HEDA

(HEALTH EQUITY DATA ANALYSIS REPORT)

June 2018

Chisago County

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Chisago County

Public Health
Prevent. Promote. Protect.

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statewide health improvement partnership

Chisago County HEDA Report

> Assessment with a health equity perspective identifies health status and trends, but it also indicates where health differences that are the result of differences in the opportunity for health exist between population groups. This adjustment in the assessment process can disclose health differences between population groups that are addressed through changes in policy, programs, or practices (WHO, 2013).

WHAT IS HEALTH EQUITY?

"Health equity is a state of affairs where everyone has what they need to be healthy and no one is prevented from being as healthy as they can be by unjust or unfair barriers. We can only achieve health equity when all children get a loving and healthy start; when we can all get a good education and good jobs; when we can all take part in the decisions that shape our communities; and when we all have good living conditions. When some of our populations are not as healthy as they could be, it is typically because of inequities in these conditions. Inequities in health outcomes can only be eliminated when each of us has the opportunity to realize our health potential – the highest level of health possible for us – without limits imposed by structural inequities." - *Minnesota Statewide Health Assessment, 2017*

PURPOSE

The HEDA was conducted as part of the Minnesota Department of Health's (MDH's) Health Equity Data Analysis project through the Statewide Health Improvement Partnership (SHIP). This project assists in better understanding the causes and conditions of health inequity throughout Minnesota. The HEDA process includes five steps: *Population, Connection, Differences, Conditions and Causes*. For this HEDA project, Chisago County looked at the root causes of Type 2 diabetes in men with a lower level of completed education based on a comprehensive analysis of quantitative and qualitative data.

Population

What populations are likely to experience health inequities in Chisago County?

Connection

What is the connection between social determinants of health and the health outcomes/behaviors of the selected population?

Conditions & Causes

What are the conditions and causes of dissimilarities in living and working experiences that have created differences between population groups?

Differences

What are the differences in health outcomes or health behaviors between population groups in Chisago County?

METHODOLOGY

Quantitative

A two-stage sampling strategy was used for obtaining probability samples of adults living in Chisago County. Address-based sampling was used so that all households would have an equal chance of being sampled for the survey. For the second stage of sampling, the "most recent birthday" method of within-household respondent selection was used to specify one adult from each selected household to complete the survey. Completed surveys were received from 641 adult residents of Chisago County; thus, the overall response rate was 26.7% (641/2400).

Qualitative

- Key informant Interview- Lead Diabetes Education Specialist with a large healthcare organization
- Group Discussion- 5 staff members with Emergency Medical Services
- Focus Group- 8 male participants with Type 2 diabetes

CHISAGO COUNTY DEMOGRAPHICS

Category		County Actual
Gender		
	Male	51.8%
	Female	48.2%
Age Group		
	18-34	25.6%
	35-44	17.6%
	45-54	22.3%
	55-64	17.0%
	65-74	10.3%
	75+	7.2%
Race		
	White	95.6%
	Of Color	4.4%
Education		
	Less than HS	7.4%
	HS grad/GED	34.9%
	Trade school	11.1%
	Some college	15.7%
	Associate's degree	10.6%
	Bachelor's degree	14.5%
	Grad/professional degree	5.8%
Annual household Income		
	<$20,000	5.0%
	$20,000-$34,999	9.2%
	$35,000-$49,999	13.9%
	$50,000-$74,999	23.2%
	$75,000-$99,999	18.2%
	$100,000+	30.4%
Employment status		
(These do not add up to 100% because respondents could choose more than one status)	Employed	63.4%
	Self-employed/farmer	5.0%
	Unemployed	0.7%
	Homemaker/stay at home parent	5.1%
	Student	7.4%
	Retired	20.4%
	Unable to work	4.0%

WHAT POPULATIONS ARE LIKELY TO EXPERIENCE HEALTH INEQUITIES IN CHISAGO COUNTY?

