

The Prevalence of Emotional and Behavior Problems in Pediatric Primary Care Serving Rural Children

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Objectives To examine the prevalence of parent-reported emotional and behavior problems in pediatric primary care clinics serving rural Appalachia using methods commensurate with studies of broader samples. **Methods** Parents presenting to pediatric primary care clinics completed a rating scale (Pediatric Symptom Checklist) of psychosocial problems for their child. **Results** Approximately 21% of all rating scales were in the clinically significant range. Across all parents, 63% identified the child's physician as their most common source of help. In contrast, mental health professionals had been sought out by only 24% of the sample. **Conclusions** These data replicate previous findings showing high rates of parent-rated psychosocial problems in pediatric primary care. Given the prevalence of these problems in primary care and parents' frequent help seeking in this setting, more research is needed on innovative approaches to integrated care in rural settings.

Key words behavior problems; pediatric primary care; integrated care; rural.

Introduction

There are many well-documented health disparities among rural children, such as an increased risk for low-birth weight (Hulme & Blegen, 1999), higher blood lead levels (Schaffer, Kincaid, Endres, & Weitzman, 1996), higher prevalence of asthma (Ernst & Cormier, 2000), and poorer dental health (Ricketts, 1999; Vargas, Monajemy, Khurna, & Tinaoff, 2002). Conjointly, rural children engage in more unhealthy behaviors such as a more sedentary lifestyle (Hortz, Stevens, Holden, & Petosa, 2009), poorer nutrition (Crooks, 2000; Stroehla, Malcoe, & Velie, 2005), and greater alcohol and drug use [Johnson et al., 2008; Substance Abuse and Mental Health Services Administration (SAMHSA), 2005] than their non-rural counterparts.

Given the significance of these disparities as well as the connection between chronic health problems and mental

health concerns (Bilfield, Wildman, & Karazsia, 2006), it is plausible that rural children might also be at a greater risk for psychosocial problems such as depression, anxiety, or behavior disorders. However, little is known about the prevalence of emotional and behavior problems among rural children. Studies of national samples of children across geographic settings have documented prevalence rates between 10% and 19% (Jellinek et al., 1999; McInerney, Szilagyi, Childs, Wasserman, & Kelleher, 2000; Palermo et al., 2002; Wasserman et al., 1999). Comparatively, in the largest study of rural children (Costello et al., 1996), which included 4,500 school-age children from the southeastern United States, rates of psychosocial concerns were 20.3%. The authors concluded this rate was not significantly higher than that found in studies of broader samples. A few smaller studies have documented elevated depression and suicide among rural

teens (e.g., Hirsch, 2006; Peden, Reed, & Rayens, 2005); however, to date, no other studies have examined broad psychosocial problems among rural youth.

While the extent of behavior and emotional problems among rural children is understudied, a strong body of literature has shown that rural children have poorer access to mental health services, with provider shortages identified as the most obvious barrier (Goldsmith, Wagenfeld, Manderscheid, & Stiles, 1997; Jameson & Blank, 2007). In rural Appalachia, for example, 75% of nonmetropolitan counties are considered mental health professional shortage areas (Hendryx, 2008). Likewise, there is some evidence that rural residents perceive greater stigma around mental health concerns, and these attitudes make them less likely to seek treatment (Hoyt, Conger, Valde, & Weihs, 1997; Rost, Smith, and Taylor, 1993). Indeed, recent epidemiological research shows residents of rural Appalachia cite stigma as a barrier more often (28%) than in a comparison sample outside the region (22%; Appalachian Regional Commission and National Opinion Research Center, 2008).

Thus, rural parents who have concerns about their child's behavior or emotional well-being are not likely to seek specialty mental health services. One alternative is primary care, which has been identified as the chief delivery setting for child mental health care nationwide (Kelleher, McInerney, Gardner, Childs, & Wasserman, 2000). According to parent ratings, the prevalence of psychosocial problems among national samples of children in pediatric primary care reveals significant scores for 10–14% of all children (Jellinek et al., 1999; Wildman, Stancin, Golden, & Yerkey, 2004). Other studies, in which physicians report the presence of psychosocial concerns after an office visit, have shown rates of 18–21% among otherwise healthy children (Bilfield et al., 2006; McInerney et al., 2000; Wasserman et al., 1999).

