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# Disparities in Access to After-Hours Care in the U.S.: A National Study

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## Abstract:

After-hours care provides timely access to continuity of care for chronic illnesses and episodic care for acute illness. Lack of timely access to primary care services is one of the main drivers of emergency department overuse. Our aim was to examine disparities in access to after-hours care based on race, income, geographic location, type of insurance, and health care setting. We used data from the 2010 Health Tracking Household Survey. Multivariable logistic regression was used to assess disparities in access to after-hours care. We found disparities by type of insurance, geographic location, and type of health care setting. People with Medicaid were less likely than those with private insurance to have access to after-hours care (aOR 0.67, 95% CI 0.53-0.86). In those living in large metropolitan areas, access to after-hours care was less likely in the Midwest (aOR 0.60, 95% CI, 0.49-0.73), South (aOR 0.40, 95% CI, 0.33-0.48), and West region (aOR 0.46, 95% CI, 0.37-0.57). We found no evidence of disparities based on sex, race, ethnicity, or income.

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## Keywords:

After-hours care, Access to care, Primary care, Health Disparities, Research and Practice, Health Maintenance Organization, HMO

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### Cover Page Footnote

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## **Disparities in Access to After-Hours Care in the U.S.: A National Study**

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### **ABSTRACT**

After-hours care provides timely access to continuity of care for chronic illnesses and episodic care for acute illness. Lack of timely access to primary care services is one of the main drivers of emergency department overuse. Our aim was to examine disparities in access to after-hours care based on race, income, geographic location, type of insurance, and health care setting. We used data from the 2010 Health Tracking Household Survey. Multivariable logistic regression was used to assess disparities in access to after-hours care. We found disparities by type of insurance, geographic location, and type of health care setting. People with Medicaid were less likely than those with private insurance to have access to after-hours care (aOR 0.67, 95% CI, 0.53-0.88). Those in non-metropolitan areas were less likely to have access to after-hours care (aOR 0.73, 95% CI, 0.61-0.89) as compared to those living in large metropolitan areas. In comparison to the Northeast census region, access to after-hours was less likely in the Midwest (aOR 0.60, 95% CI, 0.49-0.73), South (aOR 0.40, 95% CI, 0.33-0.48), and West region (aOR 0.46, 95% CI, 0.37-0.57). We found no evidence of disparities based on sex, race/ethnicity, or income. With the increasing need of after-hours care, policymakers should plan to provide incentives to providers to offer after-hours care.

**Keywords:** After-hours care; Access to care; Primary care; Continuity of care; Nurse Practitioner; Health Maintenance Organization; HMO

### **INTRODUCTION**

After-hours care is the availability of healthcare services to patients when the primary care offices are closed. Generally the offices of primary care providers are closed from 5 p.m. to 8 a.m. on weekdays and all day on weekends and holidays (O'Malley, 2013). Only 29% of U.S primary care practitioners offer after-hours care as compared to 97% in the Netherlands, 89% in the United Kingdom, and 78% in France (Berchet & Nader, 2016; Margolius & Bodenheimer, 2012; O'Malley, 2013). The availability of after-hours care is critical to timely access of healthcare. Patients sometimes need urgent medical care for the symptoms which arise during out-of-office

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hours or on weekends. These symptoms may not be severe enough to warrant the need of high-acuity and costly emergency care. The need for after-hours medical care is greater for those with chronic conditions, who may need to contact their provider more often than others, and also for those who have an acute exacerbation of a disease like asthma (Kullgren & McLaughlin, 2010; Kullgren et al., 2012). Timely access to healthcare will help in early diagnosis, prevention of exacerbations of complications, and reduction of costly management of diseases (Comino et al., 2012; Jerant et al., 2012). In the absence of access to after-hours care, there could be inappropriate use of high cost medical care, like emergency room visits, or aggravation of symptoms, leading to increases in healthcare expenditures (Busby et al., 2015; O'Malley, 2013). Ineffective after-hours care leads to increased morbidity and mortality, delayed access to care, complications of diseases resulting in fragmentation of care and compromised patient safety (Bodenheimer, 2008; VanGompel et al., 2015). Conversely, providing adequate medical care after office hours or on weekends leads to positive health outcomes for patients with early detection and active management of health problems, and reduction in preventable emergency room visits (Berchet & Nader, 2016; Comino et al., 2012; Hampers et al., 2002; Margolius & Bodenheimer, 2012).

