanic Whites. (U.S. Census B, 2009-2011).

Studies on genetic susceptibility showed a rapid lifestyle change that happened during the past two or three generations and could be a risk factor for the increased prevalence of diabetes in AI/AN. Specifically there was a shift away from traditional diet and lifestyle that may have contributed to the increase in diabetes diagnosis. (Neel, JV, 1985; Hegele, RA, et al, 2003). Another factor to contribute to the high prevalence of diabetes in some groups of AI/AN, is that many communities are geographically isolated and remotely located. (Baiju, RS, et al, 2003) This has made access to healthy food more complicated. In addition, the available federal food programs have failed to include the

AI/AN's traditional food, resulting in AI/AN population choosing a culturally inappropriate pattern of food consumption. (Bell-Sheetter, 2004).

Purpose of the evaluation

Using principles of community oriented primary care (Gofin, 2010), the purpose of this evaluation is to:

1. Identify the proportion of NUIMC AI/AN patients with prediabetes, type II diabetes, and uncontrolled diabetes.
2. Identify best practices for managing uncontrolled diabetes in urban AI/AN, the gaps and challenges in healthcare that improve hemoglobin A1c level among patients with uncontrolled diabetes.

Goal of the evaluation

The overarching goal of this evaluation is to ultimately decrease the prevalence of uncontrolled diabetes in AI/AN.

Gaps in knowledge and addressing the gaps

There is no gap in the literature with regard to this question.

Hemoglobin A1c test, why is it important, and what does it have to do with uncontrolled diabetes?

The hemoglobin A1c (A1c) estimates a person's average blood sugar level during a period of 2-3 months. The A1c test is the best way to measure how well blood glucose is controlled and it indicates how diabetes is managed. An A1c level of 5.6% or less is normal, however an A1c level of 5.7% or higher is prediabetes and indicates that the patient is at risk for developing type II diabetes. A hemoglobin A1c level of 6.5% or higher indicates the type II diabetes, and a hemoglobin A1c level of 8.0% or higher is uncontrolled diabetes and is associated with morbidity and mortality from hypertension, coronary heart disease, nephropathy, retinopathy, and neuropathy (ADA, 2015).

Uncontrolled diabetes is a group of metabolic diseases characterized by hyperglycemia and often leads to long-term damages and significant disabilities such as cardiovascular disease, nerve damage, end-stage renal failure (ESRF), blindness, and foot damage, (ADA, 2009).

Methods

Theoretical framework I have followed community oriented primary care (COPC) principles and processes, an approach to healthcare that considers the socioeconomic and cultural determinants of health, identifying the community's health needs and provides healthcare to the whole community. The conceptual roots of COPC were developed and introduced by Dr. Sidney Kark and Emily Kark in 1940s in a rural area of South Africa, (Kark, SL, et al, 1983). COPC is a systematic approach to health care, in order to improve the health of a defined community; it aims to integrate primary care and public health. The COPC approach has been used in addressing diabetes. The

CHAD Program, a community health program for the control of cardiovascular disease risk factors, including diabetes, used COPC as a framework.

The COPC cycle has six steps and more importantly, each step of the cycle ensures the community involvement. (See figure 1 for the COPC steps):

1. Community definition and characterization.
2. Prioritization.
3. Detailed problem assessment.
4. Intervention planning and implementation.
5. Evaluation.
6. Reassessment.



In this project steps 1-4 of the COPC Cycle were addressed as follows:

Community definition and characterization: I defined the community as AI/AN community members of all ages who are living with prediabetes and type II diabetes, visiting NUIMC.

Prioritization: Based on the NUIMC's audit sheet 2019, NUIMC has identified type II diabetes as a top health priority and thinks it needs to be addressed in the community,

especially because AI/AN population experiences health disparities manifested as higher prevalence of type II diabetes.

Detailed problem assessment: In COPC the goal of the detailed assessment is to measure the size and the distribution of the problem. The detailed assessment has been described in the literature review.

