

Trends in Medicaid-funded adolescent comprehensive orthodontic treatment provided by orthodontists to children in Oklahoma between 2010 and 2016

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Introduction: The aim of this study was to evaluate the trends and rates of Medicaid-funded orthodontic treatment provided by orthodontists to children younger than 18 years in Oklahoma. **Methods:** Enrollment and claims data were evaluated from the Oklahoma Medicaid program for a 7-year period, January 2010 through December 2016. Medicaid total enrollment data by age, sex, race or ethnicity, and county were included. Claims data were collected both for any dental services and comprehensive orthodontic treatment for adolescents. Descriptive statistics were used for the study variables. Proportions and odds ratios were calculated and compared using a chi-square test. **Results:** Children aged between 15 and 18 years received orthodontic treatment more frequently than children aged between 6 and 14 years. Females received orthodontic treatment more frequently than males. Caucasians received orthodontic treatment more frequently than other races. Children who live in rural areas received orthodontic treatment more frequently than those living in urban areas. **Conclusions:** Comprehensive orthodontic patients are more likely to be Caucasian females between the ages of 15 and 18 years living in rural areas. The Hispanic community is growing significantly in the Medicaid population. Access to care is still a problem faced by many. (Am J Orthod Dentofacial Orthop 2019;156:791-9)

The Medicaid program allows orthodontic treatment for children younger than 18 years. However, the parameters and restrictions that Medicaid imposes on the orthodontic treatment create many difficulties for both patients and providers. Data suggest that race, family income, education level, and access to a regular source of care affect oral health.¹ The highest prevalence of poor oral health comes from the Hispanic community.² According to the U.S. Census Bureau, this population is the fastest growing community in the United States. It accounted for 16% of the total population in 2010 and is predicted to account for >30% in 2050.³

Even with the advent of Medicaid, the benefits are not always used, especially by minority groups. Within 1 year, 87% of people with private dental insurance have sought dental care compared with only 62% of people with Medicaid insurance. The numbers have dipped to 48% for those who are completely uninsured.⁴ Bhagavatula et al⁵ determined that African American and Hispanic children were significantly less likely to use or seek dental care than Caucasian children. Barriers to dental care services still remain a significant issue for the Medicaid population.

Access to care continues to be an issue faced by the general public. In 2016, Berdahl et al⁶ evaluated access to care and use of dental services based on dental insurance, with 41.9% of children in the United States reporting an annual dental visit. Caucasian children were the most likely to have a dental visit, with 47.3%. Slightly more than one third (34.8%) of African American children and Hispanic children (34.7%) had a dental visit. Girls (42.7%) were more likely than boys (41.2%) to have a dental visit. Children with private insurance (48.6%) were more likely to have a dental appointment than children with Medicaid (32.9%). Orthodontic usage rates were much less than visits to general dental offices.

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Overall, 10% of children had an orthodontic office visit. Caucasians (13%) were the highest, followed by Asians (8.7%), Hispanics (6.5%), and finally, African Americans (5.4%). Girls (11.7%) were more likely than boys (8.5%) to have an orthodontic visit. Children with private insurance (13.6%) were more likely to have an orthodontic visit than Medicaid-eligible children (5.1%).⁷

Im et al⁸ described the barriers to care that prevent people from accessing orthodontic treatment and understanding the psychosocial and oral health advantages of improved appearance and oral function. Those barriers include low socioeconomic status, which results in lower dental IQ, which in turn prevents people from realizing the benefits of dental and orthodontic care.

The American Dental Association recommends that priority should be given to *handicapping malocclusions*. The American Association of Orthodontists (AAO) defined *handicapping malocclusions* as “a malocclusion, including craniofacial abnormalities/anomalies, that compromise the patient’s physical, emotional, or dental health.”⁹ Insurances, by contrast, needed a way to quantify each malocclusion in a systematic method that created objectivity and standardization. Several indexes have been created to accomplish this goal. The Handicapping Labio-Lingual Deviations Form (HLD) is a quantitative, objective method for measuring malocclusion. The HLD provides a single score, based on a series of measurements that represent the degree to which a case deviates from normal alignment and occlusion.¹⁰

The AAO has developed a policy change that eliminated indexes. They proposed the use of 8 auto-qualifiers to make the determination for handicapping malocclusion simpler. These auto-qualifiers are aspects of malocclusion that, if met, warrant comprehensive treatment. If an orthodontic case fits any of the criteria proposed, the case would be considered a handicapping malocclusion and would be eligible for third party funding.⁹

