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How have state policies to expand dependent coverage affected
the Affordable Care Act on healthcare-related outcomes?

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Abstract

Background: In the United States, prior to the implementation of the Affordable Care Act Dependent Coverage Expansion (ACA-DCE) in September 2010, many states had made similar expansion of coverage to young adults, although with varying requirements based on age limits, marital status, student status and other factors.

Objective: To examine if healthcare-related changes among young adults after the ACA-DCE differed by the states' prior reform status.

Methods: Young adults aged 19-34 were identified from the 2004-2013 Medical Expenditure Panel Survey, a national household interview survey in the U.S. Quasi-experiment design and difference-in-differences analyses were conducted to examine the changes in insurance coverage, annual care utilization, medical expenditures and self-reported health after the implementation of the ACA-DEC among adults aged 19-25 years, using those aged 26-34 as controls; the analyses were stratified by states' prior expansion status.

Results: While insurance coverage increased nationwide among 19-25-year-olds after the implementation of the ACA-DCE, its spillover effects on dental insurance and prescription insurance and its effects on healthcare spending and overall health status were only seen for those residing in states that expanded dependent coverage prior to the ACA.

Conclusions: State policies may have facilitated the effects from the ACA-DCE on healthcare delivery among young adults. Future studies evaluating effects of the ACA should consider state variations when possible, even for the provisions that apply to all states uniformly.

Key words: Affordable Care Act, young adults, care utilization, medical expenditures, spillover effect.

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Introduction

On September 23, 2010, the Affordable Care Act Dependent Coverage Expansion (ACA-DCE) took effect, allowing young adults to remain on their parents' health insurance plans until age 26. Since then, the target population of young adults aged 19-25 years have experienced increases in health insurance coverage and access to care [1, 2]. Using nationwide data, Chua and Sommers reported a decrease in out-of-pocket (OOP) expenditures and improved self-reported health 1-year post implementation of the ACA-DCE, but no change in health care use or in total medical expenditures in the young adult population [3]. Similar expansion of dependent eligibilities was made by dozens of states prior to the implementation of the ACA with varying requirements based on age limits, marital status, student status and other factors [4-6]. We are interested in understanding how these state reforms interact with the federal reform in care utilization, medical expenditures and overall health status among young adults. Therefore, we extended the Chua study [3] by stratifying the analyses by states' prior expansion status with more recent data and additional healthcare outcomes.

Methods

We selected adults aged 19 to 34 years from the 2004-2013 Medical Expenditure Panel Survey (MEPS), a nationally representative household survey of the US non-institutionalized civilian population conducted by the Agency for Healthcare Research and Quality (AHRQ). We utilized a difference-in-differences (DD) design, where the intervention group was adults aged 19-25 years and the control group was adults aged 26-34 years, and data years 2004-2009 were the pre-ACA period and the years 2011-2012 were the post-ACA period. The data for year 2010, a washout/phase-in period, were excluded. The publically available data were de-identified, and the state of residence was obtained from limited-access database from the AHRQ Research Data Center. MEPS has been reviewed and approved by the Westat Institutional Review Board. The following outcomes were examined as binary (yes/no) variables: any insurance coverage in the year (including medical insurance, dental insurance

and prescription insurance), any annual care utilization by service type (including outpatient visit, office-based visit, emergency department visit, hospitalization, dental visit, and prescription medicine), and self-reported excellent current health (including physical and mental health). Expenditures (including total expenditures and OOP expenditure) were inflation-adjusted to 2013 dollars and examined as continuous variables. The percentage of OOP expenditure was also calculated and examined as a continuous variable.

Similar to Chua and Sommers [3], for the binary outcome variables and the percentage of OOP expenditure, we fitted linear probability models adjusting for sex, race/ethnicity, marital status, census region and urban residence. For the expenditures, we used a 2-part model approach: a linear probability model predicting the probability of any expenditures and a linear model predicting a log-transformed expenditure among individuals with any expenditures, controlling for the same factors mentioned above. We conducted analyses for the US overall and stratified by states' expansion status prior to the ACA. We used SAS 9.3 (SAS Institute Inc, Cary, NC) for the analyses. All estimates were weighted to account for the MEPS complex survey design and nonresponse.

Results

We identified 27,701 young adults in the intervention group (10,943 from the non-prior-expansion states and 16,758 from the prior-expansion states) and 34,925 in the control group (13,606 from the non-prior-expansion states and 21,319 from the prior-expansion states). The demographic factors were generally comparable between the two groups, except that there were more married individuals in the control group (51% vs 14%) (Table 1).