Intervention planning: Prior to the implementation of any intervention COPC calls for an assessment of the literature to determine the best practices of a selected health condition, to guide program activities. (Gofin, 2010) The outcomes of the literature review on interventions to address uncontrolled urban AI/AN are described in the results and discussion sections of this paper.

Data resources, collection method, sample size:

The total number of diabetes patients at the clinic for all providers was 102 for the year 2018. For this study, data from the “IHS Diabetes Care and Outcomes Audit, from a sample of 46 adult male and female diabetic patients from one provider at the NUIMC were selected.

Defined evaluation question:

- What proportion of diabetic patients from one NUIMC provider have uncontrolled diabetes?

- What are best practice programs for addressing uncontrolled diabetes in urban AI/AN?

I identified the proportion of patients with prediabetes and uncontrolled diabetes from the “IHS Diabetes Care and Outcomes Audit, 2019.” In order to identify the proportion of patients with uncontrolled diabetes I conducted a manual audit. Audit year data reflects care administered in the previous year at NUIMC, therefore, the NUIMC patients in my study, were from the year 2018. I reviewed the audit forms, demographics and criteria, entered the data from each paper audit form into the Excel data sheet. I edited the data as necessary, calculated percentages to categorize into groups of prediabetes, type II diabetes, and uncontrolled diabetes. For the literature review, I used Google Scholar and PubMed to examine best practices for educating and managing uncontrolled diabetes in urban American Indian, using the key words: “AI/AN,” “Type II diabetes,” “uncontrolled diabetes,” “Urban AI/AN,” “Prevalence of diabetes in AI/AN.” I searched the Google Scholar and PubMed database for the above phrases, reviewed the results and selected 209 articles for my research.

Results

Among the 46 diabetic patients whose data I reviewed from the IHS Diabetes Care and Outcomes Audit, 2 patients had all data requested but not the A1c %. In addition, there were 10 patients who didn’t show up to participate in the Audit 2019, so this analysis was done on 34 patients. 16 were male and 20 were female patients between the ages of 30 and 75 with a mean age of 50. 29% (10 out of 34) of the adult patients, (4 female

and 6 male) were diagnosed with prediabetes while 71% (24 out of 34) of the patients, (10 female, 14 male) were diagnosed with type II diabetes. Among the group who had type II diabetes, 38% of them had uncontrolled diabetes, A1c \geq 8.0%.

Furthermore, from the study group of 34 patients, 12 out of the 20 female patients were diagnosed with an active depression through PHQ-9 screening while no males were diagnosed with depression.

Literature review on Best practice programs to address diabetes in urban AI/AN

The “Adult Weight Management” is a best practiced program recommended by Urban Indian Health Institute for urban American Indians. This program, created by IHS funded Urban Indian Health Organizations, is for individuals who are overweight or obese and at a high risk of developing diabetes. This program is based on changes in diet and exercise that provide the best approach for weight loss and is done through implementing a systematic approach to increase daily physical activities, provide behavior change approaches and long-term support to address weight loss maintenance. (UIHI,UDCO Audit Report 2007-2011, 2008), and (Franz M, et al, 2010).

“The Trim-down Program,” sponsored by the Albuquerque Service Unit is also a best practice program for the AI/AN population. This program is based on a six-week intervention and is focused on helping the participants to learn healthy eating habits and participate in physical activities with the support of others in the community (Indian Health Service 2006).

