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Associations Among Emergency Room Visits, Parenting Styles, and Psychopathology Among Pediatric Patients With Sickle Cell

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Abstract

Background—To examine associations between frequency of emergency room (ER) visits and various parenting styles, both conjointly and interactively, and psychopathological outcomes among pediatric patients with sickle cell disease (SCD).

Procedures—Ninety-eight parents/caregivers of 6- to 18-year-old patients with SCD completed instruments assessing parenting style, child psychopathology, and reported on the frequency of ER visits during the previous year.

Results—ER visits were found to significantly explain Withdrawn/Depressed problems and parenting styles were found to incrementally contribute to the explanation of all forms of psychopathology. Further, Permissive parenting was found to explain Rule Breaking Behavior for those patients with low ER visit frequency but not for those with high ER visit frequency.

Conclusions—Results of the current study confirm the importance of considering both the frequency of ER visits and parenting style in the explanation of psychopathology among pediatric patients with SCD. Results have important implications for both research and treatment.

Keywords

healthcare utilization; parenting; psychopathology; sickle cell disease

INTRODUCTION

Sickle cell disease (SCD) is an inherited disorder resulting from a mutation in the hemoglobin molecule that leads to sickling of red blood cells. This chronic illness occurs in approximately one in every 500 African-American live births with approximately 90,000 to 100,000 Americans affected [1]. The sickling of red blood cells is associated with many

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complications including increased morbidity from stroke, frequent infections, and lung, kidney, and heart problems. Other complications include chronic fatigue, delayed puberty, and poor growth velocity that results from chronic anemia [2]. The cardinal clinical feature of SCD is pain, with marked variability in the severity and prevalence of pain symptoms [3]. For a host of reasons, including pain, pediatric patients with SCD frequently visit to the emergency room (ER) and often require frequent hospitalization [4]. Youth with SCD are also at increased risk for poor psychosocial adaptation including both internalizing (e.g., depression and anxiety) and externalizing (e.g., aggression, delinquency) problems [5]. Extant research, however, suggests that healthy family functioning can buffer the negative psychological impact of SCD [6]. One of the most well-established aspects of family functioning that has repeatedly been shown to be associated with both adaptive and maladaptive outcomes is parenting [7]. The current study therefore aimed to explicitly examine associations between frequency of ER visits and various parenting styles, both conjointly and interactively, and psychopathological outcomes among pediatric patients with SCD.

In addition to the physical complications, youth with SCD are at an increased risk for psychosocial problems. Indeed, SCD has been found to be associated with lower overall quality of life, poor psychological adaptation, declines in various domains of functioning, including peer and family relationships and academic performance, and increased rates of mental illness [8–13]. In fact, pediatric patients with SCD report approximately four times more mental health concerns than age-matched peers [9], including internalizing problems such as excessive anxiety, poor self-concept, depressive symptomatology, and difficulties with social acceptance [14,15]. Although less studied, there is some evidence to suggest that youth with SCD exhibit heightened levels of externalizing behaviors, at least self-reported, including acting-out and other aggressive and oppositional behaviors [16,17]. Nonetheless, not all pediatric patients with SCD appear to exhibit these problematic outcomes. In fact, although many studies have found adjustment difficulties among youth with SCD, others have found few difficulties [10,18], suggesting individual variation in outcomes.

Previous research has repeatedly linked frequent ER visits by pediatric patients with SCD to a greater risk for negative psychopathological outcomes [5]. However, the extant research remains equivocal concerning what factors predict frequency of ER visits; some studies have found frequent ER visits to be associated with disease severity [19], whereas others have failed to find such an association [20]. Nonetheless, the importance of investigating the role of multiple ER visits by pediatric patients with SCD is clear; the impact of recurrent visits on parents/caregivers' psychological stress may, in turn, ultimately affect the child's adaptation to pain and result in divergent outcomes.

