

Formal Fatty Liver Education Increases Uptake of Physical Activity in Vulnerable Populations, Including Those With Heavy Alcohol Use

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Background

- Fatty liver disease (FLD) is an umbrella term for metabolically-associated fatty liver disease (MAFLD) and alcohol-associated liver disease (ALD).
- MAFLD and ALD may share overlapping mechanistic pathways and often coexist among patients.
- Vulnerable groups are disproportionately affected by both MAFLD and ALD.
- Lifestyle modification, including the adoption of physical activity, can reduce the burden of hepatic adiposity and restore liver function among FLD patients.
- Health education programs can facilitate the adoption of lifestyle modification.
- No study has evaluated the impact of a patient-centered educational program on changes in physical activity among a diverse, vulnerable population with FLD.

Objective

To identify factors associated with physical activity at baseline and the impact of implementing a FLD-educational intervention on change in physical activity in a racially-diverse and vulnerable population.

Methods

- **Study type:** Prospective cohort, survey-based study from 2/19/2020 to 12/30/2022
- **Population** 314 adult patients (≥18 years old) receiving care for FLD at hepatology clinics in the Zuckerberg San Francisco General Hospital safety-net health care system
- **Intervention:** Formal 60-minute FLD education session either in-person or remotely via Zoom conducted by a designated FLD Nurse Practitioner (NP) using PowerPoint slides
- **Outcomes:** Survey of physical activity at baseline and at 6-months following education

Results/Main Findings

Table 1. Cohort Characteristics

Characteristic	Patients who Self-reported Any Physical Activity (N=231)*	Patients who Self-reported No Physical Activity (N=83)*
Age (median, IQR), years	55 (44-64)	49 (41-59)
Female sex [N (%)]	130 (56)	53 (64)
Race/ethnicity [N (%)]		
White	25 (11)	6 (7)
Asian/Pacific-Islander	71 (31)	15 (18)
Hispanic	122 (53)	55 (66)
Black	5 (2)	4 (5)
Other	8 (3)	3 (4)
Employment in the last year [N (%)]	(N=227)	(N=82)
Employed	82 (64)	35 (43)
Unemployed	145 (36)	47 (57)
Household size [N (%)]	(N=227)	(N=82)
1-2 members	104 (46)	32 (39)
3 or more members	123 (54)	50 (61)
Alcohol use in prior year [N (%)]	(N=225)	(N=81)
None/minimal	145 (64)	48 (59)
Moderate	30 (13)	9 (11)
Heavy/binge drinking	50 (22)	24 (30)
BMI (median, IQR)	(N=226)	--
Normal/underweight	23 (10)	6 (7)
Overweight	78 (35)	15 (18)
Obese	125 (55)	62 (75)

Table 2. Factors Associated with Physical Activity at Baseline

Characteristic	Univariate Model (vs. none)						Multivariable Model (vs. none)					
	Suboptimal			Optimal			Suboptimal			Optimal		
	Relative Risk Ratio	95% CI	p-value	Relative Risk Ratio	95% CI	p-value	Relative Risk Ratio	95% CI	p-value	Relative Risk Ratio	95% CI	p-value
Age, by decade	1.39	1.12-1.73	0.003	0.98	0.77-1.29	0.98	1.37	1.07-1.75	0.01	1.05	0.78-1.42	0.73
Sex, female	0.96	0.55-1.67	0.88	0.43	0.22-0.83	0.01	1.05	0.57-1.92	0.88	0.55	0.27-1.13	0.11
Hispanic vs (non-Hispanic)	0.58	0.34-1.02	0.06	0.46	0.24-0.90	0.02	0.76	0.41-1.41	0.38	0.58	0.27-1.21	0.15
Diabetes (N=305)	1.02	0.60-1.75	0.93	0.49	0.24-0.98	0.04	0.89	0.50-1.56	0.68	0.54	0.26-1.12	0.10

Table 3. Factors Associated with Physical Activity at 6-month Follow-up after Education

Characteristic	Univariate Model (improvement vs. no change)		
	Relative Risk Ratio	95% CI	p-value
Age, by decade	0.77	0.61-0.97	0.02
Hispanic, ref non-Hispanic	2.64	1.45-4.83	0.002
<i>Sensitivity Analysis:</i>			
Alcohol consumption, ref none (N=219)			
Heavy	2.04	1.08-3.84	0.03