Another program that focuses on spiritual and mental health is called “Fresno Native American Health Centers-Greatest Loser Program,” to address diabetes, works on

behavior modification through a ten-week wellness program for urban AI/NA. (Indian Health Service, 2006). A promising practice is the “Nurse-Coaching Intervention for Women With Type II Diabetes.” This program focuses on determining the efficacy of a 6-month nurse-coaching intervention for female diabetes patients to improve better diet self-management, less diabetes-related distress. Program participants showed significant improvements in psychosocial adaptation, self-management diet and exercise, in addition to a decrease in their A1c levels (an improvement of HgbA1c level ($P < .01$)). (Whittemore, R, et al, 2004). The Minneapolis marketplace program has also shown efficacy in reducing A1c among urban AI/AN. As part of an urban health initiative for a community-based diabetes support group, the marketplace clinics located near selected pharmacy stores, committed financial support, pharmacy staff and certified educators. They offered diabetes care and provided self-management education for an urban Indian neighborhood. A 3-year study showed that the intervention group in the Minneapolis marketplace program had a moderately reduced A1C mean value ($M = 6.9$, $SD = 2.13$) compared with the nonintervention group. In addition, at the end of the study, the intervention group had a lower BMI ($M = 32.1$, $SD = 4.01$) compared with the nonintervention group ($M = 34.7$, $SD = 7.50$). (Rick R, et al, 2017).

Discussion/Recommendations

Complications of uncontrolled diabetes result in a higher mortality rate in the AI/AN population than others, (McLaughlin, 2010). This evaluation employed a COPC framework to examine the prevalence of uncontrolled diabetes in urban American Indians and best practice interventions to manage diabetes in this population. I collected information on diabetes mellitus from the Diabetes Care and Outcome Audit Sheets, for the year of 2019. I identified the prevalence of uncontrolled diabetes in AI/AN patients of NUIMC and conducted a thorough literature review to identify potential evidence-based interventions that the NUIMC could employ. Results from my evaluation showed that 29% of the adult patients were diagnosed with prediabetes while 71% of the patients were diagnosed with type II diabetes. Among the group who had type II diabetes, 38% of them had uncontrolled diabetes, A1c \geq 8.0%. (NUIMC 2018 report/presentation).

To address uncontrolled type 2 diabetes in urban American Indians I suggest a community-based program “Adult Weight Management” program that focuses on individuals who are overweight and or obese and have a higher risk of developing diabetes. Based on this program, changes made in diet and exercise on a community level, can provide opportunities to a healthy diet and rigorous physical activities on daily basis. A weight loss of as little as 5% could make a big difference in improving diabetes and preventing the complications. (UIHI,UDCO Audit Report 2007-2011), (Franz M, et al, 2010). Studies by Kirk, et al, suggests the employment of physical activity consultation (PAC), a theory-based intervention, which provides behavioral change techniques in people with diabetes and is effective in promoting physical activity. PAC

intervention includes self-monitoring, goal setting, problem solving, social support, and relapse prevention, (Kirk, A, et al, 2010). Furthermore, studies suggest that interventions with counseling alone is not enough to motivate the population. Instead, interventions that include a supervised, facility-based, aerobic, and resistance training programs will promote physical activity in diabetic patients and will be able to improve health and wellbeing of sedentary patients with type II diabetes. (Balducci et al., 2012).

In addition, for patients with uncontrolled diabetes, a lifestyle coach and program instructor would emphasize changing lifestyle, achieving weight loss, and self-monitoring to prevent the progression of the disease progress. (Duncan GE, et al, 2009). Lifestyle coach and training interventions can educate patients to choose healthy food, prepare healthy meals, and understand how to read food labels, increase patients' understanding of the disease and how to choose an active healthy lifestyle. (Lifestyle Coach Training Guide. [Link](#)). Studies show lifestyle interventions can play a critical role in preventing diabetes complications in patients with uncontrolled diabetes, in addition to preventing the development of the disease in patients who have a higher risk for developing diabetes (ADA, 2015). NUIMC is actively involved in Lifestyle Coach Interventions through educational sessions, offering classes sessions designed for small groups of patients in order to reach them better. The clinic is coaching their patients on how to choose a healthy lifestyle through healthy eating, managing medication and self-care.