In the United States (U.S), between 12% and 56% of visits to the emergency room (ER) are by patients with non-serious or non-urgent problems, whose conditions could otherwise be managed by primary care or other community interventions (Berchet, 2015; Berchet & Nader, 2016; Starfield et al., 2005). Medically non-urgent ER visits represent inefficient utilization of health care resources from an economic perspective. ERs are open 24/7 and do not require appointments, so for certain populations it is the most accessible option of accessing healthcare. Access to after-hours care of primary care physicians or usual sources of care (PCP/USC) can reduce potentially avoidable hospitalizations by either providing same-day or next-day appointments or extended office hours. After-hours care can also be provided through many channels, like telephone, emails, or at-home visit or through a healthcare facility (Berchet & Nader, 2016; O'Malley, 2013). In addition, retail clinics and urgent care centers may help provide health care beyond regular office hours. However, the effectiveness, quality and costs of health care services provided by retail clinics and urgent care centers are unclear, and these clinics are less likely to be located in underserved and minority areas (Weinick et al., 2010).

Challenges to provide or use after-hours care can exist at many levels of the U.S. healthcare system. At the federal and state level, lack of adequate funding, policy support, reimbursement, and maldistribution make services unaffordable (Bartel et al., 2019; Comino et al., 2012). At the organizational level there are issues of reimbursement, billing, and size of practice. Poor communications skills or discriminatory attitudes at the provider level can exacerbate disparities related to after-hours care (Comino et al., 2012; Rodriguez et al., 2016). Individuals may face financial and non-financial barriers such as affordability, availability, accessibility, accommodation, and acceptability in using health services (Comino et al., 2012; Kullgren & McLaughlin, 2010; Kullgren et al., 2012). For instance, the Family and Medical Leave Act (FMLA) allows employees experiencing illness the right to take temporary leave from work; however, this leave is unpaid and not available to all employees (Bartel et al., 2019). Additionally, literature shows that low-paid workers are less likely to be covered under FMLA (Bartel et al., 2019). Therefore, these individuals need access to the after-hours care. Despite the importance of after-hours care, there is a gap in the literature about disparities in access to it. Our aim was to examine after-hours care disparities based on race, income, geographic location, type of insurance, and health care setting using the latest Health Tracking Household Survey data in the U.S.

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## **METHODS**

### Data

We conducted a cross-sectional data analysis of the 2010 HTHS public use file (Center for Studying Health System Change, 2012). HTHS is a nationally representative sample of the U.S. non-institutionalized civilians, and include information on unmet needs, health insurance coverage, use of health services, and health status. The survey was conducted between April 2010 and March 2011, and the data were released in August 2012 for public use. Computer-assisted telephone interviews of 16,671 individuals from 9,165 family insurance units (FIUs) were conducted. HTHS used Random Digit Dialing Techniques to select households. One adult from each selected household responded through a self-response module to questions providing information on the household and about his or her own access to health care, chronic conditions and other information that could not be provided reliably by proxy. Households were sampled from the 48 contiguous states and the District of Columbia (DC). Methodological details about HTHS are described elsewhere.

### Study sample and measurement

Out of the total population in the dataset, respondents were asked if they visited a physician or other medical professional in the past 12 months and had at least one location where they usually went for health care or medical advice that was not an emergency room. These individuals were then asked, “Does this place have office hours at night or on the weekends?” Respondents who replied to this question were included in the study (N=9,594). Those who responded ‘yes’ were considered to have access to after-hours care. Further, after listwise deletion of the missing independent variables, the analytical sample population was 9,538 respondents, a missing rate of less than 1%.

