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Social and Behavioral Factors in Sickle Cell Disease: Employment Predicts Decreased Health Care Utilization

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Abstract

The purpose: to determine frequency of health care encounters among people with sickle cell disease (SCD) seeking treatment for a vaso-occlusive crisis (VOC). Health care encounters are categorized by visit type (day hospital, ED visit, hospitalization), prevalence of self-reported behavioral and social factors, and any associations between behavioral and social factors and health care encounters. Ninety-five people with SCD were enrolled in a prospective descriptive study in North Carolina. Patients were interviewed concerning behavioral-social factors, and a report of health care encounters was produced, generated by ICD codes associated with VOCs between October 2011 and March 2014. Among 95 patients, there were a total of 839 day hospital and 1,990 ED visits, and 1,101 hospital admissions. Prevalent behavioral and social factors were depression (29%), anxiety (34%), illicit drug use (6%); unstable home situation (17%); and unemployment (81%). Employment and stable home were significantly associated with decreased frequency of health care encounters.

Keywords

Sickle cell disease; chronic pain; health care encounters; behavioral factors

The most common genetic hematological disorder in the United States is sickle cell disease (SCD).¹ Due to the frequency and difficulty of treating acute painful episodes known as vaso-occlusive crises (VOCs),² it is not uncommon for people with SCD to have numerous emergency department (ED) visits, hospital admissions, and hospital readmissions. Despite

being a rare disease—affecting approximately 100,000 individuals in the United States—patients with SCD accounted for 1.6 million ED visits (197,000 p/year) between 1997 and 2007.³ Of all these ED visits, VOCs accounted for approximately 64.2%.⁴ In 2010 the highest 30-day readmission rate of any acute and chronic condition was SCD (31.9% of all readmissions), accounting for 87,326 hospital admissions and 27,837 readmissions.⁵

To help reduce unnecessary hospital encounters some hospitals have adopted a *day hospital* treatment model to manage VOCs.⁶ In a day hospital, people with SCD are treated for uncomplicated VOCs (e.g., VOC not associated with an additional complication of SCD or reason for hospital admission) within an outpatient center.⁷ A day hospital visit is less expensive,⁸ associated with faster pain relief, and associated with shorter lengths of stay compared with an ED visit and hospital admission.⁷

In comparison with medical factors,^{9–13} far less is known about what behavioral or social factors are associated with rate of health care encounters. The prevalence of depression and anxiety is known to be high among individuals with SCD, ranging from 2% to 57%.^{14–15} The presence of depression and anxiety predict more daily pain, higher opioid use, and worse mental and physical health in people with SCD.¹⁴ A recent systematic review of depression in SCD adults found an association between depression and increased health care encounters for studies with large sample sizes ($n > 300$ compared with smaller studies, $n < 20$),¹⁵ but did not report what established the need for each visit, or include encounters for day hospitals. From a social perspective, SCD contributes to social exclusion, financial stress, and disease-related stigmatization.^{17–18} Many patients report having unmet social needs related to transportation, maintaining stable social relationships and employment, and ability to pay medical costs.^{19–20} For adults with SCD seeking treatment for a VOC, relatively little is known about how behavioral factors and social factors may influence health care encounters.^{21–23}

Using a sample of 95 patients with SCD that received care at one of two hospitals in North Carolina for a VOC across 30 months, we advanced the following aims: (1) describe the frequency health care encounters (ED visits, day hospital visits, hospital admissions); (2) estimate the prevalence of behavioral (depression, anxiety, illicit drug use) and social (unemployment, unstable home situation) factors; (3) determine the behavioral and social factors associated with the number of decreased health care encounters.

Methods

A prospective research study was conducted using patient interviews conducted within two weeks of an ED visit for VOC at two hospitals in the Southeast U.S. Hospitals were academic medical centers with emergency medicine residency programs. Site 1 employed approximately 130 nurses, 27 emergency medicine residents, and 21 emergency medicine (EM) faculty. Site 2 employed approximately 146 nurses, 43 EM residents, and 37 EM faculty. Both hospitals had day hospitals at the time of the study that were open Monday–Friday 8A–4P.

