

ORIGINAL ARTICLE

Rural-Urban Differences in Access to Preventive Health Care Among Publicly Insured Minnesotans

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Disclosures: The authors report no conflicts of interest.

Funding: The 2008 Disparities and Barriers to Utilization among Minnesota Health Care Program Data was funded under contract with The Minnesota Department of Human Services (PI: K. T. Call). E. M. Allen was supported by the National Cancer Institute of the National Institutes of Health under award number R25CA163184. S. A. Everson-Rose was supported by the Program in Health Disparities Research and the Applied Clinical Research Program at the University of Minnesota.

Acknowledgments: The authors extend our sincere gratitude to Vicki Kunerth and James McRae at Minnesota Department of Human Services for supporting this work; Nicole Martin-Rogers and her staff at the survey center at Wilder Research; and the Cultural Wellness Center (CWC) for partnering on the research, hosting the Project Management Team and creating a bridge to the community needed to make this project a success. We are also indebted to the State Health Access Data Assistance Center for help with sampling, weighting, and administrative support. We thank the community members who came together to learn about the survey results and provided recommendations to improve the delivery of health care. We also thank members of health plans, health care and government entities who joined the "Working Together" forum on March 13, 2009, at the CWC. Finally, we are very thankful to the thousands of public program enrollees throughout Minnesota who took the time to complete the survey and tell us about their experiences with health care.

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doi: 10.1111/jrh.12235

Abstract

Purpose: Reduced access to care and barriers have been shown in rural populations and in publicly insured populations. Barriers limiting health care access in publicly insured populations living in rural areas are not understood. This study investigates rural-urban differences in system-, provider-, and individual-level barriers and access to preventive care among adults and children enrolled in a public insurance program in Minnesota.

Methods: This was a secondary analysis of a 2008 statewide, cross-sectional survey of publicly insured adults and children ($n = 4,388$) investigating barriers associated with low utilization of preventive care. Sampling was stratified with oversampling of racial/ethnic minorities.

Results: Rural enrollees were more likely to report no past year preventive care compared to urban enrollees. However, this difference was no longer statistically significant after controlling for demographic and socioeconomic factors (OR: 1.37, 95% CI: 1.00-1.88). Provider- and system-level barriers associated with low use of preventive care among rural enrollees included discrimination based on public insurance status (OR: 2.26, 95% CI: 1.34-2.38), cost of care concerns (OR: 1.72, 95% CI: 1.03-2.89) and uncertainty about care being covered by insurance (OR: 1.70, 95% CI: 1.01-2.85). These and additional provider-level barriers were also identified among urban enrollees.

Conclusions: Discrimination, cost of care, and uncertainty about insurance coverage inhibit access in both the rural and urban samples. These barriers are worthy targets of interventions for publicly insured populations regardless of residence. Future studies should investigate additional factors associated with access disparities based on rural-urban residence.

Key words access to health care, health disparities, preventive health care, public health insurance, rural health.

Regular utilization of preventive health care is critical for avoiding exposure to disease, timely diagnosis and effective management of disease, reducing the need for aggressive interventions, lowering health care costs, and improving health overall. Although nationwide rates of cancer screening, immunizations, blood pressure checks, and diabetes checks have increased, they still remain below Healthy People 2020 goals.¹⁻⁴ Rural patients use preventive care less often than urban populations, and they also experience problems accessing health care.⁵⁻⁷ Similarly, compared to privately insured populations, those enrolled in public health insurance programs use preventive care at lower rates,^{3,4} and they are more likely to use emergency departments to access primary care services.⁴

Barriers to care reported among rural populations, both privately and publicly insured, exist at the system, provider, and individual levels. System-level barriers for rural populations have included financial barriers; distance to clinics; lack of available clinics, hospitals or assisted living facilities; and concerns about confidentiality.^{8,9} Provider-level barriers have included provider-patient relationship problems, low satisfaction with and lack of confidence or trust in providers or the health care system, language barriers, and concerns about confidentiality.⁹⁻¹³ Discrimination and unfair treatment based on race or health status have also been reported as provider-level barriers.⁹ Individual-level barriers, including concerns about stigma and resistance to medical interventions, have been reported.⁹