The Oklahoma Health Care Authority (OHCA) approves Medicaid-funded orthodontic treatment to Medicaid-approved members who are younger than 18 years. Comprehensive treatment must be carried out by a state-licensed orthodontist or a general or pediatric dentist with orthodontic privileges. For general and pediatric dentists to gain orthodontic privileges, they must complete at least 200 certified hours of continuing education in the field of orthodontics. In addition, they must submit 25 successfully completed orthodontic cases, of which 10 must be extraction cases, for review. Currently, there are 2 general dentists with

orthodontic privileges practicing in Oklahoma with no future plans to increase this number. Most orthodontic care is provided by orthodontists.

For a Medicaid patient to receive funding for orthodontic treatment, he or she must receive a referral from either a general or pediatric dentist. To gain a referral, the patient must be free of dental caries at the initial appointment. If caries are present, the teeth must first be restored, and the patient’s teeth must remain free of caries for 12 consecutive months. The patient may then undergo an examination by an orthodontist or a provider with orthodontic privileges.

OHCA has adopted the HLD to determine qualification for severe handicapping malocclusion. A member must receive a minimum score of 30 to qualify. Cleft lip and/or palate qualify a member for coverage regardless of the HLD score. Upon initial determination of eligibility, prior authorization must be sent to OHCA. Prior authorization includes a completed and currently approved American Dental Association dental claim form, completed and scored HLD index with diagnosis of Angle’s classification, a detailed description of any oral maxillofacial anomaly, an estimated length of treatment, intraoral photographs showing teeth in centric occlusion and/or photographs of trimmed anatomically occluded diagnostic casts, a lingual view of casts to verify impinging overbites, cephalometric images with tracing and panoramic film, a request for prior authorization of comprehensive orthodontic treatment, and any additional information deemed pertinent by the orthodontist or as requested by the OHCA.

The first approval is for 12 months of care and begins the day the case is banded and/or bonded. The first year includes placement of appliances, archwires, and a minimum of 6 adjustments. It is expected that the member will be seen by the provider every 4-8 weeks. Additional adjustments are authorized at 1-year intervals. At 24 months of treatment, a comprehensive progress report must be submitted to authorize an additional 6 months of treatment. Payment is not made for treatment beyond 36 months. The yearly payment includes removal of appliances and fabrication of retainers.¹¹

The aim of this study was to evaluate the trends and occurrences of Medicaid-funded comprehensive orthodontic treatment provided by orthodontists to children in Oklahoma. The types of patients and providers for comprehensive treatment over a multiple-year period were analyzed to describe access to care. The study was a population-based multiyear cross-sectional evaluation. We hypothesized that among Medicaid-enrolled children, non-Caucasians are less likely to receive Medicaid-funded orthodontic treatment than Caucasians for the orthodontic population. Sex, age, and

Table I. Dental and orthodontic claims by Medicaid population, aged 6–18 years, for calendar years 2010–2016

Year	Claim	Age			Total
		6–9 y	10–14 y	15–18 y	
2010	Total population	119,208	124,342	85,609	329,159
	All dental claims	65,962	74,169	43,319	183,450
	Orthodontic claims	56	6044	4726	10,826
2011	Total population	122,965	130,544	87,101	340,610
	All dental claims	66,024	76,049	42,967	185,040
	Orthodontic claims	25	5255	4088	9368
2012	Total population	127,430	134,340	89,562	351,332
	All dental claims	69,115	79,261	45,040	193,416
	Orthodontic claims	31	5368	4342	9741
2013	Total population	131,199	137,685	91,769	360,653
	All dental claims	71,014	80,568	45,930	197,512
	Orthodontic claims	19	5074	3682	8775
2014	Total population	135,208	141,905	95,014	372,127
	All dental claims	74,233	83,610	47,885	205,728
	Orthodontic claims	18	5428	4263	9709
2015	Total population	139,887	147,764	100,289	387,940
	All dental claims	75,969	85,871	49,970	211,810
	Orthodontic claims	18	5712	4308	10,038
2016	Total population	137,001	150,745	102,069	389,815
	All dental claims	75,119	88,389	51,487	214,995
	Orthodontic claims	23	5752	4392	10,167

Note. Age is determined by the member's age as of the last day of the year. Members who turned 19 by the end of the year are not included in the demographics.