Participants.

All adult patients (≥ 21 years of age) with an ED or day hospital visit, or hospital admission for the treatment of a VOC were eligible for inclusion. Research assistants reviewed all ED visits and day hospital encounters and patients admitted to the hospital through the ED on a daily basis. Patients were recruited and provided consent in person, either during a hospital admission related to a VOC, or at the end of an ED visit between April 2012 and March 2014. Patients consented to participate in an interview within two weeks of a future ED visit, should one occur. Patients were not allowed to contribute more than a total of five interviews over the study period. The institutional review boards at both study sites approved the study protocol and subjects provided informed written consent to participate in interviews.

Procedures.

Research staff identified 10 patients per quarter per site to interview using the following stratification system: 1) admission status (yes/no), 2) number of day hospital and ED visits in the past three months (2, 3–4, 5), and 3) whether or not the patient had previously participated in an interview specific to this study. We chose this sampling method to select patients with varied ED encounter patterns (low, medium, and high), although the sample was biased in that patients did have to have at least one ED visit. Using the stratification process, every three months 10 patients (per site) were selected to participate in a follow-up interview within two weeks of an ED visit for VOC and received either an in-person (if hospitalized) or telephone interview. Interviews were conducted as close to the ED index visit as possible and no greater than two weeks after the ED visit. Upon completion of an interview patients received a \$10 gift card.

Interviews.—The focus of the interview was to evaluate behavioral and social factors. The behavioral factor questions included “Are you generally anxious?” “Are you generally depressed?” and “Do you use illicit drugs or abuse alcohol?” Social factor questions were “Do you live in an unstable home situation?” and “Are you currently employed?” These were selected questions from Decision 7 (Referrals) of Emergency Department-Sickle Cell Assessment of Needs and Strengths (ED-SCANS). The ED-SCANS is an evidence-based, decision support and quality improvement framework developed to guide care for SCD patients in the ED. The ED-SCANS has been found to have excellent inter-rater, face, and utility validity by ED nurses and physicians, with construct validity for behavioral (anxiety and depression) questions, and rated as clear, relevant, and easy to use (88–100%) as a decision support tool.²⁴ However, these questions are screening vs. diagnostic questions, especially in relation to depression and anxiety. It is not possible to incorporate comprehensive diagnostic instruments and screening to diagnose depression and anxiety in an ED setting.

Health care use definitions.—Health care encounter data were captured from October 2011 to March 2014. We purposefully chose to capture all ED, day hospital visits, and hospital admissions to provide a more discrete picture of encounters for VOC. To obtain the frequency of health care encounters, a report of all ICD-9 codes associated with a VOC (282.6, 282.60–64, 282.68–69) between October 2011 and March 2014 was generated for each of the N=95 patients in the sample. Each health care encounter (day hospital, ED,

hospital admission) was counted as unique visit, and analyzed separately. If a patient had an ED visit and hospital admission in the same day, it was counted as two visits, and if they had an ED visit, day hospital visit, and hospital admission in the same day, it was counted as three visits. The study team discussed this at length and decided on this method because we wanted to describe more fully encounters inclusive of day hospital visits, which may or may not result in an ED visit and/or hospitalization. In addition, we decided not to group encounter types together because no paper to our knowledge has reported on associations between day hospital events and psychosocial factors. This method also allowed us to differentiate the number of ED encounters that resulted in a hospitalization from those that resulted in hospital discharge. This analysis provides a more granular picture of “treatment” for VOC.

Data analysis plan.—Descriptive statistics summarize the demographic characteristics of individual patients with SCD in the sample at the first interview conducted for the total sample (N=95) and per site (Site 1: n=56; Site 2: n=39). The number of interviews conducted per patient and site was also determined. Due to skewness, a non-parametric Wilcoxon Two-Samples Test was used to test for between-site differences in age. Chisquare tests were performed for between-site differences in gender, race, and proportion of patients with two or more interviews.

