

# Relationship Between Patient-Centered Primary Care Provider Communication and Emergency Room Visits in the Medicaid Population in North Carolina, United States

Journal of Primary Care & Community Health  
Volume 14: 1–7  
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DOI: 10.1177/21501319231171430  
journals.sagepub.com/home/jpc



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## Abstract

**Introduction:** Medicaid, a joint federal-state program, finances health care for eligible low-income individuals and families in the United States. Medicaid patients use disproportionately more emergency room (ER) services than other patients in the United States. Inadequate provider communication during primary care visits might be one reason for this well-documented phenomenon. The goal of the study was to examine how patient-centered provider communication related to ER use by Medicaid patients in North Carolina. **Methods:** A 2015 state-wide cross-sectional telephone survey of NC adult Medicaid patients ( $n=2652$ ) was based on the CAHPS methodology. Predictors were 4 patient-centered provider communication characteristics assessed by patients. The outcome was the number of ER visits during 6 months prior to the survey. We used negative binomial regression to examine the relationship. **Results:** Effective patient-centered provider communication index was associated with 19% fewer ER visits ( $P<.05$ ). Provider's respect for patients had the biggest impact on the number of visits (37% fewer ER visits,  $P<.001$ ). Easy to understand provider explanations were associated with 18% fewer ER visits ( $P<.05$ ). Longer ( $>1$  year) patient continuity with the current primary care provider was associated with 36% to 38% fewer ER visits ( $P<.001$ ). **Conclusions:** Health care quality improvement should focus on training providers how to show respect, give easily understood explanations, and maintain good interpersonal relationships with patients. Relevant agencies should emphasize training and accreditation with a specific emphasis on communication of providers delivering care to Medicaid patients.

## Keywords

Medicaid, managed care, emergency room use, patient-centered provider communication, primary care

Dates received: 6 February 2023; revised: 2 April 2023; accepted: 3 April 2023.

## Introduction

The patient-centered medical home (PCMH) aims to improve health care quality and control costs. It focuses on patients and families, continuity of care and shared decision-making with primary care providers (PCPs), and enhanced coordination and access to care.<sup>1</sup> Under patient-centered care patients should receive the majority of health care services in PCP offices rather than in an emergency room (ER), which is expensive and often inappropriate.<sup>2</sup> The PCMH approach is particularly beneficial for underserved populations because of easier access to a wide array of primary care services and referrals to specialists.<sup>3,4</sup>

Medicaid, a federal-state program, finances health care for eligible low-income individuals and families. The

Medicaid medical home in North Carolina (NC, USA) was developed in response to the national movement to value-based care to improve quality and reduce costs.<sup>5</sup> Community Care of North Carolina (CCNC) is a state-wide, community-based managed care organization that administers and controls health expenditures, cost, and quality of care for Medicaid beneficiaries; it uses the PCMH approach.<sup>6</sup> In

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2019, almost 15% of the North Carolina population was covered by Medicaid.<sup>7</sup>

It is well-documented that Medicaid patients use disproportionately more ER care than other patients of comparable health.<sup>8-11</sup> Specifically, Medicaid patients were 700% more likely to visit ERs for non-urgent health issues than patients with private insurance.<sup>10</sup> Many “emergencies” are preventable and could be addressed by outpatient visits or phone.<sup>2</sup> According to an ER Director, approximately 80% of ER calls in 1 NC county were for non-urgent care.<sup>12</sup> Kim et al<sup>10</sup> reported that patient demographics, community attributes, health status, and health care use including receiving primary care services at least once a year explained 44% of ER use differences between Medicaid and privately insured patients. Thus, unmeasured factors explained almost half of non-urgent ER visits in their study. The authors suggested that ineffective communication between PCPs and Medicaid patients may be an unmeasured factor leading to ER overuse.<sup>10</sup>

