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Quantifying alcohol use among Ecuadorian HIV positive individuals and assessing alcohol as an independent risk factor for HIV

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Background

- The Joint United Nations Program on HIV “90–90–90” goals:
 - 90% of all HIV positive (HIV+) individuals will know their status
 - 90% of all people diagnosed with HIV will receive Antiretroviral Therapy (ART)
 - 90% of people receiving ART will achieve viral suppression.
- Approximately 44,000 HIV+ individuals living in Ecuador
 - Ecuadorian government providing broad public access to HIV treatment.
 - 57% of patients are receiving ART and 51% have achieved viral suppression[1].
 - Funding continues to be a major barrier.
- Previous studies have shown a correlation between alcohol consumption and HIV status [2,3].
- Increased alcohol consumption accelerates disease progression within HIV+ populations [4-6].
- SELECT:** Decreased alcohol consumption could **decrease healthcare costs and improve care quality.**

Problem Statement

- To determine whether alcohol consumption is an independent risk factor for contracting HIV. If so, which type of drinking behavior, chronic consumption or binge drinking, is associated with HIV positive status.
- To determine whether the rate of alcohol consumption decreases among HIV+ individuals post-diagnosis.

Methods

- Design: Case Control Study

- Study Groups:

Cases	300 HIV+ Patients
Controls	600 Internal Medicine Patients

- Participants selected at random from waiting rooms of clinics in 3 different hospitals in Quito, Ecuador.

- Procedures:

- Anonymous Questionnaire
- Quantified alcohol usage at 3 time periods:
 - 1 year prior to HIV diagnosis
 - At time of diagnosis
 - 1 year post-diagnosis
- Differentiated binge drinking vs. chronic consumption
- Accounted for other potential HIV risk factors (risky sexual behaviors, drug usage, etc...)

- Analysis:

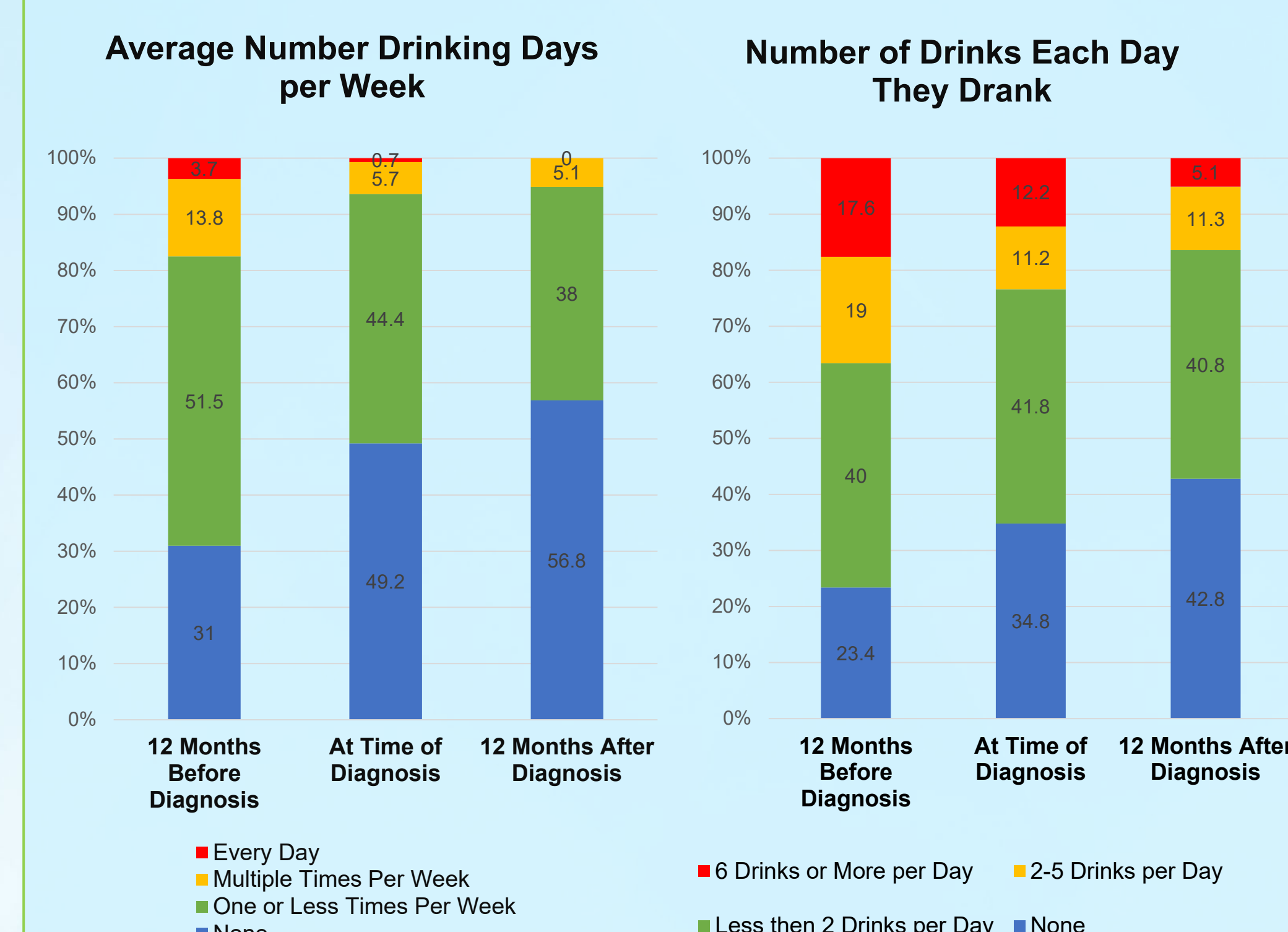
- t table for univariate analysis
- multivariable logistic regression (multivariate analysis) controlling for confounders
 - Useful for determining independence of risk factors