Frequency of health care encounters.—The following was determined for the total sample and for each site: total number of health care encounters by type (day hospital, ED, and hospital admission), and the number of health care encounters per patient with SCD. Wilcoxon two-sample tests were used to test for site-differences in the health care encounters per patient.

Behavioral and social factors.—Number and proportion of patients with SCD who reported behavioral and social factors was assessed. Chi-square/Fisher’s exact tests were used to test for site-differences in behavioral and social factors. For patients with one or more interviews, if a patient responded “unsure” to depression, anxiety, or drug use during any interview they were categorized and coded as “no” for the study period, and if a patient responded “intermittent” to unstable home or employment, they were categorized and coded as “yes” for the study period. Lastly, if a patient participated in more than one interview and had both “yes” and “no” responses for the same question but in different interviews (e.g., reports both yes and no for depression), the “yes” response was retained.

Behavioral and social factors associated with health care encounters.—A general linear model approach was used to conduct analysis of covariance with rank scores to identify social factors associated with decreased day hospital, ED visits, hospital admissions, and total encounters. Health care encounters per person were rank-ordered due to skewness of the encounter data. In the event of tied ranks, the mean of the tied ranks was used. Site was included as a covariate to control for site differences with regard to patient demographic/clinical characteristics. Each ANCOVA used Type III sum of squares results from a General Linear Model. Each model tested for the effect of each behavioral/social factor on the mean of the rank scores for the encounter category, after controlling for site.

Separate analyses for each factor and encounter category measure were conducted. Any behavioral/social factor significant at the .05 level was retained in a subsequent multifactor ANCOVA. Least squares means of the rank scores, adjusted for site effects, were derived from the models. For all analyses, higher rank scores represented a greater number of encounters per person.

Results

Sample characteristics.

Among the 95 individuals in the sample the median age was 27.5 years and 97% were African American (Table 1). Patients at Site 1 were significantly older than the patients at Site 2 ($z=2.44$, $p=.0143$), while Site 2 had a significantly greater proportion of females (chi-square=12.18, $df=1$, $p=.0005$). The two sites did not differ with regard to racial/ethnic composition ($p>.05$).

The 95 patients participated in a total of 156 interviews over the 30-month period (Table 1). The number of interviews completed per patient ranged from 1 to 5. The majority of the patients (60%) were interviewed one time, with Site 1 having a greater proportion of patients with one interview relative to Site 2 (Site 1=70%; Site 2=46%; chi-square = 5.29, $df=1$, $p=.0215$). Only one patient was interviewed five times, and six patients completed four interviews.

Frequency of health care encounters.

There were 2,829 ED and day hospital encounters and 1,101 hospital admissions, resulting in a total of 3,930 encounters (Table 2). The median number of health care encounters per person over the 30-month period was 27 (range=1 to 201; Table 3). The median number of hospitalizations was 7 (range=0 to 50), median encounters per person for ED was 13 (range = 1 to 151), compared with the day hospital which had a median encounter per person of 2 (range = 0 to 109). The median number of ED visits per patient was lower at Site 1 than Site 2 (9.5 vs. 15; $z=1.93$, $p=.0530$), but the median number of day hospital visits per person was significantly higher at Site 1 relative to Site 2 (4 vs. 1; $z=-3.36$, $p=.0011$).

Among the 95 patients, 25% had encounters at or exceeding the following during the 30-month period: (a) 29 ED visits; (b) nine day hospital visits; (c) 19 hospitalizations; (d) 55 total encounters. This high-user subgroup included patients with fewer ED visits and more day hospital visits at Site 1 when compared with Site 2 (ED Visits: Site 1=24.5 vs. Site 2=45; day hospital visits; Site 1=11.5 vs. Site 2=3), while the number of ED, day hospital, and hospital admissions was very similar at each site. The encounter counts for the upper 25% of the sample are denoted by the 75th percentile and maximum values for health care encounters per person in Table 2.