Patient-centered provider communication is the foundation of high-quality patient-centered care. Patient-centered communication is characterized by provider encouragement of patient engagement, good interpersonal relationships, and shared decision-making between patients and providers.<sup>13,14</sup> Empirical evidence suggests that, in vulnerable populations, patient-centered provider communication is associated with increased patient satisfaction and trust in PCPs<sup>15,16</sup>; better patient comprehension and recall of medical information; treatment adherence; and improved clinical outcomes.<sup>14,17</sup> Patient-centered communication may be critical for Medicaid patients because of their low health literacy<sup>18</sup> and mistrust of the health care system and providers.<sup>19</sup>

There is limited empirical evidence on PCP-patient communication and ER utilization among Medicaid patients. In the general population, patients who assessed their provider communication highly had fewer ER visits and lower annual health care costs.<sup>17</sup> ER patients with limited health literacy less often reported that their PCPs gave clear instructions or listened carefully and used more ER care than other ER patients.<sup>20</sup> Medicaid patients rated effective provider communication the second most important characteristic of care quality,<sup>21</sup> Medicaid patients prefer clear simple explanations from providers about their health issues and treatments.

Several other factors affect ER utilization. Continuity of care with primary care providers was critical for improving clinical outcomes<sup>21</sup> and was also associated with less ER use.<sup>22</sup> One study reported that primary care continuity was associated with reduced hypertension- and diabetes-related ER visits.<sup>23</sup> Patient demographic variables (age, gender, race, health status, patient residence (rural or urban), as well as dual Medicare and Medicaid eligibility status) were included in our study. Dual eligible patients are poor and aged  $\geq 65$  years and/or being disabled also makes them eligible for Medicare, a federally-run health insurance program that targets these 2 latter groups,<sup>24</sup> which may also affect ER utilization.

To date, no study has explored how the quality of patient-centered provider communication with Medicaid patients is related to their ER utilization. Our study examines how different aspects of PCP patient-centered communication is associated with ER use by Medicaid managed care patients in North Carolina. Our study further assesses the magnitude of different aspects of provider communication on the number of ER visits by Medicaid patients.

## Methods

### Study Design

A cross-sectional statewide telephone survey of the North Carolina ambulatory adult ( $\geq 19$  years) Medicaid managed care population provided the study data.<sup>25</sup> The survey used the Consumer Assessment of Health Providers and Systems methodology (CAHPS®, v5.0)<sup>26</sup> conducted under contract with the NC Department of Health and Human Services (NC DHHS). The NC DHHS enrollment file was the source of the respondent's county of residence and dual-eligibility status. Neither institutionalized enrollees, those eligible for skilled nursing care but receiving it at home, nor pregnant females are included in the primary care medical homes and were thus excluded from the study. Interviews, conducted in both English and Spanish between September 2015 and February 2016, resulted in 4188 responses with an unadjusted response rate of 13.3%. Self-reporting a PCP relationship of at least 6 months duration and having visited this provider at least once in the 6 months prior to survey participation reduced the study responses to 2652. These criteria ensured we were assessing provider communication quality in a relationship that already existed and wherein the patients had recently seen their PCP.

### Measures

The outcome measure is the number of ER visits in the previous 6 months reported by the respondents. The following 4 CAHPS questions generated the predictor variables of interest – patient assessment of patient-centered provider communication:

- “How often did your PCP show respect for what you had to say?”
- “How often did your PCP explain things in a way that was easy to understand?”
- “How often did your PCP spend enough time with you?”
- “How often did your PCP listen carefully to you?”

Possible responses were *Always*, *Usually*, *Sometimes*, and *Never*, which were dichotomized as *Always* and *Not always*, based on the observed very high prevalence of *Always* responses. Following CAHPS guidance we also created an effective patient-centered provider communication index

using the above 4 questions.<sup>26</sup> The effective PCP communication index variable was assigned a value of “*Always*” in cases where all 4 individual communication variables had a value of “*Always*” and “*Not always*” otherwise.

