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WHAT IS THE DIFFERENCE BETWEEN UTILIZATION OF THE ADVANCED PRACTICE NURSE AS A HEALTH CARE PROVIDER AND GEOGRAPHIC LOCATION OF RURAL COMMUNITY HEALTH CENTERS?

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By

Lisa K. Bigelow

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ABSTRACT

WHAT IS THE DIFFERENCE BETWEEN UTILIZATION OF THE ADVANCED PRACTICE NURSE AS A HEALTH CARE PROVIDER AND GEOGRAPHIC LOCATION OF RURAL COMMUNITY HEALTH CENTERS?

By

Lisa K. Bigelow

As the cost for health care continues to skyrocket and the number of primary and prenatal care providers declines for rural Americans, the number of rural residents without health care continues to increase. Utilizing advanced practice nurses (APNs) in rural Community Health Centers (CHCs) has been identified as a factor that will increase access to rural health care. This secondary analysis compared information about utilization of the APN by geographic location in four regions of the contiguous United States (US). The sample size consisted of 112 rural CHCs in the contiguous U.S. Executive directors of the rural CHCs completed a mailed survey. Results indicated that 91 of the 112 or 81% of the CHCs are utilizing APNs in their facilities across the U.S. While there was not a significant difference by geographic location and utilization of the APN as a health care provider, the results have positive implications for the APN as a provider in meeting the needs of rural residents.

DEDICATION

This work is not mine alone. I have been blessed with a wonderful family, supportive friends, colleagues, professors and very special mentors without whom this could not have been possible and would still be a distant dream. A part of all of you is in this work that has been done. Thank you for believing in me. This is dedicated to all who have touched my life and have helped me grow into the person I am and who I will be.

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I want to thank my colleagues and mentors: Vicki Chessin, MD, Gregg Stefanek, DO, and Jim Hall, MD, the gifts of your trust, knowledge, encouragement, unending support, and belief in me to achieve this goal still have me in awe. I truly could not imagine attempting and attaining this goals without your help.

None of this would have been possible without my family. To my mother and sister, Laurie, my hero and role model, thank you for your never ending love, faith, and support to complete this project. My deepest thanks to my husband, Jeff, my partner for life, for his support and willingness to be mom and dad for a while. Finally to my children, Kenny, Bethany, Kathryn, and Andrew, for your unconditional love and belief in my completion of this goal. You four are my greatest achievement and motivation to complete this project.

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INTRODUCTION

Background of the Problem

As the cost of health care continues to skyrocket and the number of primary care providers, including prenatal care providers, declines for rural Americans, the number of rural residents without health care continues to increase. Rural residency has been identified as a factor affecting access to prenatal care (Edelman & Menz, 1996; Kohler, 1994; Lucas & Rosenthal, 1992). A decrease in prenatal care providers in rural settings is compounded by providers not offering prenatal services due to changes in practice, lack of specialists in these rural settings, and physicians choosing to stop or reduce services (Kohler, 1994; McClanahan, 1992; Rivo & Satcher, 1993; Schleuning, 1991). The advanced practice nurse (APN) practicing within rural Community Health Centers (CHCs) has been identified as a factor which increases access to prenatal care for rural populations (Inglis & Kjervik, 1993; Kohler, 1994).

The APN has encountered difficulty at times, practicing in rural settings for various reasons, including physicians' and consumers' lack of knowledge about the APN role, and legal barriers (Brown & Grimes, 1995; Inglis & Kjervik, 1993; Kviz, Misner, & Vinson, 1983). As knowledge of the APN's role in health care increases, acceptance and utilization of the APN increases (Sabo & Louis, 1996). With the decline in rural prenatal care over the last decade (McClanahan, 1992; Schleuning, Rice, & Rosenblatt, 1991),

it is important to examine the utilization of the APN in the rural communities throughout the United States.

The purpose of this study was to determine if there were differences in APN utilization for health care in rural CHCs in the U.S. by geographic location. Utilization of the APN in separate geographic locations may vary due to the unique culture of the region, availability of health care based on distance or number of providers in a given area, and the scope of practice of the APN.

Community Health Centers (CHCs) provide comprehensive primary care services including prenatal care to medically underserved populations of which rural populations are a part. Increased accessibility to health care for rural residents can be addressed through the use of APNs in rural settings (Conway-Welch, 1991). Rural community health centers need, however, to be willing to utilize and accept APNs in the delivery of health and prenatal care services within their rural communities. Literature supports the use of APNs in rural areas (Inglis & Kjervik, 1993; Kviz et al., 1983; McGrath, 1990). Identifying the geographic location where APNs are employed could identify patterns of APN utilization and gaps where APNs could favorably impact accessibility of health care services in rural areas.

Statement of the Problem

Rural residency is often a barrier to accessing adequate prenatal care. Geographic location (Office of Technology Assessment [OTA], 1990; Public Health Service, 1990) and shortage of providers (Kohrs & Mainuos, 1996) are

factors with which rural citizens contend when seeking prenatal care in their rural communities. There are more than 61 million people living in rural settings (U.S. Census Bureau, 1996). Availability of prenatal care providers in rural areas has declined (Bamberg, Malvey, Wainright, Fottler, & Joiner, 1994; Rivo & Satcher, 1993). One solution to increase availability of prenatal care providers in rural areas is through the use of non-physician providers, more specifically the use of APNs. Advanced Practice Nurses are frequently more willing to work in underserved areas and are less costly providers of prenatal care (Buppert, 1995; Inglis & Kjervik, 1993; Mahoney, 1988; McGrath, 1990; OTA, 1990; Sekscenski, Sansom, Bazell, Salmon, & Mullen, 1994; Shi, Samuels, Ricketts, & Konrad, 1994). Utilization of APNs in rural areas has increased prenatal care utilization (Levine, Orr, Sheatsley, Lohr, & Brodie, 1978; OTA, 1990; Shi et al., 1994). APNs have been shown to provide quality prenatal care equivalent to physician care with equivalent outcomes (McGrath, 1990). However, some areas of the country are not utilizing APNs to the fullest extent (Buppert, 1995). Some of the influencing factors of utilization of the APN include: reimbursement issues, scope of practice of the APN in a particular state or region of the US, and whether or not the APN has prescriptive privileges.

Examining utilization of the APN by geographic location is relevant due to regional differences which might account for variations in the utilization of APNs. Regional

differences include availability of health care providers, scope of practice of the APN, insurance coverage, access to health care, population, income, health status, employment status, type of industry, and agricultural area. Analysis by region will offer information about the needs of the rural regional populations. The information gathered may provide insight about utilization of the APN.

Access to prenatal care is a national issue with growing concern over the decreasing number of prenatal care providers in rural areas. The APN as a health care provider can fill the gap for the prenatal care needs in rural communities. There is limited research on utilization of health care providers by geographic location. This study will provide descriptive information about the utilization patterns of APNs in health care by geographic location in rural CHCs across the United States. This will provide vital information to health planners and policy makers to help promote increased utilization of the APN as health care providers, including prenatal care, in rural areas.

This study examined utilization of APNs as health care providers in rural CHCs by geographic location. A secondary analysis using primary data collected by Omar, Schiffman, and Hogan (1997) was done. In the primary study, consenting executive directors of rural CHCs were asked to complete the Partnership for Rural Prenatal Care Delivery Survey. The completed survey provided information about the type of health care providers at the rural CHCs, as well as current staff profiles.