Behavioral and social factors.—Approximately 29% of sample reported feeling depressed and 34% having anxiety (Table 4). Illicit drug use was reported by 6% of the patients. Site 1 had a significantly lower rate of depression reported than Site 2 (20% vs. 44%; chi-square=6.34, $df=1$, $p=.0118$). Among the 95 patients, 17% reported living in an

unstable home situation and 81% indicated that they were not currently working. The sites did not differ on these two social characteristics ($p>.05$).

Behavioral and social factors associated with health care encounters.—The ANCOVA results, which examined the effects of the behavioral and social factors on health care encounters per person after controlling for site, are summarized in Table 5. Illicit drug use was examined in the analytic models due to the small number of patients ($n=6$) who reported this behavior. For this analysis, the frequency of admission or encounters per person was transformed into a ranked value due to severe skewness, with higher rank scores representing higher frequencies.

Patients who were unemployed had a significantly higher number of day hospital and ED visits than those who were employed. More specifically, unemployed patients had a significantly higher number of ED visits (Mean rank=51.4, SD=27.6) and trended towards a greater number of day hospital visits (Mean rank=49.9, SD=28.0) than those employed (ED: Mean rank=35.7, SD=23.6, $p=.0484$; Day hospital: Mean rank=40.6, SD=22.4, $p=.0641$). Furthermore, patients with an unstable home had a higher number of ED visits (Mean rank=60.6, SD= 29.7) than those with a stable home (Mean rank=45.4, SD=26.5, $p=.0179$). A multifactorial ANCOVA with employment, unstable home situation, and site together in the model further demonstrated that higher number of ED visits was significantly associated with both unemployment ($p=.0323$) and an unstable home ($p=.0144$). The interaction between employment and home situation did not significantly influence ED visits, and was omitted from the multifactorial model.

Patients who were unemployed had a significantly higher number of hospital admissions (Mean rank=51.7, SD=27.3) than those who were employed (Mean rank=35.4, SD=25.1, $p=.0241$). Patients with an unstable home situation trended towards a higher number of hospital admissions (Mean rank=59.3, SD= 34.2) than those with a stable home (Mean rank=46.7, SD=25.8, $p=.0962$). Unemployed patients had a significantly higher number of total encounters (Mean rank=51.7, SD=27.3) than those who were employed (Mean rank=34.7, SD=24.7, $p=.0192$).

Site effects were also demonstrated in several analyses. Site-2 when compared with Site-1 had significantly higher number of ED visits after controlling for the effects of (a) unstable home situation ($p=.0209$) and/or (b) employment and unstable home ($p=.0490$). In contrast, Site-1 had significantly higher number of day hospital visits after controlling for (a) depression; (b) anxiety; (c) unstable home; and (d) employment (all $p<.002$) when compared with Site-2.

Discussion

From a sample of 95 adult patients with SCD we report health care encounters, behavioral and social factors, and associations between behavioral and social factors with health care encounters. We found (1) high encounters of health care services (a median of 27 day hospital, ED, or hospital admission per patient); (2) high prevalence of depression (29%),

anxiety (34%), and unemployment (81%); and (3) employment and stable home environment as the only protective factors against greater encounters frequency per person.

Prior studies have not differentiated among the different types of health care services that are frequently utilized by people with SCD seeking treatment for a VOC. By distinguishing between ED visits, day hospital visits, and hospital admissions, an interesting trend became visible: ED encounters per patient were significantly lower at Site 1 than Site 2, and day hospital encounters per patient were significantly higher at Site 1 compared with Site 2 per patient. We expected that the number of ED visits would be lower at Site 1 because these patients utilized the day hospital more to manage their VOCs, providing preliminary evidence to support the value and usefulness of the day hospital. As day hospitals can provide people with SCD care for uncomplicated VOCs⁷ at a lowest cost compared with an ED visit,⁸ future studies should further investigate the utility of day hospitals. A testable hypothesis derived from our results is whether there exists an inverse relationship between day hospital visits and ED visits/hospital admissions for uncomplicated VOCs at treatment centers that offer a day hospital service.