A number of researchers have emphasized the need to consider the ways in which families adapt to children's chronic illness [6]. Among these family-level factors, parenting styles and practices have been repeatedly linked to both negative and positive outcomes in youth without chronic illness [21,22]. One of the most widely studied model of parenting styles is Baumrind's [23,24] conceptualization of parents' approach to reconciling the need to provide both nurturance (e.g., warmth, support, responsiveness) and limit setting (e.g., control, demandingness). Specifically, this model posits three parenting styles: (1)

Authoritative, in which parents are demanding but also warm and responsive; (2) Authoritarian, in which parents are demanding and directive with little responsiveness; and (3) Permissive, in which parents demand little from their children but are extremely responsive to children's requests. A large body of research has confirmed the association between Authoritative parenting and a host of positive developmental outcomes (e.g., happiness, self-assured) [23,25]. Further, Permissive parenting has been linked to problems such as poor academic performance and self-regulation, school misconduct, and drug use [23,26,27]. The literature is more equivocal, however, with regard to developmental outcomes associated with Authoritarian parenting. For example, although some studies have found Authoritarian parenting to be associated with more problematic outcomes, such as lower levels of social and academic competence and self-confidence [23,27], others have failed to find such an association, particularly among African-American families. In fact, several studies have found that aspects of Authoritarian parenting are associated with positive academic and behavioral outcomes among African-American children [28,29].

Converging empirical evidence confirms the importance of both frequency of ER visits and parenting styles in the explanation of psychosocial outcomes among pediatric patients with SCD. However, little is known concerning the joint and interactive contribution of each factor to psychosocial outcomes among youth with SCD. The current study therefore aimed to fill this void by examining associations between ER visit frequency and various parenting styles, both conjointly and interactively, and psychopathological outcomes among pediatric patients with SCD. Consistent with previous research [23,30,31], we expected both frequency of ER visits as well as parenting styles to be associated with psychopathological outcomes. Specifically, given previous findings of frequency of ER visits predicting internalizing symptoms [31], we expected ER visits to be positively associated with internalizing symptoms. Further, we also expected ER visits to be associated with externalizing symptoms, but with a relatively smaller association. Additionally, we expected parenting styles to show unique incremental effects beyond frequency of ER visits in the explanation of psychopathological outcomes. Given the importance of family-level factors in individual variation in psychological outcomes in pediatric patients with SCD [32], coupled with previous findings of adaptive and maladaptive parenting styles serving as protective and risk factors [21,33], respectively, we expected the association between ER visits and psychopathological outcomes to vary by parenting style. We hypothesized Authoritative parenting would be associated with lower levels of both internalizing and externalizing forms of psychopathology and Permissive parenting would be associated with higher levels of externalizing symptoms. We advanced no a priori hypotheses with regard to Authoritarian parenting as there appears to be racial differences with regard to associations with various outcomes [27,28]. Further, we expected Authoritative parenting to moderate the association between ER visits and both internalizing and externalizing outcomes. Specifically, we expected that for youth with a higher number of ER visits, caregivers who reported utilizing lower levels of Authoritative parenting would demonstrate higher levels of both internalizing and externalizing symptomatology. On the other hand, we hypothesized that higher levels of Authoritative parenting would buffer against the development of psychopathology following a higher number of ER visits.

METHOD

Participants

Participants included 98 African-American pediatric patients aged 6–18 years old (M_{age} = 11.21, SD = 3.29) with SCD at a large university medical center in the Southern U.S. Approximately half of the sample (56.1%) was male and 95.9% of caregiver respondents were patients' biological parents (94.9% biological mothers). Participants came from relatively impoverished families with almost 38.6% of respondents reporting a total combined family income of under $15,000 per year. Another 25% reported a total combined family income of $15,000–$25,000 per year.

Procedure

All study procedures were approved by the medical center's Institutional Review Board. Participants were recruited in the study based on a known diagnosis of SCD, regardless of genotype and severity, during regularly scheduled hematology visits. Parents/caregivers provided informed consent before completing the questionnaire packet. One caregiver per patient was included in the current study and all families seen in the clinic were invited to participate.

Measures

Frequency of ER visits—Caregivers reported on the total number of ER visits their child had during the past year using a free response format. As shown in Table I, ER visits ranged from 0 to 24, of which 92.9% of participants had fewer than five visits annually. The reason for each visit was not independently assessed.