Table II. Univariate logistic regression model for orthodontic utilization for calendar years 2010–2016

Demographics	Response	OR	Lower 95 CI of OR	Upper 95 CI of OR	P value
Sex	Female	1.38	1.36	1.4	<0.0001
	Male	1	1	1	
Race	Caucasian	1	1	1	
	Black or African American	0.79	0.77	0.81	<0.0001
	Asian or Pacific Islander	0.93	0.87	0.99	0.0311
	American Indian	0.86	0.84	0.88	<0.0001
	Multiple races	0.84	0.81	0.87	<0.0001
	Declined to answer	0.79	0.77	0.81	<0.0001
Ethnicity	Hispanic	0.99	0.97	1.01	0.4411
	Non-Hispanic	1	1	1	
Age	Age 15–18 y	1.15	1.13	1.16	<0.0001
	Age 6–14 y	1	1	1	
Area	Rural	1.07	1.05	1.08	<0.0001
	Urban	1	1	1	

location difference were also studied. By understanding population disparities in public funding orthodontic treatment, changes can be suggested to improve the Medicaid system for all.

MATERIAL AND METHODS

This study was a cross-sectional study designed to examine and evaluate orthodontic services rendered to children enrolled in the Oklahoma Medicaid program during 2010–2016. Children were defined as anyone

between the ages of 6 and 18 years. This range was selected as it corresponds to ages when orthodontic treatment is typically rendered.

Data were collected from OHCA. Summaries of enrollment and claims data were collected from calendar years 2010–2016. Enrollment data included Medicaid total enrollment by age, sex, race or ethnicity, and county. Claims data were collected both for any dental services and comprehensive orthodontic treatment for adolescents (D8080). Only D8080 codes were used

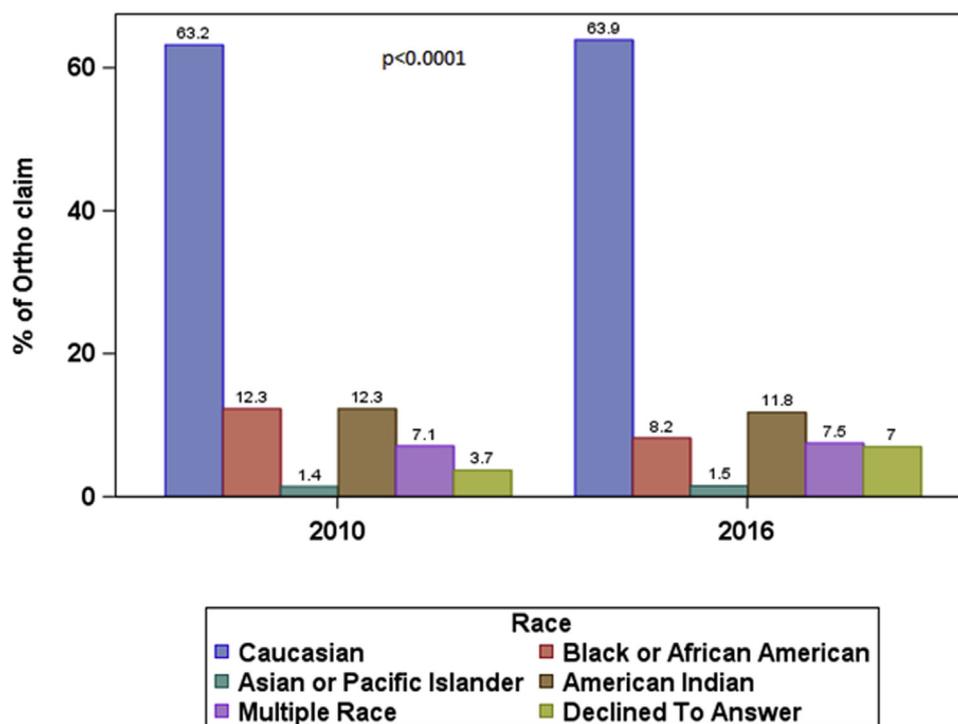


Fig 1. Distribution by race, 2010 vs 2016. *Ortho*, orthodontic.

owing to the low number of occurrences for other orthodontic codes. These summaries also included age, sex race or ethnicity, and county. Dental services were coded using the Current Dental Terminology. In addition, individual member data were collected for any enrolled member who received code D8080 to compare multivariable occurrences. These data were only collected for the years 2010 and 2016 to evaluate changes that took place in the last 7 years. The data attached to each member were sex, race or ethnicity, age, member county, and rendering provider county. Race was reported optionally to OHCA by parents and was categorized as Caucasian, black or African American, American Indian, Asian or Pacific Islander, multiple races, and declined to answer. Hispanic was not considered a race but was reported as an ethnicity. OHCA deidentified the data before releasing them. This study was approved by the University of Oklahoma Institutional Review Board (IRB #7856).