A surprising result of this study was the lack of finding between behavioral outcomes and health care encounters. A recent meta-analysis of depression in SCD reported a statistically significant association between depression and health care encounters for studies that had sample sizes above $N > 300$,¹⁵ but this study did not report on what provoked the health care encounter, or include day hospital visits. Interestingly, somatic burden has been associated with higher encounters for only VOC-related treatment,²⁵ but has also been associated with higher encounters for only non-VOC treatment.²² One possible reason for this discrepancy relates to how depression is measured, as a symptom or disease. We believe our non-significant association with depression and increased encounters is likely influenced by the fact we were screening for depression as a symptom via the ED-SCANS tool, and not using a diagnostic tool or psychological evaluation to capture clinical depression. In addition, African Americans tend to under-report symptoms of psychological distress³⁹ and to express more somatic symptoms,⁴⁰ which the ED-SCANS tool is unable to capture. Additional investigation into the type of health care encounter (e.g., ED vs. day hospital vs. hospital admission) is required to delineate how depressed mood or major depressive disorder influences encounter rates.

The high reported prevalence of depression, anxiety, and unemployment is an opportunity for social worker intervention or psychological referral. A social worker is an important yet often underutilized hospital resource that can help with many of these unmet social needs, and perhaps prevent unnecessary health care encounters by people with SCD. Both sites had a dedicated SCD social worker and ED social worker, but at the time of this study there was no systematic process at either site to alert a social worker to the presence of a SCD patient during an ED visit or day hospital encounter. After study completion Site 1 instituted a standard process to identify, screen, and refer all patients with SCD for social work services during an ED visit; this process is now being disseminated statewide to all EDs in North Carolina. It is important that future work determines how social work resources can be made more readily available to people with SCD seeking treatment for a VOC to help reduce excessive use of health care services.

A important finding was that employed patients had decreased encounters of health care services compared with unemployed patients. This is an important finding because 81% of our sample reported that they were unemployed, aligning with most estimates that report between 40% and 60% of people with SCD are not employed.^{27–30} The association between employment and decreased health care encounters is supported by other studies of people with chronic pain: full-time employment predicts fewer health care consultations, and slower declines in perceived health and physical functioning.^{31–32} However, it is important to note that the patients selected for this study were more likely to have more health care encounters than reported in these other studies because our sample was selected based on each patient having at least one ED visit, thus potentially over-representing the number of unemployed SCD patients due to their greater number of encounters with the health care system. Interestingly, the high reports of unemployment are in direct contrast to the relatively low rates of depression, suggesting that our sample was more sensitive to the employment item than the depression item in the ED-SCANS interview.

The cause of unemployment in SCD is poorly understood. Because individuals with SCD typically experience intermittent yet chronic episodes of acute pain, along with a range of other health-related problems, it is reasonable to believe that maintaining full-time employment would be more difficult because of poor health. Interestingly enough, however, there is also evidence to suggest the contrary, that employment status may not be related to poor health but to behavioral and social factors. In a qualitative study that involved SCD focus groups, patients reported that poor interpersonal relationships among management and other employees, and not their physical health, were the main contributors to their unemployment.³³ Other studies have credited personality factors such as low self-esteem or lack of assertiveness, lack of job skills due to irregular school attendance and cognitive deficits, and external locus of control to high unemployment in SCD.^{34–37} Since employment appears to be a protective factor against high numbers of health care encounters, future research should explore physical, behavioral, and social predictors of employment so we can begin to generate new ways of intervening with SCD patients who are unemployed.