Research Question

Are there proportional differences by geographic location of rural community health centers and utilization of the advanced practice nurse for health care?

Hypothesis

There will be a difference in utilization of the APN as a health care provider in rural CHCs by geographic location.

Conceptual Framework

Conceptual Definitions of Study Variables

This section includes the conceptual definitions of the study variables, followed by the conceptual model used in this study. Starfield's Health Services Model (1992) was used and is described. The concepts, utilization of the APN as a health care provider and geographic location of rural CHCs are conceptually defined.

Utilization of the APN as a Health Care Provider

An APN, or advanced practice nurse, is defined as either a certified nurse midwife or nurse practitioner. Advanced practice nurses can practice in a variety of settings within the health care arena, including rural CHCs. Nurse practitioners and certified nurse midwives more often practice in primary care settings providing prenatal and primary care (Inglis & Kjervik, 1993; OTA, 1990; Towers, 1990). Advanced practice nurses have a minimum of a Bachelors in Nursing degree which provides them with basic knowledge and skills. Usually the APN has a Masters degree. Advanced practice nurses are licensed, certified and can work independently or collaboratively with other members of

the health care team. Licensure of the APN is through a state license to practice as a registered nurse followed by a national certification to practice as an advanced practice nurse. Advanced practice nurses are educated to manage acute and chronic health problems, with a focus on preventative and health maintenance care, and psychosocial issues affecting the patients' health (Inglis & Kjervik, 1993). The APN as a prenatal care provider for low risk pregnant women fits within the scope of the APN's practice.

For the purposes of this study, utilization of the APN was defined as the employment of the APN in rural CHCs for the provision of health care to the community being serviced by the rural CHC.

Geographic Location of Rural CHCs

Geographic location of rural CHCs was defined for the use of this study, by state and/or region of the United States defined by the US Census Bureau (See Figure 1). The four regions in the U.S. that were utilized in this study were: West, Mid-West, South, and North-East. Each region has it's own characteristics related to access to health care, rural status, health care coverage, poverty status, health status, and practice environment for APNs. Each are described by region. The West has 11 contiguous states, Hawaii and Alaska are also included in this region by the Census Bureau, although these two states were not included in this study. This region can be mountainous, desert, or rich farm land with a lot of open space and sparsely populated areas. With exception of the major cities, the

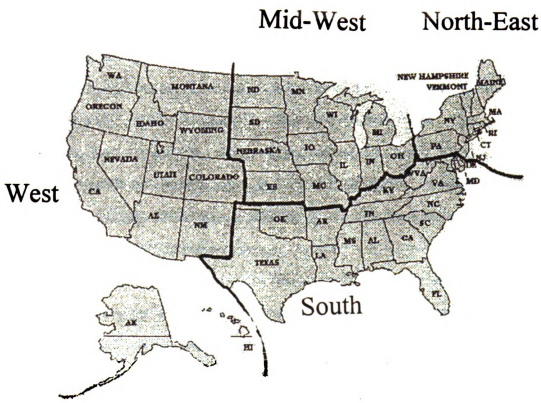

Figure 1. U.S. Census Bureau Regions

Western region's livelihood stems from ranching, tourism, and mining. This region has 34% of the nation's total population and is the most urban of the four regions with only 14% rural population (U.S. Census Bureau, 1997). However, a regional average population density of 39 people per square mile causes 91% of the counties in this region to be designated as Medically Underserved Areas (MUA) and/or Health Provider Shortage Areas (HPSA) in 1996 (Bureau of Primary Health Care [BPHC], 1996). More than 71% of the region's total counties are non-metropolitan MUA and/or HPSA in this region (BPHC, 1996). Eleven percent of the population was over 65, 29% were under 18, and 60% were between 18 and 64 years of age (BPHC, 1996). Population by age across the nation was similarly distributed and varied slightly for all four regions.

Of the four regions, the West had the second highest percent of people without access to primary care at 11% (above the national average of 10%) and the lowest percent of family physicians practicing primary care by region at 21% (Morgan, Morgan, & Uhlig, 1998). This region was also found, in comparison to the other three regions, to have 40% of primary physicians practicing prenatal care but the lowest percent of women entering prenatal care in the first trimester at 72% (below the national average of 82%) (Morgan et al., 1998). These statistics indicate the Western region has significant gaps in health care. These gaps are seen in relationship to availability of providers and the distribution of population density throughout the region.

The Western region was also found to have the second highest percent of persons not covered by insurance at 16% (above the national average of 15%), with the lowest percent of Medicare recipients at 13% (below the national average of 14%), and second lowest percentage of Medicaid recipients at 11% (below the national average of 13%) in comparison to the other regions (Morgan et al., 1998). The Western region was found to have the second highest percent of people below poverty level at 15% and the second lowest median household income at $33,730 (below the national average of $33,877) (Morgan et al., 1998). This region tends to be relatively poor, lacking access to health care, and not largely dependent on public insurance in comparison to the other three regions of the US.

The health of the Western region in comparison to the rest of the nation, however, was superior. Assessment of health was determined by reviewing state statistics for death rates related to disease, then averaged by region (Morgan et al., 1998; U.S. Census Bureau, 1997). The Western region was below the national average for the majority of diseases reviewed including, heart disease, cancer, cerebrovascular accidents, diabetes, HIV, and homicide (Morgan et al., 1998). Diseases that were above the national average for the western region were: motor vehicle accidents, accidents/adverse effects, chronic lung disease, and suicide (Morgan et al., 1998).

The practice environment in the Western region for APNs is positive. Legal authority of the APN in the Western

region is the best of the four regions with 64% of APNs able to practice independently and 91% able to practice independently or with supervision (Pearson, 1997). The scope of practice is determined by the Boards of Nursing within the states of the practicing APNs. Prescriptive authority of the APN is ranked second of the four regions with 64% (46% prescribing controlled substances) of APNs being able to prescribe independently, and 100% of the APNs within the region able to prescribe either with supervision or independently (Pearson, 1997).

The Mid-Western region consists of 12 states, including the Great Lakes area (U.S. Census Bureau, 1996). This area has a combination of flat lands and rolling hills, with access to the ocean through the Great Lakes. The sources of livelihood for this region includes a diverse and unique combination of industry and agriculture, including shipping and farming. This region also has both the Ohio and Mississippi rivers bordering for waterway access to the oceans. There is a combination of large metropolitan areas and more densely populated areas than the West and sparsely populated rural areas of farm land (Encarta, 1996). The Mid-Western region has 23% of the nation's population and is more rural at 28% than the West and the North-East (U.S. Census Bureau, 1997). An average of 81% of the counties in this region are MUS and/or HPSA, this is due to an average population density of 94 people per square mile (BPHC, 1996) demonstrating the ruralness of this region. Thirteen percent of the Mid-Western regions' population is over 65,

28% are under 18, and 59% are between 18 and 64 years of age (BPHC, 1996), indicating a slightly higher elderly rate than the West, but marginally lower than the South and the North-East.