Statistical analysis

Descriptive statistics were used for the study variables. Proportions and odds ratios (ORs) were calculated and compared using a chi-square test for the orthodontic population. A 2-sided 0.05 α level was used to define the statistical significance ($\alpha = 0.05$).

RESULTS

Medicaid enrollees for children aged 6–18 years in 2010–2016 averaged 361,662. Orthodontic claims using code D8080 averaged 9803 per year (Table I). All 7 years (2010–2016) of summarized data were combined into a univariate logistic regression. The odds of having orthodontic service were higher for children who were aged 15–18 years than for children who were aged 6–14 years (OR = 1.15; 95% confidence interval [CI], 1.13–1.16). The odds of having orthodontic services were higher for children who lived in rural areas than children who lived in urban areas (OR = 1.07; 95% CI, 1.05–1.08). The odds of having orthodontic treatment were not significantly different between the Hispanic and non-Hispanic groups ($P = 0.4411$). The odds of having orthodontic treatment were higher for females than males (OR = 1.38; 95% CI, 1.36–1.40). The odds of having orthodontic treatment were lower for other races (American Indian, Asian, black, multiple races) than Caucasians (Table II).

For the individual years of 2010 and 2016, Caucasian orthodontic patients with Medicaid accounted for 63.2% and 63.9%, respectively, for all orthodontic claims. This was significantly higher than all other races (Fig 1). The change from 2010 to 2016 was also significantly higher for the Hispanic community (Table III).

Table III. Summary of the distribution of demographics for 2010 vs 2016 orthodontic population

Variable		Year						P value for 2010 vs 2016
		Total		2010		2016		
		N	%	n	%	n	%	
Sex	Male	8998	42.86	4635	42.81	4363	42.91	0.8840
	Female	11,995	57.14	6191	57.19	5804	57.09	.
Race	Caucasian	13,341	63.55	6843	63.21	6498	63.91	<0.0001
	Black or African American	2164	10.31	1329	12.28	835	8.21	.
	Asian or Pacific Islander	308	1.47	151	1.39	157	1.54	.
	American Indian	2527	12.04	1329	12.28	1198	11.78	.
	Multiple races	1538	7.33	774	7.15	764	7.51	.
	Declined to answer	1115	5.31	400	3.69	715	7.03	.
	Ethnicity	Hispanic	4018	19.14	1651	15.25	2367	23.28
	Non-Hispanic	16,975	80.86	9175	84.75	7800	76.72	.
		Mean	SD	Mean	SD	Mean	SD	P value for 2010 vs 2016
Age (y)		14.22	1.92	14.23	1.97	14.21	1.87	0.5140

SD, standard deviation.

Table IV. Reimbursement for total, dental, and orthodontic claims (D8080), calendar years 2010–2016

Claim	Calendar year	Claim count	Unduplicated members	Total reimbursement amount
Total Medicaid claims	2010	5,913,539	298,654	\$824,419,882.69
	2011	6,271,157	306,355	\$848,383,951.16
	2012	7,122,682	321,912	\$910,402,341.44
	2013	7,445,818	329,712	\$953,054,243.87
	2014	7,463,320	341,435	\$979,103,711.50
	2015	7,250,132	351,906	\$972,689,619.92
	2016	7,332,659	352,809	\$964,414,252.70
			Average	\$921,781,143.33
All dental claims	2010	1,890,067	188,539	\$99,549,162.61
	2011	1,755,224	190,133	\$89,903,129.00
	2012	1,745,904	198,800	\$89,901,804.84
	2013	1,794,624	202,742	\$90,558,363.36
	2014	1,849,484	210,847	\$90,641,527.48
	2015	1,856,215	217,042	\$87,271,463.99
	2016	1,890,408	220,302	\$85,140,315.64
			Average	\$90,423,680.99
All comprehensive orthodontic (D8080) claims	2010	11,672	10,994	\$13,493,809.05
	2011	10,130	9542	\$9,813,975.18
	2012	10,769	9901	\$10,977,560.82
	2013	9228	8890	\$10,915,037.65
	2014	10,396	9836	\$12,278,863.45
	2015	10,429	10,174	\$11,895,275.05
	2016	10,343	10,299	\$11,346,131.22
			Average	\$11,531,521.77

There was not an association between sex and year. The sex distributions were not significantly different between 2010 and 2016 (Table III).

