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Scheduling primary care appointments online: Differences in availability based on health insurance

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ABSTRACT

Background: Digital platforms that allow patients to go online or use smartphone applications to view and schedule physician appointments have not been well evaluated.

Methods: We conducted systematic searches for primary care physician appointments in 20 cities using ZocDoc, an online appointment scheduling platform. Availability was determined for three insurance types (self-pay, Medicare, and Medicaid) in states with and without Medicaid expansion. We collected data on physician characteristics, number of appointments available, and distance to clinics.

Results: The sample comprised 4150 physician observations across 17 states. Overall, the mean distance to clinic was 8.9 miles (SD: 8.4 miles), mean total number of appointments available within 3 days for the 10 closest physicians was 20.1 (SD: 27.1), and the mean number of physicians available within 5 miles was 5.4 (SD: 6.6). There were no differences in physician characteristics by insurance type. Access to appointments did not differ between Medicare and self-pay. However, compared to self-pay, appointments for Medicaid were further away (Mean difference in miles: 5.4, $P < 0.001$), and there were fewer physicians available within 5 miles (Mean difference in # of physicians: -4.9, $P < 0.001$). States that did not adopt Medicaid expansion had fewer appointments within proximity, but this differed similarly across insurance types.

Conclusions: There were a substantial number of available appointments at close distances. However, Medicaid patients had less access to appointments within proximity than self-pay or Medicare patients.

1. Introduction

Despite improvements under the Affordable Care Act (ACA), reliable access to primary care still remains a challenge for many individuals in the United States (US). In 2015, a national survey found that 14.5% of adults reported not having insurance and 25.8% did not have a primary care physician.[1] Under the ACA, Medicaid expansion was set in place to improve coverage for individuals with a household income below 133% of the Federal Poverty Level.[2] This policy has not been adopted in all states, and it may take years to fully understand its impact. However, one study found that from 2013 to 2015, a state with Medicaid expansion was associated with a 22.7% relative reduction in the uninsured rate and significantly increased access to primary care when compared to a non-expansion state.[3]

The typical approach to scheduling a physician appointment is for the patient to call physician offices in advance to coordinate availability and payment options. This process can be tedious, inconvenient, and often results in long wait-times, even though timely access to care is crucial for both patient outcomes and satisfaction.[4] Prompt access to primary care appointments is of particular importance, since general practitioners often serve as the "gatekeepers" of the health system, and treatment may be further delayed if the patients require extensive testing or care from a specialist.[5] Recently, digital platforms have emerged that allow patients to go online or use smartphone applications to view and schedule physician appointments within a few minutes. These platforms promote their ease of use and fast appointment availability, but appointment availability through these technologies has not been well evaluated.

The objective of this study was to evaluate differences in availability of primary care appointments for patients using ZocDoc, one of the largest online appointment scheduling platforms available in the United States.[6] We evaluated patients searching with one of three insurance selections (self-pay as a proxy for private insurance, Medicare, and Medicaid) to determine if appointment availability varied based on

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insurance status. We performed this evaluation both in states that did and did not adopt Medicaid expansion after the Affordable Care Act. We hypothesized that patients searching with Medicaid insurance selected would have less appointment availability than patients searching with self-pay or Medicare. Additionally, we explored whether these findings varied in states with and without Medicaid expansion.

2. Methods

From January to February 2016, we conducted systematic searches for primary care physician appointments using ZocDoc. To gain broad insight, we evaluated availability in 20 cities where ZocDoc operates, including 10 in states with and 10 in states without Medicaid Expansion.[7] Medicaid expansion status was determined as of January 1, 2016. In the selection process, cities were first sorted by Medicaid Expansion status and geographic region in the United States: Northeast, East Coast, South, Midwest, and West Coast. To maximize geographic diversity and generalizability of the results nationally, we selected a number of cities from each region (Northeast: 3, East Coast: 1, South: 8, Midwest: 5, West Coast: 3). We selected cities with at least 10 doctors available for self-pay to ensure that there was sufficient ZocDoc penetration in that city to appropriately evaluate differences in appointment availability. Since patient searches required a zip code, we used 100 Main Street (or 100 State Street if Main Street was not available) as an address to identify centrally located zip codes within each city. This approach has been used in prior work.[8]

Two reviewers followed a structured approach to perform searches for primary care appointments. ZocDoc requires that a condition is identified when conducting searches. We selected “illness” to indicate that these searches were for primary care appointments with sooner availability given the acuity. Twice a week for four weeks in 2016 (January 18, 24, 29 and February 4, 6, 9, 13, 17), the reviewers performed three searches in each city, once for each insurance type: self-pay, Medicare, and Medicaid. The searches were carried out on different days each week to control for varying demand and fluctuations in physician and patient work schedules. Searches evaluated availability of appointments for the following three days and excluded weekends (e.g. a search performed on a Friday would be for Monday-Wednesday of the next week). On ZocDoc, self-pay is the default insurance selection and indicates that the patient can fully pay for the services provided. Since we were unable to identify the appropriate private insurance in each city, we used self-pay as a proxy for private insurance to indicate a scenario in which payment for services would not be a barrier to a physician appointment.

