

An Integrative Review of Literature Regarding Health Concerns of Rural Dwelling Adolescents

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Abstract

Those living in rural areas face particular risks to health and well-being as they are more likely to be poor, have no health insurance, and have less access to health care. Many obstacles exist in achieving optimal rural health outcomes. Many of the health related issues experienced by adolescents are preventable and are often related to risky behavior such as substance use and abuse, smoking, and unprotected sex. The purpose of this review is to define the current primary health concerns of rural dwelling adolescents worldwide. Based on current research, the primary health related problems of rural adolescents were identified as risky sexual behaviors, mental health issues, violence and bullying, substance and alcohol use, and overweight and obesity. These problems are exacerbated by diminished access to care, peer influences, and parental influences. This integrative review also illustrates many dimensions of health disparities exist in rural areas. When addressing diversity in care models, it is important to consider the rural setting as well as race or ethnicity, sex, and socioeconomic status in designing curriculum and interventions. Globally, evidence based findings are needed to inform curriculum and respond to the health needs of rural adolescents.

Programs and rural initiatives for adolescents can decrease the prevalence of established health problems and lower health care expenditures across life spans.

Those living in rural areas face particular risks to health and well-being (United States [U.S.] Department of Health and Human Services [HHS], 2011)¹. Rural dwellers are more likely than their urban counterparts to be poor, have no health insurance, and have less access to health care (Gamm, Hutchinson, Dabney, & Dorsey, 2003²; Ziller, Anderson, & Coburn, 2010³). Rural health concerns continue to draw attention from policy makers, clinicians and researchers. Healthy People 2020 re-emphasized the 2010 goal to address the health needs among rural U.S. populations (Bolin & Gamm, 2003⁴; HHS, Healthy People 2020, 2011⁵). Nonetheless, many obstacles exist in achieving optimal rural health outcomes. The purpose of this article is to synthesize findings from an integrative literature review on the current state of rural health needs for adolescents.

Adolescence is typically considered to occur between the ages of 13 and 19 years (American Academy of Child and Adolescent Psychiatry, 2008)⁶. During these years, adolescents become more independent and autonomous and often make decisions with lifetime implications for their health. Many of the health related issues experienced by adolescents are preventable and are often related to risky behavior by adolescents (Shannon & Broussard, 2011)⁷. Risky behaviors such as substance use and abuse, smoking, and unprotected sex have been targeted as leading health indicators for adolescent health in the Healthy People 2020 initiative (HHS, Healthy People 2020, 2011)⁸. Adolescents living in rural areas may be at greater risk for poor health outcomes than their urban and suburban counterparts (Curtis, Waters, & Brindis, 2011)⁹. An integrative review was undertaken to determine the most common health concerns of rural dwelling adolescents as a path to develop evidence-based curriculum and interventions that are likely to promote health in rural youth at risk.

Methodology

An integrative review seeks to summarize the existing literature, empirical or theoretical, to provide a comprehensive understanding of a healthcare problem (Whittemore & Knapfl, 2005)¹⁰. Integrative reviews, the broadest approach to literature review, allow for the inclusion of experimental research, non-experimental research, and theoretical literature and provide up-to-date evidence of existing findings (Whittemore & Knapfl, 2005)¹¹. According to Whittemore and Knapfl, five steps are included in an integrative review to enhance the rigor of the review process. These are: 1) problem identification, 2) literature search, 3) data evaluation, 4) data analysis, and 5) presentation.

Problem Identification

The initial step of this review was to clearly identify the problem and the purpose of the review (Whittemore & Knapfl, 2005)¹². The purpose of this review was to define the current primary health concerns of rural dwelling adolescents worldwide. The search terms selected were *rural*, *health*, and *adolescent*.

Because of the multiple reported age ranges for adolescence, the search term *adolescence* was used for this literature review in lieu of a specific age range. This resulted in studies that included the periods before and after adolescence, i.e., childhood and young adulthood, because the authors were interested in the contributions of childhood to adolescent health concerns, as well as the impact of adolescent health concerns on the young adult.

The search was conducted using CINAHL, Academic Search Complete, and Medline. The search was limited to research articles published between 2010 and 2012. Using these terms and limiters, 507 articles were located. These were screened using abstracts to include those investigating health issues experienced by rural dwelling adolescents in Australia, Canada, Europe, and the United States for a total of 46 articles reviewed.