Our 2017 Chisago County Community Health Survey told us a lot about our community. Obesity, mental health, and chronic diseases had the most flagrant data. Through technical assistance with the Minnesota Department of Health (MDH) we were able to see a breakdown of these data by age, employment, income, BMI, education, and risk behaviors. Overall, a few statistics stood out most. Our data showed that 15.4 % of male respondents have been diagnosed with diabetes compared to 6.5% of female respondents. When these data were broken down further we can see by the charts below the certain demographics that are correlated with this population.

		Sex by Diabetes				
		Male, non-diabetic	Female, non-diabetic	Male, diabetic	Female, diabetic	Total
Income	<$20,000	1.2%	8.9%	0.0%	21.1%	5.1%
	$20,000-$34,999	4.0%	14.8%	7.6%	22.1%	9.5%
	$35,000-$49,999	13.6%	14.0%	3.8%	19.5%	13.2%
	$50,000-$74,999	25.2%	21.1%	33.1%	9.2%	23.6%
	$75,000-$99,999	19.7%	13.3%	40.5%	10.1%	18.2%
	$100,000+	36.3%	27.8%	15.1%	17.9%	30.5%
Total		100.0%	100.0%	100.0%	100.0%	100.0%

		Sex by Diabetes				
		Male, non-diabetic	Female, non-diabetic	Male, diabetic	Female, diabetic	Total
Any employment	Yes	68.0%	69.4%	55.8%	31.3%	66.6%
	No	32.0%	30.6%	44.2%	68.7%	33.4%
Total		100.0%	100.0%	100.0%	100.0%	100.0%

		Sex by Diabetes				
		Male, non-diabetic	Female, non-diabetic	Male, diabetic	Female, diabetic	Total
Retired	Yes	17.5%	17.7%	46.3%	47.0%	20.8%
	No	82.5%	82.3%	53.7%	53.0%	79.2%
Total		100.0%	100.0%	100.0%	100.0%	100.0%

WHAT ARE THE DIFFERENCES IN HEALTH OUTCOMES OR HEALTH BEHAVIORS BETWEEN POPULATION GROUPS IN CHISAGO COUNTY?

When comparing lower educated to higher educated, across almost all statistics the numbers were vastly different. Specifically, when comparing men with diabetes from our 2017 community health survey data. From the lowest educated (less than a High School degree) at 40.5%, and 30.3% of men with a high school graduate degree. Compare that to 1.4% of men with the highest education (graduate or professional degree) that have diabetes. These results show a major gap with education among males with diabetes.

		Sex by Diabetes				
		Male, non-diabetic	Female, non-diabetic	Male, diabetic	Female, diabetic	Total
Education	Less than H.S.	5.4%	4.4%	40.5%	0.0%	7.7%
	H.S. Graduate	29.5%	40.3%	30.3%	47.3%	34.9%
	Some College/Voc./Assoc. Degree	42.0%	35.5%	20.9%	36.5%	37.3%
	College Graduate	17.7%	13.0%	7.0%	12.4%	14.6%
	Graduate/Professional Degree	5.3%	6.7%	1.4%	3.9%	5.6%
Total		100.0%	100.0%	100.0%	100.0%	100.0%

WHAT IS THE CONNECTION BETWEEN SOCIAL DETERMINANTS OF HEALTH AND THE HEALTH OUTCOMES/BEHAVIORS OF THE SELECTED POPULATION?

More than 100 million U.S. adults are now living with diabetes or prediabetes according to the Centers for Disease Control and Prevention. Diabetes is a serious disease that can often be managed through physical activity, diet, and the appropriate use of insulin and other medications to control blood sugar levels (CDC, 2017). As many as 2 out of 5 Americans are expected to develop Type 2 diabetes in their lifetime. Over half of new diagnosed diabetes cases were in adults 45-64 years old. Nearly 16% of adults diagnosed with diabetes were smokers, nearly 90% were overweight, and more than 40% were physically inactive. According to the Minnesota Department of Health, over 300,000 Minnesota adults have diabetes. As many as 1 in 3 Minnesotans have pre-diabetes, meaning their blood glucose is higher than normal and they are at a greater risk of developing diabetes. Nine in ten people with pre-diabetes don't know they have it, and don't know there is something they can do about it. As many as 1 in 4 Minnesotans with diabetes don't know they have diabetes. This could mean they are not working with healthcare providers to get their diseases under control. Having diabetes under control means there is a lower risk of developing health problems like heart and kidney disease.