Access to primary care in the Mid-Western region was at 10% ranking second in the four regions and third with 23% of the family physicians practicing in primary care across the nation (Morgan et al., 1998). The Mid-West ranks first for family physicians practicing obstetrics at 48% and is the second ranked region for women entering prenatal care in the first trimester at 84%. The Mid-Western region has greater access to health care and better access to prenatal care.

The Mid-Western region ranked the lowest of the uninsured of the four at 10% with the lowest percent of Medicaid recipients at 10% (below the national average of 13%) and the second highest percent of Medicare recipients at 15% (above the national average of 14%) (Morgan et al., 1998). The Mid-Western region had the lowest percent of people under the poverty level at 11% (below the national average of 14%) and a median household income of $34,495 (above the national average of $33,877) ranking second of the four regions (Morgan et al., 1998). This region is relatively wealthy, with good access to health care, more likely to be insured, and not as dependent on public insurance, but with more Medicare utilization.

The general health status of the Mid-Western region is poorer than the West and North-East, but comparable to, if not slightly better than the South. The Mid-Western region

was higher than the national average for all diseases: heart disease, cancer, accidents/adverse effects, MVAs, chronic lung disease, and diabetes, except HIV, and with less violence than the national average for suicide and homicide (Morgan et al., 1998). The higher than national average statistics for disease indicate more chronic conditions seen in the elderly, those with sedentary lifestyles and stress related conditions.

The Mid-Western region has the least desirable practice environment for APNs of the four regions. The APN has the lowest legal authority in this region with 42% of the APNs able to practice independently; however, 92% of APNs practicing have prescriptive authority in this region (Pearson, 1997). Of the APNs with prescriptive privileges, 73% have controlled substances privileges (Pearson, 1997). The APNs in one state in this region do not have any prescriptive privileges (Pearson, 1997).

The South has a unique culturally diverse region with 16 states bordering the Gulf of Mexico and the Atlantic Ocean (U.S. Census Bureau, 1996). The culture of this region varies from the French Creole, to the mountain people of the Smoky Mountains. Livelihood in this region includes oil industry, harvesting and producing; agricultural sources include; cotton, tobacco, and citrus fruit. Tourism and fishing industry are significant sources for the coastal states and Florida. There is a range of densely populated areas to sparsely populated areas especially in the mountainous western portion of the region. The Southern

region has 22% of the nation's population and is the most rural of the regions with 31% of the regions population being rural (U.S. Census Bureau, 1997). The average population density of this region is 142 people per square mile. This region has the most states, with 90% of the counties designated MUA and/or HPSA. More than 69% of the total counties are non-metropolitan MUA and/or HPSA in this region (BPHC, 1996). Almost 14% of the Southern region's population is over 65, 27% are under 18, and 60% are between 18 and 64 years of age (BPHC, 1996). The Southern region has the second highest percent of people over 65 of the four regions.

Health care in the Southern region is the bleakest of the four regions, with the exception of 31% of physicians in primary care practicing in the South (Morgan et al., 1998). The South has the highest percent of persons without access to primary care at 13%, the lowest percent of family physicians providing prenatal care at 17% (far below the national average of 30%), and the second lowest percent of women initiating prenatal care in the first trimester at 82% (Morgan et al., 1998). These statistics strongly indicate gaps in primary care for the Southern region through the lack of prenatal care providers and access to health care. The large rural population in the region would experience an accentuation of the health care problems identified above and greater gaps in care.

The Southern region also has the highest percent of uninsured people at 17%, the highest percent of Medicaid

recipient at 15%, and the second lowest percent of Medicare recipients in the nation at 15% (Morgan et al., 1998). The Southern region has the highest percent of people below the poverty level at 16% and the lowest median household income of the four regions at $30,339 (below the national average of $33,877)(Morgan et al., 1998). This region has the highest dependency on public insurance and the greatest poverty of the four regions.

The health of the Southern region is also the lowest in comparison to the other regions. The Southern region was found to be higher than the national average in all diseases reviewed, except HIV (i.e., heart disease, cancer, CVA, accident/adverse effects, MVA, chronic lung disease, diabetes), and a greater incidence of violence being higher than the national average in suicide and homicide percentages. These outcomes are results of poor access to primary and prenatal care, less availability of health insurance, and poverty.

The major health problems of this region are chronic diseases that have not been attended due to lack of access to care, basic primary care, mental health, and prenatal care. The Southern region exemplifies the rural health picture when needs are not being met. Although this region has the highest percent of primary care physicians in the nation, the South is the largest and with greater divergence between the rural and urban areas in the four regions. Health status of this region is better measured by the greater percentage in lack of access to health care and the

poorer health outcomes of the region in comparison to the other regions.

The practice environment for the APN in the Southern region is ranked third in the four regions, behind the West and the North-East, but better than in the Mid-West. The legal authority of the APN in the Southern region has 31% of the APNs able to practice independently and 75% able to practice with supervision or independently with scope of practice being determined by the states' Board of Nursing. Prescription authority in this region is 100% independent or supervised, with 66% able to prescribe controlled substances, and 19% are independent prescribers. While this region does have more limitations for the APN, it is less restrictive than the Mid-West. The Southern region has a great need for health care providers and the APN would be utilized in this region readily based on the needs identified here for access to primary and prenatal care, and indigent care.

The North-Eastern region consists of nine states that are densely populated and highly industrial (U.S. Census Bureau, 1996). The sources of livelihood are mostly fishing, shipping, and manufacturing. Of the four regions, the North-Eastern region has 19% of the nation's population and the second lowest rural population at 21% (Morgan et al., 1998). This region is the most densely populated at 453 people per square mile. However, 88% of the counties in the North-East region are MUA and/or HPSA indicating a high number of areas that are rural in this region (BPHC, 1996).

An example of the diversity in population in this region is comparing New York City or Boston which are both densely populated and with cutting edge technology for health care to up-state New York or Western Massachusetts, very rural, sparsely populated areas, with limited access to health care due to the distance and availability of health care providers for these communities. The contrast of these rural and urban areas are extremes found within same states are characteristic for this region. Fourteen percent of the population of this region is over 65, with 25% being under 18, and 61% between 18 and 64 years of age (BPHC, 1996). In comparison to the other three regions, the North-East has a slightly higher elderly population and adult population.

The North-East has the greatest access to health care of the four regions with the lowest percentage of people without access to health care at 8% and the second highest percent of physicians in primary care at 25% in the nation (Morgan et al., 1998). Although the percent of family physicians providing prenatal care in this region ranks third at 27, the women entering prenatal care in the first trimester is the highest of the four regions at 86% (Morgan et al., 1998). These statistics indicate less gaps in health care in comparison to the other three regions. However, gaps are present and would more readily be seen in the rural communities of this region that may be overlooked due to population density and health care availability found in parts of this region.

The North-Eastern region has the second lowest percent of uninsured people in the nation at 13%, the highest percent of Medicare recipients at 16%, and the second highest percent of Medicaid recipients at 12% (Morgan et al., 1998). This region has the second lowest percent of people below the poverty level at 13% and the highest median household income at $36,945 (above the national average of $33,877). This region tends to be wealthier, more likely to be insured, with good access to health care, and more dependent on public insurance.

