

Initiation, Progression and Sustained Waterpipe Use: A Longitudinal Study of US Young Adults

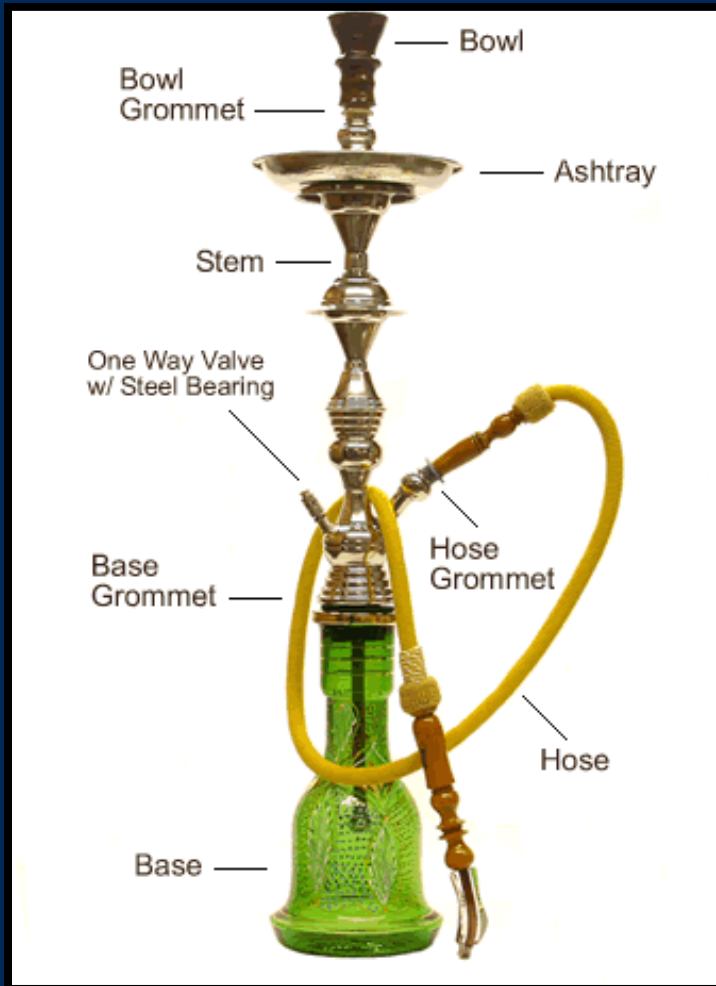
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“Hookah”



Epidemiology

- Emerging public health problem:
 - University students:
 - 20% current, 30-40% ever use
 - High school seniors:
 - 19% past year
 - Surpassing cigarette rates

Health Considerations

- Toxicant exposure*:
 - 120x smoke volume
 - 2x nicotine
 - 25x tar
 - 11x CO
- Risks:
 - Increased heart rate, blood pressure, CO intoxication
 - Pulmonary/coronary, cancer
 - Dependence

*Compared to 1 cigarette

Patterns of Use

- Initiation
 - College: 13-23%
 - Young Adult: 8%
 - Perceptual predictors
 - Attitudes (+/-)
 - Normative beliefs
 - Susceptibility
 - Knowledge
- Progression
 - Much less research
 - EMR
 - Adolescent experimenters: 8%

