



A Review of Smoking among Rural African Americans: Recommendations for Research and Cessation Interventions

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Abstract

Objective: The purpose of this review is to synthesize the available literature on smoking among rural African Americans. **Methods:** Using search terms “rural” “African American” “Black” and “smoking” 19 relevant articles were identified in the Medline data base. Findings gleaned from the 19 articles are presented in four categories: a) smoking prevalence, b) smoking behavior and patterns, c) smoking cessation interventions and quitting, and d) smoking-related outcomes. **Results:** There may be gender differences, a pattern of late onset of smoking, and a preference for mentholated brands among rural African American smokers. There is no evidence that rural African Americans are less likely to quit than other populations, though there may be disparities in receiving appropriate treatment services or advice to quit. **Conclusion:** More research regarding the socio-cultural and systemic factors that influence the trajectory of smoking initiation, maintenance and cessation among rural African Americans is needed.

Key Words: rural, African American, smoking

INTRODUCTION

The destructive effects of cigarette smoking in the general population are widely recognized. Among African Americans, smoking is of particular concern. According to the Centers for Disease Control (CDC) tobacco use is a major contributor to the three leading causes of death in African Americans: heart disease, cancer and stroke. It is estimated that 45,000 African Americans die each year from smoking-related illnesses (CDC, 2005). African Americans also suffer disproportionately from these smoking-related diseases (CDC 2005). For example, African American men are 50% more likely to develop lung cancer and to suffer higher mortality from lung cancer than White American men (CDC, 2005). In addition, rates of cerebrovascular disease are twice as high among African Americans compared to White Americans (CDC, 2005).

The previous statistics are perplexing given that the prevalence of smoking among African Americans overall is comparable or lower than that of other racially classified social groups (RCSG). (For further discussion on racially classified social group characterization see King, G. 1997). In 1997, the national smoking prevalence rate for African Americans was 26.7% compared to 25.3% in White Americans (CDC, 2005). More recently, data from the REACH 2010 Risk Factor Survey comparing smoking and other risk factors for chronic disease among various RCSGs, indicate that median smoking percentages in males ranged from a low of 28.6 among African Americans to a high of 42.2 among American Indians (Liao, Tucker, Okoro, Giles, Mokdad & Harris, 2004). Whereas, median smoking percentages in females ranged from a low of 3.3 among Asian Pacific Islanders to a high of 36.7 among American Indians, with African American women smoking at a rate of 19.5 (Liao, et al, 2004). Differences are also found in smoking rates according to the geographical location of the RCSG, such as African Americans, under study. For example, smoking prevalence among African American men in the San Diego, CA Metropolitan Statistical Area (MSA) is 21.7% compared to 54.2% in the Lawndale MSA of Chicago, IL (Liao et al, 2004). Geography was also a correlate of smoking prevalence in an analysis of population data on smoking collected in the National Health Interview Survey (1990-1994). Specifically, the highest rate of smoking prevalence among African Americans was found in the Midwest. The lowest rate of current smoking were reported in females residing in the South (King, Polednak & Bendel, 1999). The researchers also found that smoking rates were higher in central cities than in non-central cities (King et al, 1999). Similarly, a study of state patterns of tobacco use found that smoking rates for African American females was significantly lower in the Deep South (Osypur, Kawachi, Subramanian & Acevedo-Garcia, 2006).

The variability in smoking rates across geographic areas suggests that beyond RCSGs, there are cultural, demographic and environmental factors that may influence smoking behavior. Thus the findings of the REACH and NHIS surveys raise a logical question: if smoking rates among RCSG are influenced by geographical environment, what might be the influence of living in a rural area on smoking among African Americans?

African Americans are the most numerous RCSG in rural areas, second only to White Americans (United States Department of Agriculture [USDA], 2007). Still, it is difficult to locate public data on African Americans and rural-ity combined. According to the U.S. Census (2000), the total African American population in the U.S. was 36.4 million. The number of African Americans in the 2000 U.S. Census living in non-metropolitan areas was 4,197,536 (USDA, 2007). Approximately 15% of African Americans reside in rural areas, primarily in the south Atlantic region of the United States (Asante & Mattson, 1991).