The reimbursement amount for all Medicaid expenses of children aged 6–18 years averaged \$922 million from 2010 to 2016. All dental claims for the same subjects and time frame was \$90 million. Orthodontic claims for the same subjects and time frame was \$12 million (Table IV). Orthodontic claims as a

percentage of dental claims ranged from 10.9% to 13.6%. Orthodontic claims as a percentage of all Medicaid claims ranged from 1.1% to 1.6% (Fig 2).

Oklahoma has 77 counties, 11 of which are considered urban. Near Tulsa and Oklahoma City, 3 counties have a population >200,000, and 11 have a population between 50,000 and 200,000. A total of 63 counties have a population <50,000, with 18 of those between 10,000 and 20,000 and 18 of those <10,000. Three counties had

REIMBURSEMENT PERCENTAGES, 2010-2016

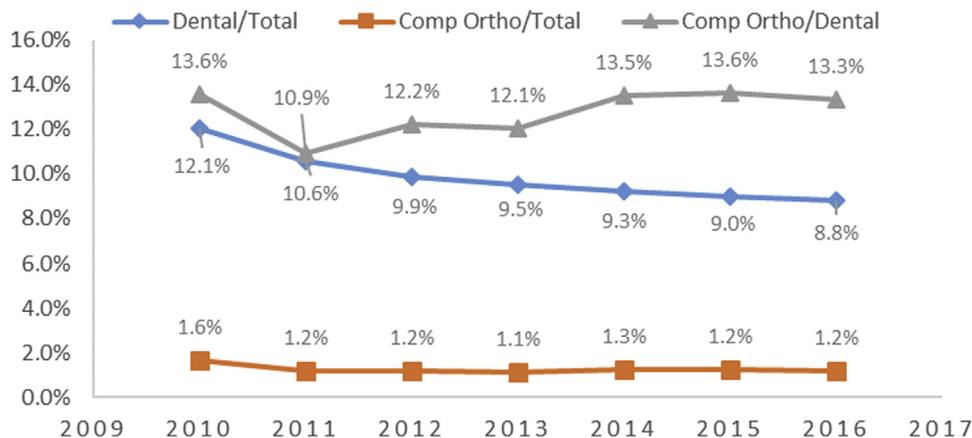


Fig 2. Reimbursement percentages, calendar years 2010-2016. *Comp Ortho*, comprehensive orthodontic.

high occurrence of orthodontic treatment spanning the 7 years, and 6 counties had low occurrence.

DISCUSSION

Children covered by Medicaid who were aged 15-18 years received orthodontic treatment more frequently than children covered by Medicaid who were aged 6-14 years. This trend will probably continue because children seeking and receiving orthodontic treatment are typically in their adolescent years and aged around 14 years. For this reason, only the Current Dental Terminology code, D8080, was evaluated. The other codes for limited orthodontics (D8010-D8040) were infrequently used; therefore, the data were considered insignificant. Codes for interceptive orthodontic treatment (D8050-D8060) were also insignificant. The code for comprehensive orthodontic treatment for transitional dentition (D8070) was also deemed insignificant. In addition, the code for comprehensive orthodontic treatment for adults (D8090) was never used owing to adults not being eligible for Medicaid-funded orthodontic treatment. Furthermore, there were no data available on denied submissions because those are not tracked by OHCA.

Another confounding factor was that Medicaid would only reimburse if the case met the criteria within the state-required index. For example, if treatment was initiated before all the permanent teeth erupting because of severe malocclusion, then a second phase would not be reimbursed because it would not meet the necessary requirements. Because of this policy, many orthodontists choose to wait to treat Medicaid

patients until after all permanent teeth have erupted. This poses an ethical dilemma when children need intervention at earlier ages.

