MAST 2017 Study

Factors Associated with Acute Medication Overuse in Persons with Migraine: Results from the 2017 Migraine in America Symptoms and Treatment (MAST) Study

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Disclosures

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Acute Medication Overuse (AMO)

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- Acute Medication Overuse (AMO)
  - Meds on 10 or more days/month for at least 3 months; 15 or more days if simple analgesics
  - 2-3% of general population and over 50% of chronic headache patients[1,2]
- AMO is associated with:
  - Episodic to chronic migraine transformation[3]
  - Medication overuse headache (MOH)
  - Greater disability, comorbid medical and psychiatric conditions, costs; Lower quality of life[4]
- Identifying variables that associate with AMO will lead to better description of risk factors for AMO and effects of AMO

[1]Steiner T et. al. *J Head Pain.* 2014;15:31. [2]Westergaard M et. al. *Pain*. 2014;155:2005. [3]Bigal M, Lipton RB. Neurology 2008;71:1821. [4]Lanteri-Minet M et. al. *Cephalalgia*. 2011;31:837.

Research Objectives

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- Estimate rates of AMO in a representative sample of adults from the U.S. with migraine who use acute medications
- Identify associations of AMO with demographics, migraine characteristics, and comorbidities

Participants and Data Collection

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- Migraine in America Symptoms and Treatment (MAST) Study
  - Web-based
  - 18+ years old, recruited from a US nationwide online research panel
- Stratified random sampling to obtain panel representative of US population
  - ICHD 3 beta diagnostic criteria for migraine and AMO
- Included
  - ≥ 3 headache days in past 3 months and ≥1 headache day in past 30 days
  - Using acute migraine medication

Data Analysis

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- Six binary logistic models, all with AMO as the binary outcome
- Sociodemographics
  - Sex, age, marital status, race, household income, education, BMI, health insurance, smoking
- Depression and/or anxiety symptoms
  - PHQ-4
- Headache features
  - Pain intensity, symptom severity score*, cutaneous allodynia (ASC-12), headache frequency

* Composite index including 7 headache features (unilateral pain, pulsating pain, moderate or severe pain, routine activities worsen pain, nausea, photophobia, phonophobia).

Data Analysis

MAST 2017 Study

1,387,252 survey invitations (age 18+)

95,821 respondents

18,363 individuals with migraine (19.2%)

13,649 met inclusion criteria (headache frequency; using acute meds) (74.3%)

- Average Age 43.4 ± 13.6
- Female 72.9%
- White 81.9%

15.4% had Acute Medication Overuse (AMO)

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Proportion With and Without AMO Using Specified Acute Medication Classes

