Journal of Patient Experience
Volume 10: 1-4

DOI: 10.1177/23743735231179060
journals.sagepub.com/home/jpx

The Nurse Licensure Compact's Effect on Telemedicine Usage

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Abstract

As a result of a shortage of primary care physicians, considerable portion of patients in the US have difficulty accessing primary care. Telemedicine allows healthcare professionals to reach patients in shortage areas, but state-based occupational licensing laws make interstate practice difficult. The Nurse Licensure Compact (NLC) was designed to improve interstate practice for Registered Nurses (RNs), including telemedicine. Our preliminary analysis does not find evidence that the NLC is able to significantly increase telemedicine usage from out-of-state providers. Policymakers cannot rely on just the NLC to encourage the adoption of telemedicine; other regulations currently limit its adoption.

Keywords

access to care, telemedicine, technology, nursing

Key Points

- The shortage of primary care physicians and nurses reduces patient access to primary care.
- State level licensing laws create a regulatory barrier to practice across state lines.
- The NLC is designed to make it easier for RNs to treat patients in other states.
- Preliminary analysis suggests that the NLC is not able to significantly increase telemedicine usage from out-of-state providers among patients.

Introduction

The US is facing a shortage of primary care physicians, which makes access to care difficult for patients.[1] These shortages are concentrated among rural areas and urban Medicaid populations. Registered nurses (RNs) are valuable members of the healthcare delivery team that work closely with patients. However, regional shortages do not allow us to rely on RNs to provide access to primary care.[2] Healthcare systems will need to harness healthcare professionals from outside their states or even their regions to ensure access for patients.

One solution that can smooth regional shortages of nurses is the use of telemedicine. Telemedicine uses communication or monitoring technology to allow healthcare providers to evaluate, manage, or treat patients remotely. During the COVID-19 pandemic, when a large proportion of patients were forced to switch to telemedicine, many specialties saw lower satisfaction ratings; however, most of the issues were related to technology rather than the quality of care.[3] Patients tend to be satisfied with telemedicine offered by outpatient clinics when freely chosen.[4] While telemedicine cannot replace all traditional, in-person care, it can be useful for patients in certain situations.

Usage of telemedicine has grown in recent years, but its adoption has been slowed in part by regulatory policy. For instance, healthcare professionals must be licensed in the state that the patient is physically located. The Nurse Licensure Compact (NLC) allows RNs to practice in any compact state on one state license, which makes it easier to provide telemedicine—one of the goals of the NLC. Using 2019 insurance claims data from Change Healthcare, we compare telemedicine usage in states that have adopted the NLC to those that have not. On average, NLC states had a slightly higher average percentage of telemedicine usage

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from out-of-state providers, but the differences were not statistically significant.

The Nurse Licensure Compact

The nursing profession is regulated by state level occupational licensing laws. This allows state boards to oversee the profession, but it makes it difficult for nurses to practice across state lines. The NLC was designed to retain state level oversight while allowing healthcare to be integrated across state lines. RNs licensed in one member state can legally practice in all member states, in person or through telemedicine. In 2019, the year of our analysis, 32 states were members of the NLC.[5] Today, 39 are members or in the process of implementing the compact.

Data and Methodology

Does reducing licensing barriers for the provision of telemedicine increase usage among patients? Making it easier for RNs to practice telemedicine is important, but the ultimate goal is to increase patient utilization. To test this question, we compared the usage of out-of-state telemedicine providers in the NLC states against non-NLC states.

For our analysis, we obtained insurance claims data from Change Healthcare, which gathered data from all 50 US states. The individual claims data were de-identified and aggregated at the state level monthly for 2019 and 2020 by Change Healthcare. We then aggregated the claims annually for each state. These claims represent more than half of the private insurance claims and Medicare Advantage claims managed by private insurance carriers. One shortcoming of the data is that it does not include Medicare indemnity and Medicaid data. However, it is the most detailed publicly available data. We limit our analysis to 2019, to ignore the effects of the COVID-19 pandemic. The pandemic had a significant impact on telemedicine usage; however, states temporarily waived licensing regulations to improve access to care, including telemedicine.[6] We would be unable to establish an appropriate control. Additionally, with just one year of data, we would be unable to establish adequate pretreatment trends.

