The Implementation of a GLP-1 Conversion Algorithm to Decrease Patient A1C Levels and Improve Glycemic Compliance

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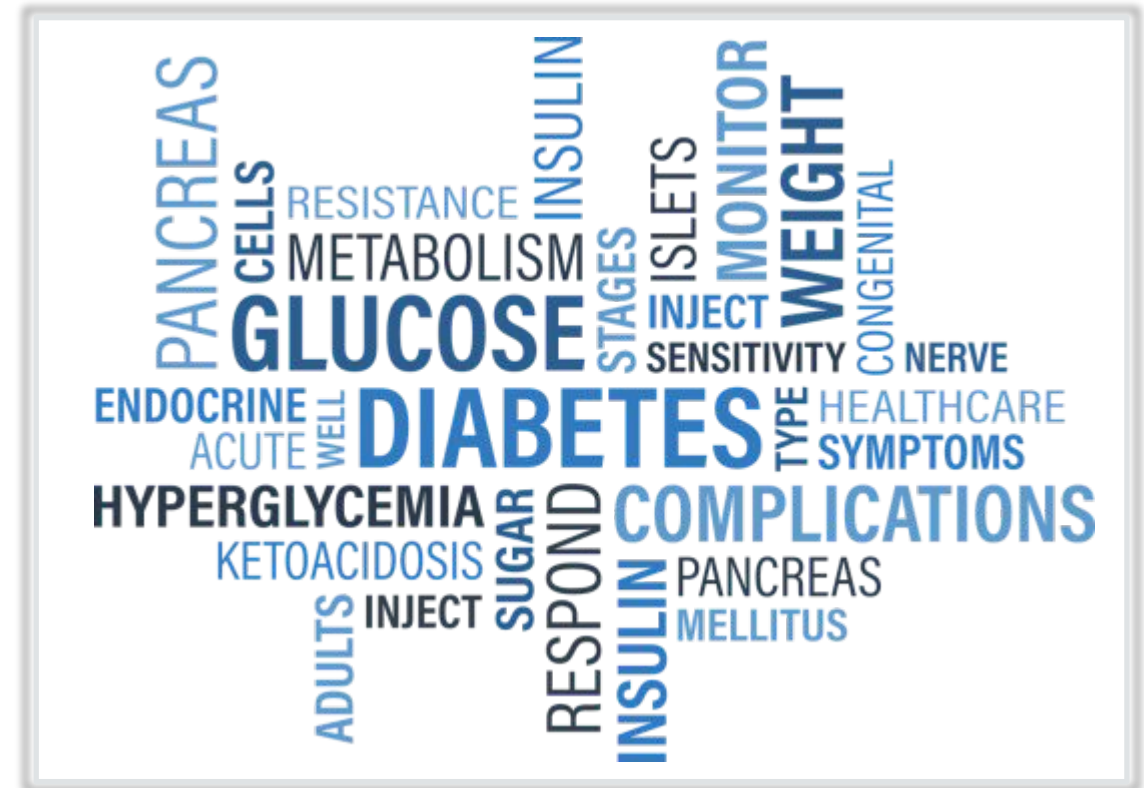
Acknowledgement Statement

- Dr. Kathleen Rindahl
- Dr. Marc Nielsen
- DNP L. Loe
- Dr. C. Carlton
- FNP C. Herman
- My family

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Background Information

- Diagnosis of diabetes

- Diagnosis of diabetes in the Native population

- Medications for the treatment of diabetes

- GLP-1 use

- Implementation of GLP-1 in Native Population

Problem Statement

Vertical dotted line indicates Major changes to the survey methods in 2019
Horizontal dotted line indicates "No Data", "Suppressed Data" or both.