In order to demonstrate a logical chain of evidence, Whittmore and Knapfl (2005)¹³ recommend providing readers with details from primary sources. The details from primary sources reviewed are provided in [Table 1](#).

Data Analysis

In addition to research papers, white papers from Rural Healthy People 2010 and Health Resource Service Administration were reviewed. The five issues most commonly identified in the majority of the articles were risky sexual behaviors, mental health issues, violence and bullying, substance and alcohol use, and weight concerns. Each of these issues is noted as a concern for rural residents in the document, “Rural Healthy People 2020”. A synopsis of the latest evidence on the incidence and interrelationship of these five health issues is addressed here.

Risky sexual behaviors by adolescents is a public health concern because adolescents experience disproportionate adverse health outcomes that can lead to significant social and financial costs (Akers, Muhammad, & Corbie-Smith, 2011¹⁴; Curtis, Waters, & Brindis, 2010¹⁵). Nearly half of all sexually transmitted infections (STIs) in the US, including human immunodeficiency virus (HIV) occur among adolescents (Logan, Beach, Philibert, Brody, Chen & Lei, 2010)¹⁶. Risky sexual behaviors are generally defined as non-coital behaviors (such as oral sex, mutual masturbation, anal sex), or sexual intercourse between adolescents with inadequate or absent protective measures to prevent unwanted pregnancy or STIs (Dake, Price, Ward, & Welch, 2011)¹⁷. Pregnancy and STIs are noted as health concerns of rural adolescents with disabilities, chronic health conditions and those in foster care (Shannon & Broussard, 2011)¹⁸. Among rural adolescents, factors associated with sexual risk behavior include lack of adequate parental supervision, drug and alcohol use and abuse, lower social connectedness, and high levels of peer influence.

Adolescents who engage in risky sexual behavior report significantly lower parental monitoring than those who do not (Akers, Muhammed, Corbie-Smith, 2011¹⁹; Rew, Carver, & Li, 2011²⁰). Rew and colleagues (2011)²¹ posit that parental monitoring may induce feelings of responsibility in the adolescent. Adolescents may be less equipped to make decisions about behaviors that provide immediate gratification but have long-term consequences. Helitzer and colleagues

(2011)²² reported that parental lack of knowledge and awareness of their child's risk behaviors is one of the primary barriers to involving parents in the care of their children.

Drug and alcohol use are associated with risky sexual behavior (Dake, Price, Ward, & Welch, 2011²³; Kogan et al., 2010²⁴; Rew, Carver, & LI, 2011²⁵). Rew and colleagues' (2011)²⁶ reported that adolescents engaged in risky sexual behaviors demonstrate significantly higher level of smoking, drinking, and drug and marijuana use than those not engaged in risky sexual behavior. Dake and colleagues (2011)²⁷ reported that youth substance use (cigarettes, alcohol, illicit drugs) was associated with earlier initiation of sexual activity and having a greater number of lifetime sexual partners. They also reported that alcohol and cigarette use were associated with oral sexual activity.

Interventions to address sexual risk behaviors are often community level interventions. Paschal, Oler-Manske and Hsiao (2011)²⁸ reported that rural local health departments play a critical role in the provision of both surveillance of and education about STIs in rural adolescents. They recommend that local health departments collaborate to standardize materials and processes at the regional level, and increase education about STIs in rural communities. Ott and colleagues (2011)²⁹ recommend that standardized materials used for sex education in rural communities be tailored to address specific needs and concerns of the rural community.

Mental health and mental disorders are often identified as a rural health priority (Dunstan & Todd, 2012³⁰; Gamm, Stone, & Pittman, 2003³¹). Mental disorders refer collectively to diagnosable mental illnesses such as schizophrenia, affective disorders, and anxiety disorders (Gamm, Stone, & Pittman, 2003)³². Rural adolescents are particularly at risk for complications from mental disorders due to lack of access secondary to geographic distance, lack of specialized health services, and poverty (Curtis, Waters, & Brindis, 2011³³; Dunstan & Todd, 2012³⁴; Gamm et al., 2003³⁵; Weber, Pushkar, & Ren, 2010³⁶). The most prevalent mental issues in rural adolescents are depression and anxiety (Gamm et al., 2003³⁷; Haley, Pushkar, & Terhorst, 2011³⁸; Salous, Al-Alem, & Omar, 2009³⁹).