The greatest concentration of rural African Americans is in the South, following the old "plantation belt" (USDA, 2004). States having the largest densities of rural African Americans are: South Carolina, Georgia, Alabama, Mississippi and Louisiana (South Carolina Health Research Center [SCHRC], 2002). Sixty-nine percent of all rural African Americans live in these five states (SCHRC, 2002). Recent migratory trends indicate that many African Americans are returning to the non-metropolitan south, and these populations are growing (USDA, 2004).

Whereas 13% of the rural White American population lives below the poverty line, the percentage of African Americans living below the poverty line is almost three-fold for rural African Americans: 34% (SCHRC, 2002).

Ethnic minority residents of rural communities are also more likely than their White American counterparts to live in subsidized housing within dilapidated community areas. African Americans comprise only 6% of rural households; however, they make up 14% of the "worst case" rural households, as defined by the U.S. Department of Housing Urban Development. (Housing Assistance Council, 1999).

It is also now widely acknowledged that rural residents commonly suffer from health disparities. Generally, rural communities have higher rates of chronic illness and disability and report poorer overall health than do residents of urban communities. Health disparities typically faced by most rural residents are in some ways dissimilar to those of urban residents. For example, rural residents are less likely to have health insurance and have higher death rates than suburban and urban populations (National Center for Health Statistics, 2001). Although the reason for these disparities are not well-understood, rural residents are more likely to live in poverty, have lower educational levels, and have limited access to medical resources than residents of suburban and urban areas (NCHS, 2001). Rural residents are considered a "special population" due to their lack of economic, health, and educational resources (U.S. Congress, Office of Technology Assessment, 1990). Among particular RCSGs who reside in rural areas the disparities are accentuated. For example, while 13% of rural White Americans are poor, 34% of rural African Americans are poor (SCHRC, 2002). In rural counties with African Americans comprising the majority population, income is 67% of the national level. And while 60% of rural White Americans live in Health Professional Shortage Areas (HPSAs), 70% of rural African Americans live in HPSAs. Furthermore, 84% of the rural

counties where African Americans are the majority population are HPSAs (SCHRC, 2002).

It is important to note that, excluding White Americans; African Americans are the largest RCGS in rural areas and are an understudied population. Given the disparities in morbidity and mortality among African Americans it is possible that the combined effect of being African American and living in a rural area may disproportionately impact smoking-prevalence rates and smoking-attributable disease in this population. However, little health research has been conducted to examine smoking and smoking related factors among rural African Americans. The purpose of this article is to synthesize the limited published research pertaining to smoking among rural African Americans and to present this information in a form useful for identifying future research and intervention needs.

METHODS

A search of the MEDLine data base was conducted using the combined key words rural, African-Americans and smoking. This yielded 59 hits. Of these, many were not relevant to smoking among rural African Americans, so a second search of the database was conducted limiting the articles to those that contained the same key words in the abstract only-- resulting in 22 hits. A third search of abstracts was run on keywords Black, rural and smoking that yielded 39 hits. After combining search results and eliminating duplicate articles that came up in both of the second and third searches, there remained 56 articles. Of these 56 articles, excluded in this review are those that were about African populations in other countries, were only about urban populations, or were not specifically about smoking. Nineteen of the 56 articles were relevant and spanned a time frame of 17 years, from 1989 to 2006 (see Table 1). Topical areas were widely dispersed, indicating a lack of depth in any one topic.

RESULTS

Who is a rural African American?