Those with public insurance also report significant barriers to health care access. Specifically, system-level barriers such as transportation barriers, concerns about cost of care, difficulty making appointments, not knowing where to go for care, and confusion about insurance coverage have all been identified as significant barriers to care among publicly insured populations.¹⁴⁻²⁰ Barriers related to one's relationship with providers, wait times in health care facilities, language barriers, cultural misunderstanding, along with discrimination based on race or public insurance status can all inhibit access to health care services.²¹⁻²³ Individual-level barriers such as conflicts with childcare needs and other work or family obligations have also been identified.²⁴⁻³¹ Moreover, many of these barriers are associated with a greater likelihood of delaying or going without needed health care.^{19,21-23}

There is some evidence of rural-urban differences in access to prenatal care for low-income women and particularly women of color,³² and higher prevalence of reports of unmet health care needs among publicly insured women in Minnesota.³³ However, there is very little research into rural-urban differences or disparities in access to preventive care within publicly insured populations.

This study fills the gap in knowledge of access barriers to preventive health care services among populations that are both rural and enrolled in public health insurance programs. Specifically, the purpose of this analysis was to identify barriers associated with use of preventive care in a population of Minnesota Health Care Program enrollees. Minnesota Health Care Programs (MHCP) are the publicly funded health insurance programs in Minnesota, including Medicaid (known as Medical Assistance), Minnesota Care, which targets populations with incomes too high to qualify for Medical Assistance, and additional state programs. Individuals and families qualify for MHCP based on a combination of factors including income and assets, family size, and disability status. Minnesota is an ideal location for a study such as this, considering the significant health outcome and socioeconomic disparities between rural and urban Minnesotans.³⁴ We hypothesized that rural MHCP enrollees experience reduced access to preventive care services and more barriers compared to their urban counterparts. Understanding the differences between barriers to preventive care in urban and rural publicly insured populations may inform targeted interventions toward the unique challenges faced in these communities.

Methods

Survey Design and Study Population

This study is a secondary data analysis of a statewide survey of MHCP enrollees carried out in 2008.³⁵ Random sampling was stratified with oversampling of American Indian, Latina/o, Somali, Hmong, and African American enrollees, then weighted to represent the MHCP population. Survey administration was mixed-mode, using mailed surveys and follow-up by telephone for enrollees who did not return the survey. Mailed surveys were in English only and telephone interviews were available in English, Spanish, Hmong, or Somali. Both child and adult enrollees were sampled ($n = 2,432$ and $n = 2,194$, respectively) for a total sample size of 4,626. However, only enrollees for whom complete demographic and socioeconomic information was available were included in this analysis, for a final sample size of $n = 4,388$. For child enrollees, one parent in the household completed the survey regarding their experiences seeking health care for their child. The overall response rate was 44.3%, which is consistent with similar surveys of publicly insured populations.³⁶ The survey design and administration were performed using a community-based participatory research (CBPR) approach, with the partnership of local community organizations in the study design, data collection, interpretation, and communication of results

for this research.³⁷ Survey items included measures of demographics, socioeconomic status, health and disability status, access to medical and dental care, and barriers to care. Complete information on survey design is available elsewhere.³⁵

Dependent Variables

The primary outcome of interest was use of preventive care, which was measured by one survey item. Participants were asked how long it had been since they used preventive care: “About how long has it been since you (your child) went to a doctor or clinic for regular or routine care?” Responses were binary and coded as “within the past year” or “more than one year.”

Independent Variables

Rural or urban residence was determined using administrative data for enrollees based on county of residence. Due to sample size limitations, enrollees residing in counties that were part of any of the 8 Metropolitan Statistical Areas (MSAs) in Minnesota were considered urban, and those outside of MSAs were considered rural. Instead of grouping enrollees by sample strata, they were grouped based on self-reported race/ethnicity as American Indian, Latina/o, Asian American or Pacific Islander, black, and white. This was done to maximize the sample size of minority race/ethnicity groups in the rural sample to allow sufficient power in our analyses. Other demographic variables were sex, age group (child under 18; adults 18-39; adults 40-64; adults 65+), US born, survey language (English or not), marital status (married or unmarried), employment status (employed or not), educational attainment (high school graduate or not), disability status, and self-reported health status (excellent, very good, good or fair, poor). Given that preventive care guidelines vary by age, we tested the sensitivity of the results to different age specifications; the results remained largely unchanged.