Data on physician characteristics, including gender, degree (MD/DO), and star rating were readily available on the website and recorded for analysis. Access to appointments was measured by capturing the total number of physicians within 5 miles with at least 1 appointment available. Additionally, for the 10 physicians in closest proximity with availability in the next three days, we recorded distance to the clinic and number of open appointments within that period. For each measure, mean and 95% confidence intervals were estimated, and t-tests were used to evaluate for differences between groups using Stata (version 12.4). This study was deemed exempt from review by the University of Pennsylvania Institutional Review Board.

3. Results

The sample comprised 4150 physician observations, and characteristics of the physicians are detailed in Table 1. Physicians were highly rated (Mean out of 5 stars: 4.52; Standard deviation: 0.87), 85.7% were male, and 71.4% had an allopathic medical degree. These characteristics did not differ significantly by insurance or Medicaid expansion status but did deviate from the national averages of 66.0% male and 91.8% allopathic degrees.[9]

Overall, the mean distance to clinic was 8.9 miles (SD: 8.4 miles), mean total number of appointments available within 3 days for the 10 closest physicians was 20.1 (SD: 27.1), and the mean number of physicians available within 5 miles was 5.4 (SD: 6.6). Table 2 displays physician appointment availability by insurance and state expansion status. Although variation exists across cities, on average, there are distinct trends and differences in availability of appointments across the three insurances and Medicaid expansion status.

Among the overall sample, there were no differences in availability of appointments between self-pay and Medicare. However, compared to self-pay, appointments for Medicaid patients were further away (Mean difference in miles: 5.4, 95% Confidence Interval [CI]: CI: 4.8 – 6.0, P value [P] < 0.001), and there were fewer physicians available within 5 miles (Mean difference in # of physicians: −4.9, 95% CI: −6.3 to −3.5, P < 0.001). There was no difference in the number of appointments available within 3 days between Medicaid and self-pay (Mean: −0.3, 95% CI: −2.4–1.7, P = 0.75).

Table 3 displays differences in access to primary care appointments for Medicaid non-expansion states relative to expansion states. Compared to expansion states, patients in non-expansion states had to travel further for appointments (Mean difference in miles: 4.2, 95% CI: 3.7–4.7, P < .001) and had fewer physicians available within 5 miles (Mean difference: −4.3, 95% CI: −5.5 to −3.2, P < .001). However, there were more appointments available within 3 days for non-expansion states (Mean difference: 9.7, 95% CI: 8.1 – 11.3, P < .001). As displayed in Table 3, the directionality of the findings did not vary across insurance type.

4. Discussion

In this study, we used information from ZocDoc to examine the impact of insurance type and Medicaid expansion status on availability of primary care appointments. Our results highlight important differences in appointment availability based on insurance. Compared to patients searching as self-pay, patients searching with Medicaid had fewer appointments available in proximity and clinics were further away in distance on average. Compared to expansion states, patients in non-expansion states had to travel further for appointments and had fewer physicians available within 5 miles. However, there were more appointments available within 3 days for non-expansion states.

Our findings reveal several important insights. First, appointment scheduling is widely recognized as a major problem in healthcare, and various solutions have been proposed to improve efficiency and effectiveness. One approach that has gained popularity is advanced access scheduling, which focuses on optimizing the existing call model rather than replacing it. Advanced access promotes patient-driven scheduling in lieu of prearranged appointments. Patients are preferentially offered same-day visits, which reduces pre-scheduled appointments and opens up provider schedules. While it has been demonstrated to improve wait times and no show rates, the effects on patient outcomes and satisfaction are unclear.[10] Other approaches such as walk-in and urgent care clinics aim to bypass the scheduling process altogether.[11] However, Zocdoc may provide better continuity and improve workflow for clinicians since the patient load is more predictable. Although digital platforms offer a unique opportunity for patients to search for providers in their area and conveniently schedule appointments, research on how to optimize their usage is currently lacking. As these platforms are increasingly adopted, it will be important that they are properly evaluated and made available to all patient populations.

Second, there were a substantial number of appointments available for patients on ZocDoc. In 17 of the 20 cities examined, there were appointments available within the next three days for all insurance types on each day searches were performed. Many of the clinics were also located at close distances (less than 10 miles) to the centralized zip codes used to perform the searches. A study conducted in 15 US cities using phone call scheduling determined that average weight times for a family practice appointment ranged from 7 days to 63 days in 2009