The health status of the North-Eastern region is mixed and could be classified as, not as bad as the South, but not as good as the West, and slightly better than the Mid-West. In the North-Eastern region the diseases that were higher than the national average were heart disease, cancer, diabetes, and HIV (Morgan et al., 1998). This region was lower than the national average for CVA, accidents/adverse effects, MVAs, and chronic lung disease (Morgan et al., 1998). Surprisingly, this region was lowest for violence of the four regions, both suicide (9%) and homicide (6%) were below the national average at 12% and 10% respectively (Morgan et al., 1998). Major health problems of this region would include, stress related health problems, HIV and AIDS related complexes. Health promotion, disease prevention, HIV and AIDS clients, and elder care would be utilized by this regions population. The rural issues of this region may include more HIV/AIDS care than in other regions and prenatal care.

The practice environment for the APN is excellent in the North-East. Legal authority of the APN in the North-Eastern region has 67% of APNs practicing independently and 89% either independent or supervised privileges with the states' Boards of Nursing defining the scope of practice (Pearson, 1997). Prescriptive authority of the APN in the North-Eastern region is also highest of the four regions at 100% having either independent or supervised privileges, including controlled substances (89%) (Pearson, 1997). Only one state, New Jersey, is without prescriptive privileges for controlled substances (Pearson, 1997). Although the practice environment is excellent, utilization of the APN may be lower in this region due to the larger percentage of primary physicians practicing and the smaller size of this region, greater access to health care, more insured and wealthy population. However, there is great value for the APN in this region and is seen through the development of an excellent practice environment for the APN. The contrasting extreme rural communities have need for APNs to fulfill the gaps in health care.

Rural health care needs to be addressed. Nearly one in four persons live in rural communities across the United States (U.S. Census Bureau, 1997). All four regions experience lack of access to health care, with three of the four regions above the national average of 10%; the North-East is the only region below the national average at 8% of the population without access to health care (Morgan et al., 1998). Nationally, less than half of the family physicians

are providing prenatal care. First trimester initiation of prenatal care is 82% nationally, indicating almost 20% of women in the US are entering prenatal care late (Morgan et al., 1998). The regions with the most rural populations (West and South) have the most people below poverty level and are the least insured (Morgan et al., 1998). Utilization of the APN in these communities can narrow the gaps in health care for rural populations.

Rural community health centers. Rural CHCs were developed in the 1960's as part of the War on Poverty issues of the Federal Government. CHCs are responsible for providing primary health care to those with limited income or access to health care. The philosophy of the CHC is to service everyone within a designated area, regardless of economic status, providing quality basic health care. Rural CHCs are organized operations that provide comprehensive, coordinated, preventative and community based primary health care services, including prenatal care, to rural clients. The CHCs are characteristically found in medically underserved areas and/or health provider shortage areas designated by the Federal Government across the U.S. Community Health Centers are located in both urban and rural areas.

Definition of Rural. The literature defines rural as the geographic area and/or the density of the population. Various definitions exist in the literature for rural. Some sources indicate ruralness is based on number of people per square mile, population of less than 50,000, populations

less than 10,000, or based on designation of metropolitan statistical area or non-metropolitan statistical area (BPHC, 1996; Goldsmith et al., 1993; U.S. Census Bureau, 1996). Rural areas are characteristically sparsely populated, and usually, distanced from metropolitan areas and underserved due to geographic location and availability of providers (BPHC, 1996; Goldsmith et al., 1993; U.S. Census Bureau, 1996).

For the purpose of this study, geographic location of rural CHC was defined as the four regions in the US (West, Mid-West, South and North-East) where rural CHCs are located and which represent characteristically diverse rural regions.

Conceptual Framework by Starfield

The conceptual framework for this study was adapted from Starfield's Health Services Model (1992) (See Figure 2). Starfield (1992) defines primary care as the first contact with the health system offering continuous, longitudinal, comprehensive, and coordinated health care. This basic health care service should be available equally to every person in the U.S. The provision of primary care can maximize the health status of the individual through health promotion, disease prevention, and treatment of disease or illness. This framework is used to measure the attainment of primary care. Every health system has three components: structure, process, and outcome. Starfield describes the approach for measuring primary care, including

A Basis for Evaluation of Rural Health Care

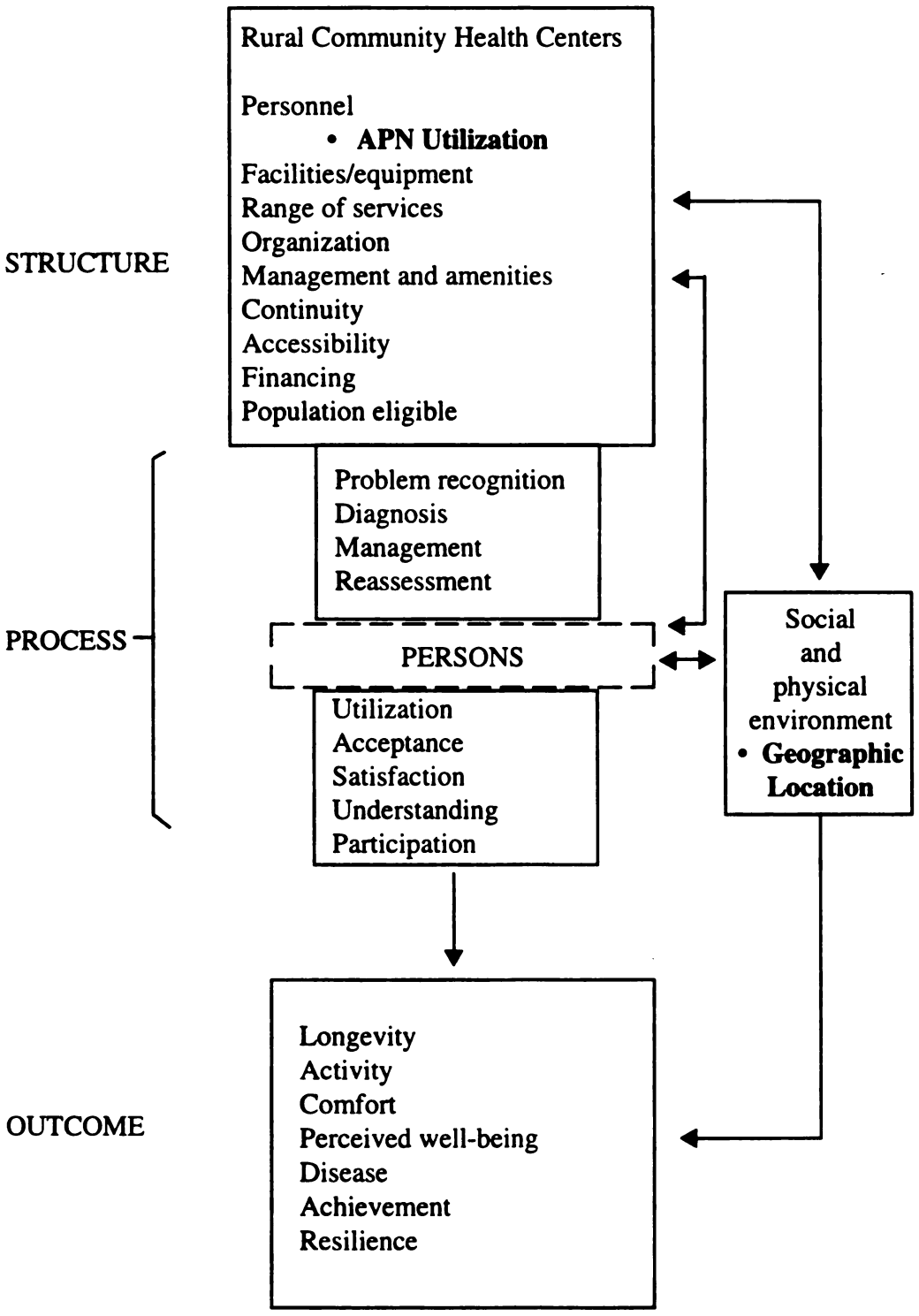

Figure 2. An Adapted Conceptual Framework for Evaluation for Rural Health Care from Starfield's Model of Health Services System. Source: Starfield, 1992.

prenatal care, based on structure and process in the health services systems.