Enrollees were questioned about 24 barriers to care, all of which were included in this analysis. Barriers were grouped conceptually as system-, provider-, or individual-level barriers according to the Institute of Medicine’s framework for understanding access to personal health services.³⁸ Enrollees were asked to identify if each barrier was a problem for them in accessing health care services. Barriers related to transportation, difficulty navigating the health care system, clinic hours, cost of care, and uncertainty with MHCP insurance were considered system-level. Provider-level barriers were those related to one’s relationship with his/her provider, including trust, understanding of culture and religion, language

differences, and discrimination; the latter was measured by 4 variables, including perceived unfair treatment based on MHCP enrollment, based on ability to pay for care, based on race, and based on sex or gender. Finally, competing work or family obligations or childcare needs that restrict access to care were considered individual-level barriers.

Analysis

Chi-square tests were used to compare demographic and socioeconomic factors between the rural and urban participants. Subsequent bivariate logistic regression models were estimated, adjusting for demographic and socioeconomic covariates. Next, to investigate associations between reported barriers and reports of no past year use of preventive care, we constructed multivariate logistic regressions stratified by rural/urban status and controlling for demographic and socioeconomic variables. That is, analyses for these associations were replicated in the rural and urban groups separately. All analyses were performed using Statistical Analysis Software 9.21.³⁹

Results

Demographic information for urban ($n = 3,355$, 68%) and rural ($n = 983$, 32%) participants is shown in Table 1. The rural sample included greater proportions of white and American Indian populations, while Asian American and African American participants were more represented in the urban group. The urban group also included a greater proportion of participants who took the survey in Hmong, Spanish, or Somali. Greater proportions of the rural group were employed, married, and high school graduates. Enrollees’ ages ranged from 1 to 89. There were no differences in health status or disability status between the urban and rural participants.

Approximately 24% of the rural population reported no past year use of preventive care compared to just under 19% of the urban population ($P = .03$). Of the 24 barriers, 7 were more prevalent in the urban group compared to the rural group. Urban participants were more likely to report not knowing where to go for care, prescription drug cost concerns, provider not understanding culture, language barriers, unwelcoming health care facilities, and unfair treatment based on race (Table 2). However, after adjusting for demographic and socioeconomic differences between urban and rural populations, there were no differences in reported barriers in each group with the exception of prescription drug cost concerns (data not shown). After controlling for demographics, socioeconomics, and health and disability status, the odds

Table 1 Demographic Differences Between Rural and Urban MHCP Enrollees

Sample Size	Total N 4,338	Rural 32%	Urban 68%	P Value
Sex				.074
Female	2,459	60.0%	54.6%	
Male	1,879	40.0%	45.4%	
Age (Mean = 24.6)				.847
Child (0 to <18)	2,253	43.4%	45.9%	
Adult (18-39)	1,027	26.5%	25.9%	
Adult (40-64)	792	23.8%	22.0%	
Adult (65+)	266	6.2%	6.2%	
Race/ethnicity				< .001
American Indian	611	9.5%	6.2%	
Asian and Pacific Islander	1,011	1.9%	9.0%	
Black	1,209	3.5%	26.3%	
Latina/o	776	8.6%	9.9%	
White	731	76.5%	48.7%	
Born in the United States				< .001
Yes	2,107	93.0%	74.5%	
No	2,231	7.0%	25.5%	
Survey language				< .001
English	3,215	97.0%	90.3%	
Hmong, Somali, or Spanish	1,373	3.0%	9.7%	
Marital status				< .001
Married	2,358	56.6%	45.7%	
Unmarried	1,980	43.4%	54.3%	
Employment status				< .001
Employed	1,820	54.9%	43.9%	
Not Employed	2,518	45.1%	56.1%	
Educational attainment				.048
Less than High School grad	2,007	19.5%	24.0%	
High School grad or Greater	2,331	80.5%	76.0%	
Health status				.843
Fair or Poor	657	15.7%	16.0%	
Excellent, Very good, or Good	3,681	84.4%	84.0%	
Disability status				.107
Yes	565	13.8%	17.4%	
No	3,773	86.2%	82.6%	

Unweighted sample sizes and weighted percentages are presented. Significant differences were assessed using chi-square and are indicated by P values shown in bold.

of reporting no past year use of preventive care was not significantly different among rural participants compared to urban (OR: 1.37, 95% CI:1.00-1.88; top of Table 3).