Thus, psychosocial problems are common in pediatric primary clinics nationally; however, they might be even more prevalent in rural areas, given the combination of health disparities and service barriers. To date, however, only one study has examined the frequency of psychosocial concerns among rural children attending primary care. Cooper and colleagues (Cooper, Valleley, Polaha, Bejeny, & Evans, 2006) had observers note concerns raised by parents or physicians during pediatric primary care visits in rural Nebraska. Results showed that 33% of all pediatric primary care visits with children ages four and up yielded a psychosocial concern raised by the physician or parent. These data show a higher number of emotional and behavior problems in rural primary care relative to more broadly

representative samples; however, methodological differences across studies make findings difficult to interpret.

Current Study

The present study is the first to examine the prevalence of emotional and behavior problems among children presenting in pediatric primary care settings serving rural Appalachia. Moreover, it is the first study to examine this variable using parent ratings, a method consistent with studies of national samples, to allow for preliminary comparisons. Given the barriers to specialty mental health care and extant health disparities among children in rural Appalachia, we hypothesized that the prevalence of significant ratings regarding behavior or emotional problems in this rural sample would be at least 10–14% or higher, given rates found in broader samples using the same method.

Methods

Participants included 628 English-speaking parents of children attending a well or sick visit at one of three primary care clinics between January 2008 and May 2009. Data from 58 participants were excluded because: (a) the child did not meet required age range (i.e., 4–16 years), or (b) the parent left more than four questions unanswered on the psychosocial questionnaire. Thus, the total number of participants in this study was 570.

Procedure

Data were collected in three pediatric primary care clinics serving children from rural Appalachia (i.e., Southwest Virginia and Northeast Tennessee). Data collection occurred in three waves differing slightly in methodology. Specifically, at all three sites, Wave 1 included the receptionist inviting parents to complete the survey while in the waiting room; Wave 2 included nurses inviting parents to complete the survey while waiting in the exam room; and Wave 3 involved research assistants inviting parents to complete the survey in the waiting room. Participation rates (number of participants recruited divided by the number of patients aged 4 and older seen by the clinic on the same day) were obtained during Waves 2 and 3. These rates ranged from 8% to 75% with no clear patterns across sites (Site 1 = 20 and 27%; Site 2 = 8 and 49%; Site 3 = 75 and 31%) or waves/recruitment methodology (Wave 2 = 20, 8 and 75%; Wave 3 = 27, 49, and 31%).

Regardless of wave, parents who expressed interest were provided: (a) letter describing the study; (b) demographic questionnaire; (c) checklist of emotional and behavior problems; and (d) an attached envelope. Parents

were instructed to complete the demographic questionnaire and psychosocial ratings regarding the child they brought to the clinic that day (approximately 5 min to complete). If parents presented with two children, they were able to complete a packet for each child. Parents were instructed to put their completed questionnaires in the envelope and place them in a sealed drop box. All study procedures were approved by the East Tennessee State University's (ETSU) Institutional Review Board, as well as review boards for specific primary care sites where applicable.

Measures

Demographic Questionnaire

A demographic questionnaire assessed the child's age, date of birth, sex, parent education, and relationship to the child (i.e., mother, father, or other). The questionnaire also asked parents whether they had ever sought help for psychosocial concerns for their child and to place a check mark beside any of the people with whom they had ever sought help from, including: teacher, pastor, close family members/friends, child's doctor, a counselor/therapist, and/or other.

Finally, participants were asked their county of residence in order to establish the "rurality" of the sample. Specifically, Rural-Urban Continuum Codes (RUCC) [Beale, 2001; Economic Research Service (ERS), 2003] were assigned. RUCC are a classification scheme that differentiates metropolitan and non-metropolitan counties. Codes range from 1 to 9 with "1" being the *most metropolitan* and "9" being the *most rural counties*.

Psychosocial Problems

The Pediatric Symptom Checklist (PSC; Jellinek, Murphy, & Burns, 1986) is a screening instrument designed to identify psychosocial concerns among parents of children ages 4–16 years presenting to primary care settings. The PSC consists of 35 statements (e.g., "Complains of aches and pains," "Spends more time alone," "Distracted easily") to be rated by the parent as occurring "Never" (0), "Sometimes" (1), and "Often" (2). The PSC items provide an overall score as well as three subscale scores (i.e., internalizing, externalizing, and attention behaviors). For children ages 4–5 years, an overall score of ≥ 24 signifies a clinically significant score and for children ages 6–16 years, an overall score of ≥ 28 signifies clinical significance (Little, Murphy, Jellinek, Bishop, & Arnett, 1994; Pagano et al., 1996). For the internalizing, externalizing, and attention subscales, a positive screen was indicated by a total score of ≥ 5 , ≥ 7 , and ≥ 7 , respectively. These methods have been utilized previously (Borowsky, Mozayeny, &