Structure of care is the actual resources (Starfield, 1992) utilized in a health services system for delivery of care: facilities and equipment, range of services organization, management and amenities, continuity, accessibility, financing, and population eligible. The structure of a rural CHC would include all of the stated resources. In this study, the focus was on personnel and whether APNs were utilized in rural CHCs. Personnel is defined by Starfield as the people involved in providing services in the health care system.

The social and physical environment also affects utilization of the APN. Rural CHCs are designed to meet the needs of medically underserved and health provider shortage areas across the U.S. The physical environment, or geographic location, potentially affects the outcome of health in the health services system described by Starfield. The geographic location can affect utilization of the APN based on the distribution and needs of the population of the specific rural region or location. The four regions offer diverse and specific health care needs based on the cultural, industrial, and geographic layout of each region as well as each region's own unique characteristics related to access to health care, rural status, health care coverage, poverty status, health status and practice environment for APNs. Geographic location of rural CHCs throughout the U.S., as

part of the physical environment, will offer information about utilization patterns of APNs in the four regions.

Although process of care is not addressed in this study, it is important to understand how it fits into the health services system. The process of care is the activities of the provider and the client during the services. The client decides whether or not to utilize the services of the health care system. The APN determines through a complete health history and physical assessment, the problem affecting the client, diagnoses, formulates and implements a management plan of care with the client and follows with reassessment to evaluate the outcome of the plan of care and revises the plan accordingly. Once the client utilizes the services, a decision is made by the client as to satisfaction with the collaborative plan of care and acceptance of this care based on the client's understanding of the problem and plan. The client's participation in the plan of care is the key for the primary care system to function effectively.

While outcome of care is not the focus of this study, it is important to see how this relates to the health services system. Outcomes are the direct or indirect results of the activities of the provider, services provided to the client, and how the client chooses to participate in the services and recommendations offered by the provider. Advanced practice nurses are capable of providing quality care equivalent to physician providers with equivalent outcomes (Shi et al., 1994).

Review of Literature

This section examines the empirical literature related to the variables under study, geographic location of rural CHCs and utilization of the APN. There is relatively little empirical literature relevant to utilization of the APN associated with geographic location in general and scant literature associated with geographic location of rural CHCs specifically. Some studies have been done on utilization of the APN and only a few studies on geographic distribution of the APN. Utilization by geographic location allows the unique health care needs of rural communities to be addressed and met. Barriers to utilizing APNs in rural communities need to be analyzed. The ability to positively influence political leaders with accurate data based on geographic location would be highly valued.

Geographic Location of Rural CHCs

A very limited number of empirical studies have been done which examined APN utilization and geographic location; no recent studies were found in the literature. Most of the studies focused on the education, barriers to practicing and recruitment of APNs to rural locations or areas of high need for primary care providers (Anderson, Gilliss, & Yoder, 1996; Bigbee, 1992; Inglis & Kjervik, 1993; Wirth, 1977). The missing piece to geographic location is what is currently happening across the nation with actual APN utilization.

Wirth et al. (1977) did an analysis of graduates from a pediatric nurse practitioner program (PNP) (n=50) at a university in Missouri. The purpose of the study was to

determine the geographic distribution of the graduates and the factors affecting their choice of location. Of the 50 graduates, 41% stated a preference for location (rural or urban) as a motivating factor for employment. This motivating factor was the second most frequent choice, with the opportunity to work with a specific institution being first. Limitations of this study include the population of a specialty group, and the small sample size from one area of the country limiting the generalizablity of the study. The method of the survey was not identified, nor were the locations of the PNPs practicing outside the state. The study did not offer information about utilization of the PNPs by geographic location and is more than 20 years old.

Goldberg, Hafferty, and Fowkes (1984) studied the distribution of APNs and PAs in the state of California with the influence of the type of clinical experience during the education process. The population was graduates (n=172) from a Primary Care Association Program. Based on the clinical location of the student, "community graduates" (Graduates from Stanford University who had their clinical experience in one of five outlying training sites rather than in the San Francisco Bay area) were twice as likely to practice "outside the San Francisco Bay area" and in communities with a population of less than 10,000 when compared to the university graduates with clinical experience in the San Francisco Bay area. The focus of this study was on the education and recruitment away from the university

setting to increase the supply of practitioners to the outlying areas.

Limitations of this study include the dated study and it is limited to one population in a small area limiting the generalizablity. Details about the rural community APN utilization were not addressed in this study, but could have been helpful in developing strategies to meet the needs of these rural populations.

Utilization of the APN

Empirical literature about utilization of the APN focuses on the perception of tasks the APN is able to perform to physicians' satisfaction (Levine et al., 1978; Schaffner, Ludwig-Beymer & Wiggins, 1995), the presence or absence of barriers to practice environments affecting utilization of the APN (Sekscenski et al., 1994), and descriptive data about the types of APN practices currently utilized in different settings (Schaffner et al., 1995; Shi et al., 1994). Utilization of the APN as a prenatal care provider has not been studied in the recent literature. Some possible explanations for the paucity may be the focus of research in the late 1970's was on process rather than structure of prenatal care in the health care system (Levine et al., 1978; Wirth et al., 1977). The primary APN utilized in the late 1970's and early 1980's for prenatal care was the certified nurse midwife with research more focused on comparison of services to the physician for low risk populations. Five studies are reviewed which focus on APN utilization.

Sabo and Louis (1996) surveyed physicians (n=211), APNs (n=76), and nurse administrators (n=44) in Nevada about their willingness to hire APNs. The study measured willingness to hire, not actual numbers of APNs currently employed. The data was compared to 1990 data. There was an increase in all three categories of health care professionals in their willingness to hire APNs. The family APN was the most desired and needed specialty over all types of APNs and chosen by all three health care professional groups as their first or second choice for willingness to hire and need to hire APNs. A limitation of this study is lack of generalizability because the sample population was limited to one state.

A study of large health systems (n=26) across the U.S. were surveyed by phone to explore the utilization of the APN (Schaffner et al., 1995). These phone interviews were done with a Vice President of Nursing in the hospital associated with a clinic or series of clinics. The second phone survey was with a physician administrator in the clinics associated with the hospital. Although this study was across 13 states, there was no separation between rural and urban. The study referred to data about the increasing amount of primary care being provided by APNs, although no data was provided to support this statement. Eighty percent (n=21) of the health systems interviewed were utilizing APNs in the clinics. Approximately 16% (n=4) of the systems reported an increased use of APNs for rural primary care. All systems surveyed were expanding the roles of the APN to be better utilized.