We also obtained state population data from the U.S. Census Bureau to calculate the telemedicine claims per 1000 residents. Finally, we divide the number of out-of-state claims by the total number of telemedicine claims. We classified states as NLC members if they had adopted and implemented the NLC prior to 2019, according to the NCSBN. We also gathered state level covariates to account for differences between states that could account for some of the socioeconomic factors that influence telemedicine adoption based on Liu et al.[7] We obtained the median age, and percentage of white population, and percent of residents with a college degree from the US Census Bureau. We used the total number of out-patient hospital visits from the Kaiser Family Foundation. We also included average personal income from the Bureau of Economic Analysis.

Table 1 below shows the summary statistics for NLC and non-NLC states, respectively. Comparing raw numbers, NLC states had a lower number of out-of-state telemedicine claims. However, NLC states tended to be smaller than non-NLC states. When we standardize the telehealth claims data using telehealth claims per 1000 residents, we find that NLC states average just over four out-of-state telehealth claims per 1000 residents and non-NLC states average 3.25 out-of-state telehealth claims per 1000 residents. 37.8% of telemedicine claims in NLC states are from out-of-state providers, while in non-NLC states, 33.7% of claims are from out-of-state providers. This suggests that out-of-state professionals provide a slightly larger amount of telemedicine in NLC states.

Table 1 also breaks down the differences between NLC states and non-NLC states by census region. For both the Northeast and Midwest, NLC member states have both a higher number of out-of-state telehealth claims per 1000 residents and a percent of claims are from out-of-state providers. In the Western region, we find the opposite, with non-NLC member states with a higher number of out-of-state telehealth claims per 1000 residents and a percent of claims are from out-of-state providers. The Southern region has just one NLC member state compared to fifteen non-NLC member states, making a comparison impossible.

To control for the possibility that characteristics of the states that are unrelated to NLC membership are driving the differences, we also perform a simple cross-section regression to test if the difference in out-of-state telemedicine usage between NLC states and non-NLC states is statistically significant. The results can be found in Table 2. We confirm our original findings that NLC member states had greater telemedicine usage. However, this difference is smaller, 2.1% points, and the results are not statistically significant. We do not have enough evidence to attribute the difference in out-of-state telemedicine claims to NLC membership.

Discussion

We are unable to find statistically significant evidence that NLC membership is associated with an increase in usage of telemedicine across state lines. While NLC states had a higher average fraction of claims from out-of-state providers, we are unable to reject the null hypothesis that it had no impact. Furthermore, the difference seems small, at just over 2% points. However, this relatively small change represents a larger number of claims. The NLC makes it easier for RNs to provide telemedicine to patients located in other states; however, it does not seem to increase patient utilization.

Limitations

There are a number of factors that make interpretation difficult. RNs are a member of a healthcare team, but they

Table 1. Summary Statistics.