- 2013 26 million Americans dx with T2D
- 2050 98 million will be dx with T2D
- 1997 SDPI created by Congress
- 2020 301 SDPI programs

Cultrual Prevalence

American Indian — Black — Asian — Hispanic — Caucasian
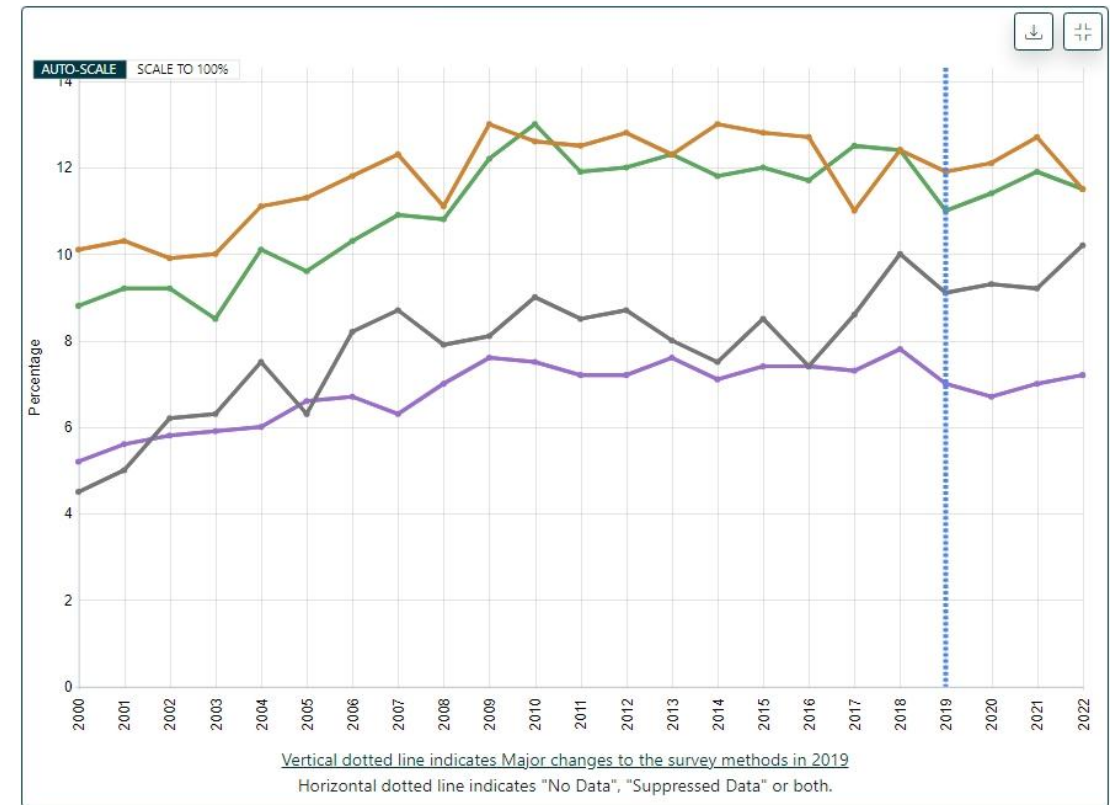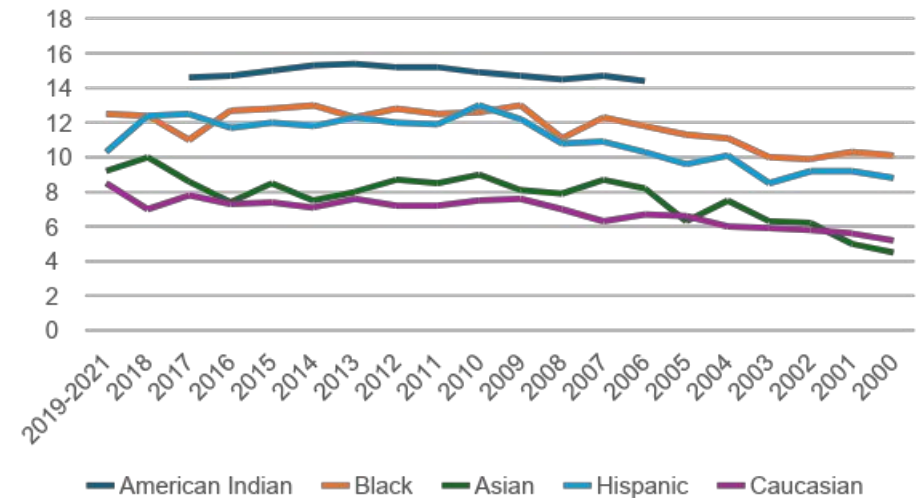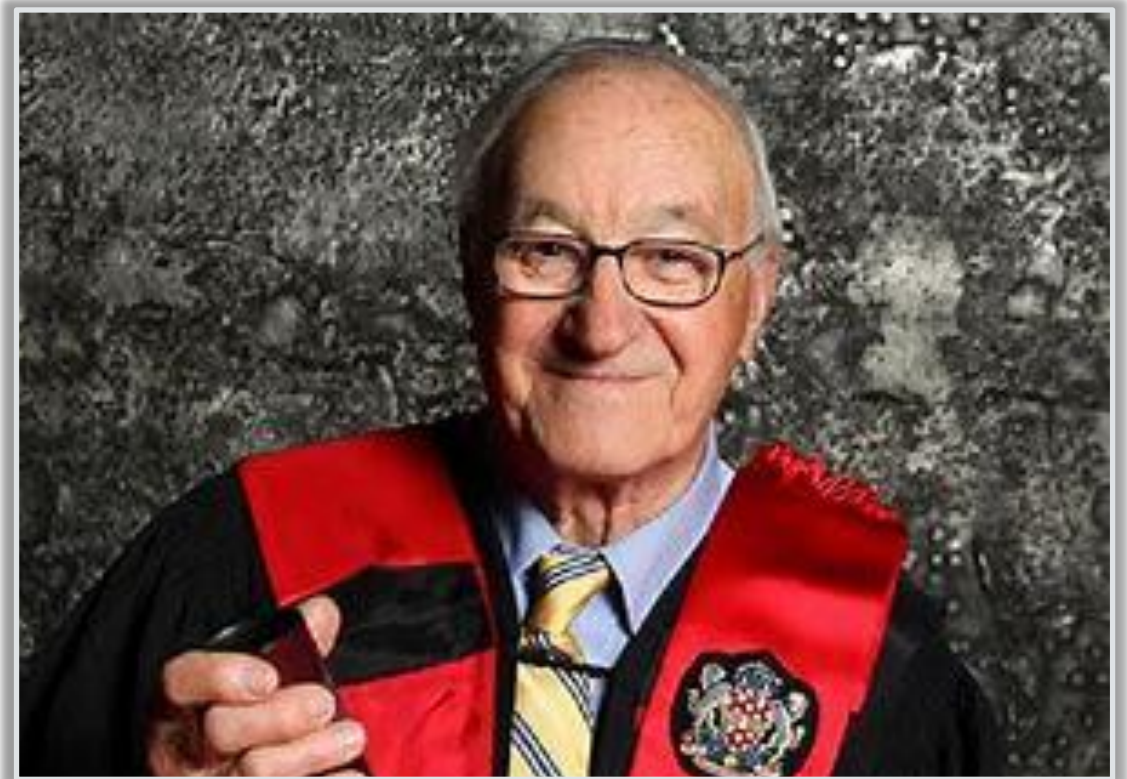
Purpose of the project