During the 7-year span, orthodontic treatment was consistently higher for females than males. When compared cumulatively for all years, there were significant differences between females receiving orthodontic treatment and males ($P < 0.001$). This evidence of greater use of orthodontic treatment by females than males has been documented previously.¹²⁻¹⁵ There has been no definitive study that can explain why females use orthodontic treatment more frequently than males. However, 1 study concluded that males have a greater need for orthodontic treatment than females.¹³

Several other studies have reported that orthodontic treatment was performed less frequently for American Indians, Asians, blacks, and multiple races than Caucasians.¹²⁻¹⁴ This is contrary to a recent study that evaluated the Washington state Medicaid program and determined that nonwhite children were more likely to receive orthodontic treatment than white children.¹⁶ These results were inconsistent with this study and other studies that have determined that minorities were significantly less likely to receive orthodontic treatment, despite their greater levels of need.¹⁷ Two factors to consider are, first, that Oklahoma has a significantly higher Caucasian population than the rest of the United States. According to the most recent census data, Oklahoma's population is about 74% Caucasian.³ This could skew the data in favor of Caucasians seeking out orthodontic treatment more frequently. Second, there is a large population of Native Americans in Oklahoma

who can have orthodontic treatment funded by the Indian Health Services, which was not evaluated in this study and is not part of the Medicaid program.

Orthodontic treatment was found to be performed more frequently for children who live in rural areas than children who live in urban areas. Data from rural and urban areas were collected and analyzed from the counties within Oklahoma, with 11 counties considered urban: Canadian, Cleveland, Comanche, Creek, Logan, McClain, Oklahoma, Osage, Rogers, Tulsa, and Wagoner. The remaining 66 counties were considered rural. McKernan et al¹⁸ used zip codes of dental service areas to determine use of service in each area. Because of restrictions from OHCA, the use of zip code data was not achievable; therefore, county data were used.

The results of this study agree with McKernan et al.¹⁸ They discovered that children living in rural areas of Iowa were more likely to receive orthodontic treatment than children living in urban or metropolitan areas. These results differ from other published results, which state that both within the United States and internationally, the use of orthodontic treatment on Medicaid was higher in urban areas.^{15,19} It has been speculated that rural families and individuals may have different time allocation priorities. These families may be more accustomed to increased time commitments for orthodontic treatment, because there is already an increased time commitment for travel to school, work, and running errands.¹⁸ Providers in rural areas may also be more willing to serve Medicaid patients because of lower patient volume.

Many Medicaid patients find it difficult to find providers willing to accept Medicaid, and those who are willing may not be able to accommodate all those who need treatment. In 2016, there were only 59 Oklahoma orthodontists who treated Medicaid patients. There were 107 licensed orthodontists in the state. Only 55% of orthodontists treat Medicaid patients; 44 are located in urban areas, whereas only 15 are located in rural areas. Even with more orthodontists in rural areas, Medicaid patients were still more likely to be treated if they were rural. With the current system, there is a significant limit to access to care. Future studies are needed to examine the occurrence at which orthodontists who accept Medicaid are willing to accept new patients.

Another common reason for low provider participation was administrative difficulties. Those difficulties include excessive paperwork, prior authorization forms, and lack of continuity of patient eligibility.²⁰ Another concern for providers might be patient compliance and reliability. Wilson and Harris²⁰ determined that Medicaid patients were 5.5 times more likely to be dismissed from a practice, which resulted in lesser reimbursements. It

was also reported that 1 in 5 Medicaid patients did not complete treatment. Regarding reliability, Wilson and Harris²⁰ determined that Medicaid patients were 6 times more likely to miss an appointment, with an average of 3 missed appointments in the course of treatment. This has been reported to result in provider frustration and loss of revenue.

When treating Medicaid patients, the cases might inherently be more difficult. State requirements affirm that a patient must meet their criteria for severe handicapping malocclusion, which might result in the expenditure of more resources and eventually could lead to several providers opting not to treat Medicaid patients. This requirement is also arbitrarily set to 30 points on the HLD index to determine qualification with no scientific backing. The AAO-proposed changes would determine, from a scientific reason, who should need treatment.

Lack of provider participation in Medicaid-funded services could negatively affect access to orthodontic care. One main reason reported for providers not participating was the low reimbursement rates. In 2004, Medicaid reimbursement for comprehensive orthodontic care was 65% of private insurance reimbursement. In 2015, Medicaid reimbursement for comprehensive orthodontic care was 41% compared with private insurance reimbursement.²¹ Medicaid reimbursement has not kept up with private insurance, which may have led to many providers opting out.