When looking at a deeper approach to the relationship between Type 2 diabetes and social determents of health, a study found that socioeconomic and psychological social determinants of health were associated with glycemic control through a direct association and through the mediators/moderators of self-care, access to care and processes of care (Walker, 2014).

Variables like employment and income showed significant associations, such that less hours worked were associated with a lower HbA1c and higher income was associated with higher access and lower processes of care. This study validates the importance of considering social determinants of health in patients with diabetes and the need for clinicians to consider these factors during care (Walker, 2014)

A meta-analysis found that individuals with higher levels of education are more likely to participate in preventive healthcare including eating healthier (foods), being more physically active, and avoiding obesity. Cultural tailoring of education in group settings may afford the means to increase patients' knowledge of the disease for earlier diagnosis and earlier intervention to prevent diabetes complications (Clark & Utz, 2014). The charts below reflect the some of the lifestyle characteristics of men in Chisago County diagnosed with Type 2 diabetes.

		Sex by Diabetes				
		Male, non-diabetic	Female, non-diabetic	Male, diabetic	Female, diabetic	Total
Weight status according to BMI	Not overweight	17.9%	34.1%	5.8%	.5%	23.4%
	Overweight but not obese	53.9%	35.6%	27.3%	28.0%	43.2%
	Obese	28.2%	30.2%	66.9%	71.5%	33.4%
Total		100.0%	100.0%	100.0%	100.0%	100.0%

		Sex by Diabetes				
		Male, non-diabetic	Female, non-diabetic	Male, diabetic	Female, diabetic	Total
Number of fruits and vegetables yesterday	0 servings	1.2%	3.3%	37.1%	7.9%	5.1%
	1-2 servings	35.4%	22.9%	24.7%	19.2%	28.6%
	3-4 servings	21.6%	23.3%	24.2%	34.3%	22.9%
	5 or more servings	41.9%	50.5%	14.0%	38.6%	43.4%
Total		100.0%	100.0%	100.0%	100.0%	100.0%

		Sex by Diabetes				
		Male, non-diabetic	Female, non-diabetic	Male, diabetic	Female, diabetic	Total
Smoking status	Current smoker	7.3%	20.0%	45.5%	9.6%	16.1%
	Former smoker	31.4%	26.6%	30.4%	36.5%	29.4%
	Never smoked	61.3%	53.4%	24.1%	53.8%	54.5%
Total		100.0%	100.0%	100.0%	100.0%	100.0%

		Sex by Diabetes				
		Male, non-diabetic	Female, non-diabetic	Male, diabetic	Female, diabetic	Total
Any alcohol drinking in past 30 days	No drinking	23.9%	37.4%	17.8%	37.5%	29.8%
	Any drinking	76.1%	62.6%	82.2%	62.5%	70.2%
Total		100.0%	100.0%	100.0%	100.0%	100.0%

WHAT ARE THE CONDITIONS AND CAUSES OF DISSIMILARITIES IN LIVING AND WORKING EXPERIENCES THAT HAVE CREATED DIFFERENCES BETWEEN POPULATION GROUPS?

Chisago County utilized a mixed methods approach to collect qualitative data which included a key informant interview, a brainstorming session with external partners, and a focus group with the target population. For our key-informant interview we spoke with a Diabetes Education Specialist at a large healthcare organization. Our intention was to get more detail on the 'cycle of service' when it comes to the process of patients first getting diagnosed with Type 2 diabetes to doing self-management. We also spoke with a group from Emergency Medical Services about what their care looks like when it comes to diabetic patients. We also had discussions around future programming that would assist people in better managing their diabetes. Lastly, we wanted to hear from the target population themselves about their Type 2 diabetes and what those in their community can do to make it easier for them to manage their diabetes.