- American Natives and Alaskan Native populations are highly affected by T2D.
- They are faced with disparities regarding healthcare.
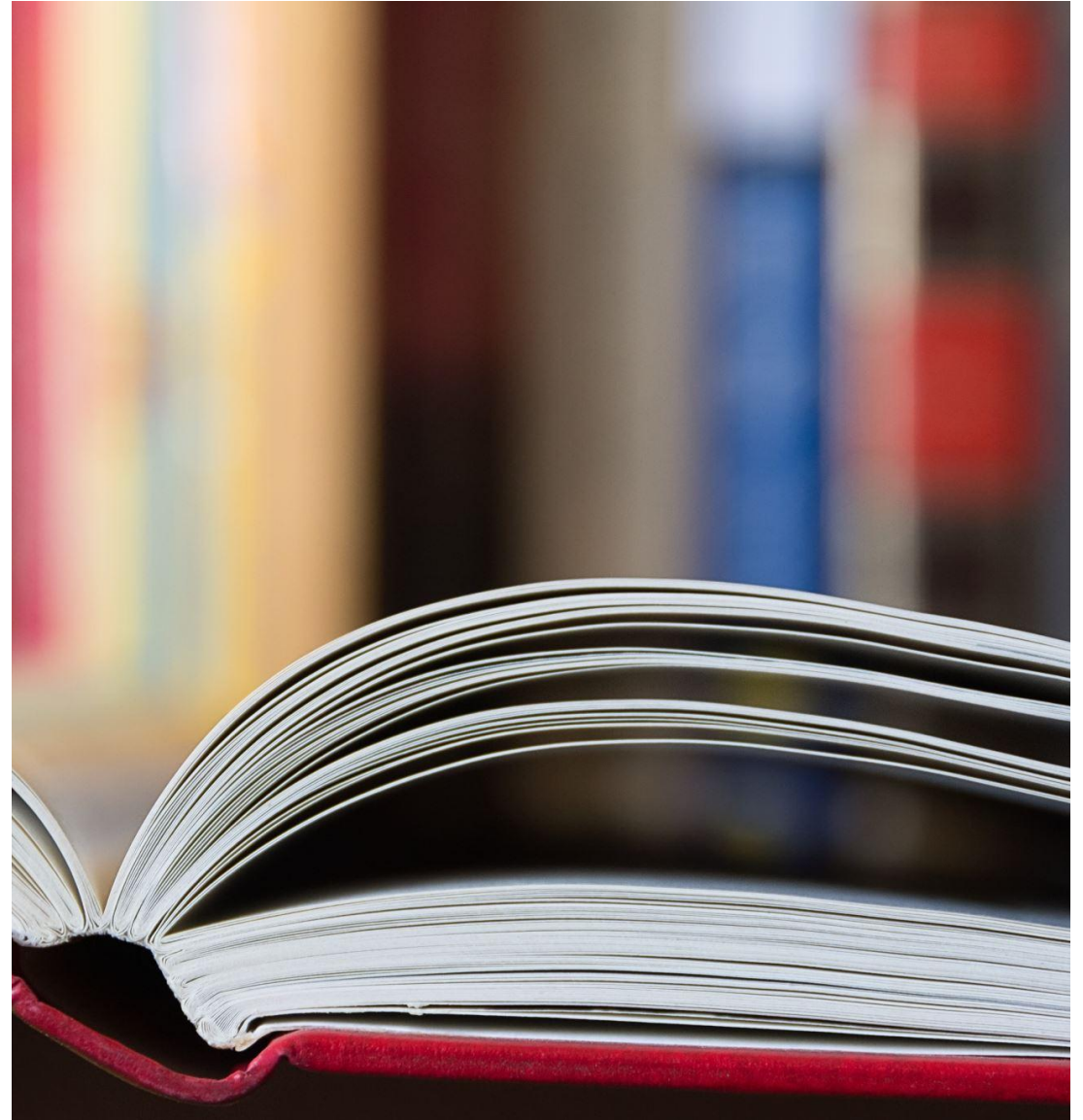
Theoretical Framework