To address the high proportion of female diabetes patients diagnosed with an active depression, it is important to treat the depression. Finally, the health care system needs to commit funds to improve depression care in diabetes patients. (UIHI,UDCO Audit Report 2007-2011, 2008). Further upstream solutions suggest a need for healthcare staff or lifestyle coaches to screen and identify prediabetes patients and offer group education sessions, diabetes prevention curriculum, and coaching in order to prevent the disease from progressing into a type II diabetes. (Duncan GE, et al, 2009).

Limitations

Due to the small sample, my study is not representative of all urban AI/AN patients seen at the NUIMC clinic. There exists limited data on the prevalence of uncontrolled diabetes in urban AI/AN populations which makes comparisons with other urban AI populations limited.

Conclusions

Diabetes in Urban AI/AN is a great concern for public health due to a higher incidence of long-term complications and a higher mortality rate than other U.S. population, (62% vs 10%). (McLaughlin, 2010) A promising practice to address uncontrolled diabetes in urban AI/AN is the “Minneapolis marketplace,” which is part of an urban health initiative for a community-based diabetes support group that has shown positive effects of marketplace clinics and community health that has improved blood glucose level, weight loss, and has brought changes in lifestyle behaviors that affects uncontrolled diabetes

prevalence. (Rick R et, 2017). More research is needed to address uncontrolled diabetes in Urban AI/AN and the association between depression and uncontrolled diabetes in urban AI/AN women.

Describe how SL activities were performed: what, where, when, with whom, how long, etc. What resources, relationships, and skills permitted these activities to occur?

Describe the experience with the placement site.

JDRF is one of the organizations' educational, in-school fundraising programs that has two goals: to educate students about type 1 diabetes (T1D), and to promote philanthropy by raising money for life-changing T1D research to help find a cure.

Learning experience was to know how to engage JDRF in creative and meaningful ways to increase the knowledge of T1D and help drive progress towards a cure. In general, this product was a fun and effective way of putting plans into actions!

What did you learn about the organization?

I always knew this but working for JDRF confirmed that I am a passionate educator, enthusiastic, capable, and eager to educate the community about a disease or a healthcare issue. I have a deep passion to help the underserved, disadvantaged communities. What I didn't expect was to get involved in fund raising and find donors to participate in celebrating November, the national Diabetes Awareness Month, and to raise awareness about T1D. I contacted dozens of businesses and vendors by phone and in person, sharing a flyer (included) with each one of them that I met. In the end, I found a few businesses who expressed interest in becoming donors and helping JDRF with T1D and becoming JDRF's regular donors.

Briefly describe the placement site for Service Learning: Juvenile Diabetes Research

Foundation (JDRF) is a nonprofit organization that funds type 1 diabetes research and advocates for regulations favorable to medical research, and raising awareness about type 1 diabetes. The population served are children and adults diagnosed with type 1 diabetes and their families. JDRF has a mission to accelerate life-changing breakthroughs to cure, prevent, and treat type 1 diabetes and its complications through the support of research.

Describe the product(s): JDRF required providing training manuals for the participants attending events that we organized. In addition, making a playbook for the school children, providing them different options to learn and get involved in type I diabetes activities.

JDRF products:

Product 1. Assist in creating a JDRF Youth Making an Impact playbook that helped in recruitment and implementation of the kids walk program. This playbook included three parts: education, fundraising, and celebrating success that is beneficial in recruitment and implementation of the kids walk program.

Product 2. Creating a promotional piece for JDRF Paper Sneaker Campaigns and Give Back opportunities, distributed to area companies and retail stores to help raise awareness and donations.

JDRF activities: Prepared a Bag of Hope for the newly diagnosed children with comprehensive collection of educational material. Prepared an Adult Type 1 diabetes care kit to support adults with type one diabetes. Participated in back to school bash

and type one diabetes connection program to connect families and individuals with the volunteers who have personal experience of type one diabetes.

Related to your Service Learning activities, what do you think were your greatest contributions/accomplishments? Providing educational resources at worksites, creating educational materials for JDRF and engaging with the community members discussing type 1 diabetes with them was a great accomplishment.

