

Healthy Kids: Impacting Children's Health in Rural Alabama

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Abstract

Significant changes have occurred in the healthcare community as a result of legislative decisions, the economic downturn, and long range effects of consistent annual reductions in public funding. Community partnerships have become vital to the existence of many areas of healthcare delivery, including the Alabama State Department of Education's School Health Services Program which is charged with the oversight of the health of students while they are enrolled in Alabama public schools. This program, along with many state agencies, continues to struggle in finding creative ways to stretch every education dollar in order to adjust to the impact of across the board budget cuts. A decrease in the number of registered nurses and the increasingly complex medical issues of students requiring individualized care have potentially jeopardized the ability of school nurses to adequately monitor and detect changes in the overall health status of children in the Alabama School Health Services Program. Nursing, Medical Laboratory Sciences, and Communication Disorder students from the College of Nursing and Health Sciences (CONHS) at Auburn University Montgomery (AUM) conducted health screenings for school age children in medically underserved counties of rural Alabama. The purpose of this article will be to discuss the collaboration and implementation of an interprofessional, community-based, service-learning project entitled Healthy Kids.

Keywords: Rural health, Interprofessional collaboration, Child health, Service learning

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The Alabama Rural Health Association (ARHA), the Alabama Department of Public Health Office of Primary Care and Rural Health (ADPH-OPCRH), and the National Organization of State Offices of Rural Health have explored several trends in healthcare which negatively impact the overall health of Alabama's rural population including, but not restricted to, limited availability of local healthcare providers, population growth, inadequate personal and public transportation options to healthcare facilities, and inadequate insurance coverage (ADPH OPCRH, n.d.a.). Furthermore, they report that rural populations have less annual income and less education than their urban contemporaries. According to the Alabama Department of Public Health (2015a), the health status of African-Americans in Alabama is not as favorable as the health status of Caucasian Alabamians as the mortality rate for African-Americans is 15% higher related to heart disease and 1.8 times higher from diabetes than for Caucasian Alabamians.

The ADPH-OPCRH (n.d.b.) evaluates communities in the state to determine Health Professional Shortage Areas (HPSA) and Medically Underserved Areas/Populations (MUA/P). If a deficiency is found when comparing the number of healthcare providers (physicians, dentists, and psychiatrists) to the entire population within a specific area, a designation of a Geographic HPSA is warranted. When the number of providers accepting Medicaid insurance or a Sliding Fee Scale is insufficient in comparison to the low-income population of a service area, the designation of a Low-Income HPSA is given. Within Alabama, 27 of 67 counties have been identified as Geographic *Primary Care* HPSAs, and 33 counties as Low-Income *Primary Care* HPSAs (ADPH-OPCRH, 2015a). Low-Income *Dental* HPSAs have been designated within 66 of Alabama's 67 counties and 43 counties have been identified as Geographic *Mental* HPSAs, with 23 counties as Low-Income *Mental* HPSAs (ADPH-OPCRH, 2015b, 2015c). Medically Underserved

Areas/Populations (MUA/Ps) indicate inadequate primary healthcare services as measured by the number of healthcare providers and certain health status indicators that effect a community's health, including cardiovascular diseases, nutrition and physical activity, obesity, oral health, diabetes, mental health and substance abuse (ADPH-OPCRH, n.d.b.). MUA/Ps have been categorized within each of Alabama's 67 counties – virtually the entire state (Figure 1).

