

# Effect of Neuropsychiatric Comorbidities on Hospital Outcomes in Children with Cholesteatomas

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## STUDY OBJECTIVE

- To understand the impact of neuropsychiatric (NP) comorbidity on hospital outcomes in pediatric patients with cholesteatomas.

## INTRODUCTION

- Nearly 20% of the pediatric population is currently diagnosed with a mental health disorder, and the incidence is increasing.<sup>1, 2, 3</sup>
- There is a lack of literature that evaluates the impact of mental health disorders on outcomes of pediatric patients with cholesteatomas.
- This study assesses the effects of NP disorders on complication rates and outcomes in children with cholesteatomas present during an inpatient hospitalization.

## METHODS

- The Kids' Inpatient Database (KID), released by the Agency for Healthcare Research and Quality, is a publicly available database of the inpatient pediatric population.<sup>4</sup>
- The KID 2003-2019 was queried for all patients with a diagnosis of cholesteatoma.
- Patients were stratified into two groups based on presence of comorbid NP diagnosis.
- NP comorbidity was defined as developmental disorder, Down syndrome, intellectual disability, behavioral disorder, schizophrenia, other psychotic disorder, mood disorder, and anxiety.
- Univariate and multivariate analyses were performed to compare demographics and outcomes between the two groups.
- This study was exempt from review by the Rutgers New Jersey Medical School Institutional Review Board, as the information in the KID database is entirely deidentified.

## REFERENCES

- Ruth Shim, Moira Szilagyi, James M. Perrin; Epidemic Rates of Child and Adolescent Mental Health Disorders Require an Urgent Response. *Pediatrics* May 2022; 149 (5): e2022056611. 10.1542/peds.2022-056611
- Global Burden of Disease Pediatrics Collaboration. Global and National Burden of Diseases and Injuries Among Children and Adolescents Between 1990 and 2013: Findings From the Global Burden of Disease 2013 Study. *JAMA Pediatr.* 2016 Mar;170(3):267-87. doi: 10.1001/jamapediatrics.2015.4276. PMID: 26810619; PMCID: PMC5076765.
- 2022 National Healthcare Quality and Disparities Report [Internet]. Rockville (MD): Agency for Healthcare Research and Quality (US); 2022 Oct. CHILD AND ADOLESCENT MENTAL HEALTH.
- Ramanathan D, Bruckman D, Appachi S, Hopkins B. Association of Discharge Location Following Pediatric Tracheostomy with Social Determinants of Health: A National Analysis. *Otolaryngol Head Neck Surg.* 2023 Sep 20. doi: 10.1002/ohn.516. Epub ahead of print. PMID: 37727943.

## RESULTS

**Table 1. Patient Demographics**

Variables	NP (%)	Overall N=2288	P-value
<b>Age</b>			0.065
<1	48		
1-3	76		
4-6	176		
7-9	172		
10+	133		
<b>Sex</b>			0.608
Female	383		
Male	222		
<b>Race</b>			<b>0.006</b>
White	312		
Black	40		
Hispanic	129		
Asian/Pacific Islander	12		
Other	27		
<b>Comorbidities</b>			
Obesity	9		0.167
OSA	21		<b>0.012</b>
Growth Restriction	22		<b>&lt;0.001</b>
Asthma	31		<b>0.007</b>
Feeding Difficulties	10		<b>&lt;0.001</b>

\*NP = Neuropsychiatric Diagnosis; OSA = Obstructive Sleep Apnea, N\*\*<5 so value is not specified

**Table 2. Hospital Outcomes**

Complications	NP	No NP	P-value
Major Respiratory	**	**	0.549
Cardiac	**	**	0.721
Dehydration	14	12	0.022
<b>Hospital Outcomes</b>			
Length of Stay	3.13 ± 0.113	5.14 ± 0.417	P<0.001
Total Charges	\$39,757.06 ± \$1,684.36 vs,	53,180.92 ± 9,034.58	P=0.001

\*NP = Neuropsychiatric Diagnosis; OSA = Obstructive Sleep Apnea, N\*\*<5 so value is not specified

**Table 3. Logistic Regression for Patient Complications**

Complications	OR	95% CI		P-value
		Upper	Lower	
Cardiac	1.022	0.876	1.211	0.565

\*NP = Neuropsychiatric Diagnosis; OSA = Obstructive Sleep Apnea, N\*\*<5 so value is not specified

## RESULTS

- A total of 2,288 cases of children hospitalized with cholesteatoma were identified.
- Of these, 605 (26.5%) patients had a NP diagnosis.
- Most patients in the cohort were 7 to 9-years old (N=679,29.7%), Caucasian (N=1168, 51.0%), and male (N=1428, 62.4%).
- Patients with NP diagnoses also had a significantly longer length of stay (3.13 ± 0.113 vs 5.14 ± 0.417, P<0.001), and increased hospital charges (\$39,757.06 ± \$1,684.36 vs \$53,180.92 ± \$9,034.58, P=0.001).
- When accounting for demographics and comorbidities, patients with NP diagnoses did not have an increased rate of hospital complications on univariate and multivariate analyses.

## DISCUSSION

- In our study, we found that over a quarter of patients hospitalized with cholesteatoma had a comorbid NP condition.
- We found that children with cholesteatoma with comorbid NP conditions had longer lengths of stay and increased hospital charges.
- However, no significant differences in complications in patients with NP and cholesteatoma were noted.
- As surgical management is indicated for cholesteatomas, these findings can offer guidance to providers when speaking with parents about surgical planning.
- One limitation is that the KID database is an inpatient database.
- Future investigations with a more detailed breakdown of the impact of specific conditions on hospital outcomes are warranted.

## CONCLUSION

- Over 25% of the patients hospitalized with a diagnosis of a cholesteatoma have a comorbid NP diagnosis.
- The presence of a comorbid NP diagnosis was associated with longer hospital stays and increased hospital charges; however, no significant difference in hospital complications were found.