An early methodological question arose regarding who constitutes a rural African American. Neither of the terms "African American," "Black" or "rural" have stable definitions. To answer this question, one must first operationalize the individual terms "African American" and "rural". Of the articles collected in this review only one defined "African American", and three defined "rural". Daza and colleagues utilized the 1997 U.S. Office of Management and Budget (OMB) definition, where RCGS is designated by the following categories: a) White; b) Black or African American; c) American Indian or Alaskan Native; d) Native Hawaiian or Other Pacific Islander; and, e) Some other race (Daza et al., 2006). The three articles collected in this review that defined rural used a dichotomous classification system based on population density. Two of these studies used the pre-2002 U.S. census definition of rural meaning that

the area contained no towns with a population greater than 2,500 (Harrell, Bangdiwala, Deng, Webb & Bradley, 1998; Alexy, Nichols, Heverly & Garzon, 1997). One of the studies used a rural urban continuum that was dichotomized by removing data from small cities and towns, and comparing only the data from large cities and associated suburbs (urban) with data collected from rural farm and nonfarm areas (Sarvela, Cronk & Isberner, 1997). In 2002, the U.S. Census Bureau released new criteria for defining rurality by partitioning what was formerly known as urban into two categories: "urbanized areas" having cores with populations of 50,000 or more and "urban clusters" having cores of populations that range from 2,500 to 49,999 (Hart, Larson, & Lishner, 2005). All other areas are deemed rural. Adding the third category has proved to be useful in teasing out disparities that were otherwise obscured in dichotomous definitions of rural and urban.

Despite the failure to provide definitions for the use of the descriptors in the majority of the articles reviewed and the inherent problems of dichotomous definitions of rurality or categorization of racial groups, for the purpose of this review, rural is defined as residing in a town containing a population of less than 2,500 (USDA, 2005), and African American is defined by the OMB category "Black or African American" meaning persons having origins in any of the black racial groups of Africa (OMB, 2000).

Prevalence of smoking among rural African Americans

In studies providing rural-urban comparisons, it was generally found that rural African American adults have lower or equivalent smoking prevalence than urban African Americans. A study comparing Pitt County, South Carolina with Harlem, New York found that 37.2% of African Americans in Pitt County were current smokers, and that 50.6% of African Americans living in Harlem were current smokers (Geronimus, Colen, Shochet, Ingber & James, 2006). Although differences were statistically insignificant, Hueston and Hubbard (2006) report rural and urban African American smoking prevalence rates of 19% and 23%, respectively. In studies that focused solely on rural African Americans prevalence, percentages of 32.3 (Dressler, Bindon & Neggers, 1998) and 25.8 (Schorling et al., 1997; Willems, Hunt & Schorling, 1997) were reported. Furthermore, Willems and colleagues (1997) provided smoking prevalence statistics based on gender, where smoking prevalence among rural African American males was 32.6%, and among females was 20%. It is important to note that smoking prevalence varies across geographic regions. While the prevalence rates reported in these studies vary, there does not appear to be any higher smoking prevalence in rural areas than in urban areas among African Americans. Consistent with national data (CDC, 2005), smoking prevalence is lower in African American females than in African American males living in rural areas.

Smoking behaviors and patterns of rural African Americans

Smoking initiation and rates. Orleans et al. (1989) found that among rural African American adults smoking initiation occurred later and they tended

to smoke fewer cigarettes per day (CPD) than other RCSGs. Alexander and colleagues explored the social pressure to begin smoking and the sensory experience of the beginning smoker in a qualitative study of youths from four RCSGs in both rural and urban settings (Alexander, Allen, Crawford and McCormick, 1999). Across all RCSG's studied, peer influences were strong and parents were a source of cigarettes for all African American groups. For both rural and urban African American males, direct social pressure and coercion, including threats of physical harm or verbal attacks on their masculinity were sometimes part of their first smoking experience. Among both rural and urban African American youth, parents served as "instigators" (meaning that they prompted smoking behavior either advertently or inadvertently) of smoking behavior in male African Americans, but not for African American females (Alexander, et al., 1999)

In quantitative studies of youth smoking initiation, contradictory findings regarding age of initiation exist. There are significant racial differences in smoking initiation across rural/urban settings, with fewer African-Americans experimenting with smoking after the 4th and 5th grades than White Americans (Harrell, 1998). It was found that although rural youth are more likely to smoke, smoking initiation was delayed among rural African American youth in comparison to rural White American youth (Harrell, 1998). In another study it was found that rural White American youth had a higher smoking prevalence at 7th grade than rural African American youth (34% and 17%, respectively), though African American youth began smoking approximately one year earlier than White American youth (Felton et al., 1999). Factors associated with avoidance of smoking among rural African American female youth were physical activity in the 5th and 6th grades and best friend's or mother's smoking behavior in 6th and 7th grades (Felton, Liu, Parsons & Geslani, 1998). Generally, it appears that rural African American youth do not initiate smoking earlier and are less apt to smoke than their White American counterparts. Social pressure, especially in males, and access to their parent's cigarettes may be important in smoking initiation among rural African American youth.