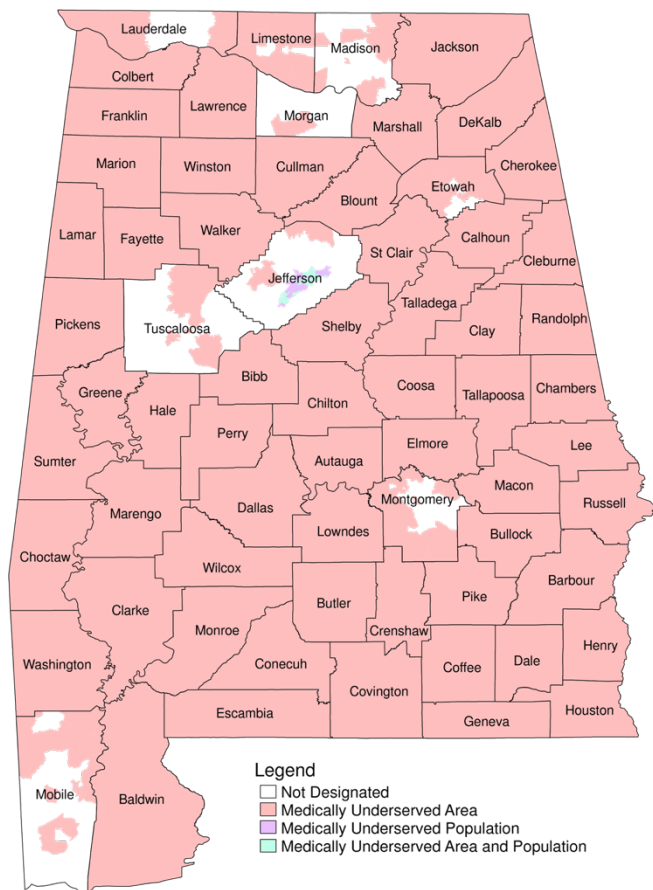


Figure 1. Medically Underserved Areas/Populations in Alabama. Alabama Department of Public Health, Office of Primary Care & Rural Health. (n.d.c.). Medically underserved areas/populations. Retrieved from <http://www.adph.org/ruralhealth/assets/MUAPMap.pdf> Permission to publish granted from ADPH-OPCRH)

The southern state of Alabama is primarily comprised of rural counties with 55 out of 67 being classified as “rural.” Rural is defined by ARHA (n.d.) by analyzing four variables within a county: (a) employment percentages in the local school system, (b) monetary value of agricultural production, (c) total population per square mile, and (d) population of the largest city in the county. Lowndes and Elmore Counties, both rural counties, have been designated as medically underserved areas with a scarcity of primary, dental, and mental healthcare providers (ADPH-OPCRH, n.d.c., 2015a, 2015b, 2015c). The United States Census Bureau (2015a) estimates 10,458 individuals reside in Lowndes County with 22.9% under the age of 18 years. Of this county’s population, 72.4% is African American compared to 13.3% in the United States (United States Census Bureau, 2015a). Between 2006 and 2011, 52.0% of Lowndes County’s population was considered under 200% of the poverty level (ARHA, 2013). The median household income is \$25,678 with 31.4% of residents living in poverty (United States Census Bureau, 2015a). Elmore County’s population is approximately 81,468 with 22.8% persons under 18 years old, and 21.3% of the county’s individuals being African American. The median household income is \$54,159 with 14.4% of persons living in poverty (United States Census Bureau, 2015b).

The prevalence of heart disease and diabetes in Alabama is significant (ADPH, 2010a; 2015a; ARHA, 2013; Johnson, Peterson, Dotherow, & Johnson, 2013). These non-communicable conditions can be directly linked to modifiable risk factors including a sedentary lifestyle, obesity, poor nutrition and smoking (ADPH, 2015b; Barlow, 2007; Mozaffarian et al., 2016; United States Department of Health and Human Services [USDHHS], National Institutes of Health [NIH], National Heart, Lung, and Blood Institute [NHLBI], 2005). When these risk factors, along with other key indicators of health outcomes, are examined, the health status of communities can be assessed (CDC, 2015a). Since 1926, heart disease has been the primary cause of death in Alabama

with rural counties having a higher rate of heart disease mortality than urban counties (ADPH, 2015a). Furthermore, the 15 counties with the highest heart disease mortality rates are all rural (ADPH, 2015a). According to the Centers for Disease Control and Prevention (CDC, n.d.a), 40.4 % of adult Alabamians were diagnosed with hypertension in 2013, 12.9% were diagnosed with diabetes in 2014, and 66.9% had weight classifications of either obese or overweight in 2014. Early health screenings, along with health promotion and disease prevention education, have proven to reduce the incidence of these diseases (ADPH, 2015b; Clark, 2008; Sidorov & Romney, 2016). If fewer children entered adulthood with the challenges posed by obesity, hypertension and/or diabetes, a significant improvement in overall health status could be more likely to be achieved (Dick & Ferguson, 2015; Kelly et al., 2013).