	NLC Member States		Non-NLC Member States	
	Mean	SD	Mean	SD
Telehealth Claims to Out-of-state Providers	21 371	20 840	26 653	24 516
Telehealth Claims to In-state Providers	56 290	110 047	63 043	74 944
Out-of-state Telemedicine Claims per 1000 Residents	4.05	1.98	3.25	1.66
In-state Telemedicine Claims per 1000 Residents	10.02	15.53	6.54	3.05
Fraction of Telemedicine Claims to Out-of-State Providers	0.38	0.15	0.34	0.12
Population	5,403,789	5,966,297	8,594,470	9,235,167
N	32		18	
	NLC Member States		Non-NLC Member States	
North East	Mean	Std. dev.	Mean	Std. dev.
Telehealth Claims to Out-of-state Providers	26 536	29 789	3109	360
Telehealth Claims to In-state Providers	67 141	99 124	12 807	13 808
Out-of-state Telemedicine Claims per 1000 Residents	2.72	1.21	2.30	0.25
In-state Telemedicine Claims per 1000 Residents	6.41	4.13	9.50	10.28
Fraction of Telemedicine Claims to Out-of-State Providers	0.33	0.11	0.32	0.29
Population	7,589,149	6,685,969	1,350,000	70 711
N	7		2	
	NLC Member States		Non-NLC Member States	
South	Mean	Std. dev.	Mean	Std. dev.
Telehealth Claims to Out-of-state Providers	21 138	-	31 789	23 890
Telehealth Claims to In-state Providers	23 850	-	54 793	69 599
Out-of-state Telemedicine Claims per 1000 Residents	4.31	-	4.73	2.12
In-state Telemedicine Claims per 1000 Residents	4.86	-	6.54	2.19
Fraction of Telemedicine Claims to Out-of-State Providers	0.47	-	0.42	0.12
Population	4,900,000	-	8,045,111	7,644,450
N	1		15	
	NLC Member States		Non-NLC Member States	
Midwest	Mean	Std. dev.	Mean	Std. dev.
Telehealth Claims to Out-of-state Providers	34 992	13 443	12 926	9548
Telehealth Claims to In-state Providers	74 444	41 417	40 819	57 640
Out-of-state Telemedicine Claims per 1000 Residents	3.67	1.23	3.23	1.22
In-state Telemedicine Claims per 1000 Residents	7.11	2.94	12.29	17.77
Fraction of Telemedicine Claims to Out-of-State Providers	0.35	0.12	0.31	0.17
Population	10,200 000	3,279,736	3,531,356	2,378,668
N	4		8	
	NLC Member States		Non-NLC Member States	
West	Mean	Std. dev.	Mean	Std. dev.
Telehealth Claims to Out-of-state Providers	22 150	28 003	13 916	16 234
Telehealth Claims to In-state Providers	57 196	76 165	89 607	212 391
Out-of-state Telemedicine Claims per 1000 Residents	3.41	2.44	4.03	2.24
In-state Telemedicine Claims per 1000 Residents	6.59	2.25	15.04	27.96
Fraction of Telemedicine Claims to Out-of-State Providers	0.31	0.15	0.39	0.17
Population	9,338,934	14,700 000	3,125,731	2,515,789
N	6		7	

Note: Telemedicine claims gathered from Change Healthcare. State population gathered from the US Census Bureau National and State Population Estimates. NLC membership gathered from the NCSBN.

Table 2. Regression Results.

	Fraction of Telemedicine Claims from Out-of-State Providers
NLC Membership (1 = member)	0.021
	(0.038)
Median Age	−0.004
	(0.010)
Percent of Population with a bachelor's degree	0.001
	(0.005)
Per Capita Income	−0.023
	(0.041)
Percent White	0.389**
	(0.182)
Hospital Outpatient Visits per 1000	−0.000**
	(0.000)
Observations	50
R-squared	0.158

Robust standard errors are in parentheses.
***$P < .01$, **$P < .05$, *$P < .1$

typically do not establish a direct relationship with a patient. This would suggest that limitations created by physician licensing are more important for patient telemedicine usage from out-of-state providers than limitations from RN licensing. Additionally, we are unable to determine which healthcare profession is providing the care. Thus, physician-provided care, unrelated to the NLC, is included in our figures.

Without multiple years of data, we are unable to test the effect of joining the NLC on out-of-state telemedicine usage. Leveraging a policy change for our analysis would give us some ability to establish causality. Lastly, NLC membership itself may not be enough to overcome other regulations related to telemedicine. There are a number of other regulations that likely limit the adoption of telemedicine. Although it may be easier for RNs to incorporate telemedicine services into their practice under the NLC, these regulations may prevent further adoption by patients.

Establishing the effect of the NLC on the usage of telemedicine is important. However, more detailed data is necessary to estimate a causal relationship. This will likely require accessing proprietary data or creating a new data source. Either would be a valuable addition to the literature.

Conclusion

The United States faces a shortage of healthcare professionals, while the demand for healthcare continues to grow. State level licensing regimes exacerbate these issues, making it difficult for healthcare professionals to practice across state lines. Telemedicine has the potential to connect patients in healthcare shortage areas to healthcare providers across the country, but it is currently limited by regulations. The NLC offers one potential solution, giving patients access to nurses located in other member states. While we found some limited evidence that patients located in NLC member states use slightly more telemedicine services from out-of-state providers than states outside of the NLC, these results are not statistically significant. Although the NLC makes it easier for RNs to practice telemedicine, other regulations likely limit the adoption of telemedicine.

Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Ethics Approval

Ethical approval is not applicable to this article.

Funding

The author(s) received no financial support for the research, authorship, and/or publication of this article.

Statement of Human and Animal Rights

This article does not contain any studies with human or animal subjects.

Statement of Informed Consent

There are no human subjects in this article and informed consent is not applicable.

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