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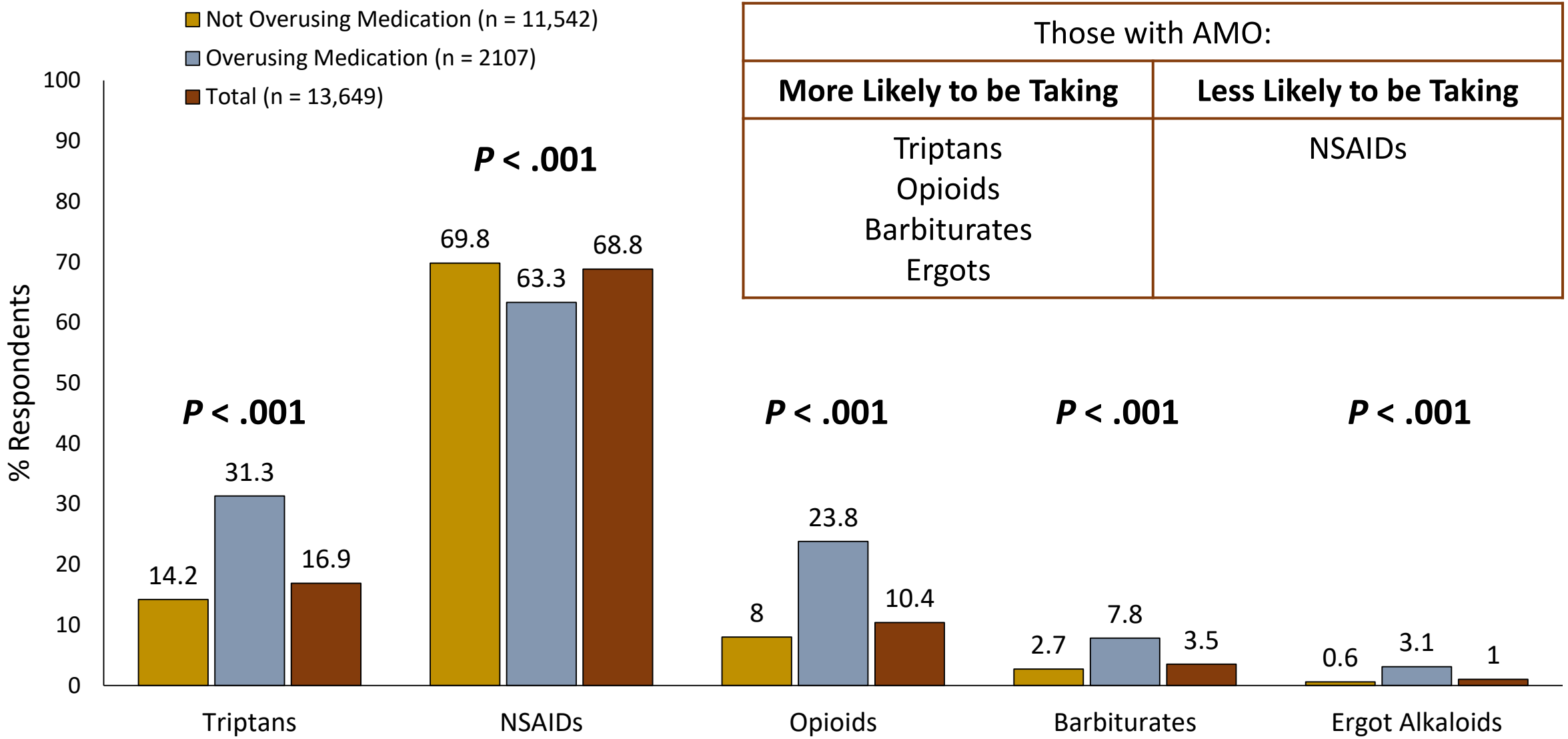

Those with AMO:	
More Likely to be Taking	**Less Likely to be Taking**
Triptans Opioids Barbiturates Ergots	NSAIDs

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Variables Associated With AMO – Univariate Analysis

MAST 2017 Study

	Not Overusing Medication n = 11,542	Overusing Medication n = 2107	Chi	*P*-value
Sex				
Men	3074 (26.6)	621 (29.5)	7.136	0.008
Women	8468 (73.4)	1486 (70.5)		
Age, years (mean ± SD)	43.0 ± 13.6	45.8 ± 13.2	8.891	< 0.001
Married				
Yes	6245 (54.3)	1229 (58.6)	13.436	< 0.001
Race				
Non-Caucasian	2091 (18.2)	361 (17.2)	1.166	0.280
Caucasian	9379 (81.8)	1736 (82.8)		

Variables Associated With AMO – Univariate Analysis

MAST 2017 Study

	Not Overusing Medication n = 11,542	Overusing Medication n = 2107	Chi	*P*-value
Household income, $				
< 25,000	1254 (11.2)	292 (14.2)	17.025	0.002
25,000-49,999	2422 (21.6)	444 (21.6)		
50,000-74,999	2493 (22.2)	437 (21.3)		
75,000-99,999	1986 (17.7)	363 (17.7)		
≥ 100,000	3070 (27.3)	516 (25.1)		
Education, ≥ 4-year college degree				
Yes	6930 (60.0)	1089 (51.7)	51.000	< 0.001
BMI, kg/m^2 (mean ± SD)	28.1 ± 7.4	28.9 ± 8.5	4.380	< 0.001
Health Insurance				
Yes	10,597 (91.8)	1923 (91.3)	0.628	0.428

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Variables Associated With AMO – Univariate Analysis

MAST 2017 Study

	Not Overusing Medication n = 11,542	Overusing Medication n = 2107	Chi	*P*-value
Psychological symptoms				
Yes	2332 (20.2)	832 (39.5)	370.957	< 0.001
Current smoker				
Yes	1155 (10.0)	389 (18.5)	126.127	< 0.001
MHDs (mean ± SD)	4.3 ± 4.3	12.9 ± 8.6	69.7	< 0.001
MHD category, n (%)				
0-4	8054 (69.8)	451 (21.4)	2830.498	< 0.001
5-9	2351 (20.4)	380 (18.0)		
10-14	656 (5.7)	417 (19.8)		
≥ 15	481 (4.2)	859 (40.8)		
Cutaneous allodynia, n (%)				
Yes	4334 (37.5)	1131 (53.7)	192.380	< 0.001
MSSS (0-21)	16.4 ± 3.0	17.8 ± 2.7	19.433	< 0.001
Pain intensity (0-10)	6.5 ± 1.6	7.4 ± 1.6	22.7	< 0.001