Why do rural African Americans smoke? None of the studies collected in this review specifically addressed reasons for smoking among rural African Americans. As was discussed earlier, smoking initiation appears to be related to social pressure. Is there more or less pressure to smoke among rural African Americans than their counterparts in urban areas? We simply don't know. In a study by Gittlesohn and colleagues African American and White American youths articulated that they felt that they were being targeted by tobacco industry advertisements and both rural and urban African American youths were especially able to provide detailed descriptions of tobacco advertising (Gittlesohn et al., 1999). Tobacco industry marketing may play a role, but no studies specifically exploring marketing targeted to African Americans in rural areas were identified in this review.

Sociodemographic factors related to smoking. Based on the literature collected for this review there are gender differences evident in smoking behavior in rural areas, with African American females being less likely to smoke than their male counterparts. This is consistent with national statistics of smoking prevalence among African Americans which show that African American women smoke at lower rates than African American men (CDC, 2005). However, it is unclear whether there are distinct rural and urban patterns of gender differences in smoking.

In an interesting study conducted by Dressler and colleagues (1998), cultural consonance was explored as a factor related to smoking in a rural African American community. Cultural consonance can be viewed as the degree to which an individual's material lifestyle meets culturally determined values for successful living. Using key informant interviews, a list of indicators of successful living and social status specific to the community was generated and tested. The list included such items as owning a home, having a leadership position in the church, etc. Dressler and colleagues found that smoking among individuals was inversely related to social status, meaning that cultural dissonance in material lifestyle was associated with smoking (Dressler et al, 1998).

Consistent with African American smoking behavior in general (CDC, 2005), rural African Americans, exhibit a preference for mentholated cigarettes. A qualitative study by Gittlesohn and colleagues (1999) identified patterns in cigarette brand preference among youth in four RCSGs. Rural and urban African Americans youths of both genders had similar brand preferences. Both groups preferred mentholated brands of cigarettes such as Newport, Kool, or Salem (Gittlesohn et al., 1999).

Similarly, in an intervention trial conducted in two rural Virginia counties baseline characteristics of adult rural African Americans indicated a preference for mentholated cigarettes (Orleans et al., 1989). Interestingly, smokers in this study were also significantly less likely to have a telephone compared to nonsmokers (Schorling et al., 1997). From the articles collected in this review it appears that gender, social status, and preference for mentholated tobacco are related to smoking behavior in Rural African Americans

Smoking cessation interventions and quitting among rural African Americans

What factors influence the cessation process in rural African Americans? In a study comparing two "poor" African American populations, one in rural Pitt County, SC and urban Harlem NY, it was found that although uptake of smoking was similar, Pitt county data revealed a greater percentage of quitters than in Harlem (19.4% and 11.5 % respectively). The researchers found marked differences in other indicators such as social support (74% Pitt, 41% Harlem), employment (79% Pitt, 53% Harlem) and private health insurance (56.2% Pitt and 48.6% Harlem) that may relate to smoking cessation (Geronimus et al., 2006).

Among rural African Americans with adequate access to health care, appropriate preventive services and screenings are just as likely to be used as they are among urban African Americans (Hueston & Hubbard, 2000). However, it is well known that access to health care is a major problem in rural areas, so it is probably a safe assumption that rural African Americans do not have adequate access to health care. Even when they do have access to health care, rural African Americans do not appear to receive sufficient advice to quit smoking from their health care provider. For example, Hueston & Hubbard (2000) found that urban African Americans are more likely to report that they were counseled about cigarette smoking than rural African Americans.