Results

Univariate Analysis			
	HIV		
	Cases	Controls	OR (95% CI)
Gender (Male vs. Female)	221/296 (74.7)	264/597 (44.2)	4.0 (2.9 – 5.4)
Age of 1 st sexual encounter	16.8±3.8	17.8±4.1	p=0.0004
Days the Patient Drank Per Week 12 Months Prior (vs. None)			
Every day	11/297 (3.7)	7/597 (1.2)	5.3 (2.0 – 14.1)
Multiple times per week	41/297 (13.8)	85/597 (14.2)	1.6 (1.1 – 2.5)
One or less times per week	153/297 (51.5)	193/597 (32.3)	2.7 (2.0 – 3.7)
None	92/297 (31.0)	312/597 (52.3)	
Drinks Per Day the Patient Drank 12 Months Prior (vs. None)			
6 drinks or more per day	52/295 (17.6)	39/593 (6.6)	5.0 (3.1 – 8.2)
2-5 drinks per day	56/295 (19.0)	114/593 (19.2)	1.9 (1.2 – 2.8)
Less than 2 drinks per day	118/295 (40.0)	179/593 (30.2)	2.5 (1.7 – 3.5)
None	69/295 (23.4)	261/593 (44.0)	
Binge Drinking 12 Months Prior (vs. Never)			
Every day	7/298 (2.4)	16/597 (2.7)	1.2 (0.5 – 3.0)
One or more times per week	55/298 (18.5)	59/597 (9.9)	2.6 (1.6 – 4.0)
One or more times per month	69/298 (23.2)	87/597 (14.6)	2.2 (1.5 – 3.3)
One or more times per year	33/298 (11.1)	92/597 (15.4)	1.0 (0.6 – 1.6)
Less than once per year	53/298 (17.8)	120/597 (20.1)	1.2 (0.8 – 1.8)
Never	81/298 (27.2)	223/597 (37.4)	