Based on our 2017 Chisago County Community Health Survey Data we can see multiple characteristics of this male population with diabetes. We can generally say, that three-fourths of these men with diabetes have a HS graduate degree or less, and are between the ages of 35-44 or 55-74. They are working class (55.8%) or retired (46.3%), and make an average household income of $50,000- $99,000. They are generally overweight (27.3%) or obese (66.9%), and over half of the men eat less than 3 servings a day of fruits and vegetables daily. So why do these men have twice the rate of Type 2 diabetes than their counterparts? What makes these demographic characteristics more prone to being diagnosed with Type 2 diabetes?

When participants were asked "What are some reasons that you think might make it more difficult for some people to manage their diabetes than others?" Participants said, "Its unpredictable, some people just give up more than others [when it comes to trying to manage their diabetes]." Living with Type 2 diabetes isn't properly managed in one simple step. To live with diabetes means coping with stress, eating well, being active, taking medications, talking with their healthcare team, and being proactive in educating themselves on the disease. Education plays a huge role in how to help manage diabetes. Education on what to eat, how to prepare the food, how much to eat; all participants agreed that is one of the biggest challenges they face when it comes to being in control of their diabetes. Many of these factors can be contributed to the rigorous working conditions, such as overnight shifts or factory work for many years that have caused numerous amounts of stress, which research and participants say is a huge factor to their health issues. A new study from British and American researchers, found that more often people who worked night shifts were more likely to have diabetes. Compared to daytime workers, people who occasionally worked night shifts were 15% more likely to have diabetes; those who rotated shifts with some night work were 18% more likely; and those who worked irregular shifts with frequent night shifts were 44% more likely to have Type 2 diabetes (Vetter, Dashti, Lane, et al., 2018)

Participants of the focus group shared personal stories of when and how they were diagnosed with Type 2 diabetes. Many of the men mentioned their parents or grandparents had the disease so they were not surprised when they were diagnosed. According to the Ali (2013), the development of Type 2 diabetes is the result of interaction between environmental factors and a strong hereditary component. Environmental factors include obesity, sedentary lifestyle, nutrition, stress and small or large birth weight. These factors play a major role in the development of Type 2 diabetes but can impact everyone in many different ways. "Even with the same environmental exposures, some people are more susceptible to developing diabetes than others, and this increased risk appears to be inherited." "Estimates for the heritability of Type 2 diabetes range from 20%-80%. The lifetime risk of developing Type 2 diabetes is 40% for individuals who have one parent with Type 2 diabetes and 70% if both parents are affected (Ali, 2013)." Does this mean that some of these men were bound to get Type 2 diabetes regardless of their lifestyle choices? Not necessarily. "Several studies have found that a risk score based on traditional risk factors (BMI, family history, age, sex, HDL, triglycerides, etc.) consistently outperforms any set of genetic markers and the addition of known genetic markers does not significantly improve prediction based on traditional risk factors (Ali, 2013)."

Are there other factors that could be contributing to the high rates of Type 2 diabetes in men living in Chisago County besides their education, lifestyle choices, and genetics? Of course! When asked "What are the barriers that make it difficult to access diabetes care?" Participants mentioned inconvenience, cost and transportation. Living in a somewhat rural area of Minnesota, residents often face barriers to access quality health care. With poor (or nonexistent) public transportation, fewer healthcare providers and/or poor insurance coverage it can be difficult for anyone to afford the costs of managing diabetes with medications. It's been said that even if healthcare was free or fully funded by insurance, patients would still have to spend more money on healthy food, home glucose monitoring kits, and transport to and from healthcare appointments. According to the American Diabetes Association, lack of health care coverage is associated with poor glycemic control. In addition, low use of health care services is associated with poor glucose and blood pressure control (Zhang, Bullard, Gregg, et al., 2012).

The causes of their condition can be multi-faceted. A common theme across the focus group discussion and the key informant interview is education, specifically nutrition education, and income due to the costs associated with having Type 2 diabetes. It takes a team care approach to effectively help people cope with the vast array of complications that can arise from diabetes. Physicians, Diabetes Educators, family, friends, and the patient themselves all play a significant role in patient satisfaction with care, better quality of life, improved health outcomes, and ultimately, lower health care costs.