Control variables were selected to account for the patient’s physical condition as possible moderators of the relationship between communication quality and ER visits. These included the following variables:

- Self-assessed general health (*Poor, Fair, Good, Very good, and Excellent*) dichotomized as *Fair/poor* and *Excellent/very good/good*,
- Needed help with activities of daily living (ADLs) (*Yes, No*),
- Received health care 3 or more times in the previous 6 months for the same condition (*Yes, No*).

Other variables which can also moderate the relationship include:

- Dual-eligibility status: Medicare-eligible patient due to a disabling illness and/or age  $\geq 65$  years as well as Medicaid (*Dual* and *Not dual*),
- Patient’s county of residence (*Rural* and *Urban*),
- The length of time the patient had been with the current PCP ( $\geq 1$  and  $< 1$  year).
- Patient age ( $\geq 65$  years, 45-64, 19-44), sex (*Female, Male*), and race (*Black, Multi/other, White*), were chosen as general demographic descriptors.

### Statistical Analysis

We used univariate analysis to describe both outcome and predictor variables for the population, reporting frequency and proportions for each variable. Our unadjusted and fully adjusted multivariable models used negative binomial regression with a log-link because of the highly skewed distribution of the ER visit count containing predominantly zero values (no ER visits in previous 6 months), a preferred method for regression analysis in such cases.<sup>27</sup> Cases with missing values on any of the variables were eliminated from both the univariate and multivariable regression analyses. Data analyses were conducted using IBM SPSS version 26. All study procedures were reviewed and approved by the relevant Institutional Review Board.

### Results

Table 1 displays descriptive results for the outcome and predictor variables used in subsequent modelling efforts, showing the zero-inflated nature of the ER visit distribution (69.6% reported no ER visits in the previous 6 months), rapidly moving to a small number of participants with a high number of visits. Table 1 also describes distributions of the responses to the 4 communication questions, with

**Table 1.** Outcomes, Communication Assessments, and Participant Characteristics (n = 2652).

Characteristics	n (%)
<b>Outcome variable</b>	
Number of ER visits in prior 6 months	
0	1847 (69.6)
1	373 (14.1)
2	230 (8.7)
3	98 (3.7)
4	57 (2.2)
$\geq 5$	47 (1.8)
<b>Independent variables of interest</b>	
PCP showed respect	
Always	2362 (89.1)
Not always (referent)	290 (10.9)
PCP explanations easy to understand	
Always	2198 (82.9)
Not always (referent)	454 (17.1)
PCP spent enough time	
Always	2182 (82.3)
Not always (referent)	470 (17.7)
PCP listened carefully	
Always	2258 (85.1)
Not always (referent)	394 (14.9)
Effective PCP communication index	
Best	1876 (70.7)
Not best (referent)	776 (29.3)
<b>Demographic covariates</b>	
Age	
$\geq 65$ years	793 (29.9)
45-64	1195 (45.1)
19-44 (referent)	664 (25.0)
Sex	
Female	1787 (67.4)
Male (referent)	865 (32.6)
Race	
Multi/other	211 (8.0)
Black	1026 (38.7)
White (referent)	1415 (53.3)
Dual Medicare/Medicaid dual-eligibility status	
Dual	1373 (51.8)
Not dual (referent)	1279 (48.2)
Rurality	
Rural	949 (35.8)
Urban (referent)	1703 (64.2)
Patient health/utilization covariates	
Overall health rating	
Fair/poor	1472 (55.5)
Excellent/very good/good (referent)	1180 (44.5)
Needs help with ADLs due to health problem	
Yes	700 (26.4)
No (referent)	1952 (73.6)
Got health care $> 3$ times in previous 6 months for same condition	
Yes	1389 (52.4)
No (referent)	1263 (47.6)
Time seeing the current PHP	
$\geq 1$ year	2357 (88.9)
$< 1$ year (referent)	295 (11.1)

82.3% to 89.1% of the respondents indicating PCP communication was always good. Approximately 71% of all patients reported effective PCP-patient communications on the effective provider communication index variable (ie, responded *Always* on all 4 communication variables).