Compared to the control group, the intervention group experienced an increase in medical insurance coverage, regardless of their states' prior expansion status (Table 2). Spillover effects of increased dental insurance (DD 9.6, 95% CI [5.6, 13.5] percentage points) and prescription insurance (DD 11.3, 95% CI [7.4, 15.1] percentage points) were observed in young adults 19-25 years old in the states that had

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expanded dependent coverage previously, but not in those from the non-prior-expansion states (Table 2). Moreover, the implementation of the ACA-DCE was associated with an increase in reporting excellent physical health (DD 4.2, 95% CI [0.9, 7.5] percentage points) and a decrease in percent of expenditures paid out-of-pocket spending (DD -4.6, 95% CI [-7.2, -2.0] percentage points) in the prior-expansion states but not in the non-prior-expansion states (Tables 2 & 3). Generally, no change was observed in healthcare utilization for the intervention group, except a decrease in hospitalization (DD -2.0, 95% CI [-3.6, -0.5] percentage points) in the non-prior-expansion states.

Discussion

While the rate of insurance coverage increased nationwide among young adults aged 19-25 years three years after the implementation of the ACA-DCE, its spillover effects on dental insurance and prescription insurance and effects on healthcare spending and overall health status were only seen for those residing in the states that had expanded dependent coverage expansion prior to the ACA. Cantor et al. examined the interaction between prior state laws and the ACA on young adult coverage, and found that in the early months of the ACA

implementation the increase in young adult dependent coverage was greater among those who were also eligible under a state law [7]. Our findings on other healthcare-related outcomes are in line with these “prime the pump” effects observed on coverage previously. The mechanisms largely remain to be elucidated, but could be related to raised awareness of the dependent coverage expansion or possibly pre-developed infrastructure in health care spending in the states with prior reform. The decrease in hospitalization among young adults aged 19-25 years likely reflected the nation’s overall decrease in potentially preventable adult inpatient admissions in recent years [8].

Due to differences in demographics, political makeup and history of state reforms, the effect of the ACA on healthcare-related outcomes may vary substantially by state. We suggest future studies taking into consideration these state variations when possible, even for the ACA provisions that apply to all states uniformly, such as the dependent coverage expansion.

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Table 1. Demographic factors for young adults aged 19-34 years, MEPS 2004-2009 and 2011-13

	Total		Age 19-25		Age 26-34	
	N	Weighted %	N	Weighted %	N	Weighted %
<i>US overall</i>						
Sex						
Male	29452	50.0	13497	50.9	15955	49.3
Female	33174	50.0	14204	49.1	18970	50.7
Race/ethnicity						
Non-Hispaniwhite	24503	58.8	10390	58.3	14113	59.1
Non-Hispanic black	11459	13.0	5549	13.8	5910	12.3
Hispanic	20996	20.0	9342	19.9	11654	20.0
Other	5668	8.3	2420	8.0	3248	8.5
Marital status						
Unmarried	40609	65.4	23711	86.0	16898	48.8
Married	22017	34.6	3990	14.0	18027	51.2
Region						
Northeast	9048	17.8	4130	18.3	4918	17.4
Midwest	11798	21.4	5134	21.1	6664	21.6
South	23707	36.5	10593	36.9	13114	36.2
West	18071	24.3	7842	23.7	10229	24.8

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Urban residence

Non-metropolitan	8226	13.6	3764	14.3	4462	13.1
Metropolitan	54398	86.4	23935	85.7	30463	86.9

*Non-prior-expansion states**

Sex

Male	11616	50.4	5396	51.8	6220	49.3
Female	12933	49.6	5547	48.2	7386	50.7

Race/ethnicity

Non-Hispanic white	8088	52.2	3434	51.6	4654	52.8
Non-Hispanic black	4539	14.5	2209	15.5	2330	13.7
Hispanic	9242	23.6	4149	23.5	5093	23.6
Other	2680	9.7	1151	9.4	1529	9.9

Marital status

Unmarried	16019	65.3	9413	85.9	6606	48.6
Married	8530	34.7	1530	14.1	7000	51.4

Region

Northeast	125	1.2	45	1.1	80	1.3
Midwest	2822	14.6	1271	14.7	1551	14.4
South	8100	37.5	3681	38.6	4419	36.6
West	13501	46.8	5945	45.7	7556	47.6

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Urban residence

Non-metropolitan	3548	14.3	1643	15.2	1905	13.5
Metropolitan	21000	85.7	9299	84.8	11701	86.5

Prior-expansion states

Sex

Male	17836	49.8	8101	50.4	9735	49.3
Female	20241	50.2	8657	49.6	11584	50.7

Race/ethnicity

Non-Hispanic white	16415	62.3	6956	62.0	9459	62.6
Non-Hispanic black	6920	12.1	3340	12.9	3580	11.5
Hispanic	11754	18.0	5193	17.9	6561	18.1
Other	2988	7.6	1269	7.2	1719	7.8