Voices of Men with Diabetes (Focus Group)

CONCLUSION

When analyzing these data that were collected, we can strongly say that health education and health behaviors play major roles in managing Type 2 diabetes. Changing health behaviors of individuals can seem like a big ask. It is very difficult for individuals to do it on their own, but when external factors make it easy, than it becomes less of a choice to make those decisions we know are not good for our health. Here is an example:
"Individual preferences are often inconsistent over time, especially in situations where immediate pleasures carry long term consequences. In a study that asked [hypothetically] if people would prefer fruit or chocolate as a future snack, 74% chose fruit. But, when those same participants were presented with both fruit and chocolate in real-time, 70% selected chocolate (Read & Van Leeuwen, 1998)." Reflecting on Chisago County, the options residents have for eating out is very limited to restaurants that serve food that would not correlate well with a diet focused around managing Type 2 diabetes.

There is an expanding body of research that sheds light on the difficulties of healthy living when society is dominated by the marketing of unhealthy foods and unduly large portion sizes, and where sedentary behavior is often the default option (Stulberg, 2014). In the focus group the participants mentioned the struggle it is to control their portions when they were very used to eating a certain way before being diagnosed with Type 2 diabetes. There also seems to be a correlation with having a support system when it comes to men better managing there diabetes. The participants revealed the important roles significant others play in their life that help motivate them to eat better and move more regularly. It was also mentioned that diabetes educators are very helpful resources to have and keep the men on track with where they need to be when managing there diabetes. Participants noted the need for more diabetes educator's because the demand for them is so high, and it can take a long time to get an appointment. Traditionally, the ability to achieve total good health has been dependent on an individual's willingness to implement change in his or her everyday life. If we want to avert a public health crisis at the hands of chronic lifestyle-driven diseases, we need not only focus on changing individual behaviors, but also on changing the environments that give rise to those behaviors. We must look at ways to intentionally shape environments that promote healthy behaviors.

In conclusion, for primary prevention of diabetes complications to be effective, patients must have access to quality medical care, the means to pay for services (either through insurance or self-pay), and the knowledge and skills to manage their diabetes on a day-to-day basis. Because access and self-care are critical contributors to outcomes in patients with diabetes, socioeconomic mediators (education and/or income) do play a significant role in these processes.

Resources

Ali, O. (2013). Genetics of Type 2 diabetes. *World Journal of Diabetes*, *4*(4), 114-123. http://doi.org/10.4239/wjd.v4.i4.114

Clark, Myra L, and Sharon W Utz. *World Journal of Diabetes*, Baishideng Publishing Group Inc, 15 June 2014, www.ncbi.nlm.nih.gov/pmc/articles/PMC4058734/.

Minnesota Department of Health (MDH, 2013)

Read, D., & Van Leeuwen, B. Predicting hunger: the effects of appetite and delay on choice. *Organizational Behavior and Human Decision Processes*. 1998; 76 (2), 189-205.

Stulberg, B. The Key to Changing Individual Behaviors: Change the Environments that Give Rise to Them. *Harvard Public Health Review*. (2014).

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Vetter, C., Dashti, H. S., Lane, J. M., Anderson, S. G., Schernhammer, E. S., Rutter, M. K., . . . Scheer, F. A. (2018). Night Shift Work, Genetic Risk, and Type 2 Diabetes in the UK Biobank. *Diabetes Care, 41*(4), 762-769. doi:10.2337/dc17-1933

Walker, Rebekah J, et al. "Relationship between social determinants of health and processes and outcomes in adults with Type 2 diabetes: validation of a conceptual framework." *BMC Endocrine Disorders, BioMed Central*, 9 Oct. 2014, bmcendocrdisord.biomedcentral.com/articles/10.1186/1472-6823-14-82.