The main independent variables in the regression analyses were: race/ethnicity defined as non-Hispanic White, non-Hispanic Blacks, Hispanics and others; household annual income categorized into four quartiles; Metropolitan Statistical Area (MSA) as metropolitan, micropolitan, and non-metropolitan areas; four census regions - Northeast, Midwest, South and West; health insurance coverage categorized as private, Medicare, Medicaid, and uninsured; and health care setting categorized as doctor’s office, health maintenance organization (HMO), hospital outpatient clinic, community health centers (CHC), or community clinics, and others.

We also included the following variables in the analyses as possible confounders: sex; marital status (married vs. unmarried), having a child vs. no child, and age in years categorized as 0-17, 18-30, 31-42, 43-52, 53-64, and 65+ years.

### Statistical Analysis

In all analyses, we used sample weights to account for sampling design and survey nonresponse. A multivariable logistic regression model was used to calculate the adjusted odds ratios for the association of access to after-hours care with independent variables. Because HTHS is publicly available data with de-identified information, the institutional review board at the University of Nebraska Medical Center declared this study exempt from review. The analysis was performed using Stata version 14.2 (Stata Corp, College Stata, TX).

## **RESULTS**

The sample characteristics and bivariate associations with access to after-hours care are shown in Table 1. Access to after-hours care was provided to only 40.3% by the respondents’

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PCP/USC. Family income, MSA, census region, insurance, health care setting geographic location, insurance, marital status, having a child, and age were found to be associated with the outcome. The bivariate results showed no sex or racial/ethnic disparities in access to after-hours care.

**Table 1:** Descriptive statistics of respondents by access to after-hours care, HTHS 2010

Characteristics	Study Sample	Access to After-hours Care		p-value
	(%) (N=9,538)	(%) No (N=6,002)	(%) Yes (N=3,536)	
Race/ethnicity				0.520
Non-Hispanic White	70.8	70.9	70.4	
Non-Hispanic Black	11.5	11.7	11.3	
Hispanic	11.3	11.8	10.6	
Other <sup>1</sup>	6.4	5.6	7.7	
Family Income				<0.001
First Quartile	23.9	26.5	19.8	
Second Quartile	23.5	24.4	22.2	
Third Quartile	25.9	25.6	26.4	
Fourth Quartile	26.7	23.5	31.6	
Metro/Non-Metro				<0.001
Large Metro over 200K population	75.1	72.8	78.3	
Small Metro under 200K population	6.5	6.5	6.6	
Nonmetropolitan	18.4	20.7	15.1	
Census Region				<0.001
Northeast	21.0	16.1	28.1	
Midwest	23.5	22.8	24.6	
South	34.3	38.8	27.7	
West	21.2	22.3	19.6	
Insurance				<0.001
Private	56.4	51.5	63.9	
Medicare	19.1	23.4	12.6	
Medicaid	17.9	18.4	17.1	
Uninsured	6.6	6.7	6.4	
Health care setting				<0.001
Doctor's office	77.7	79.8	74.4	
HMO	2.2	1.6	3.1	
Hospital outpatient clinic	5.9	5.3	6.9	

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CHC or health center	9.8	8.7	11.6	
Other places <sup>2</sup>	4.4	4.6	4.0	
Sex				0.090
Male	46.4	45.2	48.3	
Female	53.6	54.8	51.7	
Marital Status				<0.001
Unmarried	30.3	31.9	27.9	
Married	69.7	68.1	72.1	
Child				<0.001
No child	46.6	53.1	36.9	
Child	53.4	46.9	63.1	
Age Categories				<0.001
0-17	32.1	26.1	41.2	
18-34	15.2	14.5	16.1	
35-64	37.4	40.4	32.9	
65 or above	15.3	19.0	9.8	
After-hours access	40.3			

