

Effects of Alcohol Beverage Preference & Exercise on Diet

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Introduction

The 2015-2020 Dietary Guidelines for Americans states a healthy dietary pattern is composed of vegetables, fruits, grains, dairy, protein, and oils. The Dietary Guidelines recommends limiting foods and beverages high in added sugars, saturated fat, and sodium, and as well as alcoholic beverages. The Health Eating Index Score-2015 is a measure for assessing diet quality in individuals and is indicative of how well their diet aligns with the dietary guidelines for Americans (HEI-2015). The HEI-2015 is composed of 13 components that reflect the various food groups and recommendations. Using HEI-2015, the average American scored between 53 and 64, with younger individuals having lower HEI scores than older individuals. These scores suggest that the average American diet fails to meet 2015-2020 Dietary Guidelines and "needs improvement". Failure to meet dietary guidelines, increases the risk for malnutrition and diet-related chronic diseases such as cardiovascular disease, type 2 diabetes, obesity, and liver disease.

The current analyses are from the ongoing Alive-Ex Study, a prospective longitudinal, interventional study designed to determine the effects of a 10-week aerobic exercise intervention in people living with HIV (PLWH) with fasting dysglycemia and at-risk alcohol use. Previous findings suggest that PLWH with at-risk alcohol use are at a higher risk of developing dysglycemia (Primeaux et al., 2021).

The goal of the current analyses was to determine if diet intake and diet quality, as measured by the HEI-2015, was affected by alcohol beverage preference and exercise intervention, in individuals with fasting dysglycemia.

Methods

Medical Clearance

Timeline Followback

Fitness Assessment

ASA24

Exercise Training

ASA24

Fitness Assessment

Timeline Followback

Participant Inclusion Criteria:

- ≥ 18 years old
- Fasting glucose above 94 mg/dL and below 125 mg/dL (high normal-prediabetic range), without diagnosis of diabetes mellitus
- Physical activity readiness questionnaire
- HIV positive or HIV negative
- All participants were given an oral glucose tolerance test prior to starting the study. Participants with glucose ≥ 200mg/dL were excluded from the study.

Timeline Followback (TLFB):

- Measures alcohol use in the previous 30-days
- Pre-exercise TLFB used to categorize alcohol beverage preference among participants
 - Beer drinkers
 - Wine/Liquor drinkers
 - Nondrinkers

Exercise Sessions

- Aerobic exercise 3 times per week for 10 weeks
- 6 minute warm up, 30 min at 40-50% VO₂max during weeks 1-5, 50-60% VO₂max during weeks 6-10, 6 min cooldown
- Every 3 minutes heart rate and rate of perceived exertion were assessed
- (Simon et al., 2023)

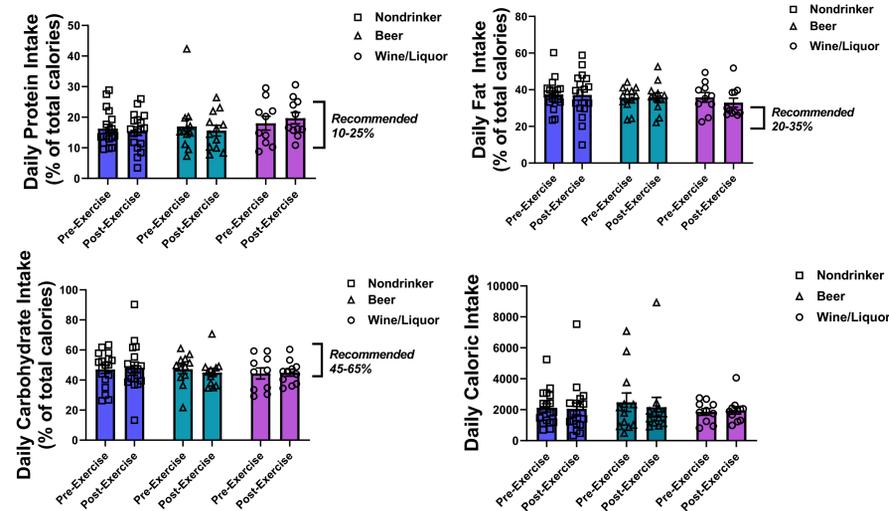
Automated Self-Administered 24-Hour Diet Recall (ASA24)