An important part of mental health is the creation of a healthy self-concept (Molloy, Ram, & Gest, 2011)⁴⁰. Molloy and colleagues (2011)⁴¹ report that the transition from middle childhood into early adolescence is an important time in the development of self-concept. They reported a modest but significant decline in academic self-concept during middle school, while social self-concept seems to slowly increase over time with no deflection in the middle school years. Self-concept was reported to be fairly stable even during middle school for most adolescents. However, those with lower academic performance and lower social self-concept seemed to experience evidence of poorer mental health.

Depression and suicidal ideation are common among rural adolescents (Weber, Pushkar, & Ren, 2010)⁴². Depressive symptoms were reported to be negatively correlated with peer social support, family social support, self-esteem, and optimism (Weber et al., 2010)⁴³. Risk factors for suicide attempts in adolescents include suicidal ideation, depressive symptoms, a friend's history of attempted or completed suicide, and a family member's attempted or completed suicide. These risk factors were found to be the same for urban and rural adolescents (Thompson & Light, 2011)⁴⁴.

Anxiety disorders are one of the other most common mental disorders among rural adolescents (Gamm et al., 2003)⁴⁵. Haley, Pushkar and Terhorst (2011)⁴⁶ used the Screen for Child Anxiety Related Emotional Disorders (SCARED) instrument to screen for child anxiety-related emotional disorders in a rural high school population. Though rural adolescents are not less likely to report anxiety disorders than their urban counterparts, they are less likely to have the disorder diagnosed and treated. Lack of access is identified as the main cause.

Violence in school communities takes many forms, including fighting, bullying, sexual assault, and gang activity (Affonso et al., 2010)⁴⁷. Youth violence in rural schools may be exacerbated by lack of community resources, lack of parental role models, cultural acceptance of youth violence, and changes in cultural values (Affonso et al., 2010)⁴⁸.

Bullying has been defined by Limber and Nation (n.d.)⁴⁹ as “repeated, negative acts committed by one or more children against another. These negative acts may be physical or verbal in nature - for example, hitting or kicking, teasing or taunting - or they may involve indirect actions such as manipulating friendships or purposely excluding other children from activities. Implicit in this definition is an imbalance in real or perceived power between the bully and victim (Para. 5).”

In their study with rural children from grade school through high school, Russell and colleagues (2010)⁵⁰ examined whether being a victim of aggression was predictive of perpetrating physical and relational aggression. The authors reported that bullying is more likely to be perpetrated by boys than girls, with about 40% of boys reporting using physical aggression compared to 25% of girls. Boys were slightly more likely to report physical victimization than girls. Two thirds of their sample, males and females, reported experiencing at least one form of relational aggression. The authors reported that perpetrators of physical aggression are also victims of physical aggression and are more likely to perpetrate relational aggression with no differences in gender. Finally, the authors reported that perpetration of relational aggression tends to increase with age (Russell, Kraus, & Ceccherini, 2010)⁵¹.

In addition to understanding which are likely to perpetrate aggression during adolescence, it is important to understand who is likely to become the target of aggression. D’Esposito and colleagues (2011)⁵² explored how certain personality traits, behaviors, and social status may be associated with the target of peer aggression in rural communities. They reported that anxiety and feelings of inadequacy contribute to whether a child is victimized by peers. Children who appear to be socially incompetent or not assertive have an increased likelihood of victimization. The authors posit that youth who exhibit feelings of inadequacy, oversensitivity, and worry may provide a signal to aggressors that they are unable to defend themselves (D’Esposito, Blake, & Riccio, 2011)⁵³.

Farmer and colleagues (2011)⁵⁴ studied bullying in rural schools that did and did not transition to middle school. A transition to middle school involves a building change for students in grade 6, with middle schools serving grades 6 through 8. Those without transition had no building change prior to grade 8. Compared to schools without a transition, schools with a transition demonstrated fewer bullies following the move from grade 5 to 6. The social dynamics in schools with transition appeared to be less supportive of bullying, with fewer students reporting being bullied.