Many orthodontists may not want to take on the added burden of treating Medicaid patients compared with private or self-paid patients. For the last 7 years, adolescent comprehensive orthodontic reimbursements have accounted for about 9% of all dental claim reimbursements and as little as 1% for all reimbursements, including medical, for children aged 6-18 years. Even the total Medicaid reimbursement for ages 6-18 years was only about 20% of the entire Medicaid reimbursement for Oklahoma. In 2016, Oklahoma reimbursed about \$4.8 billion. Many resources need to be allocated to the younger demographics. If reimbursement rates were increased to be more consistent with market rates, then more children who are in significant need of treatment and living in more populated areas may be able to get the care they need. Merritt et al¹⁶ found that in Washington, reimbursement rates for orthodontic treatment were in the top 5% of the nation. As a result, nonwhites were more likely to receive treatment. This resulted in orthodontic treatment reaching a population with greater need. This could be replicated in Oklahoma with an increase in funds that would only account for about 1% of the total Medicaid expenditure.

The Hispanic community is 1 of the fastest growing communities in the United States. Oklahoma is following this same trend.³ The Hispanic community has 1 of the highest probabilities of participating in Medicaid because of their association with low socioeconomic status.¹ This finding is also supported by the evidence that the percentage of Hispanics who received orthodontic treatment increased statistically from 2010 to 2016 ($P < 0.0001$). If the trend continues, and all evidence suggests that it will, then the Hispanic community will become a major portion of the Medicaid system that needs to be treated.

In Oklahoma, 11 of the 77 counties are considered urban. These 11 counties are located surrounding Tulsa and Oklahoma City. The remaining 66 counties are considered rural and account for the vast majority of the state. For orthodontic occurrence, 6 counties averaged low treatment occurrences. All 6 were considered rural counties and among the lowest population size in Oklahoma. Three counties averaged high treatment occurrences. Two of those 3 counties were considered rural and among the lowest for population count. These results were not statistically significant but do reinforce the claims made by McKernan et al¹⁸ that occurrences in Iowa were higher for rural areas than urban areas. Cleveland, Oklahoma, and Tulsa counties are the 3 counties with the highest population count, yet their orthodontic treatment occurrences were not considered in the high and low occurrences. With a larger population base, it would be expected that the occurrences would be higher. There may be an access to care issue and needs that may not be met in these large population counties.

Although a primary strength of this study was its longitudinal nature, spanning over 7 years, there were several limitations of this study. Oklahoma Medicaid policies and reimbursement rates may differ from other states limiting comparisons. In addition, Oklahoma populations and demographics are atypical in that they are mostly rural and Caucasian when compared with those of the United States. Furthermore, OHCA provided data that were summarized in different categories. These summaries limited the types of statistical analysis that could be achieved. The individual deidentified data were limited to orthodontic patients only. To determine how orthodontic service was used in the state of Oklahoma, the entire population of Medicaid would need to be acquired at the patient level to serve as a comparison with the orthodontic population as a whole. Future studies are needed to investigate these type of data and perform further analysis.

Incorporating the AAO-proposed changes to auto-qualifiers and diagnostic records could potentially eliminate many of the obstacles that face providers and payees. Providers could base their decisions to submit cases for

approval based on scientific reasoning while minimizing controversies. Increasing funds for the orthodontic patients also has the potential to recruit more providers to participate in Medicaid. As the needs for orthodontic treatment continue to grow, funding also needs to change to adequately address these needs. With the potential for increased Medicaid population and urban areas having lower orthodontic treatment occurrences, strategies should be employed to address the high likelihood of increased orthodontic treatment needs.

CONCLUSIONS

This population-based cross-sectional study was designed to examine and evaluate orthodontic services rendered to children enrolled in the Oklahoma Medicaid program during 2010-2016. Results from this study demonstrated that adolescent comprehensive orthodontic claims were a small portion compared with total Medicaid enrollment. Adolescent comprehensive orthodontic claims, as a percentage of dental claims, ranged from 10.9% to 13.6%. Adolescent comprehensive orthodontic claims, as a percentage of all Medicaid claims, ranged from 1.1% to 1.6% (Fig 2).

The conclusions are as follows:

1. Children aged 15-18 years received orthodontic treatment more frequently than children aged 6-14 years.
2. Females received orthodontic treatment more frequently than males.
3. Caucasians received orthodontic treatment more frequently than other races.
4. Children who live in rural areas received orthodontic treatment more frequently than children living in urban areas.

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