

**Introduction**

- Nonalcoholic fatty liver disease (NAFLD) is one of the most common liver disorders.
- NAFLD involves a spectrum of liver diseases that starts with hepatic steatosis and progresses to inflammation known as nonalcoholic steatohepatitis (NASH) and ultimately over time, ends with cirrhosis or end stage liver disease.
- NASH is associated with increased morbidity and mortality with very limited treatment options and no FDA approved pharmacological therapy.

**Aim**

- We will shed some light on the impact of a multidisciplinary team approach including diet, lifestyle and the use of Glucagon Like Peptide-1 (GLP-1) agonists on liver enzymes and improving comorbidities.

**Methods**

- This is a retrospective study conducted at a large tertiary care center. Data were collected from May 2019 to December 2021.
- We included patients with NASH, with or without liver biopsies, who are diagnosed with Type 2 Diabetes Mellitus (DM).
- Patients were identified at first clinic follow up and at their 12 month follow up after initiation of therapy with GLP-1 agonist, mainly Liraglutide and Simaglutide for at least 6 months. Data on baseline characteristics and demographics were collected.

		First NASH	12-month	Difference (12 month – first NASH)	p-value
<b>BMI</b>	N	28	28	28	0.2375
	Mean (s.d.)	39.78 (8.94)	38.25 (8.30)	-1.53 (6.71)	
	Median (IQR)	40.00 [33.50, 46.50]	37 [34.00, 43.00]	-1.50 [-4.50, 1.00]	
<b>A1C</b>	N	28	28	28	<b>&lt;0.0001</b>
	Mean (S.D.)	7.81 (1.19)	6.72 (0.77)	-1.09 (0.95)	
	Median (IQR)	7.70 [6.85, 8.10]	6.70 [6.20, 7.05]	-0.90 [1.55, -0.30]	

**Table 1. First NASH clinic visit versus 12-Month visit.**

**Table 2. Subgroup analysis in patients with 5% weight loss.**

Variable	5% Weight Loss	Descriptive Statistics	First NASH	12-Month	Difference (12mo - first)	P-Value
<b>A1C</b>	Yes	N	13	13	13	<b>0.0002</b>
		Missing	0	0	0	
		Mean (S.D.)	7.55 (0.93)	6.46 (0.69)	-1.09 (0.89)	
		Median [Q1, Q3]	7.2 [6.8, 8.1]	6.6 [6, 6.8]	-0.9 [-1.7, -0.2]	

**Results**

- Our study included a total of 28 patients with NASH cirrhosis, only 6 with biopsy proven NASH.
- Our patient population had a mean body weight of 115kgs with a mean BMI of 39.78 kg/m<sup>2</sup> at first clinic follow up compared to a mean BMI of 38.25 at the 1 year follow up.
- All patients followed up with a NASH clinic dietician and were complaint with GLP-1 therapy for at least 6 consecutive months.
- Patients had a statistically significant (p< 0.0001) reduction in A1c (Table 1). All other laboratory values were not statistically significant.
- Simaglutide and Liraglutide were compared and there was also no statistical significance associated with the use of either.
- We performed Subgroup analysis (Table 2) to compare lab values between patients who met 5% weight loss according to BMI and those who did not at 1 year follow up, A1c was again statistically significant among both groups with P< 0.05.

**Discussion**

- Recent studies have indicated that central obesity and insulin resistance are the major factors leading to the development of NASH.
- NASH treatment is believed to be multimodal similar to what was applied at our institution, including a combination of lifestyle adjustments and drug therapy for all associated chronic illnesses and comorbidities.
- Glucagon-like peptide-1 (GLP-1) receptor agonists lead to improvement in A1C, which can impact both DM and NASH. Although data on weight trend and liver function improvement was neutral, further studies will be needed to determine if fibrosis and liver outcomes (death, transplant, etc) will improve.