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Variables Associated With AMO – Binary Logistic Models

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	Model		
	1 Sociodemographics (OR, 95% CI)	2 Psychological Symptoms (OR, 95% CI)	3 Headache Characteristics (OR, 95% CI)
Male	1.05 (0.95, 1.17)	1.01 (0.91, 1.13)	1.32 (1.16, 1.5)
Age	1.01 (1.01, 1.02)	1.01 (1.01, 1.02)	1.02 (1.02, 1.03)
Married	1.12 (1.02, 1.24)	1.19 (1.07, 1.31)	1.19 (1.06, 1.34)
< 4-year college degree	0.8 (0.72, 0.88)	0.85 (0.77, 0.94)	0.99 (0.88, 1.12)
BMI	1.01 (1.01, 1.02)	1.01 (1, 1.01)	1 (1, 1.1)
Psychological symptoms	–	2.61 (2.36, 2.89)	1.62 (1.43, 1.83)
Current smoker	2.05 (1.8, 2.33)	1.78 (1.56, 2.03)	1.54 (1.31, 1.81)
Cutaneous allodynia	–	–	1.22 (1.08, 1.37)
MHDs 5-9	–	–	2.5 (2.15, 2.90)
MHDs 10-14	–	–	9.73 (8.27, 11.45)
MHDs ≥ 15	–	–	27.34 (23.43, 31.89)
MSSS	–	–	1.06 (1.04, 1.09)
Pain intensity	–	–	1.27 (1.22, 1.32)
Sex-by-allodynia interaction	–	–	–

Race, Household Income, and Health Insurance did not contribute and were trimmed from subsequent analysis

Variables Associated With AMO – Binary Logistic Models

MAST 2017 Study

	Model		
	4 Sex-by-Allodynia Interaction	5 Men	6 Women
Male	1.1 (0.93, 1.31)	–	–
Age	1.02 (1.02, 1.03)	1.02 (1.01, 1.03)	1.02 (1.02, 1.03)
Married	1.18 (1.05, 1.33)	1.44 (1.14, 1.83)	1.1 (0.95, 1.26)
< 4-year college degree	0.99 (0.88, 1.11)	1.13 (0.9, 1.41)	0.93 (0.81, 1.07)
BMI	1 (1, 1.1)	1.44 (1.14, 1.83)	1 (1, 1.1)
Psychological symptoms	1.6 (1.41, 1.81)	1.94 (1.54, 2.45)	1.48 (1.28, 1.72)
Current smoker	1.52 (1.3, 1.79)	1.65 (1.25, 2.16)	1.42 (1.16, 1.74)
Cutaneous allodynia	1.09 (0.95, 1.25)	1.61 (1.28, 2.03)	1.08 (0.94, 1.25)
MHDs (vs 0-4, reference)			
5-9	2.5 (2.15, 2.9)	2.46 (1.89, 3.2)	2.52 (2.1, 3.01)
10-14	9.75 (8.28, 11.47)	8.2 (6.03, 11.16)	10.44 (8.6, 12.67)
≥ 15	27.45 (23.53, 32.04)	21.01 (15.64, 28.21)	30.25 (25.2, 36.3)
MSSS	1.06 (1.04, 1.09)	1.06 (1.02, 1.1)	1.06 (1.03, 1.09)
Pain intensity	1.27 (1.22, 1.32)	1.21 (1.13, 1.31)	1.28 (1.22, 1.35)
Sex-by-allodynia interaction	1.53 (1.18, 1.97)	–	–

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Conclusions

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- MAST study shows high prevalence of AMO (15.4%) amongst representative sample of adults with migraine who use acute medications
- In addition to headache frequency, increased likelihood of AMO:

Male	Higher BMI
Older Age	Anxiety/Depression Symptoms
Married	Higher Pain Intensity
Less Educated	More Severe Migraine Symptoms
Smokers	Cutaneous Allodynia Men with allodynia more likely than women with allodynia to have MO

Next Steps

MAST 2017 Study

- Longitudinal data collection to determine risk factors for AMO and stopping AMO
- Explore why allodynia is associated with AMO in men but not women
  - Symptom experience
  - Symptom reporting
  - Differential effect of allodynia on decision to take medications
  - Differential effect of medication on development of allodynia

Thank You!

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