What strengths did you bring into the project? I established JDRF with a few businesses around town to become donors and to support type I diabetes as committed members of JDRF.

What were the greatest challenges of your Service Learning/Capstone Experience?

How did you address and overcome those challenges?

Fundraising was difficult for me but I had to be persistent and bold in order to talk local businesses into becoming JDRF donors.

How have your views of public health practice been impacted by your SL? The world needs a lot more compassion and kindness. Sometimes we judge too soon without giving someone a chance to know them. I learned to become a better listener and build more patience and let them talk and open up about what is important to them.

How did your public health education prepare you to address any ethical or other issues you encountered during your SL? As a student with the community oriented primary care concentration, the school had sent me out with all the tools I needed to face the community.

References

1. American Diabetes Association. A1C and eAG. Available at: <http://www.diabetes.org/living-with-diabetes/treatment-and-care/blood-glucose-control/a1c/> Accessed July 28, 2017.
2. American Diabetes Association. Diabetes Care. Standards of Medical Care in Diabetes—2009,. 32(Supplement 1): S13-S61, 2009.
3. American Diabetes Association. Diagnosis and classification of diabetes mellitus. Diabetes Care. 35 Suppl 1:S64-S71. 2012.
4. American Diabetes Association. Standards of medical care in diabetes— Diabetes care, 38, S1-S93, 2015.
5. Baiju RS; Gunraj N; Hux JE. Markers of access to and quality of primary care for aboriginal people in Ontario, Canada, Am. J. Public Health 93 (5) 798–802, 2003.
6. Balducci S., Zanuso S., Cardelli P., Salvi L., Bazuro A., Pugliese L., Pugliese G. Effect of high- versus low-intensity supervised aerobic and resistance training on modifiable cardiovascular risk factors in Type 2 diabetes; The Italian Diabetes and Exercise Study *Plos one*.7(11), 2012.
7. Barnes PM; Adams PF; Powell-Griner E. Division of Health Interview Statistics: Health Characteristics of the American Indian and Alaska Native Adult Population: United States, 1999–2003. <http://www.cdc.gov/nchs/data/ad/ad356.pdf>
8. Bell-Sheetter A. Food Sovereignty Assessment Tool. Fredericksburg, VA: First National Development Institute; 2004.
9. CDC 2010. Health Characteristics of the American Indian and Alaska Native Adult Population: United States, 2004-2008.
10. Census Bureau. United States. American Indian and Alaska Native Summary File: Table: PCT2; Urban and rural; Universe Total Population; Population group name: American Indian and Alaska Native alone or in combination with one or more races. 2010.
11. Centers for Disease Control and Prevention (CDC). (2011). National Diabetes Fact Sheet: National Estimates

12. Cobb N; Espey D; King J. Health behaviors and risk factors among American Indians and Alaska Natives, 2000-2010. *Am J Public Health.* 104, 3:S481-9, 2014. <https://www.ncbi.nlm.nih.gov/pubmed/24754662>
13. Colby SE; McDonald LR; and Adkison G. "Traditional Native American Foods: Stories from Northern Plains Elders." *Journal of Ecological Anthropology* 15: 65-73, 2012.
14. Department of Health and Human Services, Indian Health Service Division of Diabetes Treatment and Prevention, (Facts At a Glance, DHHS), 2012. <http://www.ihs.gov/medicalprograms/diabetes>
15. Department of Health and Human Services, Indian Health Service Division Diabetes Fact sheets. <https://www.ihs.gov/newsroom/factsheets/disparities/>
16. DHHS, IHS Fact sheet, <https://www.ihs.gov/newsroom/factsheets/uihp/>
17. DHHS, Nebraska American Indian and Alaska Native Socioeconomic Profile, 2013. <http://dhhs.ne.gov/Reports/American%20Indian%20and%20Alaska%20Native%20Socioeconomic%20Profile%20-%202013.pdf>
18. DHHS, Report, <https://www.ihs.gov/aboutihs/overview/>
19. Duncan GE; Goldberg J; Buchwald B; Wen Y and Henderson JA. Epidemiology of Physical Activity in American Indians in the Education and Research Towards Health Cohort. *Am J Prev Med.* 37(6): 488–494, 2009.
20. Edwards K, and Patchell B. State of the Science: A Cultural View of Native Americans and Diabetes Prevention. *J Cult Divers.* 16(1): 32–35, 2009.
21. Egede LE, Zheng D. Independent factors associated with Major Depressive Disorder in a national sample of individuals with diabetes. *Diabetes Care.* 26: 104-111, 2003
22. Franz M, Powers A, Leontos C, et al. (2010). The evidence for medical nutrition therapy for type 1 and type 2 diabetes in adults. *Journal of American Dietetic Association*, 10, 1852-1889.
23. Gofin J; & Gofin R. *Essentials of global community health.* Jones & Bartlett Learning. 2010.