HMO, Health Maintenance Organization; CHC, Community Health Clinic

<sup>1</sup>Include American Indian or Alaska Native, Asian, Native Hawaiian or other Pacific Islander, and other Non-Hispanic races

<sup>2</sup>Respondents had more than one PCP/USC

Table 2 provides the adjusted odds ratio (aOR) with 95% confidence interval (95% CI) for the association of access to healthcare with characteristics of respondent. The adjusted results provided support for the presence of disparities-based on metro/non metro place of residence ( $p = 0.004$ ), census region ( $p < 0.001$ ), insurance type ( $p = 0.014$ ), and health care setting ( $p < 0.001$ ). The people living in non-metropolitan cities had lower odds of access to after-hours care (aOR 0.73, 95% CI, 0.61-0.89) in comparison to those living in large metropolitan areas. In comparison to respondents living in the Northeast census region, the odds of access to after-hours care were lower in the Midwest (aOR 0.60, 95% CI, 0.49-0.73), South (aOR 0.40, 95% CI, 0.33-0.48), and West (aOR 0.46, 95% CI, 0.37-0.57). Respondents on Medicaid had lower adjusted odds of access to after-hours care in comparison to respondents with private insurance (aOR 0.67, 95% CI, 0.53-0.88). Healthcare setting was also found to be associated with access to after-hours care ( $p < 0.001$ ) such that those with HMO coverage had the highest odds of access to after-hours care (aOR 2.45, 95% CI, 1.42, 4.21), followed by hospital outpatient clinic, community health centers, and others. Sex, race, and family income were not associated with the outcome. Finally, among independent variables, having a child and age were associated with the outcome.

**Table 2:** Adjusted odds ratio for the association of access to after-hours care with patient characteristics and provider's setting (N=9,538)

	Adjusted OR	p Value
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Characteristics	OR (95% CI)	
Race/ethnicity		0.099
Non-Hispanic White	1.00	
Non-Hispanic Black	1.05 (0.84, 1.32)	
Hispanic	0.80 (0.60, 1.07)	
Other <sup>1</sup>	1.26 (0.96, 1.66)	
Family Income		0.882
First Quartile	1.00	
Second Quartile	1.17 (0.93, 1.47)	
Third Quartile	1.24 (0.97, 1.58)	
Fourth Quartile	1.38 (1.07, 1.78)	
Metro/Non-Metro		0.004
Large Metro over 200K population	1.00	
Small Metro under 200K population	1.06 (0.82, 1.37)	
Nonmetropolitan	0.73 (0.61, 0.89)	
Census Region		<0.001
Northeast	1.00	
Midwest	0.60 (0.49, 0.73)	
South	0.40 (0.33, 0.48)	
West	0.46 (0.37, 0.57)	
Insurance		0.014
Private	1.00	
Medicare	0.77 (0.57, 1.04)	
Medicaid	0.67 (0.53, 0.88)	
Uninsured	1.00 (0.75, 1.32)	
Healthcare setting		<0.001
Doctor's office	1.00	
HMO	2.45 (1.42, 4.21)	
Hospital outpatient clinic	1.90 (1.45, 2.50)	
CHC or health center	1.78 (1.42, 2.23)	
Other places <sup>2</sup>	1.12 (0.85, 1.49)	
Sex		0.751
Male	1.00	
Female	0.98 (0.85, 1.12)	
Marital Status		0.683
Unmarried	1.00	
Married	0.96 (0.81, 1.15)	
Child		0.028



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No child	1.00	
Child	1.22 (1.02, 1.46)	
Age Categories		<0.001
0-17	1.00	
18-34	0.69 (0.55, 0.86)	
35-64	0.48 (0.40, 0.59)	
65 or above	0.43(0.30, 0.62)	

HMO, Health Maintenance Organization; CHC, Community Health Clinic; N/A, Not applicable

<sup>1</sup>Include American Indian or Alaska Native, Asian, Native Hawaiian or other Pacific Islander, and other Non-Hispanic races