WHO (2013). Handbook on health inequality monitoring: with a special focus on low-and middle-income countries.Geneva: *World Health Organization*. Retrieved from: www.who.int

Zhang, X., Bullard, K. M., Gregg, E. W., Beckles, G. L., Williams, D. E., Barker, L. E., … Imperatore, G. (2012). Access to Health Care and Control of ABCs of Diabetes. *Diabetes Care*, 35(7), 1566-1571. http://doi.org/10.2337/dc12-0081

APPENDICES

A. Focus group script and questions

Introduction:

Hello, my name is _____, and I work for Chisago County Public Health and will be facilitating this group discussion.

We would like to keep this as an informal discussion / conversation. There are no "wrong" answers during the discussion – just sharing.

This focus group will give us valuable and detailed insight into what you have experienced in dealing with your diabetes diagnosis, and give us ideas from the patient perspective about how we can reduce the rate of diabetes and other health problems in our County going forward to improve population health.

Informed Consent and Confidentiality:

Attending this focus group discussion is completely voluntary. You do not need to answer any questions that you do not want to answer. It will last about 90 minutes. If you decide you need to leave before the focus group is over, you are free to do so without giving any reason. Gas cards will be given out at the end of the focus group discussion.

All of the comments today will be summarized so that individual comments cannot be identified. All of your comments are strictly confidential. Only first names will be used. We are recording the discussion simply to help with note taking and summarizing themes later. Staff will also be taking notes throughout the discussion. Only the researchers will have access to the notes and recording.

If you are comfortable with what I have shared and still would like to continue to participate, please say "yes."

Let's Get Started:

Chisago County Public Health has identified that in our county men are diagnosed with diabetes at more than twice the rate of women (15.4 vs. 6.5) and nearly twice as much as the national average compared to men in the whole country. (15.4 vs. 8.1).

The topic of this focus group is to help identify what may account for the higher rates of diabetes among men in our county.

Question 1: **What does "being healthy" mean to you?**

Question 2: **When you learned you had diabetes:**

a) **How old were you? How long have you had the disease?**
b) **How was it discovered (testing, illness?)**
c) **What was your initial reaction to that diagnosis?**

Question 3: **In your opinion, what does it mean for someone to be "in control" of their diabetes?**

Question 4: **Please describe challenges you have had in managing your diabetes (emotionally, physically or socially)?**

Question 5: **How did you find out about service options which may be available to you?**

Question 6: **What do you expect of health service providers in supporting your diabetes care?**

Question 7: **What tools/materials do you or would you utilize most to assist you in managing your diabetes?**

Question 8: **Some people are reluctant to access services, what do you think are the barriers that make it difficult to access diabetes care?**

Question 9: **What are some reasons that you think might make it more difficult for some people to manage their diabetes than others?**

Question 10: **Are there things that others can do for you that would help you manage your diabetes (family, doctors, friends, community, Public Health)?**

Question 11: **What and who motivates you the most to self-manage your diabetes effectively?**

Question 12: **If there was a perfect program or perfect thing that could greatly improve your health, what would that look like for you?**

If time permits (only ask if it is before 7:30 pm)
Question 13: **Did you come today to talk about anything else that you didn't have time to say?**

Thank you. We are very appreciative that you have taken the time to share your thoughts, knowledge, opinions and ideas. The information learned through research and community conversations like this will help us improve methods that impact improvements in individual and community health.

B. Focus Group Flyer

$50 Gas Card

For 90 Minute Focus Group

Men: Chisago County Public Health wants to hear from YOU!
This is your opportunity to tell us what you want or need in order to help you and others in our community manage their type 2 diabetes and other related health problems.

REQUIRMENTS:

- Must be Male
- Must have Type 2 Diabetes
- Must live in Chisago County
- Must be between the ages of 30-65

WHEN: Wednesday, April 4th, 2018 from 6:00-7:30 p.m.

WHERE: Chisago Lakes Area Library (conference room)
11754 302nd Street
Chisago City, MN 55013

Will Receive: $50 gas card for participation

Register: Email Colton Anderson at colton.anderson@chisagocounty.us or call (651)213-5232

Chisago County Public Health

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Diabetes Focus Group:
April 4, 6:00-7:00 pm
Chisago Lakes Area Library
colton.anderson@ chisagocounty.us
651-213-5232