Of the articles included in this review, only one was an intervention study targeting a rural African American community (Schorling et al., 1997). This was a study based on the Alliance of Black Churches Health Project in two rural Virginia counties. Among the counties, African American church attendance was 88% and the researchers believed that the church would be a good dissemination point for health teaching among rural African Americans. Using one of the counties as a comparison and the other as the intervention county, the church-based intervention was found to be effective in the sense that there was a significant difference in stage of change among those of residing in the intervention county. In addition, there was increased smoking cessation in the intervention county, though it was not statistically significant (Schorling et al, 1997). No other intervention studies were retrieved in the literature search on rural African Americans.

Only one article collected in this review specifically explored socio-cultural factors related to smoking cessation that may exist in rural African American communities (Dressler et al, 1998). Three articles made some reference to psychosocial or cultural themes such as social support, stages of change, or the historical importance of the church among African Americans (Daza et al, 2006; Dressler et al, 1998; Schorling et al, 1997). One article specifically explored the applicability of stages of change, or the Transtheoretical Model (TTM) to rural African Americans (Schorling, 1995) and found support for the models use in rural African Americans. Schorling and colleagues (1997), in a church delivered smoking cessation program, measured such variables as stage of change and household characteristics in two African American communities in rural Virginia. They noted that at baseline, the majority of smokers in both communities were in the Precontemplation stage of change (52.1% and 54.9%), about a third were in the Contemplation stage of change (33.3% and 29.9%), and a smaller percentage were in the Preparation stage of change (14.5% and 15.1%). The researchers also reported a strong identification of their sample population with churches with minimal involvement with other social/community organizations, confirming the importance of church in rural African American communities. Schorling and colleagues found that only two variables were significantly associated with quitting: smoking fewer cigarettes at baseline and being married. As it is for other populations, smoking cessation in rural African Americans is influenced by social support, psychological

readiness to change and access to health insurance and appropriate cessation services.

Smoking-related outcomes among rural African Americans

While it is known that African Americans suffer disproportionately from smoking-related illness and death, it is difficult to isolate statistics for rural African Americans. Only one study collected in this review examined smoking related outcomes in a rural county and contrasted them with data from urban Harlem, NY. In a study by Geronimus and colleagues, mortality was higher among African Americans in Harlem than in Pitt County, NC and using a simulation model, researchers attributed 16% of the mortality differential to smoking (Geronimus et al, 2006). A possible explanation for the lower mortality rate in Pitt County is that of health insurance. In the rural county, more individuals were employed and had some form of health insurance than those living in Harlem. However, a limitation of the study was that only one urban and one rural area were compared, so it remains to be seen if patterns of smoking-related health disease outcomes identified are similar across other geographical areas.

DISCUSSION

Owing to few health research articles available for review at this time, broad conclusions about smoking among rural African Americans cannot be drawn. Little is known about the smoking trajectory of rural African Americans, and what issues confront rural African Americans as they initiate and maintain smoking, or make efforts to quit smoking. Also unclear is the etiology of nicotine dependence and smoking-related health outcomes among rural African Americans.

Still, the results presented here offer some intriguing insights. In summary, there may be gender differences, a pattern of late onset of smoking, and a preference for mentholated brands among rural African American smokers. There is no evidence that rural African Americans are less likely to quit, and in at least one study were more likely to quit. On the other hand, rural African Americans face disparities in income and access to care that may impede smoking cessation. Findings collected in this review suggest some initial recommendations for future research and practice.

Recommendations for research and practice

Smoking among rural African Americans is an understudied phenomenon. The authors posit that before health care providers can tailor effective interventions to aid smoking cessation among rural African Americans, researchers must first understand the specific needs of this population. To begin with, it would be logical to run a series of qualitative studies among rural African American adults to describe the trajectory of smoking initiation, maintenance, and quitting and what the smoking-related health outcomes

are among this population. Research utilizing both qualitative and quantitative methodologies would be especially useful, as it would provide a more holistic understanding of smoking among rural African Americans. Research should then proceed to quantitative analysis and targeted/ tailored clinical trials. Questions that remain unanswered about smoking among rural African Americans are numerous and offer fertile ground for research. The following is an initial list to stimulate research in this area:

- What is the influence of tobacco industry marketing on smoking initiation among rural African Americans?
- Are there protective social factors (especially for females) that delay smoking initiation in rural African Americans? If so, can these be capitalized on to design programs aimed at prevention?
- What are the social dimensions of gender, cultural consonance, poverty, and employment in rural African American communities and how do these dynamics relate to smoking?
- What exactly are the disparities in health care access that rural African Americans face?
- Are rural African Americans more or less likely to have health insurance than other groups?
- Are rural African Americans less likely to receive help with cessation?
- What systemic or cultural factors present in rural African American communities promote or hinder attempts to quit smoking?
- What is the role of social support and church attendance in smoking cessation programs for rural African Americans?
- Does geography or the physical environment have anything to do with the increased mortality rates of African Americans?
- What exactly are the smoking attributable mortality rates of rural African Americans?

Another area of pressing research concern is the definition of what is rural. It is highly likely that when using dichotomous measures of “rurality” as the studies collected in this review did, true health disparities have been obscured. A more accurate depiction would lie in comparisons between suburban and rural populations, since the most rural and the most urban areas are both disadvantaged (Eberhart & Pamuk, 2004). Also important to research in rural health is that investigators describe the regional characteristics of the rural population at hand, because there are likely to be region-specific cultural influences at play among rural African American populations. Many of the articles collected in this review drew data from rural populations of southeastern coastal states and especially South Carolina. Might there be differences in study results if data were collected in rural communities of other states?

In conclusion, rural African American smokers as a group warrant more attention in terms of research and interventions tailored to meet their public health needs. Smoking remains the largest cause of preventable death and disease. The reduction of smoking and smoking attributable morbidity and mortality has long been a goal of public health. A more recent public health goal is the elimination of health disparities. Already identified are health disparities among rural and African American populations. From the sparse data collected in this review, it would seem that interventions aimed at eliminating health care treatment disparities would decrease disparities in smoking-related illness and death since African Americans, as a group, are not more likely to smoke than other populations, but continue to suffer more from smoking related disease and mortality. Thus, research on tobacco use at the intersection of rural and African American populations will prove valuable.

Table 1. Smoking and Rural African Americans Literature Review

Author (Year)	Research Question	Type of Study	Geographic Setting(s)	Sample Population	Findings
Alexander et al. (1999)	What are smoking experiences of youths from 4 ethnic groups, urban/rural and male/female?	Qualitative. Focus groups.	Maryland, Texas (urban), Alabama, New Mexico (rural) *no African American in NIM sample.	African American, Hispanic, and White American adolescents.	Influence of friends, parents as "instigators" or source for cigarettes are part of first smoking experience of rural African American youths. Peer pressure important in rural African American males. Pleasant sensory experiences of buzz/high/rush or dizzy/light headed in rural African American youths.
Alexander et al. (1999)	What are correlates of early sexual activity?	Cross-sectional (1st year of a longitudinal study).	African American and White American adolescents in the 8th grade of 5 public schools.	Of sample, smoking prevalence is 20.6% in blacks and 28.7% in whites. Smoking is correlated with the likelihood of having sexual intercourse among white females only.	
Alexy, et al. (1997)	Are there rural/urban differences in demographic prenatal factors and birth outcomes? Do demographic prenatal factors predict birth outcomes differently in rural and urban women?	Cross-sectional analysis of epidemiological data.	Rural and urban areas of the US.	African American and White American women of child bearing age.	Comparisons of urban vs. rural white vs. black—not rural and black.
Daza et al. (2006)	What are racial/ethnic differences in smoking cessation and positive predictors of smoking cessation? Does predictive ability of specific factors differ across racial/ethnic groups?	Longitudinal.	Southeastern United States.	African American, Hispanic and White American employees of Rural Electric Cooperatives and natural gas pipeline companies participating in the Working Well Trial.	Risk factors for smoking differed across racial/ethnic groups. At baseline, African Americans smoked fewer cigarettes, reported more confidence in quitting, used more behavioral processes of change and reported more cons of smoking—all positive predictors of cessation. However, African Americans also reported consuming more alcohol, which was negatively related to abstinence. At the end of study, abstinence did not differ across racial/ethnic groups. Possibly risk factors are counterbalanced by protective factors.

