The difficulties of meeting the medical and psychological needs of individuals living in rural areas have long been recognized. In Pre-Colonial days, a network of native healers attempted to meet the needs of rural populations, and when the Colonists arrived from England, the first formally trained physicians arrived in America as well. As the colonists moved westward, physicians followed, facing difficulties and hardships they had not encountered previously. In 1910, the Flexner report was released, which suggested revamping medical education and moving toward a formalized 4-year medical education system. Less than 20 years after this report was implemented, publications started to appear in the literature discussing the lack of healthcare providers in rural areas—an unintended consequence of the Flexner report. Recognizing this problem, in the 1960s and 1970s, the federal government established Area Health Education Centers (AHECs) primarily to directly serve the medical and behavioral needs of rural individuals. Although the office of Rural Health Policy at the U.S. Department of Health and Human Services was not formally established until 1987, it was seen as a final major step forward in improving the health of rural Americans.

Data indicate, however, that even with all of these impressive steps forward, the health of rural populations is still lacking when compared to urban populations. Recent data released by the National Center for Health Statistics (2010) indicate that 14.8% of individuals in urban areas “did not get medical care due to cost,” and yet this rate is even higher (17.1%) among rural residents. The same is true for the items querying “did not get prescription drugs due to cost” (10.8% urban, 13.6% rural) and “did not get dental care due to cost” (16.4% urban, 19.2% rural). Specific to children, 10.2% of the children aged <18 years who live in urban areas had no visit to a physician in the past 12 months; the rate for rural children was higher at 12.0%. Finally, the percentage of children aged ≤18 years with one or more visits to an emergency room was higher for rural children (24.2%) than for urban children (20.2%). Though these differences may seem small, they equate to tens of thousands of rural children not receiving adequate medical care.

Looking at specific diseases, data from the National Survey of Children’s Health (U.S. Department of Health and Human Services, 2005) indicate that rural children are more likely to be overweight (17.1% large rural, 17.4% small rural) than urban children (14.2%). Unintentional injury rates are also higher among rural children (9.4% large rural, 10.0% small rural) compared to urban children (9.3%). Chronic physical or mental health problems are also more prevalent among rural children (9.0% large rural, 8.1% small rural) than among urban children (7.7%).

Our nation has long recognized the problems faced in meeting the medical and behavioral needs of rural populations, and has taken dramatic and positive steps to ameliorate these differences. Despite this, taken together, data overwhelmingly indicate that children and adults living in rural areas still experience greater medical and behavioral issues and are less likely to receive treatment for these issues relative to their nonrural counterparts.

Studies in this Special Section

The purpose of this special section is to present articles that further document differences in behavior and psychosocial functioning between rural and nonrural youth, and also to show how pediatric psychology can help address the health and psychosocial functioning of children in rural settings. The six articles in this special section can be
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roughly broken down into three groups. The first group of articles focuses on the need for, and utilization of, mental and behavioral health services, while the second group of articles focuses on health behaviors, qualify of life, and obesity. The final group of articles focuses on the issue of recruitment for treatment outcome research in rural settings. A brief description of each of these articles is listed in the following paragraphs.

In the first article, Polaha and colleagues use parent ratings to examine the prevalence of emotional and behavior problems in pediatric primary care clinics serving rural Appalachia (Polaha, Dalton, & Allen, 2011). While studies have documented substantial rates of behavior and emotional problems in children across geographic settings (Jellinek, Murphy, & Burns, 1999; McInerny, Szilagyi, Childs, Wasserman, & Kelleher, 2000), little data exist examining these rates in rural children. Unfortunately, research has shown that rural children have poorer access to mental health services. Thus, while psychosocial problems are common in pediatric primary care clinics nationally, they might be even more prevalent in rural areas, given the combination of health disparities and service barriers. Participants in this study included 570 parents of children attending a well or sick visit at a primary care clinic. Overall 21.1% of the youth in this sample exceeded the cutoff for clinical significance on the total behavior problem scale. Parents rated the child’s physician as the most common source of help for psychosocial concerns. Almost two-thirds of the sample sought help from their physician regarding psychosocial concerns for their child even though only 21% were currently in the clinically significant range. This speaks of the importance of physicians in the treatment of mental and behavioral health issues in rural youth, and suggests that integrated mental health treatment in primary care settings may be particularly salient for rural areas.

Developing a greater understanding of the factors related to youth mental health service utilization is important given the limited availability of these services in rural areas and the potential stigma associated with the use of these services in rural settings. In the second article, Reeb and Conger (2011) examined whether paternal warmth was a predictor of subsequent adolescent treatment seeking for depressive symptoms, and specifically, if paternal warmth served as a moderator of the association between adolescent depressive symptoms and mental health service utilization. This study is unique in that it focuses on paternal–child interactions. Research focusing on fathers is all too rare and much needed in child health. In this longitudinal study, the authors found that adolescent depressive symptoms at Time 1 were positively associated with mental health treatment seeking at Time 2. Notably, paternal warmth moderated the longitudinal association between adolescent depressive symptoms and subsequent treatment seeking such that with greater depressive symptoms adolescents were more likely to seek needed help in the context of a warm, supportive father. These findings suggest that fathers can play an important role in the familial processes through which rural adolescents recognize and seek help for their psychological concerns. Yet, further research is needed to identify additional predictors of mental health utilization in rural adolescents.