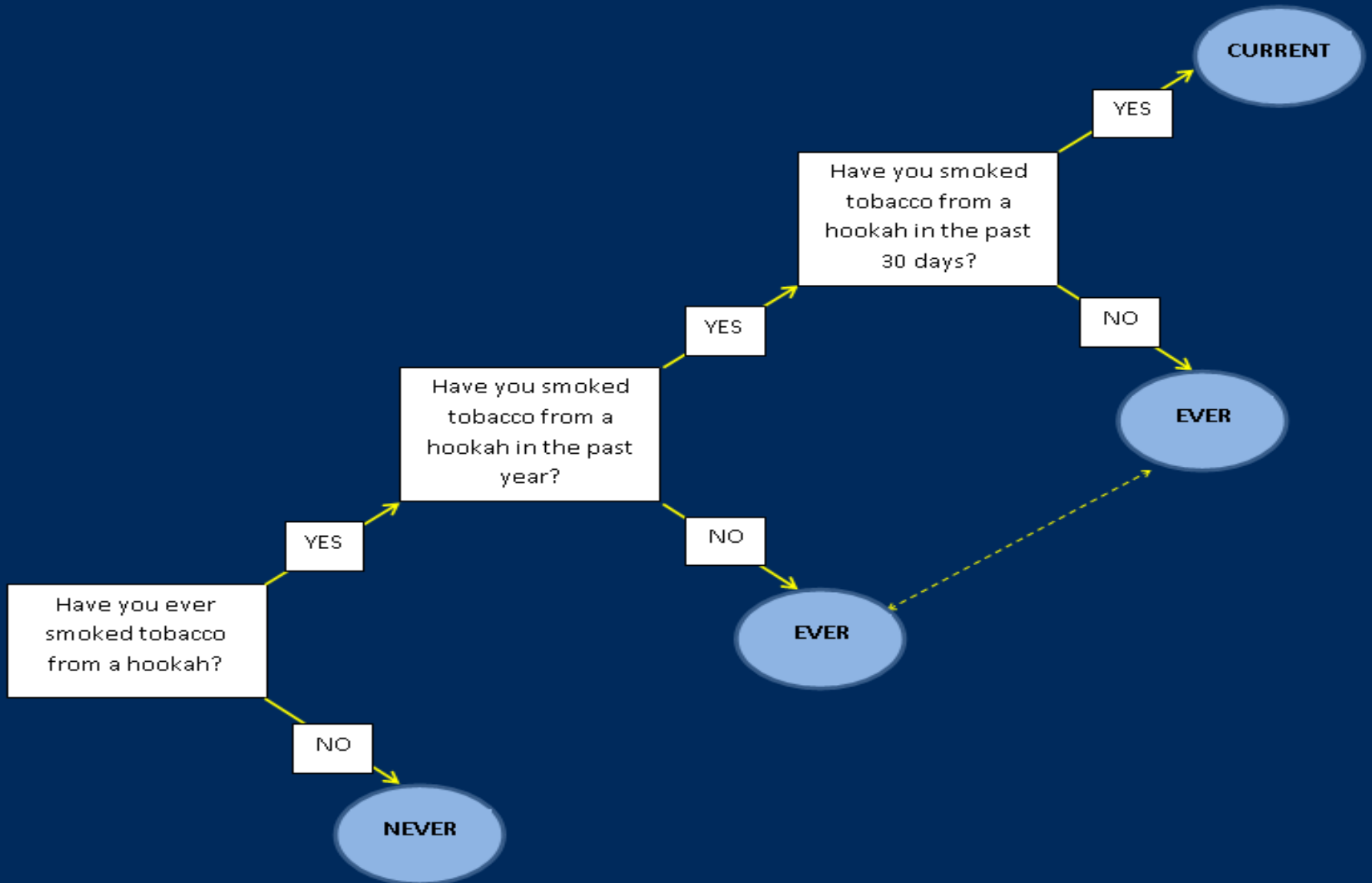
Purpose

- Previous research
 - Mainly study college students
 - Not always nationally-representative
 - Short periods of time
- This study aims to
 - Capture a more inclusive young adult population
 - Chart patterns of WTS
 - Investigate factors associated with WTS initiation

Sample

- KnowledgePanel®
 - Nationally-representative, probability-based, online non-volunteer access panel
 - 55,000 members ages 18+
 - Web-based surveys
 - Wave 1 (March 2013) and Wave 2 (October 2014)
- Participants
 - N=3253 (Wave 1), N=1786 (Wave 2; 59% follow-up RR)
 - Age range: 18-32 years old