Parenting styles and dimensions questionnaire-short version (PSDQ short-version)—Caregivers reported on their parenting style using PSDQ-Short Version, a modification of the PSDQ [34]. The PSDQ-Short Version consists of 32 items rated on a 5-point Likert-type scale ranging from one (Never) and five (Always) and assesses three global parenting styles derived from Baumrind's theory of parenting: Authoritative (e.g., responsive to feelings and needs), Authoritarian (e.g., use physical punishment), and Permissive (e.g., difficulty with disciplining). On average, the PSDQ has been found to show good internal consistencies across studies although the Permissive scale has been found to evidence relatively lower reliabilities [35,36]. Consistent with the extant literature, in the current sample, internal consistency reliabilities were good for Authoritarian and Authoritative parenting, but evidenced relatively lower reliability for the Permissive parenting scale (see Table II).

Child behavior checklist (CBCL)—Caregivers also reported on their children's Internalizing and Externalizing symptoms using the CBCL [37]. The CBCL consists of a 118-item scale rated zero (not true) to two (very true or often true). The CBCL assesses two broad dimensions of psychopathology, each of which is comprised of two subscales: Internalizing, comprised of Withdrawn/Depressed and Anxious/Depressed, and Externalizing, comprised of Rule-Breaking Behaviors (RBB) and Aggressive Behaviors. The CBCL has shown acceptable internal consistency, strong test–retest reliability, and

content and criterion validity [37]. In the current sample, internal consistency reliabilities across subscales were good (see Table I). Standardized age- and gender-based T-scores were used for all analyses.

Analyses

For those participants with less than 5% missingness on any given scale, the estimation maximization (EM) algorithm in SPSS 20.0 was used to impute missing items. The EM algorithm first imputes data using conditional expectation and then verifies imputed values using maximum likelihood estimation [38]. As reports of ER visits were positively skewed and contained the minimum score of zero (i.e., report of no ER visits during the past year), these scores were $\log_{10}$ transformed after adding a constant (i.e., 1) [39]. The transformed scores closely approximated a normal distribution and were used in all analyses. Zero-order correlations were performed to examine the relationships among frequency of ER visits, three parenting styles, and internalizing and externalizing problems. Then, four separate hierarchical multiple regression analyses were performed to examine how frequency of ER visits and parenting style jointly and interactively predicted Withdrawn/Depressed, Anxious/Depressed, and RBB and Aggressive Behaviors problems. In preparation, all variables were standardized (i.e., computed z-scores). Three interaction terms were also calculated by multiplying each parenting style by ER visits to test the moderating effect of parenting style. To keep the number of model predictors to a minimum, interaction terms were entered in the final step of the model separately. Variables were entered into the hierarchical regression in the following order: Step 1—frequency of ER visits, Step 2—three parenting styles (Authoritative, Authoritarian, Permissive), and Step 3—frequency of ER visits by parenting style interaction terms. Age and gender were not included as covariates in the models as age and gender corrected T-scores were used as dependent variables.

RESULTS

Preliminary Analyses

ER visits were positively associated with Authoritarian parenting but were unrelated to the other two parenting styles. ER visits were also positively associated with Withdrawn/Depressed problems but were not associated with any other form of psychopathology. Additionally, Authoritative parenting was negatively and Authoritarian and Permissive parenting were positively associated with all psychopathology symptom scales. Further, Authoritarian parenting was negatively associated with Authoritative parenting while being positively associated with Permissive parenting. Permissive parenting was unrelated to Authoritative parenting. Lastly, all psychopathology scales were positively associated with each other with the Internalizing scales more strongly related to one another and the Externalizing scales most strongly related to one another (see Table II).

Predicting Psychopathological Symptoms From ER Visits and Parenting Styles

As shown in Table III, results of hierarchical linear regression analyses suggested that frequency of ER visits was associated with Withdrawn/Depressed problems explaining a significant 9% of the variance in ER visits were not associated with any other form of psychopathology, though, explaining a nonsignificant 1% of the variance in Anxious/

Depressed and Aggressive Behaviors problems, and a nonsignificant 0% of the variance in RBB problems. After accounting for ER visits, parenting style contributed an additional 13% (Withdrawn/Depressed and RBB), 15% (Anxious/Depressed), and 21% (Aggressive Behaviors) of the variance explained. Authoritative parenting emerged as significantly uniquely associated with both Withdrawn/Depressed ($\beta = -0.26$, $t = -2.72$, $P < 0.01$) and Aggressive Behaviors problems ($\beta = -0.30$, $t = -3.19$, $P < 0.01$). Further, Authoritarian parenting was uniquely positively associated with both Anxious/Depressed ($\beta = 0.24$, $t = 2.22$, $P < 0.05$) and Aggressive Behaviors problems ($\beta = 0.28$, $t = 2.72$, $P < 0.01$). Permissive parenting was not uniquely associated with any of the psychopathology scales (βs < 0.16, ts < 1.54, Ps > 0.13).