In the third article, Davis and colleagues used data from the National Health and Nutrition Examination Surveys (NHANES) to examine weight status, as well as related health behaviors, among rural and urban children (Davis, Bennet, Befort, & Nollen, 2011). Consistent with previous research (Lutfiyya, Lipsky, Wisdom-Behounek, & Inpanbutr-Martinkus, 2007), the authors found that significantly more youth from rural areas were obese relative to their urban counterparts. Across rural and urban settings, obese children were significantly less likely to meet physical activity guidelines, and significantly more likely to engage in more than 2 hrs of electronic entertainment. Obese youth were also more likely to consume sugar-sweetened beverages relative to nonobese youth. Only two health behaviors were differentially predictive of obesity in rural vs. urban settings. Among urban youth, a higher mean consumption of meat and sugar-sweetened beverages was associated with being obese, while in rural areas failing to meet physical activity guidelines and engaging in 2 hrs or more of electronic entertainment per day were related to obesity. Research that identifies and targets the unique challenges and barriers faced by rural youth are greatly needed. This preliminary research is a starting point and suggests potential differential foci for interventions addressing obesity in rural vs. urban setting.

In the fourth article, Dalton and colleagues examined the relationships between health-related quality of life (HRQoL), physical activity, sedentary behavior, and eating patterns in a sample of middle school children residing in Southern Appalachia (Dalton, Schetzina, Pfortmiller, Slawson, & Frye, 2011). Examining factors related to HRQoL and health behaviors may be especially important to understand in rural youth, given the higher rates of obesity, chronic disease, and disability. Children from this Southern Appalachian sample reported lower HRQoL than a national sample of healthy children. Moreover, higher weight status was associated with lower HRQoL. In addition, less screen time and more physically active days per week were both associated with higher HRQoL across multiple domains. Intervening in these areas may
hold promise for not only impacting health behaviors and weight status, but also HRQoL. Longitudinal research examining environmental, family, and individual psychosocial and health behaviors variables are needed to better understand how changes in these variables are related to change in HRQoL over time.

In the fifth article, Gallagher and colleagues (2011) describe the design, methods, and baseline data characteristics from an on-going randomized controlled trial (RCT) examining the efficacy of a telemedicine intervention to address obesity in rural children (Gallagher, Davis, Malone, Landrum, & Black, 2011). There are few published RCTs addressing pediatric obesity in rural settings, and none has utilized telemedicine technology. One of the greatest benefits of using telemedicine technology in rural settings is that it allows for specialized professionals to provide interventions to access hard-to-reach, underserved areas. The authors reported that at baseline children consumed several servings of high calorie, high-sugar food daily, but only roughly three daily servings of produce, considerably less than the recommended five to nine daily servings per day. Moreover, half the sample was not meeting daily recommendations for moderate physical activity. These findings are supported by prior research that demonstrated that rural children tended to eat more junk food or “red” foods than their urban counterparts (Davis et al., 2008). This is an example of the type of innovative intervention delivery model that is needed to address the unique needs of rural families. The authors also discussed the challenges of enrolling adequate numbers of participants in their RCT due to the perceived burden on participants in the intervention and the small size of rural schools.

Reducing health disparities experienced by rural residents is a goal of “Healthy People 2010” and the U.S. Department of Health and Human Services (U.S. Department of Health and Human Services, 2000, 2001). Thus, developing and evaluating prevention and treatment programs to improve the long-term physical and mental health of rural residents is essential to this goal. However, research suggests rural residents are less likely than urban residents to participate in clinical trials research. Addressing this concern, and building on the paper by Gallagher and colleagues (2011), the final paper by Lim and colleagues reviews the challenges of recruiting children and families to participate in treatment outcome research in rural settings (Lim, Junger, Crawford, & Janicke, 2011). The authors provide recommendations to enhance recruitment for research with this underserved population based on the research literature and their own experiences. Suggestions for reporting the success of recruitment strategies, as well as ideas for future research in this area, are presented.

**Future Directions**

As we read the submissions for this special issue, the most glaring absence is the lack of treatment outcome research. The impact of behavioral health practices on overall health is particularly salient in rural communities, where a confluence of factors leaves rural residents at greater risk for serious and life-threatening illnesses as compared to their urban counterparts (Congressional Research Services, 1995). Given this fact and the limited access to behavioral health services that are experienced by children and families in rural populations, the lack of well-designed RCTs is a concern. There was only one study included in this special issue that reported on a RCT, and this study currently lacks outcome data as it is ongoing. Clearly, there is great need for future research to focus on prevention and intervention programs that address behavior change and health outcomes for youth living in rural settings.