Teen dating violence is a problem in both rural and urban areas (Alexander & Castillo, 2004)⁵⁵. Teen dating violence is defined as physical, emotional, sexual, or psychological harm by a current or former partner or spouse (CDC, 2010)⁵⁶. Kervin and Obinna (2010)⁵⁷ describe a youth-driven teen dating violence prevention project in which participants were taught about unhealthy gender norms, root causes of relationship violence, and ways to cope with and influence their environment with respect to dating violence. They reported that the youth-led project provided opportunities to learn, educate bystanders, and empower individuals and other school groups.

Substance abuse is a pattern of substance use that is maladaptive and contributes to health problems. Substances considered as a part of substance abuse can be licit or illicit. Licit substances are alcohol, tobacco, and inhalants. Illicit substances include methamphetamines, marijuana, cocaine and other illegal substances (Hutchison & Blakely, 2003)⁵⁸. Substance abuse was identified as a major rural health concern among state offices of rural health (Hutchison & Blakely, 2003)⁵⁹. Substance use has been correlated with other psychosocial problems, including antisocial behavior (Connell, Cook, Aklin, Vandeploeg & Brex, 2011)⁶⁰, aggression (Wiens, Hade, Dean, & Sivinski, 2010)⁶¹, and risky sexual behavior (Dake, Price, Ward, & Welch, 2011⁶²; Kogan et al., 2010⁶³).

Rew and colleagues (2011)⁶⁴ reported that the distribution of drug use varied among rural, suburban and urban adolescents. Rural adolescents were more likely to report recent use of alcohol, smokeless tobacco, inhalants and illicit drugs such as cocaine, ecstasy, and hallucinogens than their suburban and urban counterparts. Rates of lifetime and current alcohol, tobacco, and cannabis use were significantly higher in rural compared with urban adolescents in the US and Australia (Coomber, Toumbourou, Miller, Staiger, Hemphill, & Catalano, 2011)⁶⁵. Rural youth were also more likely to engage in binge drinking (Donath, Graßel, Baier, Pfeiffer, Karagülle, Bleich, Hillemacher, 2011)⁶⁶.

Prevention of substance use and abuse among rural adolescents is most likely to be effective if it is family centered. Participation in a family centered prevention program was reported to be efficacious in deterring conduct problems, substance use, and depressive symptoms among rural black adolescents (Brody et al., 2012)⁶⁷. Positive childhood experiences were reported to have an enduring influence into early adulthood on positive functioning, even when substance abuse occurs (Kosterman et al., 2011)⁶⁸. Lippold and colleagues (2011)⁶⁹ explored congruence between mothers' and youths' perceptions of mothers' knowledge and its association with youth delinquency, substance use, and attitude toward substances. Maternal overestimation of knowledge was positively associated with delinquency and negatively associated with healthy drug attitudes. Dyads with high youth and high maternal knowledge reported less substance use and healthier drug attitudes than dyads with low youth and low maternal knowledge. The dyads with low youth knowledge and high maternal knowledge had significantly higher delinquency and substance use than the dyads with high youth knowledge and high maternal knowledge. This study suggests that integrating both parents and youths knowledge may enhance our understanding of the parental protective factor. Particularly, increasing both the knowledge of mothers and helping mothers to accurately gauge their knowledge may be an important strategy.

In addition to family centered prevention strategies, community centered prevention approaches appear to have value in influencing adolescent alcohol use (DeHaan & Boljevak, 2010)⁷⁰.

Community supportiveness, as perceived by adolescents, reduced both lifetime and more recent use of alcohol. Living in a community in which adolescents perceived as both supportive and included controls to drinking were associated with less likelihood of alcohol use among rural adolescents (DeHaan & Boljevak, 2010)⁷¹.

Rural residents experience an increased prevalence of being overweight and suffering from obesity when compared to their suburban and urban counterparts (Slaney, Salmon & Weinstein, 2012⁷²; Tai-Seale & Chandler, 2003⁷³). Adolescent obesity and overweight is worse in rural areas, perhaps due to lack of nutritional education, lack of access to nutritionists, limited nutritional resources, and less access to physical education classes and exercise facilities (Slaney, Salmon, & Weinstein, 2012⁷⁴; Tai-Seale & Chandler, 2003⁷⁵). Ismailov and Leatherdale (2010)⁷⁶ explored the prevalence and factors associated with overweight and obesity among youth across urban, suburban, and rural settings. The authors reported that males from rural areas were more likely to be overweight and obese than their suburban or urban counterparts. Females living in rural areas were also likely to be more overweight than their suburban or urban counterparts. Overall, males in all locations, urban, suburban, and rural, are more likely than females to be overweight or obese.

