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CLINICAL FEATURE
LETTER TO THE EDITOR

Check for updates

An update on admissions of cystic fibrosis children in the United States based on national databases

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ABSTRACT
We read the article posted by Vadagam et al. with great interest and would like to provide a brief update based on the 2016 KID database to understand the trend in hospitalization among cystic fibrosis children.

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KEYWORDS
Cystic fibrosis; database; hospitalization; HCUP

We read the article posted by Vadagam et al. [1]. with great interest and would like to provide an update on some aspects of the article. In their published abstract, they wrote: 'A total of 3142 and 10,258 CF-related hospital discharges were identified from 2012 KID and 2012 NIS databases, respectively'. This is confusing to the readers as in the main document they further mentioned that 'A sample of 10,258 and 3142 CF-related unweighted hospital discharge records were identified from 2012 KID and 2012 NIS databases, respectively'. We crosschecked the 2012 KID database and can confirm that the line in the main document is the correct one.

Since the 2016 Kids´ Inpatient Database (KID), Healthcare Cost and Utilization Project (HCUP), Agency for Healthcare Research and Quality [2] was recently released, we further conducted a brief retrospective analysis to compare differences in gender, race, region, as well as payer form. We also studied differences in the mean age, mean length of stay as well as the mean total cost of hospitalization of the patients relative to other non-cystic fibrosis admissions during the same period of time.

We used the International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM) codes for Cystic fibrosis to extract all cases of cystic fibrosis in patients under the age of 21 [3]. The 2012 KID used by Vadagam et al. followed the ICD-9-CM codes, and the comparison done by them was more extensive. SPSS 20 was used to conduct all statistical analysis. Statistical significance was set at $p < 0.05$.

A total of 7634 weighted admissions had a diagnosis of cystic fibrosis among which 55.1% (4204) were females and 44.9% (3429) were males ($p < 0.01$) (Table 1). Racial

Table 1. Characteristics of admissions of patients with cystic fibrosis under the age of 21 in the United States.

Characteristic	Non -cystic fibrosis	Cystic fibrosis (%)	*p* Value
Gender	3,036,398 (48.5)	3429 (44.9)	<0.01
Male	3,219,366 (51.5)	4204 (55.1)	
Female			
Race	2,875,416 (50.7)	5469 (77.0)	<0.01
White	920,906 (16.2)	358 (5.0)	
Black	1,202,942 (21.2)	1043(14.7)	
Hispanic	278,215 (4.9)	53 (0.7)	
Asian or Pacific Islander	47,990 (0.8)	28(0.4)	
Native American	345,436 (6.1)	154 (2.2)	
Other			
Region	1,031,877 (16.5)	1003 (13.1)	<0.01
Northeast	1,349,019 (21.6)	1939 (25.4)	
Midwest	2,446,159 (39.1)	3143 (41.2)	
South	1,434,596 (22.9)	1549 (20.3)	
West			
Payer	25,803 (0.4)	52 (0.7)	<0.01
Medicare	3,074,054 (49.2)	3670 (48.1)	
Medicaid	2,688,841 (43.0)	3355 (44.0)	
Private Insurance	251,515 (4.0)	96 (1.3)	
Self pay	209,936 (3.4)	459 (6.0)	
No charge or other			
Mean Age (Median, LQ-UQ)	4.01 [(0.00 (0.00–5.00)]	12.04 [14.00(7.00–18.00)]	<0.01
Mean Length of Stay(Median, LQ-UQ)	3.98 [(2.00 (2.00–3.00)]	10.09 [7.00(3.00–13.00)]	<0.01
Mean Total cost (LQ-UQ)	28,534.32 [(3439.00–18,603.00)]	107,844.78 [(28,419.26–119,033.00)]	<0.01

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differences were observed ($p < 0.01$) as 77.0% (5469) patients were white. This confirms similar conclusions previously reported in multiple studies [4]. Most cases of cystic fibrosis admissions were registered in the Southern region (41.2%, 3143 admissions, $p < 0.01$). While the Northern areas of the United States have a higher percentage of Caucasian white, this finding can be attributed to the combined effect of the high Hispanic prevalence in the southern states with the Caucasian population present in that area[5].

48.1% of the patients were covered with Medicaid, as also previously reported by the Cystic fibrosis association [6], while 44.0% had private insurance ($p < 0.01$). The mean and median ages of admission of cystic fibrosis were higher than other pediatric admissions in the United States (mean of 12.04, $p < 0.01$). They also had a longer stay in the hospitals (10.09 days, 95% CI 5.906–6.320,$p < 0.01$) and a higher mean total charge ($107,844.78, $p < 0.01$, 95% CI $76,548.666-$82,072.266).

The goal of our brief statistical study is to provide a scope for deeper analysis and research in the future by other readers using the 2016 KID database as we were very impressed by the work conducted by Vadagam et al.

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Declaration of interest

The authors have no relevant affiliations or financial involvement with any organization or entity with a financial interest in or financial conflict with the subject matter or materials discussed in the manuscript. This includes employment, consultancies, honoraria, stock ownership or options, expert testimony, grants or patents received or pending, or royalties.

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