<sup>2</sup>Respondents had more than one PCP/USC

### DISCUSSION

To our knowledge, this is the first study which used nationally representative data to explore disparities in access to after-hours care. We found disparities based on metropolitan/nonmetropolitan place of residence, census region, insurance type, and health care setting. We found no evidence of racial/ethnic or income disparities in access to after-hours care. Our study produced results which were consistent with other studies. In our study, location of residence and the type of PCP/USC used by respondents were found to be associated with access to after-hours care as in many developed countries (O'Malley, 2013). Access to after-hours care was lower in non-metropolitan areas, consistent with prior literature (Piehl et al., 2000). The results show that there is clear geographical variation in the access to after-hours care. This may be due to shortages of health care workforce in rural areas (Decker, 2012; Piehl et al., 2000). Patients with Medicaid insurance were less likely to have access to after-hours care (Llovera et al., 2019). This can partially be explained by the fact that because they have chronic illness and are unable to pay out-of-pocket. Inability to pay out-of-pocket cost is strongly associated with medication non-adherence, and non-adherence is associate with higher number of visits to emergency room (Eastwood & Dowell, 2006; Yabroff et al., 2019). Also, Medicaid has generally low reimbursement rates, reducing incentive for providing after-hours care by PCP/USC (Hummel et al., 2014). Previous literature shows that a positive effect of HMO programs aimed at reducing ER visits through provision of 24/7 access to PCP (Li et al., 2019). In our study we found that people with an HMO as their PCP/USC were found to have two and half times higher odds of access to after-hours care than those with a doctor's office.

After-hours clinics were less accessible to older patients than younger patients, which was also found in a study in New Zealand (Baker & Walker, 2017). They found that women use more after-hours care than men, which was different than our study where sex was found to be not significant (Baker & Walker, 2017). We found that people who belonged to other races/ethnicities (including Asians and Pacific Islanders) had the highest access to after-hours care, similar to other studies where Asians and Pacific Islander utilized more after-hours visits than other race/ethnic groups (Baker & Walker, 2017). However, race/ethnicity was found to be not significant in our study. Families with children were more likely to use after-hours care than those without children (Huang et al., 2019).

Previous literature has widely documented the importance of after-hours care and also suggested different care models for provision of after-hours care (O'Malley et al., 2012). After-

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hours care provides continuity of care for people who need episodic care for their chronic illnesses. Getting urgent care from the PCP/USC, helps both patients and their providers aware of all the episodes of required care. Providers get access to a patient's health record across all the episodes, which may not happen in the case of emergency room visit. Most of these prior studies were undertaken in the United Kingdom which has universal healthcare system. In the U.S. within the last few years, there has been a rise in alternate care models for acute medical conditions, commonly known as retail clinics and urgent care centers. Both these care models provide health care beyond regular office hours. There were 1,900 retail clinics owned mainly by two drug stores CVS and Walgreens in 2015 (Dalen, 2016). As the name suggests, retail clinics are located in retail stores, staffed ordinarily by nurse practitioners, who provide treatment for a limited range of health conditions. However, several states restrict the scope of practice of nurse practitioners and other advanced practice clinicians. For example, the American Association of Nurse Practitioners reports that only 23 states including DC allow full scope of practice for nurse practitioners. Reducing these restrictions could help improve after-hours access to care.

Urgent care clinics are physician offices with extended hours, which provide treatment for a wider range of health conditions including fractures, lacerations, and diagnostic procedures (Weinick et al., 2010). Retail clinics and urgent care clinics are less likely to be located in underserved and minority areas (Weinick et al., 2010). The out-of-pocket expenditure for utilizing the services from retail clinics and urgent care are generally lower than emergency room but higher than primary care (Weinick et al., 2010).