According to the Nurse Administrator of the Alabama School Health Services Program, a decrease in the number of registered nurses and the increasingly complex medical issues of students requiring individualized care have potentially jeopardized the ability of school nurses to adequately monitor and detect changes in the overall health status of children in Alabama's public schools (J. Ventress, personal communication, August 25, 2016). An ongoing community-academic partnership between neighboring county school systems and AUM's College of Nursing and Health Sciences has proven to be effective through the utilization of baccalaureate nursing and health sciences students to assist public school nurses in identifying children at risk for health issues. This endeavor offers a proactive approach to address the health disparities existing in the schoolchildren of rural Alabama (ADPH, 2010b) and supports the school-based interventions endorsed by the World Health Organization ([WHO], 2005). The purpose of this article is to discuss the collaboration and implementation of an interprofessional, community-based, service-learning project entitled *Healthy Kids*, which provides health screenings to school age children in

medically underserved counties of rural Alabama. The objectives for *Healthy Kids* are to (a) partner with schools in the rural Alabama counties to provide service-learning experiences that promote health and wellness, (b) assemble interprofessional student health teams to engage in health screenings for children in underserved communities, (c) provide individualized health education to the children being screened to promote health and prevent disease, and (d) identify health concerns that require follow-up attention and notify school officials.

Methods

Service Learning/Interprofessional Collaborative Practice

The American Association of Colleges of Nursing (AACN, 2009) advocates the use of service learning projects as an active learning strategy to promote the core competencies of baccalaureate education. These foundational competencies include critical thinking, creative problem solving, oral and written communication, application of evidence-based practice (EBP) concepts, health promotion teaching skills, and group dynamics. Through the development of service learning projects, faculty can structure clinical activities which incorporate the application of classroom theory and promote professional development while meeting community needs. Faculty in the College of Nursing and Health Sciences at AUM are committed to the integration of service learning experiences throughout the curriculum. Service learning activities provide the opportunity for students to apply classroom concepts during a structured activity while providing a service to the community (Mueller & Norton, 2005; National Service-Learning Clearinghouse, 2016). Effective service learning should utilize experiential learning, provide a structured activity that meets a community need, require reflection, and incorporate both the learner's needs and the community needs to yield positive outcomes for all involved parties (Schmidt & Brown, 2016). Course faculty developed the *Healthy Kids* program as an experiential activity and part of the

clinical requirements for a senior level baccalaureate community health nursing course. The project was designed to assist local school nurses with health screening needs while allowing student nurses the opportunity to develop their professional communication skills, hone their nursing assessment skills, further their understanding and application of classroom concepts such as growth and development and cognitive stages, as well as teach health and wellness concepts. In 2015, the *Healthy Kids* program was expanded to include students from the Medical Laboratory Sciences and Communication Disorders departments. This interprofessional approach is consistent with AUM's core values of community engagement, diversity and collaboration. Furthermore, this approach parallels the Interprofessional Collaborative Practice Competencies of values and ethics for interprofessional practice, roles and responsibilities, interprofessional communication, and teams and teamwork (Interprofessional Education Collaborative Expert Panel, 2011). The collaboration is also serving as a basis for research for the entire college while incorporating tenets of the Curriculum Development Guide for Health Professions Faculty (Association for Prevention Teaching and Research, 2014). The *Healthy Kids* program improves communication and physical assessment skills while allowing them to interact with children at different developmental levels. Students become aware of the more common health problems of children while identifying research opportunities to further investigate appropriate preventative approaches. Through this endeavor, students from the Nursing, Medical Laboratory Sciences and Communication Disorders departments have hands-on experience in working together to address healthcare needs and consider ways to enhance health maintenance within communities.