Ireland, 2003; Gardner, Lucas, Kolko, & Campo, 2007). The PSC is considered to be a valid and reliable measure with test/retest reliability ranging from $r = .84$ to $.91$ (Jellinek et al., 1988) and strong internal consistency (Cronbach $\alpha = .91$) (Murphy et al., 1996). In validity studies, classification using the PSC was in agreement with other well-established ratings as well as clinician ratings of psychiatric impairment in a variety of settings with children representing a wide range of socioeconomic backgrounds (see Jellinek et al., 1999 for an overview). In the current study, Cronbach α s were .94, .72, .79, and .78, for the overall, internalizing, externalizing, and attention scales, respectively.

Results

Sample Characteristics

Demographic characteristics are shown in Table I. Participants ($n = 570$), who were evenly distributed across gender, ranged in age from 4 to 16 years. A majority (86.3%) of parents completing the measures were mothers.

Table I. Demographic Characteristics

Age (years)	
M \pm SD	8.84 \pm 3.47
Range	4–16
Gender, n (%)	
Male	201 (48.6)
Female	213 (51.4)
Screening respondent, n (%)	
Mother	492 (86.3)
Father	45 (7.9)
Other	33 (5.8)
Highest grade of parent education, n (%)	
Mother	
Did not complete high school	23 (4.3)
Completed high school	239 (44.3)
Some college/college graduate	233 (43.2)
Post college	38 (7.1)
Does not apply	6 (1.1)
Father	
Did not complete high school	62 (11.6)
Completed high school	245 (45.7)
Some college/college graduate	160 (29.9)
Post college	43 (8.0)
Does not apply	26 (4.9)
Participant county of residence RUCC code, n (%)	
3	317 (59.5)
6	212 (39.8)
8	3 (0.6)

Note. Patient gender is not available for those recruited during Wave 1 of data collection. Total n's may not equal 100 due to missing data.

Approximately 48% of mothers and 36% of fathers had completed at least some college.

An examination of RUCC showed that the sample could be divided into two groups. About half of all participants resided in counties with a designated RUCC of “3” (i.e., counties in metro areas of less than 250,000) and the other half resided in counties with a RUCC of “6” (i.e., counties w/urban population of 2,500–19,999 and adjacent to a metro area) or “8” (completely rural or less than 2,500 urban population and adjacent to a metro area). Due to the small number of participants residing in a county with a RUCC of 8, participants with this rating were combined with those with a RUCC of 6 to represent a more rural group.

It is important to note that, while the “less rural” half of our sample resided in counties designated as “metro areas of less than 250,000” according to the RUCC schema, our whole sample is from a region considered “rural Appalachia”. Many of the participants from a county considered “metropolitan” (according to RUCC) reside in very remote parts of counties that are adjacent to a county with a small city. For example, some of these participants were from Roan Mountain, a remote and isolated mountain community in Carter County which itself has no substantial sized city but borders Washington County where Johnson City is located (population 60,000). Further, all of our participants resided in counties designated by the United States Department of Health and Human Services (2009) as Medically Underserved Areas.

Subsequent to considering the sample as a whole we conducted exploratory analyses comparing the more versus less rural groups. A comparison by demographic data showed the groups did not differ by gender; however those in the less rural areas were older, $t(530) = 3.39$, $p < .01$, with a mean age of 9.39 years ($SD = 3.55$) as compared to a mean age of 8.35 years ($M = 8.35$, $SD = 3.34$) in the more rural group. Additionally, those in the less rural counties had more education [mothers, $\chi^2(1, N = 497) = 5.77$, $p < .05$; fathers, $\chi^2(1, N = 481) = 4.71$, $p < .05$].

Prevalence of Psychosocial Problems

For the sample as a whole, 21.1% of children ($n = 120$) exceeded the cutoff for clinical significance on the total PSC score. Similarly, 14.7% exceeded criteria on the internalizing subscale, 16.2% on the externalizing subscale, and 21% on the attention subscale. As shown in Table II, independent samples t -tests were used to compare total PSC scores across various demographic variable groupings. Higher total PSC scores were found for school-age children, males, and children whose fathers had less education.