Table 3 also shows the results of multivariate logistic regressions with each individual barrier predicting the odds of no past year preventive care for the urban and rural participants after adjusting for demographic, socioeconomic, and health and disability status differences between urban and rural populations. For both the urban and rural participants, untrustworthy providers, unfair treatment based on ability to pay for care, unfair treatment based on MHCP enrollment, concern about

care costing more than expected and concern that care won't be covered by insurance were associated with no past year preventive care. In addition, for urban participants, not knowing where to go for care (OR: 1.75, 95% CI: 1.16-2.64), provider not understanding culture (OR: 2.04, 95% CI: 1.33-3.14), provider not understanding religion (OR: 2.08, 95% CI: 1.18-3.69), and language barriers (OR: 1.77, 95% CI: 1.11-2.81) were also associated with no past year preventive care.

Discussion

This study identified barriers to health care utilization common to both rural and urban populations as well as some barriers unique to urban residents. Rural residents were more likely to report not using preventive care in the past year compared to their urban counterparts, with 24% of the rural sample reporting no past year use of preventive care compared to just under 19% of the urban sample. However, when controlling for demographics, socioeconomic, health and disability status, this difference was not statistically significant. There were some differences between rural and urban participants in terms of barriers, or barriers associated with no past year use of preventive care. A few barriers were significantly associated with no past year use of preventive care in the urban group but not the rural group. These include not knowing where to go for care, and provider-level barriers including providers who are unfamiliar with patients' culture or religion. Notably, these barriers were significantly associated with no past year use of preventive care in the urban group, but not in the rural group, despite controlling for demographic and socioeconomic differences. These findings are largely in agreement with the literature on barriers to care in publicly insured populations. System-level barriers including cost of care concerns,^{16,18,19,32} provider-level barriers such as provider-patient relationship factors, and individual-level barriers such as competing work or family obligations have been previously reported in publicly insured populations.^{15,18,25-27,40} These barriers have also been identified in rural populations.^{8,11,13,41} Still, there is little research investigating the intersection between rural-urban residence and public insurance status or the specific experiences of rural public insurance enrollees.

MHCP enrollees, regardless of residence, experience barriers to health care at the system, provider, and individual levels, and these barriers explain, at least in part, reduced access to care. These barriers represent worthwhile targets for interventions. System-level barriers such as concerns about cost of care and confusion about insurance coverage, along with provider-level barriers such as

Table 2 Prevalence of Reporting No Preventive Care in the Past Year and Barriers Among Rural and Urban MHCP Enrollees

	Rural Percentage	Urban Percentage	P Values
Dependent variable			
No past year use of preventive care	24.0	18.9	.034
System-level Barriers			
Difficulty making appointments	33.5	32.6	.747
Transportation barriers	22.6	24.8	.336
Not knowing where to go for care	11.1	14.9	.056
Do not know where to go with questions	24.9	29.8	.062
Unable to see preferred provider	24.1	23.2	.691
Concerns about care being unaffordable	43.2	47.4	.145
Do not know what care is covered by insurance	36.4	40.0	.203
Concern about being dropped from MHCP	35.9	44.4	.003
Concern that care won't be covered by insurance	33.8	37.8	.155
Concerns about care costing more than expected	33.6	37.8	.135
Prescription drug cost concerns	24.8	34.4	<.001
Provider-level barriers			
Lack of confidence in provider	42.3	43.2	.751
Provider is not trustworthy	15.6	16.8	.584
Inconvenient clinic hours	15.4	16.9	.493
Language barriers	9.9	14.7	.008
Health care facility is unwelcoming	6.4	11.8	<.001
Provider does not understand culture	4.3	9.6	<.001
Provider does not understand religion	2.3	3.9	.019
Unfair treatment based on MHCP enrollment	33.1	33.8	.777
Unfair treatment based on ability to pay for care	32.6	32.3	.829
Unfair treatment based on race	7.9	13.9	<.001
Unfair treatment based on sex or gender	6.2	9.1	.088
Individual-level barriers			
Competing work or family obligations	26.7	29.8	.238
Childcare needs	18.9	21.7	.238

