Adolescent Dental Use of Preventive and Restorative Services: A Big Data Study

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BACKGROUND

- Specific factors such as health insurance are consistently related to use of preventive dental care in the adolescent population (1)
- Discrepancies in the usage of oral health services can also be attributed to factors such as race and ethnicity.
- African Americans are less likely to receive dental care, including preventive and restorative services, as compared to Whites (2,3,4).
- Moreover, the Hispanic adolescent population is less likely to receive dental care than Non-Hispanic adolescents (2,3).
- The purpose of this study is to identify the relationship between insurance (Medicaid vs Commercial Insurance) and race/ethnicity (White, Black and Hispanic) with the utilization of preventive and restorative dental services in the adolescent population (ages 13-19).

METHODS

- 8004 adolescents who participated in BigMouth Repository and either has preventive or restorative service or both were included in the analysis.
- Insurance statuses were classified as "Private" or "Public", adolescents whose insurance status coded as "Unknown" were excluded from all analyses .
- Race/Ethnicity were used separately initially, then further classified as a combination of them, the new classification has 3-levels: "non-Hispanic White", "non-Hispanic Black" and "Hispanic" which including "Hispanic White", "Hispanic Black" and "Hispanic Others"

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- To explore the association between preventive /restorative service use by combination of insurance and race/ethnicity status, multiple logistic regression model was employed and found that the new race/ethnicity combined classification is much more sensitive in predicting service use. Odds ratios and effect plots were used to summarize the probabilities of the use of either service. All analyses were done with SAS V9.4 (Cary, NC) and p-value < 0.05 was set for statistical significance.

RESULTS

Table1: Preventive and Restorative Services by Insurance Status

Measures	Overall	Private	Public	P_Value
Preventive				<.0001
Yes	7435 (92.9%)	6594 (93.86%)	400 (87.15%)	
No	569 (7.1%)	431 (6.14%)	59 (12.85%)	
Restorative				0.3422
Yes	3453 (43.1%)	3009 (42.83%)	207 (45.10%)	
No	4551 (56.9%)	4016 (57.17%)	252 (54.90%)	

Table 2b: Preventive and Restorative Services by Ethnicity

Variables	Hispanic	Non-Hispanic	P_Value
Preventive			0.0218
Yes	884 (95.67%)	4751 (93.73%)	
No	40 (4.33%)	318 (6.27%)	
Restorative			0.0068
Yes	339 (36.69%)	2101 (41.45%)	
No	585 (63.31%)	2968 (58.55%)	

Table 3a: The Association between Preventive Care and Combination of Insurance and Race/Ethnicity

Odds Ratio Estimates and Wald Confidence Intervals				
Odds Ratio	Estimate	95% Confidence Limits		P-Value
Private vs Public	1.962	1.386	2.777	0.0001
Hispanic vs non-Hispanic Black	1.736	1.100	2.737	0.0177
Hispanic vs non-Hispanic White	2.062	1.369	3.105	0.0005
non-Hispanic Black vs non-Hispanic White	1.188	0.883	1.598	0.2544

Table 2a: Preventive and Restorative Services by Race

Variables	White	Black	P_Value
Preventive			0.2978
Yes	2423 (92.5%)	1019 (93.5%)	
No	196 (7.5%)	71 (6.5%)	
Restorative			0.5359
Yes	1110 (42.4%)	474 (43.5%)	
No	1509 (57.6%)	616 (56.5%)	

Table 2c: Preventive and Restorative Services by Race and Ethnicity

Variables	Non-Hispanic White	Non-Hispanic Black	Hispanics	P_Value
Preventive				0.0029
Yes	2354 (92.4%)	999 (93.4%)	884 (95.7%)	
No	194 (7.6%)	71 (6.6%)	40 (4.3%)	
Restorative				0.0024
Yes	1088 (42.7%)	466 (43.5%)	339 (36.7%)	
No	1460 (57.3%)	604 (56.5%)	585 (63.3%)	

Table 3b: The Association between Restorative Care and Combination of Insurance and Race/Ethnicity

Odds Ratio Estimates and Wald Confidence Intervals				
Odds Ratio	Estimate	95% Confidence Limits		p-Value
Private vs Public at Race_Ethn2=Hispanic	0.082	0.024	0.281	<.0001
Private vs Public at Race_Ethn2=non-Hispanic Black	1.531	0.979	2.393	0.0617
Private vs Public at Race_Ethn2=non-Hispanic White	0.940	0.724	1.222	0.6449
Hispanic vs non-Hispanic Black at Insurance2=Private	0.649	0.534	0.789	<.0001
Hispanic vs non-Hispanic White at Insurance2=Private	0.719	0.607	0.853	0.0002
non-Hispanic Black vs non-Hispanic White at Insurance2=Private	1.108	0.950	1.293	0.1927
Hispanic vs non-Hispanic Black at Insurance2=Public	12.067	3.320	43.857	0.0002
Hispanic vs non-Hispanic White at Insurance2=Public	8.212	2.371	28.446	0.0009
non-Hispanic Black vs non-Hispanic White at Insurance2=Public	0.681	0.415	1.116	0.1270

CONCLUSIONS

- Higher proportion of adolescents having private insurance coverage tends to have preventive dental care than those having public insurance 93.7% vs. 87.2% . This is not true for restorative services, which was 42.8% vs. 45.1%.
- There is a significant different in using of preventive or restorative services between Hispanic and non-Hispanic adolescents. 95.7% vs. 93.7% in preventive and 36.7% vs. 41.5% in restorative, respectively.
- Hispanic adolescents used more preventive service and less use of restorative service than non-Hispanic white or non-Hispanic black when not taking insurance status into account.
- Adolescents with private insurance are 1.96 (95% CI: 1.39, 2.78 p = 0.0001) times more likely to get preventive service compared to adolescents with public insurance when taking race/ethnicity into account. Hispanic adolescents are 1.74 times more like use preventive service compared to non-Hispanic black and 2.06 time more likely to use preventive service compared to non-Hispanic white adolescents. There is no difference in using preventive services between non-Hispanic black and non-Hispanic white when adjusting for insurance status.

IMPLICATIONS:

Understanding how the associations between specific social determinants of health (payment method and ethnicity/race) and utilization of preventive and restorative dental services will allow for improved interventions on bridging gaps for care in these populations. By learning about these discrepancies of access to specific dental services, there can be programs and initiatives developed to promote the use of these services in a proportionate manner irrespective of specified social determinants

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