The association between overweight and hypertension in children has been reported in a variety of ethnic and racial groups (Rodriguez, Mowrer, Romo, Aleman, Weffer & Ortiz, 2010)⁷⁷. The prevalence of overweight, obesity, and elevated systolic blood pressure was studied by Rodriguez and colleagues (2010)⁷⁸ in ethnically diverse adolescents in a rural community. Prevalence of overweight in the group was reported at 20% for females and 17% for males. The prevalence of obesity was reported to be 14% in females and 29% in males. The authors reported that the prevalence of obesity was highest (30%) among African American males. Systolic blood pressure was found to be elevated in overweight males, regardless of race or ethnicity. Elevated systolic blood pressure was higher among African American females only. The study noted that prevalence of obesity was greater than that for overweight in adolescent males, regardless of race or ethnicity. The authors concluded that adolescent males from rural communities may be at greater risk for developing cardiovascular disease and metabolic disorders during adulthood.

Recognizing the greater risk of obesity and overweight among Mexican American adolescents, Villalba, Amirehsani and Lewis (2011)⁷⁹ conducted a school-based intervention study to increase healthy behaviors of Mexican American adolescents. The school based intervention involved community health nurses and nursing students in educating students through a series of education stations where health status, health behaviors were assessed and a physical exam was completed. Age appropriate literature for students and their parents was provided in English or Spanish. In addition, small group counseling was conducted over an eight-week period by a school counselor to promote health and self-concept. The authors reported significant improvements in participants' physical activity and healthy eating after the intervention and concluded the intervention was successful.

Physical activity, a key component to maintaining a healthy weight, was studied by Perry, Saelens, and Thompson (2011)⁸⁰ among rural Latino youth. These authors aimed to identify intrapersonal, behavioral, and environmental factors associated with engaging in the

recommended levels of physical activity among rural Latino middle school youth. Boys were more likely to engage in the recommended levels of activity than girls. Girls were reported to be motivated by identification with a team, while boys were more likely to be motivated by a coach. Participation in organized after school activities and attending physical education classes five days per week were consistent with strong correlates of engaging in the recommended level of physical activity (Perry, Saelens, & Thompson, 2011)⁸¹.

Slaney and colleagues (2012)⁸² examined the effectiveness of a school-based program for adolescents in rural Australia to combat obesity. They reported that a school-based program may be a valuable addition to other interventions to help rural adolescents maintain a healthy BMI. These authors recommended ongoing research to determine the ideal combination of interventions to assist rural adolescents in maintaining a healthy body weight.

Conclusion

Rural residents, particularly adolescents, face many challenges to overall health. Based on very current research, the primary health related problems of rural adolescents were identified as risky sexual behaviors, mental health issues, violence and bullying, substance and alcohol use, and being overweight and obese. These problems are exacerbated by diminished access to care, peer influences, and parental influences. While the literature evidence clearly demonstrated the many unmet health concerns among rural dwelling adolescents, this integrative review also illustrates many dimensions of health disparities exist in rural areas.

This review of literature also highlights the need for future research to better understand the health needs and concerns of rural adolescents. Ott and colleagues (2011)⁸³ recommend that standardized materials to teach sex education be tailored for use in rural communities. To tailor such materials to rural communities, research is needed to understand the educational needs, concerns, and learning preferences of rural students and their parents. Molloy and colleagues (2011)⁸⁴ reported that academic self-concept decreases during middle school. Further research is needed to understand what factors are associated with a decrease in academic self-concept in rural students and what interventions may be effective in helping rural middle school students maintain healthy academic self-concept. Affonso and colleagues (2010)⁸⁵ report factors associated with youth violence in rural schools. Further research is needed to better understand the factors associated with youth violence in schools and how rural schools differ from urban schools in this regard. Farmer and colleagues (2011)⁸⁶ reported that schools with a building transition to middle school seemed to have less bullying. This is an important finding and replication studies are needed to validate Farmer's (2011)⁸⁷ findings. Ismailov and Leatherdate (2010)⁸⁸ reported that males and females from rural areas are more likely to be overweight and obese than their urban counterparts. More research is needed to understand what elements of the rural environment may contribute to this serious problem. The studies by Villalba, Amiresani, and Lewis (2011)⁸⁹ and Perry, Saelens, and Thompson (2011)⁹⁰ point to possible interventions to address higher overweight and obesity in rural adolescents. These interventions should undergo further testing to determine the ideal combination of interventions to assist rural adolescents in maintaining a healthy weight.