Table II. *Psychosocial Concerns Across Demographic Characteristics*

	PSC total score ($M \pm SD$)	t -test	df
Age		-3.25*	242
Preschool (4–5)	14.15 \pm 9.80		
School (6–16)	17.60 \pm 12.47		
Gender		3.54*	399
Male	18.40 \pm 12.24		
Female	14.37 \pm 10.84		
Mother's education		2.06	525
High school or less	17.90 \pm 12.44		
Some college or more	15.76 \pm 11.56		
Father's education		4.27*	460
High school or less	18.46 \pm 12.29		
Some College or more	13.97 \pm 11.17		
Participant's county RUCC		1.48	530
Code 3	17.48 \pm 12.22		
Code 6 or 8	15.92 \pm 11.65		

Note. The Bonferroni correction was applied to decrease risk of Type I error due to multiple comparisons. * $p < .01$.

There were no differences between the more versus less rural groups.

Reported Help Seeking

The majority of parents (78.9%) reported that they had sought help for psychosocial concerns regarding their child. Across all parents, the child's physician was the most commonly identified source of help (62.5%) with teachers (55.1%) and family/friends (54.7%) also frequently identified. Fewer parents reported seeking help from a counselor/therapist (24.7%), pastor (10.7%), or “other” source (2.8%). Parents who had previously sought help for their child's behavior rated their child as having significantly greater emotional and behavior problems on the PSC ($M = 19.03$, $SD = 12.08$) than those who had not ($M = 8.72$, $SD = 7.52$), $t(301) = -11.57$, $p < .001$. Finally, a comparison of participants showed those from more rural counties (RUCC = 6 or 8) reported they were more likely to talk with their child's doctor, $\chi^2(1, N = 532) = 3.75$, $p = .05$; and school teacher, $\chi^2(1, N = 532) = 5.765$, $p < .05$, than those from less rural counties (RUCC = 3). We found no differences in help seeking for other sources including pastor, friends and family, counselor/therapist, or “other”.

Discussion

The aim of the present study was to document the prevalence of emotional and behavior problems in pediatric practices serving children living in rural Appalachia. Findings showed 21% of these children were rated by

parents as exceeding the cutoff for clinical significance on the PSC. These data are commensurate with previous literature showing that such problems are prevalent in primary care settings (Cassidy & Jellinek, 1998; Williams, Klinepeter, Palmes, Pulley, & Foy, 2004). In fact, this prevalence rate is as common or more common than a number of other top concerns in pediatric practice (e.g., asthma: 9.1%, CDC, 2007; diabetes: .18%, Liese et al., 2006; recurrent abdominal pain: 7–25%, Campo et al., 2004), a finding that is consistent with physician rankings showing behavior problems to be among the top concerns presenting in pediatric primary care (Arndorfer, Allen, & Aljazireh, 1999).

The present study utilized parent ratings of psychosocial problems on the PSC so that preliminary comparisons could be made between the frequency of concerns in this sample and those of broader, national samples. Indeed, the PSC is the same measure used in two large-scale studies of national samples finding prevalence rates in pediatric primary care of 10–14% (Jellinek et al., 1999; Wildman et al., 2004). Consistent with Jellinek and colleagues (1999), we also found male gender and lower parental education to be associated with greater psychosocial problems. Whereas Jellinek et al. (1999) found differences between low (parents with high school education or less) versus medium (at least one parent with some college, technical school, or college degree) or high (at least one parent with professional or graduate degree) parental education, we found youth whose fathers had completed lower levels of education (high school or less) to have greater psychosocial problems than youth whose father's completed higher levels of education (some college or more).

Overall, data from the present study provides some evidence that the prevalence of behavioral and emotional problems reported by parents (although not necessarily directed to their physician) attending rural primary care clinics is greater (21%) than that found in more broadly representative samples (10–14%). While greater than national studies, rates are lower than those found by Cooper et al. (2006; 33% for 4–16-year olds) who examined rural Nebraskans (i.e., a different rural demographic), using a different methodology (observers coding parent and physician concerns raised during office visits). These various findings point to the importance of cross-rural comparisons and the potential role of methodology.

We hypothesize that an increased prevalence in rural pediatric primary care might be true for two reasons. First, there is evidence that there is a relationship between poor psychosocial functioning and increased medical service use or primary care “overuse” (Simon, VonKorff, & Barlow, 1995). Thus, rural parents facing ongoing struggles with

behavior, development, or emotional well-being in their children may be visiting their doctor more often (for psychosocial concerns or other reasons) and therefore have greater representation in a primary care-based sample. Moreover, in rural areas, there are few other services to access regarding psychosocial concerns due to provider shortages and stigma. The fact that there is a dearth of professionals across this region as a whole might explain why there were no differences when the participants from less rural counties were compared with those from more rural counties. In addition to a shortage of specialty mental health providers, previous literature (Hoyt et al., 1997; Rost et al., 1993) suggests that perceptions of stigma around mental health services might also drive increased help-seeking behavior in primary care; however, this problem has not been studied directly with parents.