The second significant finding was that people with an unstable home environment experienced higher ED encounters compared with people with a stable home environment. To our knowledge this is the first SCD study that has reported a significant association between unstable home environment and more ED encounters, and supports the construct validity of our screening question, “Do you live in an unstable living or residential situation?”⁴³ As described in our introduction,^{9–15} much of the prior work examining high health care use has focused on medical factors such as drug addiction, genotype, and psychological factors as contributors to higher ED encounters. This is an important finding for both people with SCD and their health care providers because an unstable home environment is a potentially modifiable factor that can be influenced by health care providers such as a social worker or registered nurse. Clinical social workers are especially well suited for this task as they receive training to identify and provide services that have a strong impact on the patients’ home environment. These providers could conduct a short, targeted screening tool prior to discharge from an ED visit or from a hospital admission. Future research should explore the feasibility and optimal methods of using case managers

and social workers to intervene to stabilize a patient's home environment, and the potential efficacy of such a program on decreasing the number of ED encounters.

Limitations and strengths.

Our sample reflects patients treated in two large EDs affiliated with a comprehensive SCD center, each with dedicated social and behavioral health services. This is unique in that most hospitals do not offer dedicated social and behavioral health services, which may limit the generalizability of our findings. It is possible that patients who are not affiliated with a comprehensive center may have even higher social and behavioral health needs than we found. Per our protocol, only ICD-9 codes associated with SCD and VOC were eligible for inclusion, therefore patients may have had additional visits, related or unrelated to SCD, that we did not capture. We do not know how many more additional ED visits, day hospital visits, or hospital admissions occurred where SCD was not included as one of the diagnostic codes (e.g., visits for injuries or illness thought to be unrelated to the patient's SCD), or how many other visits occurred to non-study hospitals that the patient might have visited during the duration of this study.

There were several limitations related to how data were measured and collected. We did not measure patients' disease severity and thus could not control for it in our analyses. Prior work has reported that people with SCD who experience aseptic necrosis, septicemia, and renal disease are higher utilizers of hospital services.³⁸ In addition we did not capture educational status. Patient education is a socio-demographic predictor of health-related quality of life in people with SCD,⁴¹ and a predictor of ED encounters.⁴² Education may also be a predictor for hospital admission and day hospital encounters, and should be tested in future studies. Depression for this study was measured by the ED-SCANS tool, and as previously stated was used in this study as a screening tool and not a diagnostic tool due to the impracticality of conducting a complete evaluation of clinical depression in the ED. Lastly in our analyses, because some patients were contacted multiple times over the course of the study (one patient five times, six patients four times) our results are overrepresented by patients who were contacted multiple times compared with participants who were contacted only once. It is possible social and behavioral health risk factors may have changed over time. However, to address this, if a patient gave a "yes" response during any of the interviews, they were coded as a positive response to that indicator. It is possible that we over-represented these needs over time.

Our project also had several strengths. We were able to conduct interviews with SCD patients treated in the ED and identify social and behavioral health needs, and begin to understand the relationships between these factors and how patients use health care for treatment of VOC. We were also able to tease out the number of day hospital visits for VOC in addition to ED visits. These data provide a more accurate description of the health care use burden for treatment of VOC.

In summary, there was a very high number of day hospital, ED visits, and hospital admissions per person at both study sites. Our sample experienced a high burden of behavioral health needs and an extraordinarily high proportion (81%) of unemployment. None of the social or behavioral factors, except for employment and home stability, were

associated with frequency of health care encounters for people with SCD seeking treatment for a VOC. This work can guide the development and evaluation of social and behavioral health screening and referral programs for individuals with SCD treated in an ED.

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Table 1.**PATIENT DEMOGRAPHIC CHARACTERISTICS AND INTERVIEWS**

	Total (N=95)	Site-1 (N=56)	Site-2 (N=39)	p-value
Characteristic				
Age, in years				
Median	27.5	29.0	25.0	.0143
25th, 75th percentile	23, 36	25, 38	22, 31	
Minimum, maximum	18, 58	18, 58	18, 53	
Female, n (%)	45 (48%)	18 (33%)	27 (69%)	.0005
African American, n (%)	92 (97%)	54 (96%)	38 (98%)	.7824
Hispanic/Latino, n (%)	4 (4%)	3 (6%)	1 (2%)	.6324
Interviews	(N=156)	(N=78)	(N=78)	
Number of interviews per patient, n (%)				
One interview	57 (60%)	39 (70%)	18 (46%)	
Two interviews	23 (24%)	13 (23%)	10 (26%)	
Three interviews	8 (8%)	3 (5%)	5 (13%)	
Four interviews	6 (6%)	1 (2%)	5 (13%)	
Five interviews	1 (%)	0 (0%)	1 (3%)	

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Table 2.