Marital status

Unmarried	24590	65.4	14298	86.1	10292	49.0
Married	13487	34.6	2460	13.9	11027	51.0

Region

Northeast	8923	26.8	4085	27.8	4838	26.0
Midwest	8976	25.1	3863	24.6	5113	25.4
South	15607	36.0	6912	35.9	8695	36.1
West	4570	12.2	1897	11.6	2673	12.6

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Urban residence

Non-metropolitan	4678	13.3	2121	13.9	2557	12.8
Metropolitan	33398	86.7	14636	86.1	18762	87.2

* The following states did not implement any policy expanding the dependent coverage eligibility prior to September 2010: Alabama, Alaska, Arizona, Arkansas, California, Hawaii, Kansas, Michigan, Mississippi, Nebraska, North Carolina, Oklahoma, Vermont, District of Columbia; the following states were also counted as non-prior-expansion states as the expansions were very limited and only applied to students: Louisiana, Nevada, South Carolina, and Wyoming [9].

Table 2. Difference-in-Differences Estimates for Insurance, Health Care Use, and Health Outcomes after Implementation of the Dependent Coverage Provision, MEPS 2004-2009 and 2011-2013

	Unadjusted %				Adjusted Estimated Change in Healthcare related Outcomes, % (95% CI)	P Value
	Intervention Group (Age 19-25)		Control Group (Age 26-34)			
	Before	After	Before	After		
<i>US overall</i>						
Insurance coverage						
Any medical insurance	74.0	77.9	78.2	76.6	5.5 (3.4 to 7.7)	<0.001
Any dental insurance	37.7	42.8	47.4	45.6	7.1 (4.0 to 10.2)	<0.001
Any prescription insurance	47.6	52.8	59.3	56.3	8.3 (5.1 to 11.5)	<0.001
Annual health care use						
≥1 Outpatient visit	7.1	7.1	9.4	9.3	0.1 (-1.3 to 1.5)	0.86
≥1 Office-based visit	55.7	55.1	62.0	61.1	0.3 (-2.0 to 2.6)	0.80
≥1 Emergency department visit	14.9	14.7	12.7	13.2	-0.6 (-2.3 to 1.0)	0.46
≥1 Hospitalization	5.9	5.3	7.6	8.1	-1.3 (-2.4 to -0.3)	0.01

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≥1 Dental visit	32.8	30.3	36.7	33.5	0.8 (-1.9 to 3.4)	0.57
≥1 Prescription Medicine	48.3	45.5	53.9	51.9	-0.7 (-3.0 to 1.6)	0.56
Self-reported health status						
Excellent physical health	37.5	40.5	32.0	31.4	3.6 (1.0 to 6.1)	0.006
Excellent mental health	46.8	49.7	43.7	43.7	2.7 (0.0 to 5.3)	0.047
<i>Non-prior-expansion states*</i>						
Insurance coverage						
Any medical insurance	72.0	75.1	77.2	75	5.5 (1.9 to 9.1)	0.003
Any dental insurance	37.2	38.4	46.6	45.2	2.7 (-2.4 to 7.8)	0.30
Any prescription insurance	46.7	48.1	56.7	55.2	3.1 (-2.2 to 8.4)	0.25
Annual health care use						
≥1 Outpatient visit	6.5	6.5	8.2	7.6	0.6 (-1.5 to 2.7)	0.57
≥1 Office-based visit	52.6	53.3	59.0	58.8	1.3 (-2.6 to 5.2)	0.52
≥1 Emergency department visit	14.0	15	11.6	12.3	0.3 (-1.8 to 2.4)	0.77
≥1 Hospitalization	6.0	5.0	7.4	8.0	-2.0 (-3.6 to -0.5)	0.01
≥1 Dental visit	30.9	27.5	34.6	32	-0.5 (-5.0 to 4.1)	0.84
≥1 Prescription Medicine	46.0	42.3	51.8	49.8	-1.6 (-5.1 to 1.9)	0.36
Self-reported health status						
Excellent physical health	36.3	38.9	30.8	30.8	2.5 (-1.6 to 6.7)	0.23
Excellent mental health	46.3	49.3	43.9	45.0	1.4 (-3.2 to 6.1)	0.543
<i>Prior-expansion states</i>						
Insurance coverage						
Any medical insurance	75.1	79.5	78.8	77.5	5.6 (2.8 to 8.3)	<0.001