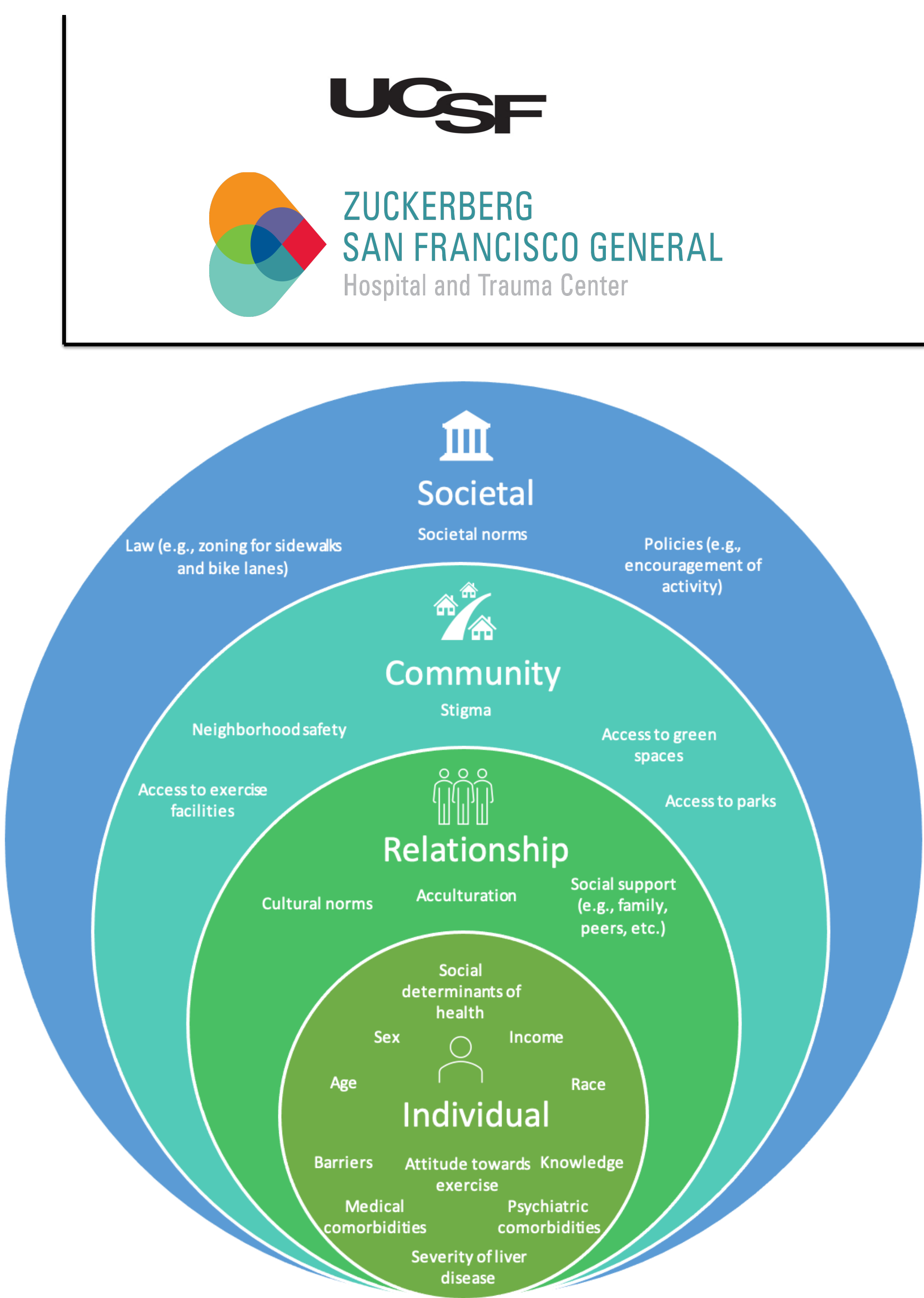


Figure 1. Socio-Ecological Model for Uptake of Physical Activity in a Vulnerable Population

Conclusions/Discussion

- **Age** is associated with **physical activity at baseline**, likely due to more leisure time than their younger counterparts.
- **Hispanics** (vs. non-Hispanics) were more likely to report **improvements in physical activity** (vs. no change) following education at six-month follow-up.
- Those reporting **heavy alcohol use** (vs. no drinking) were more likely to report **optimal exercise** at follow-up.
- Future studies should examine **clinical endpoints** and **rationale for adoption of physical activity** in this population.
- This study demonstrated the **positive impact of patient-centered approaches** in promoting uptake of physical activity.