When addressing diversity in care models, it is important to consider the rural setting as well as race or ethnicity, sex, and socioeconomic status in designing curriculum and interventions. Nurse educators, especially those in colleges within rural regions, need to expose students to rural theory and evidence-based practice. Faculty and students need to be utilizing evidence for the continuum of care within a rural community context. In rural dwelling adolescents, informal social structures may be highly valued and there is less access to health resources or professionals. Educators are encouraged to expose all students to the rural health-care delivery system including advanced technology to connect urban and rural resources. Colleges of nursing can promote clinical or preceptor experiences in rural settings so students are exposed to the rural cultural perspective. Involving parents and the community in interventions is important in establishing programs to prevent and mitigate these problems. The future curriculum development and research initiative of the authors involves a tailored community-based intervention project based on the health needs evident in this review and a Delphi technique study in schools. Nationally and globally, evidence-based findings are needed to inform curriculum and respond to the health needs of rural adolescents. Programs and rural initiatives for adolescents can decrease the prevalence of established health problems and lower health care expenditures across the life span.

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Appendix 1

Table 1. ([back to text](#))

Author and Year	Focus of Study	Sample	Methodology
Affonso,D., Mayberry, L., Shibuya, J., Archambeau, O., Correa, M., Deliramich, A., Frueh, B. (2010)	Cultural context of school communities to inform youth violence prevention (Rural Hawai'i)	N=86 51 adults 35 aged 8-15 years	Focus groups with teachers, parents, students, community leaders
Akers, A., Muhammad, M. Corbie-Smith, G. (2011)	Community perceptions of neighborhood effects on ad sexual behaviors (Rural North Carolina, African Americans)	N=80 38 aged 16-24 years 42 aged over 25 years	Focus groups
Brody, G., Chen Y., Yu, T., Molgaard, V., DiClemente, R., & Winwood, G. (2012)	Family centered programs deter substance use, conduct problems and depressive symptoms in black ads (Rural Georgia)	N=502 16 years	Experimental
Connell, C., Cook, E., Aclin, W., Vandeploeg, J., Brex, R. (2010)	Risk and protective factors associated with antisocial behavior (Rural Northeast)	N=1,820 Age 14-16 years	Latent class analysis
Coomber K, Toumbourou JW, Miller P, Staiger PK, Hemphill SA, & Catalano RF. (2011).	Rural adolescent alcohol, tobacco, and illicit drug use: a comparison of students in Victoria, Australia, and Washington State, United States	N= 3,729 Ages 12-15 Grade 7-9	Questionnaire
Curtis, A., Waters, C., Brindis, C. (2011)	Prevention services in a rural community (Rural California)	N=663 Age 12-17 years	Secondary analysis of California Health Interview Survey
Dake, J., Price, J., Ward, B., Welch, P. (2011)	Midwestern rural adolescents' oral sex experience	N=2,000 Grade 6-12	Survey
D 'Esposito, S., Blake, J., & Riccio, C. (2011).	Predictors of adolescent' vulnerability to peer victimization	N=243 Age 12-15 years	Survey