- Albert Bandura
- Self-Regulating Theory

Review of the literature

- Is there a need for GLP-1 and natives
- Lifestyle modifications for diabetic treatments
- Medication treatment for natives.

Methods

- Subjects were Native Americans/Alaskan Natives with Diabetes

- SDPI audit sheet

- Retrospective chart review

- Assessing A1c at initial start of GLP-1, 3 month follow up and 6 month follow up.

IHS Audit 2023

- Each Patient had an Audit sheet completed
- Each Audit sheet was assessed for inclusion criteria.

IHS Diabetes Care and Outcomes Audit, 2023

NOTE: It is highly recommended that you review the Audit 2023 Instructions prior to conducting an Audit.

Audit Period Ending Date: _12_ / _31_ / _2022_

Facility Name: _____

Reviewer initials: _____

State of residence: ____ ____

Month/Year of Birth: _____/_____

Sex: ☐1 Male
☐2 Female
☐3 Unknown

Date of Diabetes Diagnosis: _____/_____/_____

DM Type: ☐1 Type 1
☐2 Type 2

Tobacco/Nicotine Use

Screened for tobacco use (during Audit period):
☐1 Yes
☐2 No

Tobacco use status (most recent):
☐1 Current user
☐2 Not a current user
☐3 Not documented

Tobacco cessation counseling/education received (during Audit period):
☐1 Yes
☐2 No

Electronic Nicotine Delivery Systems (ENDS)*

Screened for ENDS use (during Audit period):
☐1 Yes
☐2 No

ENDS use status (most recent):
☐1 Current user
☐2 Not a current user
☐3 Not documented

*ENDS include: vapes, vaporizers, vape pens, hookah pens, electronic cigarettes (e-cigarettes or e-cigs), and e-pipes.