Author (Year)	Research Question	Type of Study	Geographic Setting(s)	Sample Population	Findings
Dressler et al. (1998)	Is a cultural dimension of SES related to cardiovascular disease risk among rural African Americans?	Cross-sectional analysis of national surveys.	Rural community in the South.	African American adults.	Cultural consonance in lifestyle is more strongly associated with hypertension and smoking than other measures of SES.
Duelberg. (1992).	What is the relationship of race to preventive health behavior among women?	Cross-sectional analysis of national survey (NHIS).	Rural and urban areas of the U.S.	African American and White American females.	When controlling for age, marital status and urban residence, African American women are less likely to be non-smokers. Education is important link between race and non-smoking. Rural African American women are most likely to be non-smoking.
Felton et al. (1999).	Do personal factors (race, gender, grade level), environmental factors (parents' and best friends' smoking/alcohol use), or behavioral factors (physical activity), affect avoidance of smoking and alcohol use?	Longitudinal prospective study of surveys.	Two rural predominantly African American communities in the south.	African American and White American school children in grades 5-7.	Significant interaction grade level effects re smoking by: race (African Americans started earlier), gender, best friend smoking, and mother smoking.
Felton et al. (1998).	Is there an association between number of health risk behaviors (HRB) and demographic, psychosocial or environmental variables in rural, fifth grade children?	Cross-sectional analysis of surveys.		Five rural predominantly African American schools in South Carolina.	No specific data for individual HRBs. Most common HRB was obesity. Smoking, alcohol use or both was more prevalent in boys (67%) than in girls (11%). Gender patterns in HRB evident. In males, race (African American) was a predictor of 1 HRB, while nonparticipation in sports, inactive best friend and alcohol use in best friend was predictive of 2 or more HRB. In females, non-participation in sports, watching TV, and not talking on the phone with friends was predictor of 1 HRB. TV watching predicted 2 or more HRB. Risk doubled with one hour increase of TV watched.
Felton et al. (1998).	What is the relationship of cognitive, social and environmental variables on health promoting behaviors as measured on HPLP among rural adolescent women?	Cross-sectional analysis of surveys.	Rural family planning clinic.	African American and White American adolescents seeking family planning services.	Smoking not specifically addressed, though included in HPLP. Self image, problem solving, education level, employment status and family structure were significant predictors of HPLP score. Of these, self-image was the strongest predictor. Race not a significant predictor of HPLP score.

Author (Year)	Research Question	Type of Study	Geographic Setting(s)	Sample Population	Findings
Flick et al. (2006).	Are psychiatric disorders more prevalent in pregnant women who persist in using tobacco?	Prospective Cohort.	St. Louis, MO (urban) and 5 rural counties in the Missouri Bootheel region.	Medicaid eligible pregnant African American and White women receiving WIC.	Black women were less likely to smoke while pregnant than white women (40% vs. 60%). No significant difference between urban and rural smoking while pregnant. No data presented on rural, black women. Overall, psychiatric disorders were associated with continued tobacco use while pregnant.
Gerominus et al. (2006).	What are differences in health-related variables among poor urban and rural African Americans?	Cross-sectional comparison of two surveys: Pitt County Study of African American Health (PACS) and the Harlem Household Survey (HHS).	Pitt County, NC (rural) Harlem, NY (urban).	African American respondents of PCS and HHS surveys.	Poor urban African Americans are at greater risk than poor rural African Americans. Factors pointing to increased mortality are smoking, decreased employment, and decreased social support. Most significant factor is smoking.
Gittelsohn et al. (1999).	What are tobacco use language beliefs and behaviors of adolescents across ethnic groups? What is the social, cultural and environmental context of decision making regarding cigarette brand use?	Qualitative: Individual interviews.	Maryland, Texas (urban) Alabama, "New Mexico (rural)" "no African American in NM sample.	African American, Hispanic, and White American adolescents.	Cigarette language varies by geography, not by gender or ethnic group. African American youths show a preference for mentholated cigarette brands because of taste that is "cool" "mellow" "not too strong." Calming effect of mentholated brands and health reasons were also cited among African Americans for brand choice. Brand choice was consistent with tobacco industry marketing. Youths were aware that advertising was targeted to their ethnic group. African American youths in particular, could describe the advertisements in great detail.
Greenlund et al. (1998).	What are community differences in cardiovascular disease risk factors among black and white young adults?	Cross-sectional comparison of 2 studies.	Urban: Birmingham, AL Chicago, IL Minneapolis, MN Oakland, CA Semi-rural: Bogalusa, LA	African American males and females. White American males and females.	Bogalusa and Minneapolis have the highest rates of smoking (35.9% and 39.7%). In Bogalusa, 26.1% of black females, 37.6% of white females, 36.1% of black males, and 39.4% of white males smoked. In Minneapolis, 48.2% of black females, 29.4% of white females, 53% of black males and 35.3% of white males smoke. In Bogalusa and Birmingham white women had higher smoking prevalence than black women, with no differences between white and black males. In all other sites smoking prevalence was greater in blacks than in whites for both males and females.