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Any dental insurance	38.0	45.4	47.9	45.8	9.6 (5.6 to 13.5)	<0.001
Any prescription insurance	48.1	55.5	60.7	56.9	11.3 (7.4 to 15.1)	<0.001
Annual health care use						
≥1 Outpatient visit	7.4	7.4	10.2	10.3	-0.1 (-1.9 to 1.6)	0.88
≥1 Office-based visit	57.3	56.1	63.7	62.4	0.0 (-2.9 to 2.8)	0.98
≥1 Emergency department visit	15.4	14.6	13.2	13.6	-1.2 (-3.5 to 1.1)	0.318
≥1 Hospitalization	5.9	5.5	7.7	8.2	-1.0 (-2.3 to 0.4)	0.17
≥1 Dental visit	33.8	31.9	37.9	34.4	1.6 (-1.6 to 4.7)	0.32
≥1 Prescription Medicine	49.5	47.3	55.0	53.0	-0.1 (-3.2 to 3.0)	0.94
Self-reported health status						
Excellent physical health	38.1	41.4	32.6	31.8	4.2 (0.9 to 7.5)	0.01
Excellent mental health	47.0	49.9	43.5	43.0	3.3 (0.0 to 6.7)	0.051

* The following states did not implement any policy expanding the dependent coverage eligibility prior to September 2010: Alabama, Alaska, Arizona, Arkansas, California, Hawaii, Kansas, Michigan, Mississippi, Nebraska, North Carolina, Oklahoma, Vermont, District of Columbia; the following states were also counted as non-prior-expansion states as the expansions were very limited and only applied to students: Louisiana, Nevada, South Carolina, and Wyoming [9].

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Table 3. Difference-in-Differences Estimates for Health Care Expenditures after Implementation of the Dependent Coverage Provision, MEPS 2004-2009 and 2011-2013

	<u>Unadjusted expenditures</u>					
	Intervention Group		Control Group		Adjusted Estimated Change in Health care related Outcomes, % (95% CI)	P Value
	<u>(Ages 19-25)</u>		<u>(Ages 26-34)</u>			
	Before	After	Before	After		
<i>US overall</i>						
Overall health care expenditures						
Any annual expenditures (%)	72.0	70.6	76.4	74.7	-0.5 (-1.5 to 2.4)	0.64
Annual expenditures (\$)†	2448	2892	3236	3921	NA	
Log annual expenditures†	6.64	6.64	6.88	6.91	0.02(-0.11to0.07)	0.61
Out-of-pocket health care expenditures						
Any annual expenditures (%)	65.0	61.3	71.2	68.1	-0.4 (-2.6 to 1.8)	0.73
Annual expenditures (\$)	577	478	652	670	NA	
Log annual expenditures†	5.29	5.06	5.46	5.37	-0.12(-0.21to 0.03)	0.007
Percent of expenditures paid out-of-pocket†	37.1	43.5	39.7	37.5	-4.0 (-4.0 to -4.0)	<0.01
<i>Non-prior-expansion states*</i>						
Overall health care expenditures						
Any annual expenditures (%)	68.8	68.8	73.9	72.1	2.0 (-1.6 to 5.5)	0.28
Annual expenditures (\$)†	2449	3035	3158	3464	NA	
Log annual expenditures†	6.59	6.56	6.81	6.82	-0.04(-0.18to0.10)	0.59
Out-of-pocket health care						

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expenditures						
Any annual expenditures (%)	61.7	58.9	68.4	65.2	0.7 (-3.0 to 4.5)	0.70
Annual expenditures (\$)	568	442	616	576	NA	0.13
Log annual expenditures [†]	5.25	5.00	5.41	5.27	-0.11(-0.26 to 0.05)	0.18
Percent of expenditures paid out-of-pocket [†]	43.8	38.8	39.9	37.9	-2.8 (-6.0 to 0.3)	0.08
<i>Prior-expansion states</i>						
Overall health care expenditures						
Any annual expenditures (%)	73.6	71.6	77.9	76.1	-0.2 (-2.8 to 2.5)	0.90
Annual expenditures (\$) [†]	2447	2813	3276	4151	NA	
Log annual expenditures [†]	6.66	6.68	6.92	6.95	-1.0 (-11.90 to 9.84)	0.85
Out-of-pocket health care expenditures						
Any annual expenditure (%)	66.8	62.7	72.8	69.6	-0.8 (-3.6 to 2.1)	0.59
Annual expenditures (\$)	581	497	671	717	NA	
Log annual expenditures [†]	5.31	5.09	5.49	5.41	-12.5 (-23.63to -1.44)	0.03
Percent of expenditures paid out-of-pocket [†]	43.3	36.2	39.5	37.3	-4.6 (-7.2 to -2.0)	<0.001

* The following states did not implement any policy expanding the dependent coverage eligibility prior to September 2010: Alabama, Alaska, Arizona, Arkansas, California, Hawaii, Kansas, Michigan, Mississippi, Nebraska, North Carolina, Oklahoma, Vermont, District of Columbia; the following states were also counted as non-prior-expansion states as the expansions were very limited and only applied to students: Louisiana, Nevada, South Carolina, and Wyoming [9].

[†] Among individual with nonzero annual health care expenditures.