Vital Statistics

Height (last ever): _____ ft _____ in

Weight (last in Audit period): _____ lbs

Hypertension (documented diagnosis ever):
☐1 Yes
☐2 No

Blood pressure (last 3 during Audit period):
_____/_____ mmHg
_____/_____ mmHg
_____/_____ mmHg

Examinations (during Audit period)

Foot (comprehensive or "complete", including evaluation of sensation and vascular status):
☐1 Yes
☐2 No

Eye (dilated exam or retinal imaging):
☐1 Yes
☐2 No

Dental:
☐1 Yes
☐2 No

Depression

Screened for depression (during Audit period):
☐1 Yes
☐2 No

Depression an active diagnosis (during Audit period):
☐1 Yes
☐2 No

Education (during Audit period)

Nutrition:
☐1 RD
☐2 Other } ☐3 Both RD and Other
☐4 None

Physical activity:
☐1 Yes
☐2 No

Other diabetes:
☐1 Yes
☐2 No

Diabetes Therapy

Select **all** prescribed (as of the end of the Audit period):
☐1 None of the following
☐2 Insulin
☐3 Metformin [Glucophage, others]
☐4 Sulfonylurea [glipizide, glyburide, glimepiride]
☐5 DPP-4 inhibitor [alogliptin (Nesina), linagliptin (Tradjenta), saxagliptin (Onglyza), sitagliptin (Januvia)]
☐6 GLP-1 receptor agonist [dulaglutide (Trulicity), exenatide (Byetta, Bydureon), liraglutide (Victoza, Saxenda), lixisenatide (Adlyxin), semaglutide (Ozempic, Rybelsus, Wegovy)]
☐7 SGLT-2 inhibitor [canagliflozin (Invokana), dapagliflozin (Farxiga), empagliflozin (Jardiance), ertugliflozin (Steglatro)]
☐8 Pioglitazone [Actos] or rosiglitazone [Avandia]
☐9 Tirzepatide [Mounjaro]
☐10 Acarbose [Precose] or miglitol [Glyset]
☐11 Repaglinide [Prandin] or nateglinide [Starlix]
☐12 Pramlintide [Symlin]
☐13 Bromocriptine [Cycloset]
☐14 Colesevelam [Welchol]