Measures: WTS Behavior



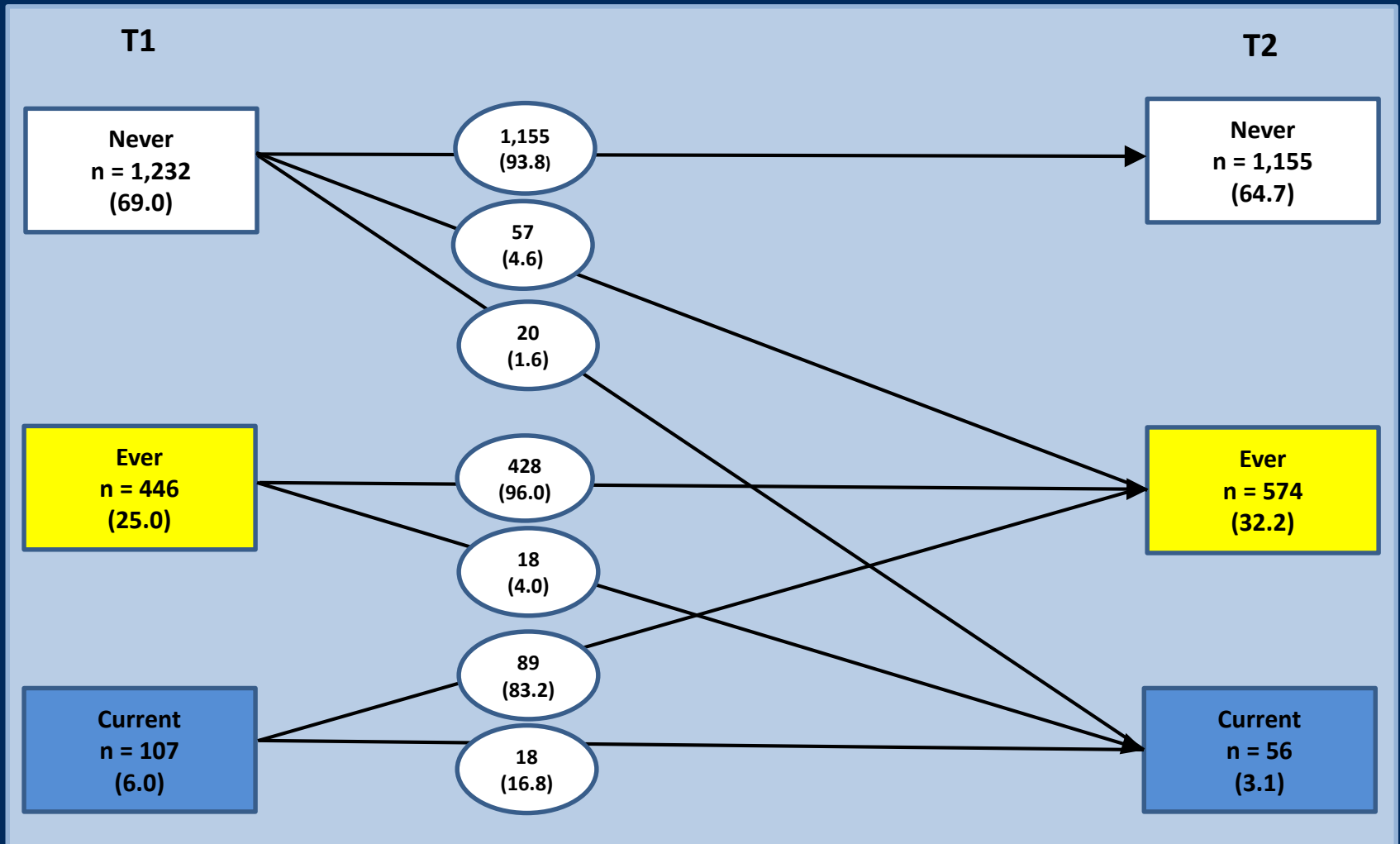
Measures: Associated Factors

- Attitudes (+/-)
 - Attractive, romantic, fun, relaxing
 - Harmful, addicting
- Knowledge
 - Tar, nicotine, carcinogens, carbon monoxide, heavy metals
- Normative beliefs
 - Perceived prevalence
 - Perceived acceptability
- Susceptibility
 - Intention to smoke tobacco from a hookah at any time in the future

Data Analysis

- Frequencies and percentages
- Logistic regression
 - Survey weights
 - Comprehensive set of covariates

Results: Patterns



Results: Initiation

- 1232 non-smokers at baseline
 - 6.2% initiated by follow-up
 - 4.6% never → ever
 - 1.6% never → current
- Associated with:
 - Race/ethnicity (White, non-Hispanic)
 - Yearly household income (\$30,000-\$74,999)
 - All others not significant

Results: Initiation

Predictors	Initiation	
Overall Positive Attitude	1.65 (1.13-2.41)^a	1.67 (1.21-2.31)^b
Overall Negative Attitude	0.81 (0.66-1.00)	0.83 (0.66-1.04)
Normative Beliefs		
Perceived prevalence of HTS among peers	0.97 (0.85-1.11)	0.94 (0.84-1.06)
Perceived acceptability of HTS among peers	1.26 (0.93-1.72)	1.26 (0.91-1.74)
Overall Knowledge Score	1.22 (0.92-1.62)	1.22 (0.95-1.56)
Susceptibility	5.52 (2.77-11.02)	6.95 (3.54-13.65)

^aOR (95% CI); ^bAOR (95%CI)

Discussion: Trajectories

- Progression
 - Intermittent use?
 - Potential for dependence
- Current smokers
 - 17% sustained
 - Most regressed

Discussion: Initiation

- 6.2% initiated
 - Consistent with young adult studies
 - Lower than college students
- Positive attitudes
- Susceptibility

Implications

- Some factors associated with initiation can be changed through intervention
 - Knowledge → no
 - Socio-demographic → no
 - Attitudes, susceptibility → yes

Limitations

- Self report
- Need more power to further study trajectories
- More time points would yield richer data

Conclusion

- In an 18-month period, 6% of non-smokers initiated and 4% of smokers progressed.
- Initiation was associated with two perceptual predictors at baseline:
 - Positive attitudes
 - Susceptibility
- Intervention and policy can benefit from focusing on these predictors.

Thank You!

