Association between behavior at initial dental visit and future behavioral health and developmental diagnoses

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BACKGROUND

Dental behavior is multifactorial
- Behavior is influenced by parenting style, temperament of child, past experiences, etc.
- Behavior is often assessed using the Frankl scale

Rating	Shorthand	Description
1	-/-	Definitely Negative
2	-	Negative
3	+	Positive
4	+/+	Definitely Positive

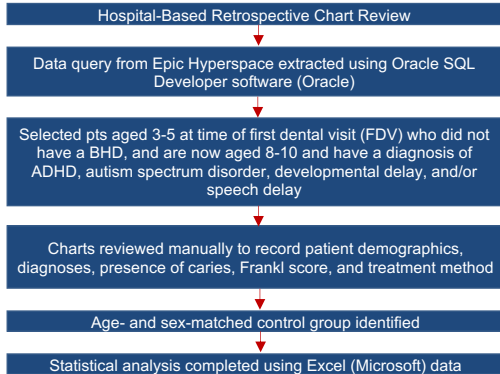Table 1 – Frankl behavior scale

Behavioral health disorders may affect behavior at dental appointments
- ADHD is the most common behavioral disorder of childhood
- Autism is rapidly increasing in prevalence. Patients with autism often have sensory issues that make the dental environment challenging
- Developmental delay is present in up for 15% of the US population
- Speech delay is common and shares many risk factors with dental caries

PURPOSE

The purpose of this retrospective study is to utilize data from the Nationwide Children's Hospital (NCH) electronic health record to relate behavior at initial early child dental visits and future behavioral health diagnoses (BHD)
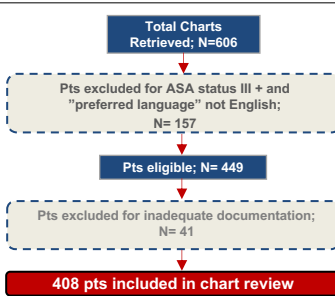
METHODS

Hospital-Based Retrospective Chart Review
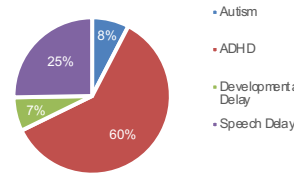
Data query from Epic Hyperspace extracted using Oracle SQL Developer software (Oracle)

Selected pts aged 3-5 at time of first dental visit (FDV) who did not have a BHD, and are now aged 8-10 and have a diagnosis of ADHD, autism spectrum disorder, developmental delay, and/or speech delay

Charts reviewed manually to record patient demographics, diagnoses, presence of caries, Frankl score, and treatment method

Age- and sex-matched control group identified

Statistical analysis completed using Excel (Microsoft) data

RESULTS

Age in Months at FDV

	Experimental	Control
Mean	52	50
Standard Deviation	10	10
Min	36	36
Max	72	73

Demographics

Gender
- 70.6% male
- 29.4% female

Race
- 45.6% Black/African American
- 37.7% White
- 10.8% Bi-racial/Multi-racial
- 3.5% Latino/Hispanic
- 2.5% Other

Total Charts Retrieved; N=606

Pts excluded for ASA status III + and "preferred language" not English; N= 157

Pts eligible; N= 449

Pts excluded for inadequate documentation; N= 41

408 pts included in chart review

Behavioral Health Diagnoses After FDV

- Autism 8%
- ADHD 60%
- Developmental Delay 7%
- Speech Delay 25%
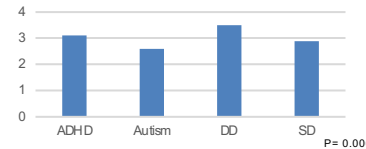
Age at FDV vs. Frankl at FDV

P= 0.01

Mean Frankl Score at FDV

ADHD, Autism, DD, SD

P= 0.006
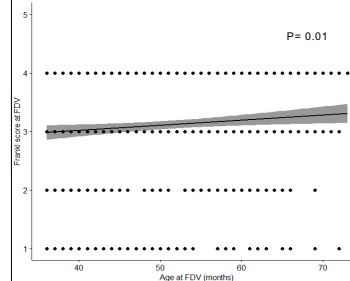
	Behavioral Health Diagnosis	
Treatment Needed	No	Yes
No	32%	40%
Yes	68%	60%

P= 0.01

	Behavioral Health Diagnosis	
Referred for GA or Sedation	No	Yes
No	58.8%	49.8%
Yes	41.2%	50.2%

P= 0.04

DISCUSSION

- Similarly to other reported demographics, the most common BHD encountered was ADHD.

- Also, similarly to other reports, males were more frequently diagnosed with a behavioral health condition.

- Frankl score increased as age at FDV increased, while mean Frankl scores were statistically different between each diagnoses. Developmental delay > ADHD > Speech Delay > Autism

- Patients without BHDs more frequently needed treatment but were less often referred to GA or sedation for that treatment.

- Limitations of the study include a potential lack of calibration of providers documenting Frankl scores, bias in inclusion criteria (non-English speaking patients were not included), and inability to determine if pts had a dental experience previously to their FDV at NCH.

CONCLUSIONS

- This study provides information regarding dental behavior of patients who will develop a BHD in the future, prior to that diagnosis.

- Patients with lower Frankl score at FDV may be more likely to develop a BHD in the future.

- The dental office may be a point of referral for patients with lower dental behavior scores to behavioral health resources.

- More research is needed to establish a connection between dental behavior and likelihood to develop a BHD

REFERENCES