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Data Collection
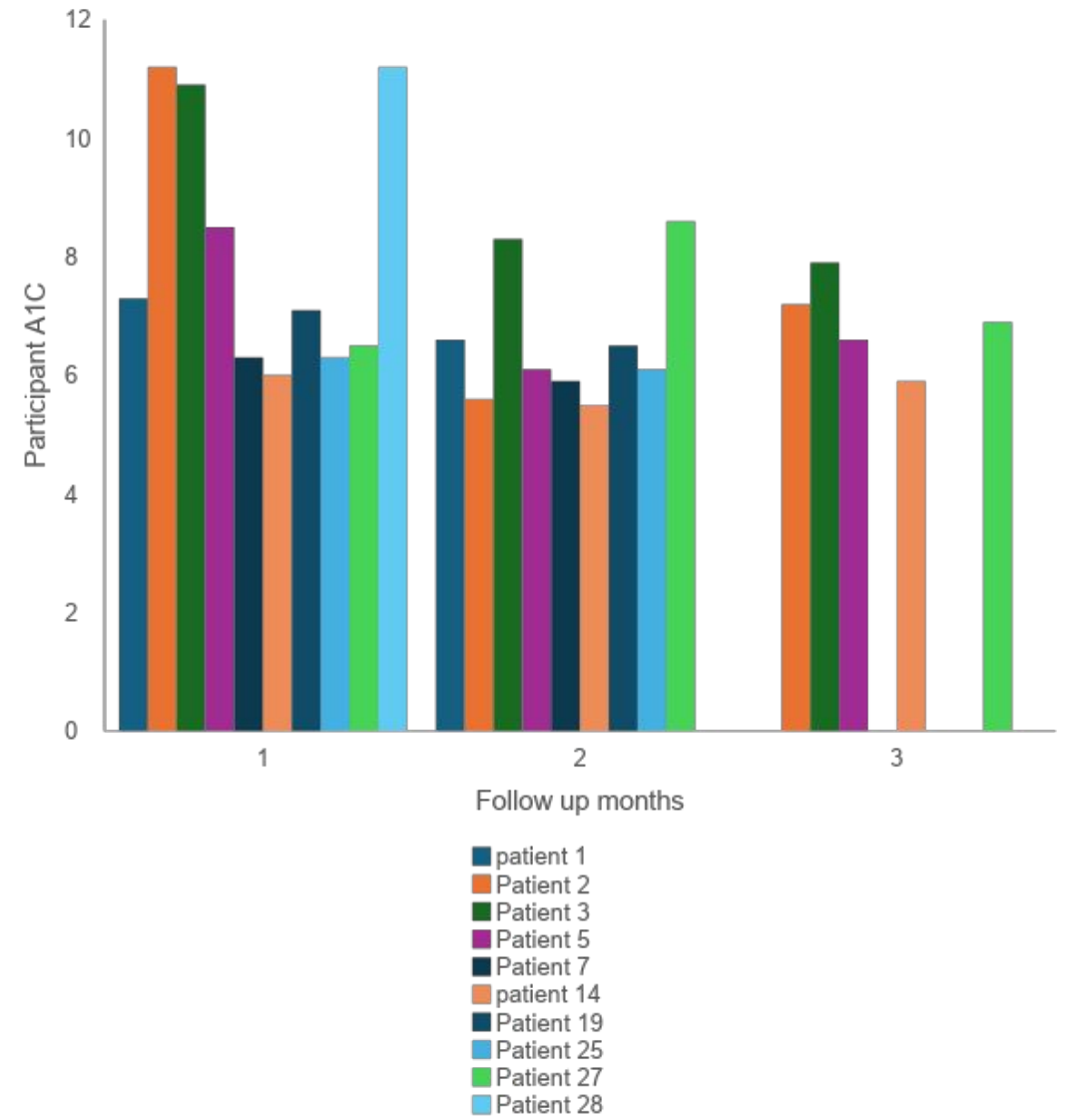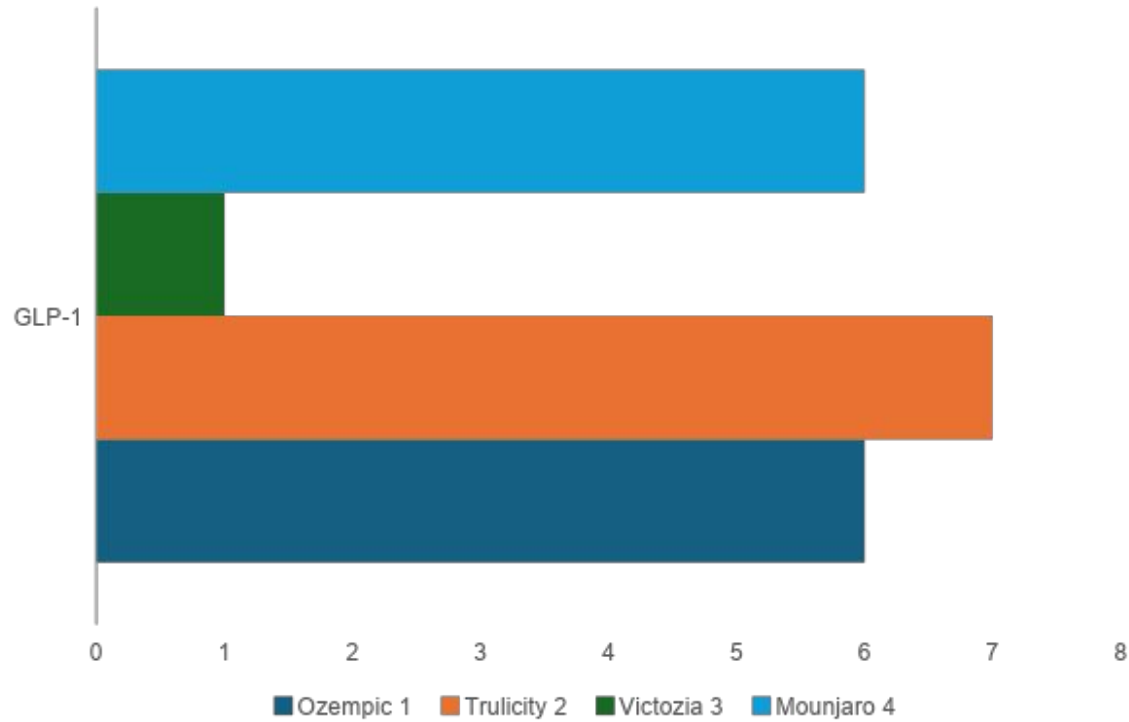
ANOVA results