Further, the ER visits by Permissive parenting style interaction approached significance in the explanation of RBB ($\beta = -0.21$, $t = -1.98$, $P = 0.051$). Given the significant clinical and research significance of this marginally significant interaction, we decided to examine the specific form of this interaction. The slope of the final equation was therefore computed at points that correspond to high and low levels of the predictor variables (±1.0 SD). As shown in Figure 1, among those patients whose parents reported relatively low numbers of ER visits, high levels of Permissive parenting were associated with more, while low levels of Permissive parenting were associated with fewer, RBB problems. No differences emerged among those patients whose parents reported relatively high numbers of ER visits.

DISCUSSION

The current study represents the first investigation to date of the joint and interactive contribution of frequency of ER visits and parenting styles in the explanation of psychopathological symptoms among pediatric patients with SCD. Results of the current study confirm the importance of the frequency of ER visits to internalizing psychopathology. Specifically, the frequency of ER visits was found to explain a significant 9% of the variance in Withdrawn/Depressed. After accounting for frequency of ER visits, parenting styles explained an additional 13–21% of the variance in the explanation of all forms of psychopathology. Further, the association between frequency of ER visits and psychopathology was moderated ($P = 0.051$) by parenting styles; specifically, ER visit frequency interacted with Permissive parenting in the explanation of RBB problems.

Although the literature is mixed, previous research has found ER visits to be associated with increased risk for negative psychopathological and psychosocial outcomes [5,20]. Results of the current study partially support these findings. Specifically, frequency of ER visits was found to be associated only with Withdrawn/Depressed but not with Anxious/Depressed or either of the Externalizing problem scales. These results suggest that repeated ER visits confer a specific risk for Withdrawn/Depressed problems among pediatric patients with SCD and are consistent with prior work finding that patients with SCD most commonly report depressive symptomatology [14,15], with anxiety symptoms less frequently reported [15]. Although the reason for each ER visit was not explicitly assessed in the current study, an estimated 54% of SCD-related ER visits among 0- to 17-year-olds in the US are a result of pain crises with an additional 11% due to acute symptoms including pneumonia and stroke [40]. As such, although a number of potential explanations exist, these results may be

indicative of repeated acute symptoms, notably pain crises, resulting in difficulty with a broad repertoire of affective and behavioral problems consistent with the withdrawal often seen in depression symptomatology.

Results of the current study confirm the critical role of parenting style in the explanation psychopathology among pediatric patients with SCD above and beyond frequency of ER visits. Specifically, Authoritative parenting was associated with lower levels of both Withdrawn/Depressed and Aggressive Behaviors and Authoritarian parenting was associated with an increase in both Anxious/Depressed and Aggressive Behavior. Surprisingly, although previously found to be associated with a number of problematic outcomes [23,26,27], Permissive parenting was not found to uniquely contribute to any form of psychopathology in the current study. As noted below, it is possible that the relatively low internal consistency of the Permissive parenting scale may have resulted in attenuated associations resulting in a failure to detect significant associations. Nonetheless, results largely confirm previous findings of Authoritative parenting associated with more positive outcomes [23,25,27,37]. This finding is consistent with emerging work which confirms the importance of Safe, Stable and Nurturing Relationships (SSNRs) between children and caregivers [41]. Indeed, research indicates that clear communication and positive discipline (e.g., verbal assertion/teaching limit setting) can buffer children against the effects of variety of stressful and negative events [42,43], and this appears to be no exception with regard to youth with SCD. It will be important for future research to begin to explicate whether there are certain aspects of Authoritative parenting (e.g., limit setting) that may be particularly important to reduce both Anxiety/Depression and Aggressive Behavior within people with SCD.