Weighted percentages are presented. Significant differences were assessed using chi-square and are indicated by *P* values shown in bold.

unfair treatment based on public insurance status were associated with no past-year use of preventive care and were widely reported in this sample. Beyond these, additional system- and provider-level barriers were reported at high rates across the sample. In particular, concerns about care being unaffordable and lack of confidence in providers were reported by over 40% of both the rural and urban enrollees. Unfair treatment based on MHCP enrollment and ability to pay for care, along with additional system-level barriers, was reported by over 30% of both groups.

Unfair treatment based on insurance status, as well as unfair treatment based on race or sex or gender have been reported in publicly insured populations and identified as a barrier to care.^{9,17,19,22,41} In Minnesota, a recent statewide survey documented experiences of insurance-based discrimination and showed that publicly insured patients experience discrimination at much higher rates compared to privately insured patients, controlling for socioeconomic status differences, and that discrimination was associated with lower odds of having a usual

source of care and greater barriers to care.^{42,43} Insurance-based discrimination may be explained by disparities in provider reimbursement rates between public and private insurance.⁴³⁻⁴⁵ This creates a financial incentive to limit patient contact time and costly services for patients with public insurance, leading to experiences of discrimination. In addition, unconscious biases of providers against poor people, or racial/ethnic minorities, who are disproportionately represented in public insurance, may be another explanation.⁴²

Limitations

Some limitations should be considered when interpreting the results of this analysis. First, there are inherent limitations with cross-sectional survey data in establishing cause and effect relationships. Second, there is also susceptibility to nonresponse or sampling bias. Previous analyses of these data have demonstrated that respondents were more likely to be female, white, Asian, and younger, and less likely to be black or American Indian.³⁶

Table 3 Odds of Reporting No Preventive Care in the Past Year by Barrier Type Among Rural and Urban MHCP Enrollees

	No Past Year Use of Preventive Care OR (95% CI) 1.37 (1.00-1.88)	
	Rural Group	Urban Group
Rural versus urban participants, overall		
System-level barriers		
Difficulty making appointments	0.78 (0.47-1.30)	0.98 (0.69-1.39)
Transportation barriers	1.32 (0.77-2.50)	1.15 (0.80-1.68)
Not knowing where to go for care	1.42 (0.75-2.68)	1.75 (1.16-2.64)
Do not know where to go with questions	0.98 (0.56-1.70)	1.24 (0.86-1.78)
Unable to see preferred provider	0.99 (0.57-1.72)	1.06 (0.72-1.56)
Concerns about care being unaffordable	1.31 (0.77-2.21)	1.31 (0.93-1.86)
Do not know what care is covered by insurance	0.86 (0.51-1.43)	1.12 (0.79-1.59)
Concern about being dropped from MHCP	1.38 (0.84-2.26)	1.18 (0.82-1.69)
Concern that care won't be covered by insurance	1.70 (1.01-2.85)	1.64 (1.15-2.33)
Concerns about care costing more than expected	1.72 (1.03-2.89)	1.53 (1.07-2.20)
Prescription drug cost concerns	1.67 (0.98-2.86)	1.27 (0.88-1.82)
Provider-level barriers		
Lack of confidence in provider	1.40 (0.84-2.34)	1.29 (0.91-1.83)
Provider is not trustworthy	1.91 (1.03-3.57)	2.08 (1.37-3.16)
Inconvenient clinic hours	0.77 (0.40-1.48)	1.07 (0.72-1.60)
Language barriers	1.13 (0.45-2.80)	1.77 (1.11-2.81)
Health care facility is unwelcoming	1.51 (0.72-3.15)	1.53 (0.97-2.41)
Provider does not understand culture	1.40 (0.61-3.19)	2.04 (1.33-3.14)
Provider does not understand religion	2.91 (0.97-8.72)	2.08 (1.18-3.69)
Unfair treatment based on MHCP enrollment	2.26 (1.34-2.38)	1.85 (1.30-2.64)
Unfair treatment based on ability to pay for care	1.87 (1.12-3.14)	1.67 (1.17-2.37)
Unfair treatment based on race	0.89 (0.40-2.00)	1.09 (0.74-1.63)
Unfair treatment based on sex or gender	1.72 (0.71-4.17)	1.45 (0.84-2.51)
Individual-level barriers		
Competing work or family obligations	0.80 (0.43-1.46)	0.82 (0.54-1.23)
Childcare needs	1.14 (0.69-1.90)	1.06 (0.74-1.52)

