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The Role of Physician Assistants in Rural Health Care: A Systematic Review of the Literature

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Abstract

Purpose: A literature review was performed to assess the role of physician assistants (PAs) in rural health care. Four categories were examined: scope of practice, physician perceptions, community perceptions, and retention/recruitment.

Methods: A search of the literature from 1974 to 2008 was undertaken by probing the electronic bibliographic databases of English language literature. Criterion for inclusion was original data published on rural PAs. Each paper was assessed and assigned to the four categories.

Findings: A total of 51 papers were identified; 28 papers had a primary focus on research and specified PAs in a rural setting. Generally, the literature suggests that PAs provide cost-efficient and supplemental medical services to underserved rural populations and that these services are valued. It also appears that rural PAs possess a larger scope of practice than urban PAs. This broad range of skills and procedures may be necessary to match the extensive health care needs of underserved rural populations. Over a 35-year period of examination, the literature improved in numbers of PAs studied and the quality of research. However, the lack of longitudinal studies was considered a shortcoming of rural health PA observational research.

Conclusions: Through this review, some insights about the role of PAs emerged. Overall, they seem well adapted to rural health. Important issues regarding the recruitment and retention of PAs to rural populations also emerged. Improvement in enabling legislation contributes to the utilization of PAs in America.

Key words Acceptance, physician assistants, primary care, retention, rural health care.

Physician assistants (PAs) are health care professionals trained within the medical model and licensed to practice medicine under the supervision of a licensed doctor.[1] During the mid-1960s, the PA emerged in the United States in an effort to relieve a nationwide shortage of doctors in primary care, as well as to increase access to health care for patients in rural and underserved populations.[2] The number of PAs in America has steadily increased and as of 2009, there were 148 PA programs and over 72,000 clinically active PAs.[3] The PA model has also been implemented in Canada, the Netherlands, Australia, South Africa, England, and Scotland.[1]

To qualify for practice, PAs must be licensed (credentialed) in the state where they work. All PAs must graduate from an accredited educational program and pass a certifying examination administered by the National Commission on Certification of PAs. To work clinically the PA must obtain authorization to practice from the appropriate regulatory board and be supervised by a doctor. Since 2007, all states have enabled legislation that sanctioned delegated prescribing by PAs and permitted PAs to prescribe controlled substances.

The development of PAs was intended to improve health care delivery. There were no preconditions to

this development, but the early creators were strongly aware of a social mandate to improve access to care in rural and underserved communities. Consequently, PAs from many of the first education programs went to rural areas in West Virginia, North Carolina, Colorado, Oregon, and Washington State.[1] Almost from the beginning, researchers began documenting PAs in terms of personality, geographical location, practice and population characteristics, and economics. However, only a few studies examine the role of the rural PA. Interest in this topic is growing because of a shortage of doctors across North America. Since 2000, far fewer doctors have been choosing rural care or primary care.[4] Other countries are also looking at PAs from a rural deployment standpoint.[5,6]

In 1977, the US Congress enacted the Rural Health Clinics Act (Public Law [PL] 95-210), which among other actions, encouraged the use of PAs, nurse practitioners (NPs), and certified nurse midwives in rural areas since many small communities could no longer support a sufficient number of physicians. PL 95-210 facilitated rural health expansion by entitling various providers to receive reimbursement from Medicare and Medicaid on a cost basis. However, after four decades, information on the PA's role in rural health remains fragmented from a national standpoint. What is the accumulative role of PAs and NPs in rural health? Our intent is to identify, appraise, select, and synthesize the research evidence about 1 type of provider. We purposely focus on PAs but include references to NPs where appropriate. The rationale is that the PA is trained in the medical model and is in a dependent relationship with an employing physician. NPs, on the other hand, are sanctioned to work independently in many states, which distinguishes them from PAs, and their role may be different.

Objective

The primary objective was to perform a review of the literature in order to evaluate the factors that contribute to the assumed role of PAs in rural practice locations. The secondary objective was to identify any relationship among those factors that influence the retention and recruitment of PAs in rural practice.

Methods

A search of the English-speaking literature was undertaken spanning the years 1966 to 2009. We employed the computer bibliographic databases of MEDLINE, Google Scholar, and the Cumulative Index of Nursing and Allied Health Literature (CINAHL). Key search terms included "physician(s) assistant," "physician(s) extender," "nonphysician provider," "PA," and "mid-level provider." These search terms were matched with "rural," "underserved," "practice location," "rural health," and "shortage." To ensure a comprehensive search, we included a manual search through journals, Internet resources, and bibliographies of retrieved articles. Our criterion for inclusion was original data published on rural PAs. All authors reviewed each paper and assessed its characteristics. Any level of disagreement was resolved by consensus.