In addition to direct effects of parenting style in the explanation of psychopathology, although only approaching significance ($P = 0.051$), parenting style was found to moderate the association between frequency of ER visits and externalizing behavior. Although Permissive parenting did not exhibit any direct effects, the association between ER visits and RBB varied by the level of Permissive parenting. Specifically, only in the context of low ER visit frequency was Permissive parenting associated with RBB. One potential explanation for this finding may be that among patients frequently visiting the ER, a group that may be experiencing particularly severe disease-related complications [19], the contribution of Permissive parenting is negligible given the debilitating nature of the disease. For those patients with relatively lower frequencies of ER visits (potentially those patients with less severe SCD presentations), Permissive parenting, which provides low levels of supervision and monitoring, results in an increased opportunity to engage in RBB.

The cross-sectional, correlational nature of our design does not allow for causal inferences. Indeed, although we considered parenting in the explanation of psychopathological symptoms, this is association is likely more nuanced and bidirectional [44] underscoring the need for future longitudinal research. Our use of all single-informant reports results in potential concerns regarding both common method and source variance. Future research would benefit from multi-informant approaches and utilization of multiple methods. Additionally, although a converging literature suggests ER visits to be an important consideration in the context of psychosocial adaptation among this population, the exact

nature of what this index represents is still not well understood. More research is needed to better explicate contributors to and consequences of frequent ER visits. Further, the reason for each visit was not independently assessed, nor would it be possible to determine the reasons for ER visits from patient's medical records. It is very likely that many participants visited multiple different local ERs as many participants live far from the university medical center at which these data were collected. It will be important for future research to examine potentially less biased indicators of ER utilization. Additionally, although Baumrind's three styles of parenting are widely examined, Maccoby and Martin [45] advanced a fourth style, "uninvolved," characterized by the combination of provision of basic needs but low levels of warmth and control, that was not assessed in the current study. Future research is encouraged to examine all four parenting dimensions in the context of the association between frequency of ER visits and youth outcomes. Additionally, it is important to note that the internal consistency of the Permissive parenting scale was relatively low potentially attenuating the magnitude of associations. Nonetheless, as described earlier, this finding is consistent with previous studies [35]. Lastly, the finding of the association between frequency of ER visits and RBB problems being moderated by Permissive parenting ($P = 0.051$) did not meet the $P < 0.05$ criteria for traditional mechanical dichotomous decision-making regarding significance potentially raising increased concerns with regard to replicability. As such, this finding will need to be replicated in larger samples.

Results of the current study add to the limited literature on risk and protective factors contributing to outcomes among pediatric patients with SCD. Indeed, our results have important implications for future research on the critical role of parents for more positive psychosocial outcomes among youth with SCD. Additionally, our findings suggest important avenues for tailored intervention and treatment approaches. Developmentally appropriate parent-focused behavioral approaches may be particularly effective in the case of pediatric chronic illness, as many chronic illnesses, such as SCD, require adherence to a variety of physician-prescribed self-care regimen, where responsibilities fall heavily on parents. Indeed, the association between parenting and disease management appears quite complex. For example, among adolescent patients with SCD, higher levels of parental involvement in pain management activities has been found to be associated with increased levels of youth impairment [46] likely reflecting the complex process of transitioning pain management responsibilities from parents to adolescents. Similarly, recent work on pediatric patients with Type 1 Diabetes has found interventions supporting the maintenance of developmentally appropriate parent involvement and the avoidance of parent-youth conflict to result in better adherence and functioning [47,48]. Results of the current study, as well as recent promising findings among patients with chronic illness, suggest that developmentally appropriate parent-focused interventions are likely promising for improving outcomes for pediatric patients with SCD.