ORs adjusted for age group, sex, race/ethnicity, age group, US nativity, survey language, marital status, employment, educational attainment, health status, and disability status. Significant odds ratios (in bold) were determined using Wald 95% confidence intervals.

Data were weighted to account for this and more accurately represent the overall MHCP population. In this study, urban and rural designations were based on county of residence. This may have led to residency status misclassification, as some counties contain an urban area as well as rural areas and were classified as urban. Still, 75% of the urban sample ($n = 2,523$) was from the major urban center in Minnesota, and we speculate that the number of participants in counties designated as urban, but who live in functionally rural areas, would be outnumbered by urban participants. Also, we can be confident that those participants in the rural group reside in decidedly rural counties. Therefore, while this misclassification may have led to an underestimation of the differences between rural and urban groups, the effect this has on the data may be small or negligible. These data were collected in 2008 and therefore cannot account for changes in health care accessibility in Minnesota or nationwide such as the expansion of Medicaid as a result of the imple-

mentation of the Patient Protection and Affordable Care Act (ACA).

Another limitation is the difference in sample size between the rural and urban groups, where a weighted 32% of the study was rural. The barriers estimates, therefore, were less precise for the rural than the urban group, perhaps leading to fewer significant odds ratios.

Finally, Minnesota is predominantly white and English-speaking, especially in rural areas, although MHCP enrollees are more diverse than the general population. This may be an important difference when considering comparisons to rural areas in other states. However, the design of the survey study sought to account for this by oversampling racial and ethnic minorities and non-English speakers.

Despite these limitations, this study has a number of strengths. First, the study population had substantial representation of racial and ethnic minority groups, and the survey was designed with significant involvement from

community partners using a CBPR framework and thus well represents the experiences of minority or marginalized populations in Minnesota. Second, the survey was very comprehensive and included questions about 24 barriers. This allows for a nuanced investigation into the barriers participants experience, and it is therefore useful for informing the development of future interventions. For example, questions about specific problems with insurance coverage and experiences of discrimination related to race, sex, MHCP enrollment, or ability to pay for care all highlight specific issues that can be translated into changes in public program administration or the development of other interventions.

Conclusions

Building from these results, future research should include additional individual-level barriers that may be more relevant for rural populations. Previous qualitative studies suggest that preventive health care is a low priority in some rural communities.⁴⁴ In addition, illness-related stigma and privacy concerns can prevent individuals in rural communities from seeking care where there is a high probability of being recognized by others in health care settings.^{9,46,47} For preventive care specifically, this may be more relevant for certain preventive care services (ie, screening for sexually transmitted infections, family planning) than others. It is possible that barriers unique to rural populations may have been overlooked in this survey. The community partners who contributed to the design and administration of this survey were diverse yet urban-based. Future research on this topic may benefit from representation from rural communities, and specifically rural minority or non-English-speaking communities with a greater understanding of unique challenges faced by rural populations.

This study identified a number of barriers to explain reduced access to preventive care among both rural and urban enrollees. These findings warrant further research, and together with ongoing input from the affected communities, will lay the foundation for improving access to care for publicly insured populations, regardless of residence. In addition, these results demonstrate a need for targeted interventions to increase the use of preventive care among both rural and urban public insurance enrollees.

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