24. Hegele RA; Bartlett LC. Genetics, environment and Type 2 Diabetes in the Ojibwe population of northern Ontario, Can. J. Diabetes 27 (3) 256–261, 2003.
25. <https://www.ncbi.nlm.nih.gov/pubmed/24567193>
26. Hu FB; Manson JE; Stampfer MJ; Colditz G; Liu S; Solomon CG. Diet, lifestyle, and the risk of type 2 diabetes mellitus in women. N Engl J Med 345:790–797, 2001.
27. Human Services Office of Minority Health, OMH, Link:
<https://minorityhealth.hhs.gov/omh/browse.aspx?lvl=3&lvlid=62>
28. Indian Health Diabetes Best Practice Diabetes Prevention, 2011. Link:
https://www.ihs.gov/MedicalPrograms/Diabetes/HomeDocs/Tools/BestPractices/2011_BP_DiabPrev_508c.pdf
29. Indian Health Service Division of Diabetes Treatment and Prevention: Fact sheets. Link:
<http://www.ihs.gov/MedicalPrograms/Diabetes/index.cfm?module=resourcesFactSheets>
30. Indian Health Service. Indian Health Diabetes Best Practices: Audit Weight Management and Diabetes. 2006. Link:
<http://www.ihs.gov/MedicalPrograms/Diabetes/Index.cfm?module=toolsBestPractices>
31. Indian Health Service. Trends in Indian Health, 1998--1999. Rockville, Maryland: U.S. Department of Health and Human Services, 2000.
<http://www.ihs.gov/publicinfo/publications/trends98/trends98.asp>.
32. Kark SL; Kark E. An alternative strategy in community health care: community-oriented primary health care. Isr J Med Sci. 9:707–713, 1983.
33. Keoke ED; and Porterfield KM. American Indian Contributions to the World: Fifteen Thousand Years of Inventions. Checkmark Books; 2003.
34. Kirk A, et al. Application of the transtheoretical model to physical activity in older adults with type 2 diabetes and/or cardiovascular disease. Psychology of Sport & Exercise 2010;11(4): 320–4
35. Lancet. 1971 Jul 17; 2(7716):125-8. [PubMed]
<https://www.hrsa.gov/about/organization/bureaus/ohe/population/aian/html/>