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Characteristic	Baseline Hookah Non-Smokers (n = 1,232) ^a	Hookah Tobacco Smoking Initiation ^b		
		Yes ^c (n = 77)	No ^c (n = 1,155)	P Value ^d
	n (%) ^e	% ^e	% ^e	
Age, y				.41
18-20	236 (27.4)	37.5	26.7	
21-23	389 (22.8)	20.3	22.9	
24-26	292 (19.5)	21.4	19.3	
27-30	318 (30.3)	20.8	31.1	
Sex				.54
Female	767 (51.5)	46.6	51.8	
Male	468 (48.5)	53.4	48.2	
Race/Ethnicity				.02
White, non-Hispanic	789 (55.3)	35.8	56.9	
Black, non-Hispanic	135 (14.6)	28.5	13.5	
Hispanic	189 (19.4)	28.8	18.7	
Other ^f	122 (10.6)	6.9	10.9	
Relationship Status				.60
Single	593 (53.6)	57.7	53.2	
In a committed relationship	638 (46.4)	42.3	46.8	
Living Situation				.07
With a parent/guardian	428 (43.1)	30.2	44.1	
With a significant other	399 (27.9)	24.8	28.1	
Other ^g	406 (29.0)	45.1	27.8	
Yearly Household Income				.04
Low (under \$30,000)	359 (20.0)	31.8	19.1	
Medium (\$30,000-74,999)	470 (36.3)	43.2	35.7	
High (\$75,000 or more)	406 (43.8)	25.0	45.3	
Education Level				.25
High school or less	387 (48.4)	46.3	48.5	
Some college	523 (35.2)	44.9	34.5	
Bachelor's degree or higher	325 (16.4)	8.8	17.0	

Attitude, Subjective Norm, and Knowledge Items ^b	Hookah Tobacco Smoking Initiation ^a
	AOR ^c (95% CI)
Positive Attitudes	
Hookah Seems Attractive	1.50 (1.09-2.07)
Hookah Seems Romantic	1.55 (1.14-2.12)
Hookah Seems Fun	1.44 (1.10-1.89)
Hookah Seems Relaxing	1.52 (1.16-1.99)
Overall Positive Attitude	1.67 (1.21-2.31)
Negative Attitudes	
Hookah Seems Harmful	0.84 (0.69-1.04)
Hookah Seems Addicting	0.84 (0.65-1.08)
Overall Negative Attitude	0.83 (0.66-1.04)
Normative Beliefs	
Perceived prevalence of HTS among peers. ^d	0.94 (0.84-1.06)
Perceived acceptability of HTS among peers. ^e	1.26 (0.91-1.74)
Knowledge^f	
Which has more tar?	
Incorrect	1.0 [Reference]
Correct	1.30 (0.44-3.82)
Which has more nicotine?	
Incorrect	1.0 [Reference]
Correct	2.75 (1.07-7.05)
Which has more carcinogens?	
Incorrect	1.0 [Reference]
Correct	1.95 (0.61-6.22)
Which has more carbon monoxide?	
Incorrect	1.0 [Reference]
Correct	1.38 (0.52-3.63)
Which has more heavy metals?	
Incorrect	1.0 [Reference]
Correct	1.81 (0.72-4.55)
Overall Knowledge Score ^g	1.22 (0.95-1.56)
Susceptibility ^h	3.51 (2.37-5.19)

Attitude, Subjective Norm, and Knowledge Items	Hookah Tobacco Smoking Susceptibility ^{a, b}
AOR ^c (95% CI)	
Positive Attitudes	
Hookah Seems Attractive	2.04 (1.62-2.57)
Hookah Seems Romantic	2.01 (1.60-2.53)
Hookah Seems Fun	2.61 (2.18-3.14)
Hookah Seems Relaxing	2.45 (2.09-2.87)
Overall Positive Attitude	3.05 (2.41-3.87)
Negative Attitudes	
Hookah Seems Harmful	0.96 (0.85-1.07)
Hookah Seems Addicting	0.94 (0.83-1.06)
Overall Negative Attitude	0.94 (0.84-1.07)
Normative Beliefs	
At least half of people my age have ever smoked hookah. ^d	1.07 (0.71-1.61)
Smoking hookah is socially acceptable among people my age.	1.98 (1.63-2.39)
Knowledge^f	
Which has more tar?	
Incorrect	1.0 [Reference]
Correct	1.35 (0.65-2.82)
Which has more nicotine?	
Incorrect	1.0 [Reference]
Correct	1.15 (0.56-2.40)
Which has more carcinogens?	
Incorrect	1.0 [Reference]
Correct	1.06 (0.44-2.53)
Which has more carbon monoxide?	
Incorrect	1.0 [Reference]
Correct	1.29 (0.67-2.48)
Which has more heavy metals?	
Incorrect	1.0 [Reference]
Correct	1.26 (0.68-2.34)
Overall Knowledge Score^g	1.08 (0.88-1.31)