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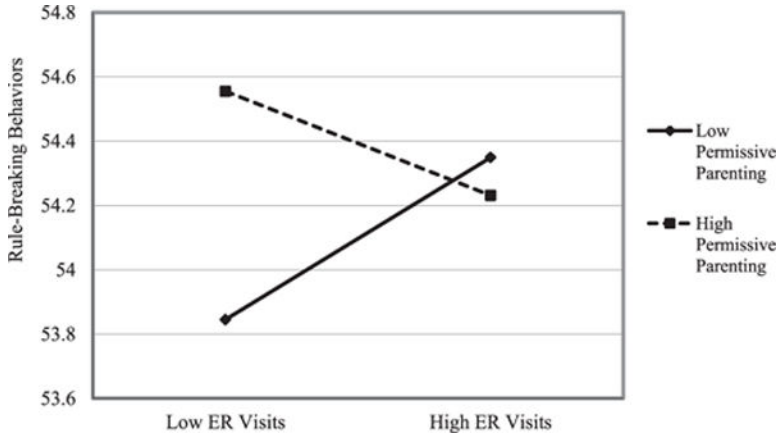

Fig. 1.

Interaction between Permissive parenting style and the frequency of ER visits: associations with Rule-Breaking Behaviors. High and low values correspond to +1.0 and −1.0 SD from the mean, respectively.

TABLE I

Demographic Data

	n	%
Gender		
Male	55	56.1
Female	43	43.9
Race		
Black/African American	98	100.0
Age (years)		
6–10	38	38.8
11–15	51	52.0
16–18	9	9.2
Household income		
<$15,000	34	38.6
$16,000–25,000	22	25.0
$26,000–35,000	13	14.8
$36,000–50,000	6	6.8
>$50,000	14	14.7
ER visits		
0–5	91	92.9
6–10	6	6.1
11–24	1	1.0

Note: N = 98. ER visits represent caregiver-reported number of ER visits over the past 12 months. Household income represents caregiver-reported total household income, excluding 10 participants that chose not report income.

TABLE II

Correlations Among ER Visits, Parenting Style, and Psychopathological Symptoms

	1	2	3	4	5	6	7	8
1. ER visits								
2. Authoritative style	−0.13	*0.72*						
3. Authoritarian style	0.25 *	−0.22 *	*0.66*					
4. Permissive style	0.16	−0.06	0.40 **	*0.54*				
5. Withdrawn/Depressed	0.27 *	−0.34 **	0.22 *	0.21 *	*0.73*			
6. Anxious/Depressed	0.11	−0.26 *	0.36 **	0.26 **	0.53 **	*0.80*		
7. Rule-Breaking Behaviors	0.08	−0.20 *	0.30 **	0.24 *	0.44 **	0.69 **	*0.64*	
8. Aggressive Behaviors	0.07	−0.32 **	0.38 **	0.27 *	0.51 **	0.57 **	0.71 **	*0.83*
Mean	2.34	4.07	1.91	2.29	56.09	53.24	54.25	54.15
Standard deviation	3.00	0.62	0.50	0.72	6.80	5.81	5.21	6.69

Note: N = 98.

† $P < 0.10$,

* $P < 0.05$,

** $P < 0.01$. Mean and SD for ER visits are raw caregiver reports. Internal consistencies (Cronbach's alpha) are shown in italic on the diagonal.

TABLE III

Predicting Psychopathological Symptoms From Frequency of ER Visits and Parenting Styles

		Internalizing				Externalizing			
		Withdrawn/Depressed		Anxious/Depressed		Rule-Breaking Behaviors		Aggressive Behaviors	
Step	Predictors	β	t	β	t	β	t	β	t
1	Frequency of ER visits	0.30	3.02**	0.09	0.93	0.05	0.44	0.09	0.91
2	Parenting style								
	Authoritative	−0.26	−2.72**	−0.19	−1.95†	−0.18	−1.83†	−0.30	−3.19**
	Authoritarian	0.11	1.05	0.24	2.22*	0.20	1.81†	0.28	2.72**
	Permissive	0.16	1.54	0.13	1.25	0.15	1.40	0.06	0.59
3	ER visits × parenting interactions								
3a	ER visits × Authoritative parenting	−0.04	−0.35	0.02	0.14	−0.03	−0.25	−0.15	−1.43
3b	ER visits × Authoritarian parenting	−0.13	−1.16	0.01	0.06	0.15	1.25	−0.02	−0.13
3c	ER visits × Permissive parenting	0.04	0.40	−0.05	−0.45	−0.21	−1.98†	−0.10	−0.97

Note: N=98.

† P=0.051,

* P<0.05,

** P<0.01.