Among patient demographic covariates, approximately 30%, 45%, and 25% of respondents were  $\geq 65$ , 45 to 64, and 19 to 44 years of age, respectively. Over 2/3 of respondents were female. Over half (53%) of the respondents were white, while 39% were Black and 8% were of Multi/other race. Patient health covariate analysis revealed that 56% reported they were in fair or poor health, 26% needed help with at least 1 ADL, and 52% got health care services for the same condition 3 or more times in the previous 6 months. The vast majority of the respondents (89%) had been seeing their current PCP for longer than 1 year, 52% were both Medicare and Medicaid (dual) eligible, and 36% lived in a rural county.

Table 2 reports negative binomial regression results where the incidence rate ratio (IRR, an exponentiated value), is the estimate for each predictor variable's proportional impact on the ER visit count. Columns indicate regression analyses conducted on each of the individual 4 communication variables as well as the effective PCP communication index variable. The same observations were included in all 5 regression models, thus making comparisons across the different communication models possible. Table 2 includes unadjusted results for each PCP communication variable's impact on the ER visit count followed by the fully adjusted models.

Unadjusted results indicate a 32% reduction in ER visits ( $P < .001$ ) associated with patients reporting the PCP always communicated well on the effective PCP communication index. This was strongly influenced by the "respect" question, which indicated a 52% reduction in the number of ER visits ( $P < .001$ ) associated with the PCP always showing respect for patient input. Highly significant results ( $P < .001$ ) on the other 3 communication questions were observed as well, although the effect sizes were smaller.

As expected, adding covariates to the fully adjusted model reduced the PCP communication impact, but the impact of the PCP always showing respect for patient input was associated with 37% fewer ER visits ( $P < .001$ ). The effective communication index variable (19% reduction in ER visits) and easy to understand PCP explanations (18% reduction) had smaller but meaningful effects on the number of ER visits ( $P < .05$ ). The PCP listening carefully and spending enough time with patient predictor variables were no longer statistically significant in the adjusted models.

Consistent with using the identical population in each model, effect sizes and significance were very similar for each covariate across all 5 models. Compared to the referent of 19 to 45 years, being 45 to 64 years was associated with 26% to 28% reduction in ER number of visits while age  $\geq 65$  years was associated with 34% to 37% fewer ER visits (both at  $P < .001$ ). Sex was not significant while Multi/other race was significantly associated ( $P < .05$ ) with 21% to 30% increased ER visits across the 5 communication measures.

Not surprisingly, all 3 patient health covariates were significantly associated with the number of ER visits (all

$P < .001$ ). Rating one's overall health Fair/poor was associated with 46% to 50% increased ER visits while needing help with ADLs was associated with a 53% to 56% increase in ER visits. Finally, receiving health care services for the same condition 3 or more times in the previous 6 months was associated with a 104% to 107% increase in the number of ER visits. Time seeing the current PCP was highly significant ( $P < .001$  in all models) as a duration of longer than 1 year was associated with 36% to 38% fewer ER visits. Neither dual Medicare/Medicaid eligibility nor rurality of the patient's residence had a significant impact.

## Discussion

The PCMH approach aims to improve health care quality by improving access, coordination, and continuity of primary care while reducing fragmentation and cost.<sup>1</sup> The PCMH is grounded in ongoing chronic disease management and prevention that should minimize ER use. Thus, high ER services utilization could undermine the health system's commitment to the PCMH.

Previous research revealed that Medicaid recipients have much higher ER use than the general population.<sup>8,9,11</sup> Inadequate communication between PCPs and Medicaid patients during primary care visits could contribute to this well-documented phenomenon.<sup>10,28</sup> Insufficient and/or unclear provider explanations and care instructions may be particularly detrimental for populations with low health literacy such as many Medicaid patients.<sup>29,30</sup> This study examined how ER utilization by ambulatory NC Medicaid managed care patients was associated with PCP patient-centered communication. We found that the vast majority of respondents assessed their personal health care providers as effective communicators, who always showed respect for patient input, listened carefully, spent enough time with patients, and whose explanations were easy to understand. We also found that overall effective patient-centered PCP communication was associated with 19% fewer ER visits in our sample.