This study indicated utilization of the APN across 13 states is increasing and will continue to increase based on the types of insurance (managed care), knowledge, and experience with the APN as a provider.

Morgan (1993) set out to determine how many states distinguish and count nurse practitioners in each state. This data has substantial value since no other information of this data has been brought together in recent literature. A phone survey was conducted with state boards of nursing across the United States. Specific questions about RNs in general, certification requirements, the number of nationally certified APNs and the number of APNs in the state. Survey findings indicate only slightly more than 1% of the licensed RNs in 34 states were APNs. It should be noted 16 states do not distinguish between APNs and RNs in their state. Interestingly, the survey results showed that the Southwest and Western regions had between one and three percent licensed APNs and the Mid-west and Southern regions had less than one percent licensed APNs.

An early study giving the historical perspective of work done analyzing the role of the APN in primary care (Levine et al., 1978) looked at the perceptions of both the APN (n=58) and the physicians (n=46) working with the APN of how well tasks were completed. The information gathered included demographics of types of patients seen by the APN and primary reason for patient visits to the APN. No information was provided about actual utilization or location of APNs. Reasons for employing (utilization) were given. Twenty-three

percent (n=11) of physicians reported the number one reason for adding an APN was the practice population had grown to the point of needing another practitioner.

Sekscenski (1994) did a nation wide study looking at the supply of APNs and practice environments. Of areas with provider shortages, 75% (n=13 of 17 states) were rural, however, no definition was given for "rural". The information gathered included estimated number of practitioners-to-population ratio for each state and national mean. The conclusions identified a significantly higher number of practitioners to populations ratio with positive practice environments. Positive environments were described as practices where APNs have greater autonomy through legal status, reimbursement, and prescriptive authority.

Geographic Location of Rural CHCs and Utilization of APNs

The most relevant study was a comparative study of rural/urban non-physician providers in community and migrant health centers (C/MHCs) (Shi et al., 1994). A survey (n=243 rural and n=140 urban) of clinic administrators was sent and covered issues about current staffing average length of employment of non-physician providers, 3-year projection of staffing needs, training experience with non-physician providers, and the region where the C/MHCs were located. The results of this survey reported fewer APNs in rural settings due to smaller number of providers needed compared to the urban settings. Some interesting statistics reported in this study were the percent of centers affiliated with training programs for APNs at 37%, the percent of centers "interested"

in participating in training APNs was 71%, and the percent of centers currently supervising student NPs was 32%. The centers actually participating in programs either through training or supervising, in other words utilizing APNs, were similar, whereas, the percent of interested centers, but not utilizing APNs, was doubled compared to the participating groups.

There were empirical data in this study on numbers of APNs currently employed in C/MHCs. An average of 1.0 APN was employed in rural C/MHCs with 2 APN vacancies per community. Advanced practice nurses were more likely to be employed in the South and West in this study. These findings were similar in another study (Morgan, 1993) for the West, but not for the South.

In summary, the literature reviewed found general support for the APN (Sabo & Louis, 1996; Schaffner et al., 1995; Shi et al., 1994). Information about geographic location and utilization of the APN indicates greater utilization in the West by both sources (Morgan, 1993; Shi et al., 1994) and in the South (Shi et al., 1994). The APN is not utilized as much in the Mid-West and North-East (Morgan, 1993; Shi et al., 1994). The literature reviewed overall, was consistent in the acceptance and utilization of the APN from a small sample perspective in individual specialty groups to the diversity of CHCs across the US both urban and rural. One of the most consistent factors throughout was the literature was the future utilization and indications of utilization. The APN was noted in several studies (Sabo &

Louis, 1996; Schaffner et al., 1995; Sekscenski, 1994; Shi et al., 1994) to be expanding roles and increasing numbers.

Critique of Literature Review

Critique of the literature demonstrates some empirical work has been done on utilization of the APN, with only three studies reporting the importance of geographic location in relationship to actual utilization of the APN (Goldberg et al., 1984; Shi et al., 1994; Wirth et al., 1977). The majority of the studies analyzed others' perceptions of how well the APN performs tasks (Levine, 1978), descriptive information about potential utilization of the APN (Morgan, 1993; Sabo & Louis, 1996; Schaffner, 1995), and factors or environments which affect the APN's ability to practice (Sekscenski, 1994).

Two major limitations of the utilization studies were the small samples and the dated studies (Goldberg et al., 1984; Levine et al., 1978; Sabo & Louis, 1996; Wirth et al., 1978). Only three studies included national information limiting the generalizability of the work done (Schaffner et al., 1995; Sekscenski, 1994; Shi et al., 1994). Many of the utilization studies were done with one specialty group or a small sample of limited population, without the specification of rural or urban areas (Sabo & Louis, 1996; Wirth et al., 1977).

An important consideration when reviewing and interpreting rural health research is how rural health has been defined. Each rural community has unique features that determine the areas of health care needs, therefore, it is

not appropriate to generalize that all rural areas have the same needs across the United States (Farmer et al.,1993). The use of non-metropolitan areas compared to metropolitan areas is too broad and does not capture the essence or characteristics that make rural populations throughout the United States vulnerable (Edelman & Menz, 1996; Rivo & Satcher, 1993; Sekscenski, 1996). The true needs of populations with limited access to care could be more effectively and accurately measured with more focused studies on similar rural populations, and/or more specific breakdowns of rural populations into smaller and more categories (Brown & Grimes, 1995; Sekscenski, 1996; Schaffner, 1995; Shi et al., 1994). The need for additional studies is clearly seen. This study, hopefully, will provide additional information about utilization of the APN in rural CHCs across the United States by region.

Method

Research Design

This study used a descriptive approach using data from the study "Provisions of Prenatal Care by Rural CHCs in the United States" (Omar et al., 1997). The primary study used a survey to describe the provision of prenatal care in rural CHCs in the U.S. Field procedures for the primary study are in Appendix A.

Sample

Surveys were originally sent to the 352 rural CHCs in the U.S. The primary sample consisted of 162 surveys completed by executive directors of rural CHCs, resulting in

a 46% response rate. The final sample for this study consisted of 112 surveys for which there was complete data from rural CHCs which provided prenatal care services within the contiguous U.S. Exclusion criteria were states outside of the contiguous U.S. and U.S. territories (Hawaii, Alaska, Guam, Dominican Republic, and Puerto Rico), and those CHCs that did not provide prenatal care.

Operational Definition of Variables

Utilization of the APN was operationally defined as the current employment of the APN as identified in Item 2 of the Partnership for Rural Prenatal Care Delivery Survey. The respondent were asked: "Are Advanced Nurse Practitioners (i.e., Certified Adult Nurse Practitioners, Certified Nurse Midwives, Family Nurse Practitioners, Pediatric Nurse Practitioners, Women's Health Practitioners) currently or in the last year employed at your CHC?" The choices for answering this question were (1) Yes or (2) No. Answering "Yes" to this question indicated utilization of the APN.

Geographic Location of Rural CHC was operationally defined as the region based on the state in which the CHC was located. The four regions of the U.S. were defined by the U.S. Census Bureau (Figure 1). The four regions were West, Mid-West, South and North-East.