DeHaan, L., Boljevac, T. (2010)	Alcohol prevalence and attitudes (Rural Northern Plains)	N=1,424 Grade 6-8	Survey
Donath C, Grassel E, Baier D, Pfeiffer C, Karagulle D, Bleich S, & Hillemacher T. (2011).	Alcohol consumption and binge drinking in adolescents: comparison of different migration backgrounds and rural vs. urban residence--a representative study (Rural Germany)	N=44,610 Grade 9	Survey
Dunstan, D. & Todd, A. (2012).	Assessing the resilience of whole communities of children (Rural Australia)	N=309 Parents, teachers, children Children's ages – 5-16 years	Cross sectional
Haley, T., Pushkar, K., Terhorst, L. (2011)	Psychometric properties of the Screen for Anxiety Related Emotional Disorders in a Rural High School Population(SCARED) (Rural Pennsylvania)	N=193 Grades 9-11	RCT
Helitzer, D., Sussman, A., deHernandez, B., & Kong, A. (2011)	Parent provider communication and reducing adolescent risk (rural New Mexico)	N=37 Primary Care Providers	Semi structured in-depth interviews
Ismailov, R., Leatherdale, S. (2010)	Rural-urban difference in overweight and obesity (Ontario)	N=34,578 Grades 9-12	Cross sectional descriptive survey
Kervin, D. & Obinna, J. (2010)	Strategies in primary prevention of teen dating violence	N=48 Pre test N=29 Post test Age 15-18 years	Quasi-experimental
Kogan, S., Beach, S., Philibert, R., Brody, G. Chen, Y., Lei, M. (2010)	Genetic influences on substance abuse and risky sexual behavior (Rural Georgia, African American)	N=259 Age 14-16 years	Longitudinal prospective
Kosterman, R., Mason, W.A., Haggerty, K.P., Hawkins, J.D., Spoth, R., & Redmond, C. (2011).	Childhood experience as a predictor of positive adult functioning and adolescent substance use as a mediator of prosocial continuity (Rural Midwest)	N=429 Age 11-22 years	Interviews and questionnaires.

Lippold, M., Greenberg, M., Feinberg, M. (2011)	Maternal knowledge of youths activities to youths problem behaviors – what youth and their mothers perceive the mother knows about the kids behaviors and how that is associated with problem behavior (Rural Pennsylvania)	N=938 Grade 6	Descriptive correlational (4 groups: High youth and mother High youth, low mother Low Youth, high Mother Low Youth and Mother
Perry, C., Saelens, B., Thompson, B. (2011)	Getting the recommended amount of physical activity for Latino ads (Rural Washington)	N=1,102 Middle School students	Community based participatory research, survey
Rew, L., Carver, T., & Li, C. (2011).	Risky sexual behavior	N=255 Age 14-17 years	Cross sectional analysis of data from an ongoing longitudinal study
Rodriguez, R., Mowrer, J., Romo, J., Aleman, A., Weffer, S., Ortiz, R. (2010)	Ethnic and gender disparities in adolescent obesity and elevated SBP (Rural California)	N=2,038 Age 13-17 years	Cross sectional
Russell, B., Kraus, S., & Ceccherini, T. (2010)	Age and sex as predictors for victimization and aggression.	N=205 Grades 3-11	Exploratory
Salous, A., Al-Alem, L., Omar, H.A. (2009)	Correlation of mental disorders with psychosocial factors. Related this to exposure to violence (Lexington, KY)	N=169 Age 10-22 years	Chart review
Shannon, P. & Broussard, A. (2011)	Health perspectives of adolescents	N=67 Age 13-20 years	Focus groups

Slaney G, Salmon J, & Weinstein P. (2012).	School based programme in a natural environment to reduce BMI in overweight adolescents	N=1,021 Age 15 years Grade 9	Quasi experimental
Thompson, M. & Light, L. (2011)	Gender differences in risk factors for suicide attempts (Nationally representative sample)	N=10,828 Grades 7-12	Longitudinal
Villalba, J., Amirehsani, K., Lewis, T., (2011)	Increasing healthy behaviors in adolescents of Mexican heritage in Rural Emerging Latino Communities (Rural North Carolina)	N=70 Grades 6-8	Descriptive Correlational
Weber, S., Pushkar, K., Ren, D. (2010)	Relationships between depressive symptoms, perceived social support, self-esteem, and optimism (Rural Pennsylvania)	N=179 Age 14-18 years	Cross sectional descriptive survey
Wiens, B., Haden, S., Dean, K., Sivinski, J. (2010)	Peer aggression and victimization on substance use (Rural Southeastern US)	N=1,388 Grades 6-12	Survey
Ziller, E. C., Anderson, N. J. & Coburn, A. F. (2010).	Access to Rural Mental Health Services: Service Use and Out-of-Pocket Costs.	2003 and 2004 Medical Expenditure Panel Surveys	Document review

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