In considering the barriers to service delivery that exist in rural settings, it will be important for researchers, clinicians, and policy-makers to focus on innovative delivery models. Such models could employ new communication technologies (i.e., telehealth and web-based programs, phone counseling, smart-phone or palm applications) such as the study presented by Gallagher and colleagues (2011) that uses telehealth technology to deliver a weight-management intervention for youth in rural areas. New service delivery models may also benefit from a focus on partnering with established services or institutions that are well accepted in the rural community (Hargrove & Breazeale, 1993). The Cooperative Extension Service network and County Health Departments are well established and highly respected national entities that provide services to children and families across the country and can be ideal partners in this regard. For example, Janicke and colleagues are partnering with the Cooperative Extension service in Florida to deliver weight-management interventions to children and their parents directly in rural settings (Janicke et al., 2010). The federal government, through the Office of Rural Health Policy (ORHP), administers the Rural Health Research Center program. This program is dedicated to producing research related to healthcare in rural areas that can inform policy decisions. For example, the Davis et al. article in the current special issue was developed through a partnership between individuals at an academic medical center and colleagues who are part of the Rural Health Research Center program. Another potential collaborative partner is the National AHECs. AHECs...
provide and support programs across the country to meet the needs of diverse and severely underserved populations. Many researchers have partnered with churches and schools to bring innovative health promotion programs to rural areas (Campbell et al., 1999; 2007; Donnelly et al., 1996; Gallagher et al., 2011). Finally, other community organizations like parent teacher associations, rotary clubs, and Kiwanis can provide opportunities to connect with rural communities in innovative and effective partnerships. Questions of dissemination and sustainability will be critical as researchers develop and evaluate interventions for rural children and families. Programs need not only be effective in promoting behavior change or other positive outcomes, but they also must be acceptable to community partners and patients, as well as financially sustainable over time.

Prevention and intervention research in this area may also benefit from greater collaboration across disciplines to help develop, implement, and assess programs that target behavior changes across multiple levels of the ecological model. For example, in health promotion programs addressing healthy eating habits and physical activity in rural youth, motivated and hard working families often encounter significant barriers to change due to lack of social support and infrastructure within their local communities to support behavior change efforts (Janicke et al., 2010). Partnering with colleagues in public health can bring together expertise in individual, family, and community level interventions to address the issue from multiple levels. Community programs can promote greater access to healthy foods, “green space” or community activities that can reinforce and support individual family efforts to adopt long-term behavior change, and vice versa. In close-knit rural communities, this approach could be particularly effective.

There is still a need for research examining key health behaviors in rural youth. Unlike the adult research literature, there are few well-designed, longitudinal studies comparing health behavior in rural vs. nonrural, or rural vs. urban pediatric populations. Research comparing these behaviors, and how they contribute to health outcome disparities, can be critical in developing interventions that are appropriately targeted for rural youth and families.

Finally, the intended scope of this special section was broad. As such, we were surprised by the limited variety of research submitted for the special section. For example, injury prevention, substance use, and trauma related to natural disasters are just some of the critical areas of needed research for youth in rural populations. We were also struck by the limited amount of grant-funded research being conducted with pediatric populations in rural settings. This is not entirely surprising given the many barriers to conducting research in rural areas. This underscores the importance of seeking out funding sources that are well suited or specifically targeted to support research and practice with underserved rural populations. There are a number of federal and foundation sources of funding for research and training that can help promote work in this area. NIH funding programs that focus on health disparities are an often underutilized source of funding for research with rural populations. The U.S. Department of Agriculture (USDA) provides funding for research and program demonstration grants that address the health of rural youth. For example, the USDA’s Agriculture and Food Research Initiative (AFRI) currently provides substantial funding opportunities to address the priority of childhood obesity prevention. The Health Resources and Services Administration (HRSA), which is part of the U.S. Department of Health and Human Services, provides funding to support psychologists providing clinical service and program evaluation in underserved rural areas. Specifically, HRSA funds accredited training programs that foster an integrated approach to healthcare services and address access for underserved populations by training psychologists to work with underserved populations and in areas of emerging needs. HRSA also funds state governments to operate loan repayment programs for health professionals (including psychologists) who work in designated health professional shortage areas, for which many rural areas qualify. The Substance Abuse and Mental Health Service Administration (SAMHSA) also provides grant funding for psychologists providing services in underserved rural settings. Another opportunity in this category is the Robert Wood Johnson Foundation (RWJF), which has invested in several initiatives to encourage healthcare professionals to practice in rural areas and support them once they are established. Finally AHEC also provides funding to develop community health education and health provider training programs to meet the needs of diverse and severely underserved populations. While much of HRSA, SAMHSA, RWJF, and AHEC funding programs have a primary focus on clinical service, there are strong evaluative and research components to many of these programs.

Little research in pediatric psychology has addressed the health and psychosocial functioning of rural youth. Given that rural residents accounts for 20% of the total U.S. population, this needs to change. It is our hope that this special issue can bring attention to this underserved population and will help spark greater research efforts to ultimately improve the health and quality of life of children and families living in rural settings.
Conflicts of Interest: None declared.

References