Instrumentation

There was one main instrument in the primary study which was developed by the primary investigators. The Partnership in Rural Prenatal Care Delivery Survey is a 14 item self - report survey with forced choice responses (see Appendix B).

The survey allows the respondent to provide information about the provision of prenatal care, type of providers who deliver prenatal care, types of providers who deliver infants, and willingness to use APNs in the provision of prenatal care delivery. There was no reported reliability or validity of the survey used in the primary study.

Data Analysis

Data analysis was done using SPSS/PCT computer program. Descriptive statistics were used to present characteristics of the rural CHCs. To answer the research question, a contingency table was constructed in which frequencies of the two study variables, utilization of the APN and geographic location of the rural CHCs were cross tabulated. To answer the hypothesis, the chi-square test was used. A significance level of 0.05 was used.

Assumptions of Study

Assumptions of the study were that the responses to the questionnaire reflect honestly and accurately the rural CHCs' practices and protocols. It was assumed that all data were entered accurately.

Limitations of Study

Limitations of the study include the following possible response bias. The primary data gathered was for rural CHCs providing prenatal care, this may have eliminated rural CHCs from the study that did not provide prenatal care but did utilize APNs. The use of a mailed survey yields a lower return rate limiting the sample size.

Protection of Human Subjects

The primary study used voluntary respondents who completed the mailed survey. Approval to conduct a secondary analysis was obtained from the University Committee on Research Involving Human Subjects (Appendix C). No potentially dangerous or adverse effects to the participants was known or identified. The primary study (Omar et al., 1997) was approved by Michigan State University Committee on Research Involving Human Subjects (Appendix D). The data utilized for this study has been maintained on a disk by the investigator. The respondents were entered by identification number only and did not reveal any subject identity. Thus, no link can be made with the name or site of any respondent for this study.

Results

Description of Sample

There were 112 executive directors who responded to the survey. This study's sample size was smaller than the primary study for data analysis purposes, because data analysis was done only on cases which had complete data for the variables under study. The number of prenatal care users in the rural CHCs ranged from 0 to 3520 with a mean of 319 (*SD*=483.5). The range of APNs that could or are providing prenatal care was 0.65 to 20 with a mean of 3.35 (*SD*=3.1). Generally, the rural CHCs' prenatal users' payment sources were a mixture of all three, no insurance, Medicaid insurance, and a combination of public and private insurance. Table 1 summarizes the characteristics of this sample.

Table 1.

Frequencies of Sample Rural Community Health Center Characteristics (N=112).

Characteristic	n(missing)	M	SD	Min	Max
No. of prenatal care users	88(24)	318.6	483.5	0	3520
No. of APN prenatal care providers	78(34)	3.35	3.1	0.65	19.70
Payment source					
No Insurance	80(32)	3237	3102	1	14279
Medicaid	52(60)	3077	2861	47	15930
Public and Private	50(62)	2898	3471	19	15632

The locations of the rural CHCs used in this study that provided prenatal care are summarized by region. In the Western region, eight (72%) of the 11 states had rural CHCs. In the Mid-western region, eight (67%) of the 12 states had rural CHCs. Thirteen (81%) of the 16 states within the Southern region had rural CHCs and in the North-Eastern region, six (67%) of the nine states had rural CHCs. The total number of states represented in this study was 35 of the 48 continental states, or 73%.

Analysis of Research Question

Research Question: Are there proportional differences between geographic location of rural community health centers and utilization of the advanced practice nurse?

A Cross-tabulation between geographic location of rural CHCs and utilization of the APN was completed (see Table 2). No association was found between the two study variables. The Western region employed the largest percent of APNs, 86%

Table 2.

Contingency Table for APNs Employed in Rural CHCs That Provide Prenatal Care and Geographic Location of Rural CHCs in the United States (N=112).

	Geographic Location							
	West		Mid-West		South		North-East	
Employment of APN	n	%	n	%	n	%	n	%
Yes	25	86	21	84	34	79	11	73
No	4	14	4	16	9	21	4	27

(n=25), followed closely by the Mid-Western region 84%, (n=21); 79% (n=24) of the rural CHCs in the Southern region employed APNs and 73% (n=11) of the APNs in the North-Eastern region were employed in rural CHCs. Overall, 81% of the rural CHCs that provide prenatal care in the United States, employed APNs within the past year.

Hypothesis

There will be a difference in utilization of the APN as a health care provider in rural CHCs by geographic location. There was no statistically significant difference found between geographic location of rural CHCs and utilization of the APN as a health care provider, χ^2 (3, n=112) = 1.343, p=.719.

Discussion

Sample

The main finding from this study was that advanced practice nurses were greatly utilized in the rural CHCs

surveyed. Eighty-one percent of executive directors (n=112) reported that their rural CHCs employed APNs. These findings are positive for the nursing profession and indicate utilization of the APN, consistent with the literature (Sabo & Louis, 1996; Schaffner et al., 1995; Sekscenski et al., 1994; Shi et al., 1994). The APN is becoming a major component in primary health care. It can reasonably be expected that the APN is considered a valued member of the health care team offering expertise of information and skills, participation in management of clients, and working collaboratively with other members of the health care team. The APN, as an expert in holistic and wellness oriented health care, is an excellent solution to the gaps in the health care system where people are without access to health care, especially rural areas. As an independent practitioner and collaborator, the APN is able to extend services available to rural clients, thus, increasing the number of available health care providers in rural areas. Prescriptive privileges of the APN also provides increased access to health care. With the increased utilization of APNs, the medically underserved populations in the rural CHCs may have their health care needs met more regularly. Advanced practice nurses' willingness to practice in rural areas is well documented (Buppert, 1995; Inglis & Kjervik, 1993). The use of APNs as prenatal care providers must also be encouraged.

While it was found that rural CHCs in the four geographic regions of the United States employed APNs, there

were no statistically significant differences found by geographic location. This finding needs further exploration since differences were noted amongst the four geographic regions with respect to access to primary health care, primary care physicians, and physicians providing prenatal care, as well as health care coverage and poverty status. Health status of the populations throughout the four regions is varied and unique, but with a common thread of gaps in health care that the APN can fill. Similarities can be made among the four geographic regions employing APNs. The four geographic regions were similar with respect to age of the populations. As discussed earlier, the need for prenatal and primary care providers, care of the uninsured populations, and areas of the country with access to health care issues show the greatest need and crosses all regions of the nation. Perhaps the need for the APN in providing rural health care services outweighs the differences of geographic location offering an explanation for the high utilization of APNs found in this study.

Some limitations to the study's findings include a small sample size which resulted from using a mailed survey. While it was a smaller sample, it can still be considered representative of those rural CHCs that provide prenatal care. Consideration of the non-responders to the survey is important. Non-responders may have been a) smaller rural CHCs that did not employ APNs, b) unable to answer the survey, or c) non-providers of prenatal care. The results of this study may not have changed even with the additional

responses. Therefore, increased credence can be given to the findings of the study.

Discussion of Results with the Conceptual Framework

The results of this study support the adaptation of Starfield's (1992) Health Services System. Under the structural component, personnel, there was support for the APN utilized as a health care provider, with more than four-fifths of the rural CHCs in this study employing APNs. This provides support for the APN as part of the structure in health care delivery in rural CHCs.