Our study found that provider respect for the patient had the biggest impact on the number of ER visits among NC Medicaid patients: provider respect was associated with 37% fewer ER visits in the 6 months before the survey. In the general population, provider respect was strongly associated with higher provider and health care quality evaluations by patients.<sup>31</sup> Provider respect may be even more important for population groups that were traditionally stigmatized and marginalized.<sup>29-31</sup> When treated respectfully, patients are likely to be more open and present an honest and comprehensive description of their health issues. This result corroborates research findings that Medicaid patients are appreciative of providers who show respect, and carefully listen to and take into consideration patients' health concerns and suggestions about their health.<sup>21</sup>

Another important characteristic of effective provider communication is the PCPs' ability to provide easy to

**Table 2.** Association Between PCP Communication Quality and Number of Emergency Room Visits in Previous 6 Months (N = 2652).

Predictors	Outcome variables				
	PHP showed respect IRR (95% CI)	PHP explanations easy to understand IRR (95% CI)	PHP spent enough time IRR (95% CI)	PHP listened carefully IRR (95% CI)	Effective PHP communication index IRR (95% CI)
Unadjusted results					
Communication (ref: not always)					
Always	0.48 (0.41-0.56)**	0.67 (0.58-0.77)**	0.69 (0.55-0.79)**	0.76 (0.65-0.89)**	0.68 (0.60-0.76)**
Adjusted results					
Communication (ref: not always)					
Always	0.63 (0.53-0.75)**	0.82 (0.70-0.96)*	0.86 (0.73-1.00)	0.91 (0.78-1.08)	0.81 (0.71-0.92)*
Patient demographic covariates					
Age (ref: 19-44 years)					
≥65 years	0.66 (0.54-0.80)**	0.63 (0.52-0.76)**	0.64 (0.53-0.78)**	0.63 (0.52-0.76)**	0.63 (0.52-0.77)**
45-64 years	0.74 (0.64-0.86)**	0.72 (0.62-0.84)**	0.73 (0.62-0.84)**	0.72 (0.62-0.83)**	0.73 (0.63-0.85)**
Sex (ref: male)					
Female	1.06 (0.91-1.18)	1.05 (0.92-1.19)	1.04 (0.91-1.19)	1.05 (0.92-1.20)	1.04 (0.91-1.19)
Race (ref: white)					
Multi/other	1.21 (0.97-1.52)	1.29 (1.03-1.61)*	1.29 (1.03-1.61)*	1.30 (1.04-1.63)*	1.28 (1.02-1.59)*
Black	1.14 (1.00-1.29)	1.13 (0.99-1.28)	1.13 (0.99-1.28)	1.12 (0.99-1.28)	1.12 (0.99-1.28)
Dual Medicare/Medicaid eligibility (ref: not dual)					
Dual	0.91 (0.79-1.05)	0.92 (0.80-1.06)	0.91 (0.79-1.05)	1.50 (1.31-1.71)**	1.47 (1.29-1.68)**
Rurality (referent: urban)					
Rural	1.08 (0.95-1.23)	1.08 (0.95-1.22)	1.08 (0.95-1.23)	1.56 (1.36-1.78)**	1.56 (1.36-1.78)**
Patient health/utilization covariates					
Overall health (ref: excellent/very good/good)					
Fair/poor	1.46 (1.28-1.67)**	1.48 (1.29-1.69)**	1.49 (1.30-1.70)**	2.07 (1.82-2.37)**	2.06 (1.81-2.36)**
Needs help with ADLs (ref: no)					
Yes	1.54 (1.35-1.76)**	1.56 (1.37-1.78)**	1.55 (1.36-1.77)**	0.62 (0.52-0.74)**	0.64 (0.53-0.76)**
Health care ≥3 times for same condition (ref: no)					
Yes	2.04 (1.79-2.33)**	2.06 (1.81-2.36)**	2.07 (1.81-2.37)**	0.92 (0.79-1.05)	0.92 (0.80-1.06)
Other covariate					
Time seeing the current PHP (ref: <1 year)					
≥1 year	0.63 (0.53-0.75)**	0.63 (0.53-0.75)**	0.62 (0.52-0.74)**	1.08 (0.95-1.23)	1.08 (0.95-1.23)

Abbreviations: 95% CI, 95% confidence interval; IRR, incidence rate ratio.