PATIENT ENCOUNTERS

	Total (N=95)	Site-1 (N=56)	Site-2 (N=39)
Encounters, <i>n</i>			
<i>ED visits</i>	1990	962	1028
<i>Day hospital visits</i>	839	730	109
<i>Hospital Admissions</i>	1101	556	545
Total	3930	2248	1682

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Table 3.

PATIENT INTERVIEWS

Category	Statistic	Total (N=95)	Site-1 (N=56)	Site-2 (N=39)	p-value
ED visits	Median	13	9.5	15	.0530
	25th, 75th	5, 29	4, 24.5	8, 45	
	Min, Max	1, 151	1, 72	1, 151	
Day hospital visits	Median	2	4	1	.0011
	25th, 75th	0.9	0.5, 11.5	0.3	
	Min, Max	0, 109	0, 109	0, 24	
Hospitalizations	Median	7	7	10	.1750
	25th, 75th	3, 19	3, 12.5	3, 20	
	Min, Max	0, 50	0, 40	0, 50	
Total	Median	27	27	27	.4009
	25th, 75th	11, 55	9, 51	15, 55	
	Min, Max	1, 201	1, 201	1, 176	

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Table 4.**BEHAVIORAL AND SOCIAL FACTORS**

	Total (N=95)	Site-1 (N=56)	Site-2 (N=39)	p-value
Behavioral, <i>n</i> (%)				
Depression	28 (29%)	11 (20%)	17 (44%)	.0118
Anxiety	32 (34%)	20 (36%)	12 (31%)	.6159
Illicit drug use	6 (6%)	4 (7%)	2 (5%)	1.0000
Social, <i>n</i> (%)				
Unstable home	16 (17%)	12 (21%)	4 (10%)	.1756
Unemployment	76 (81%)	42 (76%)	34 (87%)	.1892

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Table 5.

ANCOVA RESULTS FOR HEALTH CARE ENCOUNTER OUTCOMES

	F	df	p-value
ED Visits per Person			
1 Depression	0.22	1,92	.6381
Site	3.14	1,92	.0798
2 Anxiety	0.03	1,92	.8559
Site	3.79	1,92	.0547
3 Unstable home	5.81	1,92	.0179
Site	5.53	1,92	.0209
4 Employment	4.00	1,91	.0484
Site	2.59	1,91	.1113
5 Unstable home	6.22	1,90	.0144
Employment	4.73	1,90	.0323
Site	3.98	1,90	.0490
Day Hospital Visits per Person			
1 Depression	0.30	1,92	.5868
Site	11.94	1,92	.0008
2 Anxiety	0.31	1,92	.5781
Site	11.94	1,92	.0008
3 Unstable home	0.07	1,92	.7892
Site	11.22	1,92	.0012
4 Employment	3.51	1,91	.0641
Site	13.79	1,91	.0004
Hospital Admissions per Person			
1 Depression	0.15	1,92	.7010
Site	1.47	1,92	.2277
2 Anxiety	0.01	1,92	.9255
Site	1.86	1,92	.1765
3 Unstable home	2.83	1,92	.0962
Site	2.60	1,92	.1105
4 Employment	5.26	1,91	.0241
Site	1.09	1,91	.2981
Total Encounters per Person			
1 Depression	0.34	1,92	.5586
Site	0.43	1,92	.5113
2 Anxiety	0.12	1,92	.7252
Site	0.67	1,92	.4147
3 Unstable home	2.13	1,92	.1479
Site	1.11	1,92	.2952
4 Employment	5.69	1,91	.0192
Site	0.21	1,91	.6482

Note: Rank-ordered encounter data analyzed. Site included as a covariate.

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