Geographic location corresponded to the social and physical environment component of the model. Rural CHCs throughout the nation were represented in the sample. While no differences were detected in rural CHCs, this may be due to the similarities of the social and physical environment of rural CHCs rather than differences by geographic location. Comparison by geographic location between urban and rural CHCs might provide additional insight as to the nature of the social and physical component of the model. This study did not address the process or outcome components. There is initial support for this model and is effective for evaluating APN utilization in health care delivery.

Implications for Advanced Practice Nursing and Primary Care

Although the results of this study revealed no statistically significant difference between the geographic regions of rural CHCs and utilization of the APN, findings from this study indicate the APN is being utilized in the majority of the rural CHCs.

Rural CHCs are the health care providers for the medically underserved. Positive perceptions of the APN as a health care provider to the medically underserved will impact the utilization of the APN in rural settings. Utilization of the APN in rural CHCs provides the opportunity for the APN to be a role model. The APN can actively demonstrate capabilities through the advanced knowledge and skills, services being provided in the rural CHCs, and accountability to clients and colleagues for actions in health care delivery. While this study did not look at urban areas, private practices, hospitals, or other areas of health care utilization of the APN, the APNs providing care in rural CHCs can be leaders and role models for the utilization of APNs in all areas of health care delivery.

In those rural areas not utilizing the APN, the APN can educate the executive directors, staff, and the general public as to the scope of practice, skill level, and role in the health care team. This could be achieved through inservices for administrative and health care staff, participating in or volunteering in community health activities, e.g., conducting high school and college sports physicals, guest speaking at various community groups to increase awareness and value of the APN in the delivery of health care to the community.

Recommendations for Further Research

The APN must continue to use scientific investigation to advance the profession of nursing and advanced practice. Further replication of this research study with greater

emphasis on increasing the response rate is needed to further test the research question and hypothesis. Additional areas to research include further study using the conceptual frame work. Other aspects of the model using APNs can be studied, such as process and outcomes components. The APN has been shown to be a component of the health care system structure in this study. Characteristics of the patient population is another area to study which may reflect differences in the utilization of APNs.

The literature was very limited in the utilization of the APN by geographic location and needs to be researched further in future work. Further research of the geographic location can be done, comparing other social and physical environments, such as urban CHCs and other health care delivery systems, e.g., private practices, acute care settings, and managed care organizations. Cost effectiveness and outcomes of health care managed by the APN by geographic location could also be very beneficial to the health care at large.

Summary

This study examined if there was a difference between the utilization of the APN by geographic location of rural CHCs providing prenatal care. Although the findings in this study did not support a difference by geographic location, it did offer enlightening information about utilization of the APN. The APN was utilized in the majority of rural CHCs in this study sample. Advanced practice nurses as a profession need to educate and demonstrate to the medical community and

consumers about the role of the APN. There still exists some who are unaware of the APN role and credibility as a health care provider. With increased acceptance and utilization of the APN, gaps in health care can potentially be reduced and better health outcomes achieved throughout the United States.

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APPENDIX A

APPENDIX A

Field Procedure for the Primary Study

The Partnership for Rural Prenatal Care Delivery Survey was mailed to the executive directors of 352 rural Community Health Centers. A cover letter explaining the study was included with the survey. The letter requested that the executive directors complete and return the survey in the self addressed envelope within two weeks. Consent to participate in the study was assumed when the survey was completed and returned. A post card was sent two weeks after the initial mailing as a reminder to complete and return the survey.

APPENDIX B

MICHIGAN STATE
UNIVERSITY

May 11, 1998

TO: Mildred A. Omar
A-230 Life Sciences

RE: IRB#: 98-306
TITLE: WHAT IS THE DIFFERENCE BETWEEN UTILIZATION OF THE ADVANCED PRACTICE NURSE FOR PRENATAL CARE AND THE GEOGRAPHIC LOCATION OF THE RURAL COMMUNITY HEALTH CENTERS
REVISION REQUESTED: N/A
CATEGORY: 1-E
APPROVAL DATE: 05/07/98

The University Committee on Research Involving Human Subjects'(UCRIHS) review of this project is complete. I am pleased to advise that the rights and welfare of the human subjects appear to be adequately protected and methods to obtain informed consent are appropriate. Therefore, the UCRIHS approved this project and any revisions listed above.

RENEWAL: UCRIHS approval is valid for one calendar year, beginning with the approval date shown above. Investigators planning to continue a project beyond one year must use the green renewal form (enclosed with the original approval letter or when a project is renewed) to seek updated certification. There is a maximum of four such expedited renewals possible. Investigators wishing to continue a project beyond that time need to submit it again for complete review.

REVISIONS: UCRIHS must review any changes in procedures involving human subjects, prior to initiation of the change. If this is done at the time of renewal, please use the green renewal form. To revise an approved protocol at any other time during the year, send your written request to the UCRIHS Chair, requesting revised approval and referencing the project's IRB # and title. Include in your request a description of the change and any revised instruments, consent forms or advertisements that are applicable.

PROBLEMS/ CHANGES: Should either of the following arise during the course of the work, investigators must notify UCRIHS promptly: (1) problems (unexpected side effects, complaints, etc.) involving human subjects or (2) changes in the research environment or new information indicating greater risk to the human subjects than existed when the protocol was previously reviewed and approved.

If we can be of any future help, please do not hesitate to contact us at (517)355-2180 or FAX (517)432-1171.

Sincerely,

David E. Wright, Ph.D.
UCRIHS Chair

DEW:bed

cc: Lisa K. Bigelow

OFFICE OF
RESEARCH
AND
GRADUATE
STUDIES

University Committee on Research Involving Human Subjects (UCRIHS)

Michigan State University
246 Administration Building
East Lansing, Michigan
48824-1046

517/355-2180
FAX: 517/432-1171

APPENDIX C

MICHIGAN STATE
UNIVERSITY

March 1, 1995

TO: Mildred Omar
A230 Life Sciences Bldg.

RE: IRB#: 94-151
TITLE: BARRIERS, EXPECTATIONS, AND PATIENT SATISFACTION AS PREDICTORS OF PRENATAL CARE UTILIZATION AND MATERNAL AND INFANT OUTCOMES IN BENZIE COUNTY, MICHIGAN
REVISION REQUESTED: N/A
CATEGORY: 1-C
APPROVAL DATE: 03/01/95

The University Committee on Research Involving Human Subjects'(UCRIHS) review of this project is complete. I am pleased to advise that the rights and welfare of the human subjects appear to be adequately protected and methods to obtain informed consent are appropriate. Therefore, the UCRIHS approved this project including any revision listed above.

RENEWAL: UCRIHS approval is valid for one calendar year, beginning with the approval date shown above. Investigators planning to continue a project beyond one year must use the green renewal form (enclosed with the original approval letter or when a project is renewed) to seek updated certification. There is a maximum of four such expedited renewals possible. Investigators wishing to continue a project beyond that time need to submit it again for complete review.

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If we can be of any future help, please do not hesitate to contact us at (517)355-2180 or FAX (517)336-1171.

Sincerely,

David E. Wright, Ph.D.
UCRIHS Chair

DEW:pjm

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