Second, the frequent use of primary care among families with children who have psychosocial problems may be a function of significant health disparities in rural areas. Among adults, it is well-documented that chronic illnesses are associated with greater incidence of mental health concerns as well as increased primary care use [see Byrd, O'Donohue, & Cummings (2005) for a review] and data regarding children are commensurate (Bilfield et al., 2006). Future research should seek to document the most common co-occurring concerns so that, as described above, more sophisticated, innovative service systems can be targeted at the specific needs of rural individuals.

The present study also showed that the sample as a whole identified their physician as the most common source of assistance when a concern is raised. Two-thirds (63%) of the sample stated they had sought help from their physician regarding psychosocial concerns for their child even though only 21% were currently in the clinically significant range. Interestingly, the participants from more rural locations were more likely to seek their physician's or school's assistance than those from less rural locations, even though there were no differences in the two groups' reported previous mental health treatment.

The regularity of extant emotional and behavior problems for this sample along with these parents' regular use of pediatricians as a source of assistance suggests that pediatric primary care in rural Appalachia is an important staging ground for mental health prevention and intervention. Such findings lend support to the utility of integrating mental health treatment into primary care. According to Byrd et al. (2005), integrated care is “the process and product of the medical and mental health professionals working collaboratively and coherently toward optimizing patient health through biopsychosocial modes of prevention and intervention” (p. 2). The practice of integrated

care boasts evidence-based advantages such as increased patient and physician satisfaction, a reduced need for medical visits over time (cost-offset), and increased care coordination (see Byrd et al., 2005 for a review).

In fact, integrated care has been identified as a promising practice for rural areas (Jameson & Blank, 2007; World Health Organization, 2008) in that it may address the key barriers to service seeking, allowing for: (a) greater privacy (and reduced stigma) since patients do not visit a separate office identified as related to “mental health”; and (2) increased retention of health care providers in rural areas due to their increased job satisfaction/reduced stress (deGruy, 1997). Moreover, integrated care could also provide more sophisticated programming for rural children’s unique whole-health needs. That is, primary care could offer systematized interventions for multi-faceted concerns that include medical needs related to health disparities (e.g., obesity, increased risk for smoking) that co-occur with psychosocial concerns (e.g., depression, family discord). Innovative programming such as vertically integrated models (Strosahl, 1998), group visits (Terry, 1997), and/or multi-pronged programs that include prevention/anticipatory guidance (e.g., Sanders, 1999) could help reduce disparities.

One of the limitations of this study was the variable recruitment rates across sites. We ascertained participation rates by considering the number of completed surveys relative to the number of patients over age four attending a primary care visit that day, according to the office records. Ultimately, we found these records to be unreliable, which likely had some bearing on the variability of recruitment rate data. Thus, this study is unable to make firm conclusions regarding the prevalence of psychosocial problems among rural children in primary care. A similar limitation in this study is the lack of gender data for participants in Wave 1. Such data are needed in order to drive the development of programming that might address disparities for rural children. Our results suggest that in addition to gender, age as well as family variables such as parental education may also be important in understanding/addressing psychosocial problems among youth.

It is also important that future studies in this area consider methodology. Existing literature on the prevalence of psychosocial concerns among children presenting in primary care incorporates wide ranging methodologies which have important implications for interpretation of results. For example, studies of national samples using parent ratings scales (Jellinek et al., 1999; Wildman et al., 2004) show lower estimates (10–14%) than those asking physicians about the presence of concerns in retrospect (18–21%; e.g., McNerny et al., 2000), which in turn

show lower estimates than those using observers in the exam room (Cooper et al., 2006).

Moreover, the rural sample in this study (rural Appalachia) and the Cooper et al. (2006) study (rural Nebraska) may be considered homogenous. Thus, research is needed in which (a) a direct comparison is made between rural and urban children using like methodology, and (b) rural children are sampled from a range of locations to establish whether or not these findings are indeed one of rurality rather than another geographic factor.

The results of the current study underscore the high prevalence of psychosocial problems in pediatric primary care serving rural areas and rural parents’ endorsement of help seeking from their physicians and schools about such concerns (over specialty mental health providers). In addition, this study highlights methodological issues facing researchers interested in expanding the knowledge base in this area. Primary care practices serving rural children are well-positioned to make an important difference for these children in the context of integrated models of care.

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