Multivariate Analysis			
Variables		Odds Ratio (95% CI)	p-value
Gender (vs. Female)	Male	11.0 (4.9 – 24.9)	<.0001
Drinks Per Day the Patient Drank 12 months Prior to Diagnosis (vs. None)	2 drinks or more	0.68 (0.26 – 1.7)	0.4229
	Less than 2 drinks	1.5 (0.71 – 3.4)	0.2740
Binge Drinking at Diagnosis (vs. Never)	One or more times per month or per week or every day	0.6 (0.3 – 1.3)	0.1996
	One or more times per year	0.3 (0.1 – 0.7)	0.0043
	Less than once per year	0.5 (0.3 – 0.95)	0.0346
Tobacco Consumption at Diagnosis (vs. No)	Yes	0.3 (0.1 – 0.96)	0.0424
More Than One Sexual Partner Prior to Diagnosis (vs. No)	Yes	2.3 (1.4 – 3.7)	0.0007
Gender Preference for Sexual Partner (vs. Female only)	Male only	8.2 (3.4 – 19.4)	<.0001
	Both	11.7 (4.3 – 32.3)	<.0001
Sex worker usage prior to diagnosis (vs. No)	Yes	2.6 (1.3 – 5.2)	0.0059
Employment as a Sex worker (vs. No)	Yes	4.5 (1.2 – 16.6)	0.0258

Overall HIV+ Patient EtOH Consumption



Discussion

- Univariate analysis:
 - results show drinking every day and consuming 6 or more beverages per drinking day significantly increases the risk of contracting HIV.
- Multivariate analysis:
 - shows no evidence of alcohol as an independent risk factor.
 - highest odds ratios associated with being male, having more than one sexual partner, sex worker usage or employment, and gender preference for “both” or males only.
- High levels of alcohol consumption are a significant risk factor for contracting HIV, however this effect is likely due to its association with other risky behaviors.
- Due to the interplay of these factors, decreases in alcohol consumption could lead to beneficial decreases in other risky behaviors
- Alcohol consumption decreased significantly among HIV+ patients after diagnosis.

Conclusions

- Alcohol consumption is a significant risk factor for becoming HIV positive, albeit not independently.
- Decreased consumption amongst HIV+ individuals is a positive trend that should benefit the Ecuadorian health system in meeting the “90-90-90” goals
- SELECT:** Healthcare quality in Ecuador can likely be improved through decreased alcohol consumption among both the general and HIV+ population. These effects would likely manifest as decreased amounts of new HIV diagnoses, decreased treatment costs, and improved treatment efficacy.

REFERENCES

- ONUSIDA. Country factsheets – ECUADOR 2018. Available at: <https://www.unaids.org/es/regionscountries/countries/ecuador>. Last access: 06/08/2020.
- Fisher JC, Bang H, Kapiga SH. The association between HIV infection and alcohol use: a systematic review and meta-analysis of African studies. Sexually transmitted diseases 2007; 34(11):856-63.
- Balunas D, Rehm J, Irving H, Shuper P, JJoPH. Alcohol consumption and risk of incident human immunodeficiency virus infection: a meta-analysis. Int J Public Health 2010; 55(3):159-66.
- Midde NM, Sinha N, Lukka PB, Meibohm B, Kumar S. Alterations in cellular pharmacokinetics and pharmacodynamics of elvitegravir in response to ethanol exposure in HIV-1 infected monocytic (U1) cells. PLoS One 2017; 12(2):e0172628.
- Kovacs EJ, Messingham KA. Influence of alcohol and gender on immune response. Alcohol Res Health 2002; 26(4):257–263.
- Szabo G. Alcohol's contribution to compromised immunity. Alcohol Health Res World 1997; 21(1):30–41.
- Baum MK, Raffie C, Lai S, Sales S, Page JB, Campa A. Alcohol Use Accelerates HIV Disease Progression. AIDS Research and Human Retroviruses 2010; 26(5):511-518.

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