Results

The *Healthy Kids* project has impacted over 8,000 elementary and middle school-aged children in underserved communities of Lowndes and Elmore Counties in Alabama since 2008.

The screenings occurred at eight elementary schools and three middle schools involving numerous faculty and hundreds of health sciences students.

BMI referrals

When calculating BMI for groups up to 2000 children, the CDC has developed an effective and helpful Excel spreadsheet and database. The Children's BMI Tool for Schools (CDC, n.d.c) was utilized in calculating BMI and BMI-for-age percentiles using height, weight, sex, date of birth, and date of measurement. Calculating BMI within the pediatric population differs from the adult population in that BMI fluctuates with age and is gender specific (CDC, n.d.b). Therefore, the CDC (n.d.b) recommends the determination of BMI-for-age percentiles to be used in comparison among children of the same sex and age. The weight status categories reflected on the CDC growth charts for children and teens are *underweight*, *healthy weight*, *overweight*, and *obese* (CDC, n.d.b). For children aged 2-20 years of age, *underweight* is defined as a BMI less than the 5th percentile; *normal or healthy weight* is defined as a BMI at or above the 5th percentile and lower than the 85th percentile; *overweight* is defined as a BMI at or above the 85th percentile and less than the 95th percentile; and *obese* is defined as a BMI equal to or greater than the 95th percentile for children of the same age and sex (CDC, n.d.b). Over 800 abnormal findings of BMI-for-age percentiles have been reported to the school nurse coordinators in Lowndes and Elmore Counties since 2008. The referral criteria for BMI-for-age percentiles are based on the CDC's guidelines of weight status categories (CDC, n.d.b).

Dental referrals

Since 66 of Alabama's 67 counties have been identified as Low-Income Dental Health Professional Shortage Areas (ADPH-OPCRH, 2015b), the presence of dental issues among school children is not surprising. During the *Healthy Kids* screenings, a visual oral inspection is made to

detect unfilled cavities, discoloration of teeth, and red or swollen gums. The American Academy of Pediatric Dentistry (2013) and the WHO (2003) advocate dental screenings within the school setting to expedite timely detection and prompt referral for treatment. Through the *Healthy Kids* program, over 350 dental referrals have been noted.

Vision referral

Health professional availability, lack of insurance coverage, and affordability are barriers to receiving appropriate vision care, especially among rural populations and a partnership with community stakeholders is endorsed by the CDC (n.d.d) to promote the understanding of a relationship between vision and overall health. Snellen letter and symbol charts were used to evaluate visual acuity. A normal visual acuity evaluation is 20/20; findings of 20/40 or greater were noted as abnormal and referred for follow-up (Weber & Kelley, 2014a). There have been over 1,200 vision referrals provided to the school nurse coordinators.

Hearing referrals

The American Speech-Language-Hearing Association (n.d.) estimates that approximately 391,000 school-aged children in the United States have some form of hearing loss. Early detection is necessary to minimize the potential impact in speech development, cognitive development and social development (American Academy of Audiology [AAA], 2011; CDC, 2016). During the *Healthy Kids* screenings, evidence based guidelines are followed in pure tone screenings at 1000, 2000, and 4000 Hz to both ears (AAA, 2011), with over 130 hearing referrals having been made. Children who were unable to be conditioned or failed pure tone hearing screenings received otoscopy, tympanometry, and distortion product otoacoustic emissions testing to more accurately refer for appropriate follow up.

Glucose referrals

According to the American Diabetes Association ([ADA], 2016a), nearly 30 million people in the United States, including children, were living with diabetes in 2012 and 1.4 million more Americans are diagnosed each year. Among school-aged children, diabetes is one of the most common diseases encountered (National Diabetes Education Program [NDEP], 2014; Imperatore et al., 2012). Since comorbidities such as hypertension and obesity may accompany diabetes (ADA, 2016a, 2016b; Kelly et al., 2013; NDEP, 2014; USDHHS-NIH-NHLBI, 2005), a comprehensive *Healthy Kids* evaluation may reveal significant findings. Non-fasting blood glucose levels were obtained via finger stick and results were recorded on the health assessment form. Referral criterion was based on ADA (2016b) guidelines and Hockenberry and Wilson's (2009) pediatric recommendations. Over 300 abnormal blood glucose levels have been reported through the *Healthy Kids* program.