Author (Year)	Research Question	Type of Study	Geographic Setting(s)	Sample Population	Findings
Harrrell et al. (1998)	Does race, gender, socioeconomic status (SES), rural/urban residence or pubertal development affect smoking initiation?	Longitudinal prospective study of surveys.	Rural and urban schools in North Carolina.	African American and White American school children in grades 3-5.	Smoking initiation differed by race, rural/urban residence, SES, and pubertal development. Low SES, urban, and White American more likely to start smoking earlier. Children at higher pubertal stage are more likely to experiment with smoking.
Hueston et al. (2000).	What are prevention practices of African Americans with access to health care? What are differences in prevention practices between rural and urban African Americans with access to health care?	Cross-sectional.	Charlestown, SC (urban) and Denmark, SC (rural).	African American patients of 2 primary care centers—one rural and one urban.	Over both groups the only significant variable with respect to receiving care was income <10000/y. Low income was related to less use of preventative services ($p=.004$). Rural African Americans were not less likely to be current smokers, but were less likely to be counseled on smoking and exercise ($p=.003$).
Sarvela et al. (1997).	What are urban and rural comparisons of youth smoking behavior over time?	Secondary analysis of national data from 1976-1992.	Rural and urban subsamples of the U.S.	African American and White American high school seniors.	In 1979, rural and urban youths had similar smoking prevalence. Over time, a steady reduction in smoking prevalence among black females both urban and rural has occurred. Differences in male smoking based on urbanicity and race. Rural white males have 3.4 times the risk for smoking as do urban black males. Rural white males smoked more than any other group. Urban Black males smoked the least. Generally smoking declined among black youth, though trend data indicate that the decline in smoking among rural Black males reversed itself in 1992.
Schorling et al. (1997).	What is the impact of a church-based smoking cessation program designed for rural African Americans?	Quasi-experimental with comparison county.	2 rural Virginia counties.	African American Adults.	Sample at baseline: 88% church-attendees, 25.8% smoke, smokers less likely to have a phone. At 18 months follow up, cessation increased in intervention county but not significantly. Stage of change progressed significantly in intervention county.
Schorling et al. (1995).	Is the Transtheoretical Model appropriate for rural African Americans?	Cross-sectional.	2 rural Virginia counties.	African American adults.	Of sample, 51% in Precontemplation stage, 28% in Contemplation stage 17% in Preparation stage, 4% in Action stage. Many of the predictors of stage of change are the same as other populations.
Willems et al. (1997).	What is relationship between smoking and other cardiac risk factors?	Cross-sectional.	2 rural Virginia counties.	African American adults.	Gender differences were evident in relationship of smoking to other cardiac risk factors. Males smoking >10 cigarettes a day had significantly greater systolic blood pressure. Females smoking >10 cigarettes per day had lower BMI, increased total cholesterol.

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