36. Mak DB; Whitehead S; and Plant AJ, So far and yet so close: quality of management of diabetes in Australian and Canadian Indigenous communities, *Aust. J. Rural Health* 12 (5)206–209, 2004.
37. Mayo.org /link: <https://www.mayoclinic.org/diseases-conditions/diabetes/expert-answers/diabetes-and-depression/faq-20057904>
38. McCage S; Albanese-O'Neill A; Everette TD. The Special Diabetes Program: past success, future promise. *Clinical Diabetes*. 31:142–144, 2013.
39. McLaughlin, S, BS, RD, CDE. Traditions and Diabetes Prevention: A healthy path for Native Americans. *Diabetes Spectrum* 23(4): 272-277, 2010.
<http://spectrum.diabetesjournals.org/content/23/4/272>
40. Nebraska DHHS Office of Health Disparities and Health Equity. *Nebraska Health Disparities Report: Health Equity for all Nebraskans*, September 2015, Lincoln, Nebraska. Available at:
<http://dhhs.ne.gov/publichealth/Documents/Nebraska%20Health%20Disparities%20Report%20Final.pdf>
41. Neel VJ. The thrifty genotype revisited, in: *The Genetics of Diabetes Mellitus*, Academy Press, 1985.
42. NUIHC, Link <http://www.nuihc.com/>
43. Prediabetes and diabetes chart, Adapted from the American Diabetes Association. Standards of medical care in diabetes. *Diabetes Care*. 39 (suppl 1): S1-S112, 2016.
44. Prevent Diabetes, a proven program to prevent or delay type 2 diabetes, Lifestyle Coach Training Guide: Shop and Cook to Prevent T2, Link available.
https://www.cdc.gov/diabetes/prevention/pdf/t2/Coach-Module-8_Shop_and_Cook_to_Prevent_T2.pdf
45. Prevent Diabetes, a proven program to prevent or delay type 2 diabetes, Lifestyle Coach Training Guide: Shop and Cook to Prevent T2, Link available.
https://www.cdc.gov/diabetes/prevention/pdf/t2/Coach-Module-8_Shop_and_Cook_to_Prevent_T2.pdf
46. Rick R, Hoye RE, thron RW, and Kumar V. Marketplace Clinics Complementing Diabetes Care for Urban Residing American Indians. *J Prim Care Community Health*. 8(4):198-205. 2017.

47. Saydah, S, and Lochner, K. Socioeconomic Status and Risk of Diabetes-Related Mortality in the U.S. Public Health Rep. 125(3): 377-388. 2010.
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2848262/>
-
48. Shah BR; Gunraj N; and Hux JE. Markers of access to and quality of primary care for aboriginal people in Ontario, Canada, Am. J. Public Health 93 (5)798–802. 2003.
49. Shultz LO, Bennett PH, Ravussin E, et al. Effects of traditional and western environments on prevalence of type 2 diabetes in Pima Indians in Mexico and the U.S. Diabetes Care. 29(8):1866-1871, 2006.
50. Special Diabetes Programs for Indians (SDPI). (IHSDD, 2010).
51. U.S. Census Bureau, 2009-2011 American Community Survey, 3 Year Estimates. NE American Indian and Alaska Native Socioeconomic Profile, 2013. <http://dhhs.ne.gov/publichealth/Documents/7-%20AIAN%20%20Socio.pdf>
52. U.S. Center for Health Statistics, Death Certificates, 2010-2014.
53. Urban Diabetes Care & Outcomes Summary Report. Audit Years 2013-2017. 2017 Diabetes Audit. Link. http://www.uihi.org/wp-content/uploads/2018/10/DM_Aggregate_Final.pdf
54. Urban Indian Health Institute, Seattle Indian Health Board. (2012). Addressing Depression Among American Indians and Alaska Natives: A Literature Review. Seattle, WA: Urban Indian Health Institute. http://www.uihi.org/wp-content/uploads/2012/08/Depression-Environmental-Scan_All-Sections_2012-08-21_ES_FINAL.pdf
55. Urban Indian Health Institute, Urban Diabetes Care and Outcomes Audit Report: 2007-2011. 2008). Link: http://www.uihi.org/wp-content/uploads/2017/08/2011-Aggregate-Diabetes-Audit-Report_Final.pdf
56. USDHHS, Fact Sheets, <https://www.ihs.gov/newsroom/factsheets/disparities/>
57. Whittermore, R, D'Eramo Melkus G, Sullivan A, and Grey M. The diabetes Education. A Nurse-Coaching Intervention for Women With Type 2 diabetes. 2004.
-