Professional physician associations have raised concerns on the quality of care in retail clinics and urgent care centers (Dalen, 2016; "Urgent Care Centers," 2017). Retail clinics have been criticized for disruption of coordination and continuity of care, and potentially hurt the finances of primary care providers (Dalen, 2016; Mehrotra et al., 2009). There are concerns shown in some studies that providing after-hours care may compromise planned chronic disease care or be a distraction to healthcare professionals (Comino et al., 2012; Piehl et al., 2000). The degree of affiliation of primary care providers with retail clinics is changing over the years with the potential of them becoming partners with medical homes (Dalen, 2016).

Many care models are in place for providing after-hours care. Care models that meet the needs of the local population, have shared electronic health records, and systematic coordination between after-hours provider and daytime PCP/USC, are critical (O'Malley et al., 2012). Policy makers need to carefully examine the needs of the community and health care providers in relation with after-hours care and develop incentives such that after-hours care is available in rural areas. Even in the presence of programs like California's paid-leave law, disparities in health may exist due to lack of knowledge of such policies among employees with low socio-economic status, of young age, minority status, with less education, lower household income, and no access to paid leave benefits (Baker & Walker, 2017). Policies on paid leaves need to be revisited in the context of reducing health disparities.

Future studies could include understanding if disparities in access to after-hours care exists in people who do not have a PCP/USC. Future studies are also needed to look at reimbursement policies and motivating factors to PCP/USCs who do not provide after-hours care. It would be interesting to explore disparities in after-hours care if the geographical location of urgent care or retail clinics were closer to patients than PCP/USC. Further attention to increase understanding of why people use urgent care or retail clinics despite their PCP/USC potentially providing after-hours care. After-hours care can be complemented with same-day or next-day appointments, a

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flexibility provided by some PCP/USCs for patients in need of urgent medical care. Therefore, a study on health services which supplement, or compliment after-hours care would enhance our understanding of the true need for such urgent medical care.

### Limitations

The methodological strength of this study is that it uses nationally representative data. This study undertook a cross-sectional survey data analysis; thus, we cannot infer a causal relationship between the predictors and access to after-hours care. We measured access to after-hours care using a survey question that provided respondents' knowledge on whether their PCP/USC provides after-hours medical services or not, even though they may not have used these services. It is possible that some PCP/USCs offer after-hours care, but their patients were not aware of it. It is unclear whether people with PCP/USC's sought after-hour care from other sources not affiliated with their PCP/USC, which may underestimate the number of people with access to after-hours care. Some PCP/USCs provide flexibility of same-day or next-day appointment to patients in need of urgent medical care, reducing the need of after-hours care. We also assumed that the MSA and state location of respondents and their PCP/USC were the same. For example, people living near the borders of two states may avail of the healthcare services in the neighboring state for any number of reasons. HTHS has self-reported data which may be subject to recall bias. Self-selection bias may have occurred as we do not know if respondents in this survey had a choice of PCP/USC with after-hours care. We also do not know if the respondents have paid sick leave benefits.

### **CONCLUSION**

After-hours care is important for patient-centered care, as it helps in continuity and coordination of care. Our study provides insight on the access of after-hours care in the U.S. Having access to PCP/USC does not necessarily equate to having access to after-hours care. In our study we found the access of after-hours care was significantly lower for people who were 65 years and older, with Medicaid insurance, living in nonmetropolitan areas, and in South census region. Retail clinics and urgent care clinics are a relatively new business model for provision of after-hours care, but there is a trend of seeing them as acute care centers and as partners in coordinated care. Policymakers need to be vigilant and cautious on the practices of care given in these clinics in the absence of guidelines for standards of care. Solutions which can reduce disparities in access to after-hours care are using telephone triage, increasing the scope of practice of nurse practitioners and physician assistants', developing interoperability as a universal aspect of electronic health records, and making after-hours care participation compulsory. Policies must encompass multiple dimensions of access and effectively address both patient needs and service provision. Also, the availability of after-hours services should be clearly communicated within the community to have an effective impact on health outcomes and, thus, reduce cost of expenditures to both consumers and providers.

### **CONFLICT OF INTEREST**

The authors have no direct or indirect financial incentives associated with the conduct of the study or publication of study findings

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