\*\*p < .001. \*p < .05.



understand explanations. Effective provider communication includes speaking slowly and understandably, explaining test results and exams, and checking for patient understanding<sup>21,32</sup> which are critical for patients with low health literacy. One study found that easy-to-understand instructions were the most important communication dimension for older patients.<sup>33</sup>

Older patients reported fewer ER visits during 6 months before the survey. It may sound counterintuitive as older people often have more chronic health conditions and higher acuity levels.<sup>33</sup> However, this finding corroborates a review<sup>34</sup> that the elderly use ER care less often overall and in life-threatening situations.

Participants in this study who saw the provider for  $\geq 1$  year used ER services less often, a finding which is consistent with earlier findings on continuity of care.<sup>21,22</sup> Another recent longitudinal study of ER utilization by Medicaid patients found that patients with fragmented primary care use were more likely to have a higher number of ER visits.<sup>8</sup> As expected, unhealthy Medicaid patients (eg, those needing help with ADLs or seeing providers for the same reason 3 or more times) also reported more ER visits.

Our study has the standard temporality concerns in attempting to infer causality from a cross-sectional survey. Limiting the study participants to those whose PCP-patient relationship had lasted longer than 6 months means that, with a survey lookback period of 6 months, the relationship was already in place before the survey data were collected. Specifically, patient opinions about provider communication skills are usually formed over a longer period of time and therefore precede the patient count of ER visits. In future studies, patient-reported ER visits could be supplemented/enhanced by ER claims.

Our study has a number of strengths. It is based on a large statewide sample, using a validated and widely accepted instrument, with well-defined participation in our managed care model. Another strength of our study is that it controls for 3 measures of participant health status, all of which had statistically and substantively significant impacts; being sicker can still send a patient to the ER more often no matter how good the PCP's communication is or how long the relationship has lasted. Our analysis was strengthened by controlling for several indicators of patient health while our tested communication variables still significantly reduced the number of ER visits. Even though the study included only Medicaid managed care patients in North Carolina, our results should be generalizable to similar Medicaid populations in other states.

## Conclusions

Effective PCP communication is a critical element if the PCMH is to deliver high quality care. Thus, health care quality improvement interventions should include training health care providers in effective communication with

patients. King and Hoppe<sup>15</sup> suggest that the education to develop good communication skills with patients must start during undergraduate and graduate studies. A recent study<sup>30</sup> recommends that respective federal and state agencies should focus on training and accreditation with a specific emphasis on the communication skills of PCPs delivering care to Medicaid patients. The authors also proposed that state Medicaid and managed care organizations should conduct regular assessments of primary care Medicaid providers' communication skills and include communication quality metrics in PCP reimbursement.

Enhancing provider communication skills to improve provider-patient interactions is necessary, particularly for patients from vulnerable populations, often with low health literacy rates. Providers should be trained how to interact with patients in a respectful way. Showing respect for Medicaid patients (eg, engaging patients in treatment decisions)<sup>35</sup> and speaking clearly and understandably are critical factors to overcome patient "reluctance to use the primary care system because of previous negative personal experiences. . ." to prevent avoidable ER visits in the future<sup>32</sup> (p. 481). Our study supports the inclusion of the PCP respect measure on state Medicaid report cards, which usually do not include them.<sup>21</sup> Medical training should increase focus on patient-centered communication skills to improve the quality of care provided.

## Acknowledgments

The authors thank Dr. Bill Brandon for the constructive review of the earlier version of the manuscript.

## 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.

## Funding

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

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