Vital sign/Assessment referrals

A brief head-to-toe examination included temperature, heart rate, respirations, blood pressure, and auscultation of heart and lung sounds. Oral temperatures were obtained from digital thermometers. Heart rate and respirations were manually calculated. Blood pressure readings were obtained with appropriate sized pediatric or adult cuffs and manual sphygmomanometers. Questionable readings were verified by nursing faculty. Evaluation of vital sign readings were based on Hockenberry and Wilson's (2009) pediatric referral criterion. More than 450 abnormal findings of vital signs or assessment results have been reported to the school nurse coordinators.

Other referrals

Included within the head-to-toe examination was a visual inspection of the scalp and skin for the presence of pediculosis capitis (head lice), Acanthosis Nigracans, and tinea corporis

(ringworm). Though not a serious health issue, head lice is easily transmittable from person to person or from contact with infested objects such as combs, brushes, or hats thus necessitating screenings within the school setting (McKinney, James, Murray, Nelson, & Ashwill, 2013; Turner, 2014). Acanthosis nigricans is a dermatological condition that most often affects body folds and creases such as the neck, armpits, and groin with the skin becoming darkened and thickened, having a velvety texture (Mayo Foundation for Medical Education and Research, 2016). Its presence has been associated with diabetes and indicates a referral for further follow up (American Academy of Dermatology, 2016; Weber & Kelley, 2014b). Tinea corporis is a fungal infection commonly found on the trunk, face, and extremities. It can be transmitted by person to person contact or by contact with contaminated items and requires medical treatment (McKinney, et al., 2013). Over 60 referrals for the above referenced findings have been made to the school nurse coordinators.

Conclusion

Community partnerships have become vital to all areas of healthcare delivery. The *Healthy Kids* outreach project serves the community by improving the overall health of public school students in rural counties of Alabama. By intervening early, healthy behaviors can be learned and the prevalence of adult health issues such as hypertension, cardiovascular disease, obesity, and diabetes can be decreased. It also will continue to solidify a community-academic partnership by allowing collegiate faculty to serve as a resource to the Alabama Department of Education, the individual school nurses, and the personnel of each public school. This interprofessional, community based, service-learning endeavor benefits underserved public school children, provides much needed assistance to public school nurses, assists undergraduate health sciences students in experiential activities, and promotes strategies of population-based healthcare.

The number of referrals, along with stakeholder requests, warrant continued participation in the *Healthy Kids* evaluations. Over 3,400 referrals have been made in Lowndes and Elmore counties with approximately 43% of school children identified as being at risk for health issues. As the school nurses provide follow-up attention to these identified health concerns, the overall health status of school children is improved; thereby improving the overall health of the rural populations in which they reside. Future studies documenting longitudinal data will allow for ongoing assessments of the health status among children residing in rural communities. Innovative approaches to rural healthcare, such as *Healthy Kids*, could be replicated to address the continuing challenges of vulnerable populations and to positively impact healthcare delivery systems. Additional collaborations among disciplines and communities should be explored to continue the application of evidence-based practice interventions in disease prevention and health promotion.

Finally, hundreds of health professional students have been impacted by the *Healthy Kids* screenings. They enjoy seeing faculty “in action” in the clinical area. The faculty members become part of the healthcare team as active learning takes place within the community. In addition, health professional students from three distinct disciplines work together in teams to assess the children, teach health principles and address health issues among rural communities. The collaboration of students fosters a sense of teamwork that will follow the students into the workplace after graduation. The ultimate result will be healthcare professionals who collaborate more effectively in meeting the healthcare needs of diverse populations.

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