- There is no significant difference between the patient's A1C started on the GLP-1 compared to their A1C at their 6 month follow up.

Anova: Single Factor						
SUMMARY						
Groups	Count	Sum	Average	Variance		
Column 1	10	81.3	8.13	4.70011		
Column 2	9	59.2	6.57778	1.26194		
Column 3	5	34.5	6.9	0.545		
ANOVA						
Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	12.3818	2	6.19089	2.38213	0.11685	3.4668
Within Groups	54.5766	21	2.59888			
Total	66.9583	23				

Discussion or Outcomes

Conclusions

- Education
- Access to Care
- Access to GLP-1
- More research
- Close the gap on disparities

Limitations

- Small sample size
- Limited follow-up by patients
- Consistency in taking GLP-1
- Cost and accessibility of getting a GLP-1
- Insurance coverage for GLP-1

What is next

- More research
- Increased research focusing on Native Americans and Alaskan Natives
- SDPI
- More research on GLP-1
- Increased access to quality healthcare for Native Americans and Alaskan Natives

References

- American Diabetes Association. (2022). Standards of care in diabetes-2023 abridged for primary care providers. Standards of Care. https://doi.org/10.2337.cd23-as01

- Bullock, A., Sheff, K., Hora, I., Burrows, N.R., Benoit, S.R., Saydah, S.H., Hardin, C.L., & Gregg, E.W. (2020). Prevalence of diagnosed diabetes in American Indian and Alaska Native adults, 2006-2017. BMJ Open Diabetes Research & Care 2020: 8: e001218. https://doi.org/10.1136/bmjdrc-2020-001218

- Drucker, D. J., Habener, J. F., & Holst, J. J. (2017). Discovery, characterization, and clinical development of the glucagon-like peptides. *Journal of Clinical Investigation*, *127*(12), 4217–4227. https://doi-org.hmlproxy.lib.csufresno.edu/10.1172/JCI97233

- Lamprea-Montealegre, J. A., Madden, E., Tummalapalli, S. L., Peralta, C., Neilands, T. B., Garcia, P. K., Muiru, A., Karliner, L., Shlipak, M. G., & Estrella, M. M. (2022). Association of Race and Ethnicity With Prescription of SGLT2 Inhibitors and GLP1 Receptor Agonists Among Patients With Type 2 Diabetes in the Veterans Health Administration System. *JAMA*, *328*(9), 861–871. https://doi.org/10.1001/jama.2022.13885

- Pratte, K.A., Johnson A., Beals, J., Bullock, A., Manson, S.M., Jiang, L., & Special Diabetes for Indians Diabetes Prevention Program. (2019). Regression to normal glucose regulation in American Indians and Alaska Natives of a diabetes prevention program. *Diabetes Care 2019, 42*: 1209-1216. https://doi.org/10.2337/dc18-1964

- Wehrman, G., Halton, M., Riveland, B., Potter, E., & Gaddy, M., (2022). Comparison of A1c reduction, weight loss, and changes in insulin requirements with addition of GLP-1 agonist vs SGLT-2 inhibitors in patients using multiple daily insulin injections. *Journal of Pharmacy Practice, 0*(0): 1-7. https://doi.org/10.1177/08971900221134174