- Used to measure dietary intake, food choices, and diet quality of participants

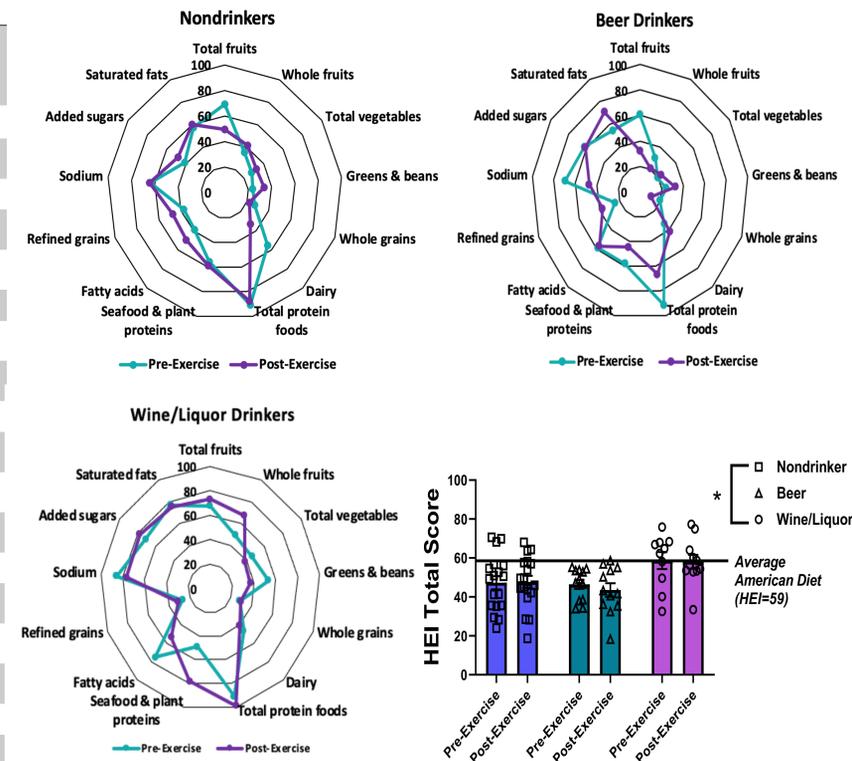
Participant Demographic Data

	Alcohol Beverage Preference				p-value
	All (n = 44)	Nondrinker (n=18)	Beer (n=14)	Wine & Liquor (n=12)	
	% (n)	% (n)	% (n)	% (n)	
Sex					
Female	36.4 (16)	38.9 (7)	21.4 (3)	50.0 (6)	p=.3068
Male	63.6 (28)	61.1 (11)	78.6 (11)	50.0 (6)	
Race					
African American	65.9 (29)	66.7 (12)	64.3 (9)	66.7 (8)	p=.9880
White	34.1 (15)	33.3 (6)	35.7 (5)	33.3 (4)	
Age, years					
20 to 39	18.2 (8)	11.1 (2)	7.1 (1)	41.7 (5)	p<.05*
40 to 59	63.6 (28)	66.7 (12)	85.7 (12)	33.3 (4)	
60+	18.2 (8)	22.2 (4)	7.1 (1)	25.0 (3)	
Marital Status					
Married/Living with partner	22.7 (10)	5.6 (1)	21.4 (3)	50.0 (6)	p=.0675
Widowed/Divorced/Separated	27.3 (12)	38.9 (7)	21.4 (3)	16.7 (2)	
Never married	50 (22)	55.6 (10)	57.1 (8)	33.3 (4)	
Income					
<\$20,000	59.1 (26)	61.1 (11)	71.4 (10)	41.7 (5)	p<.05*
\$20,000 to \$39,999	13.6 (6)	22.2 (4)	14.3 (2)	0.0 (0)	
\$40,000+	27.3 (12)	16.7 (3)	14.3 (2)	58.3 (7)	
Education					
< High School	11.4 (5)	5.6 (1)	14.3 (2)	16.7 (2)	p=.7223
High School Graduate	40.9 (18)	38.9 (7)	50.0 (7)	33.3 (4)	
Any College, Junior/Community College, Vocational/Trade/Graduate/Professional School	47.7 (21)	55.6 (10)	35.7 (5)	50.0 (6)	
BMI					
< 25	25.0 (11)	11.1 (2)	35.7 (5)	33.3 (4)	p<.01*
25 to 29.9	43.2 (19)	55.6 (10)	57.1 (8)	8.3 (1)	
30+	31.8 (14)	33.3 (6)	7.1 (1)	58.3 (7)	

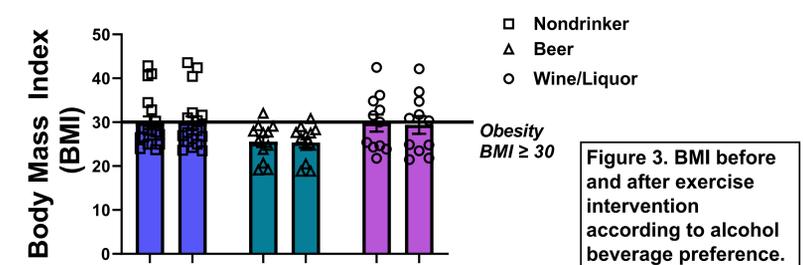
Daily Protein, Fat, Carbohydrate and Caloric Intake



HEI Scores



Body Mass Index



Conclusions

- Age of participants differed across alcohol beverage preference. Most of the participants were between 40 to 59 years old, but most wine/liquor drinkers were younger (20-39 years old).
- Income of participants differed across alcohol beverage preference. Most of the participants' incomes were less than \$20,000, but most wine/liquor drinkers were in the +\$40,000 income group.
- BMI differed across alcohol beverage preference. Most of the participants' BMI fell between 25 and 29.9, but most wine/liquor drinkers had a BMI greater than 30.
- A significant interaction between exercise and alcohol beverage preference was detected for HEI-total protein, suggesting that total protein scores increased following exercise in the wine/liquor drinkers, but decreased in the beer drinkers.
- A significant main effect of alcohol beverage preference was found for HEI-saturated fat and HEI-total score, with wine/liquor drinkers having higher scores.