Each paper was analyzed, abstracted, and categorized into the following categories:

1. scope of practice;
2. physician perception;
3. community perception;
4. retaining and recruiting rural PAs.

Results

A total of 51 papers were identified and reviewed. Twenty-eight papers met the criterion of a primary focus on research and specified PAs in a rural setting. Articles that lacked original data, editorials, and nonspecific articles that were outside the objectives of the review were omitted. Informative literature regarding the PA's history and role in rural health care was omitted from the summary table (see Table 1), but it was included in the discussion and references.

The span of the literature review was from 1974 to 2008. Two-thirds of the papers were published after 1989. An increasing trend in both the number of published studies and the size of the population studied was observed over the 35-year study period. Some of the research was centered on a state or geographical region, with other studies being national in scope. Overall, the methodology employed was broad: 17 surveys, 8 interviews/focus groups, and 4 secondary analyses of large databases. A few of the papers overlapped in methodology (eg, survey and interview). The manuscripts were published in peer-reviewed journals: 10 in *The Journal of Rural Health*, 5 in the *Journal of the American Academy of Physician Assistants*, and the remainder spread over 12 other journals.

Scope of Practice

"Scope of practice" is terminology used by state licensing boards for PAs as well as many other professions. The term generally defines the limit to which the law, an organization, or an employer permits the PA to provide care, procedures, actions, and processes. The experience and competency of the PA helps to define the scope of practice.[1]

Table 1 Public Papers on Rural Health Physician Assistants

First Author Year Reference#	Journal	Location Year Studied	Methods	Target Population Number Studied	Results
Anderson (1999) [13]	*J Rural Health*	Nationwide 1994	National Hospital Ambulatory Medical Care Surveys 1994	PAs and NPs—N/A*	Describes the cost-effectiveness of PAs in rural practice
Asprey (2006)[18]	*J Physician Assist Educ*	Rural Iowa 2002	Mailed survey	PAs in rural primary care practice—94	Identifies the PAs most frequently performed skills in towns with <10,000 people
Baldwin (1998)[25]	*Public Health Nurs*	Rural Midwest 1996	Five focus groups	Rural community members per focus group—4-9	Describes the community perceptions of rural PAs
Bergeron (1997) [23]	*J Rural Health*	Rural Minnesota 1995	Mailed survey	Physicians—277	Reveals the positive and negative perceptions of MDs regarding the role and practice of rural PAs
Bergeron (1999) [10]	*J Rural Health*	Rural hospitals in the United States 1995–1996	Mailed survey and case studies	Rural hospital administrator—285 Hospitals observed in a case study—36	Discusses the tasks and benefits related to PAs in small rural hospitals
Burgess (2003)[21]	*J Rural Health*	South Carolina 2001	Mailed survey	Rural and urban primary care physicians—681	Reveals the positive and negative perceptions of MDs regarding the role and practice of rural PAs
Chumber (2001)[9]	*J Allied Health*	Wisconsin 1997	Mailed survey	PAs, full-time and part-time—433	PAs who practice in rural communities have a high degree of practice autonomy
Ford (1998)[11]	*J Am Acad Nurs Practitioners*	Family practice residency program in the Southeast United States 1996	Semi-structured interview/ Qualitative methodology	Physicians in a family practice residency program—10	Reveals the positive and negative perceptions of MDs regarding the role and practice of rural PAs
Gairola (1982)[38]	*J Commun Health*	Kentucky 1982	Mailed survey	PA graduates from the University of Kentucky's Clinical Associate Program	Discusses PA characteristics that relate to location decisions
Henry (2007)[12]	*J Rural Health*	Eight rural towns in Texas 2005	Direct observation, semi-structured interviews, and focus groups	PAs, town mayors, and town representatives—8	Describes factors contributing to the retention of rural PAs
Henry (2008)[26]	*J Physician Assist Educ*	Eight rural towns in Texas 2005	Direct observation, semi-structured interviews, and focus groups	PAs, town mayors, and town representatives: 8 Average focus group—8	Describes factors contributing to the retention of rural PAs

Continued

Table 1 Continued

First Author Year Reference[#]	Journal	Location Year Studied	Methods	Target Population Number Studied	Results
Hooker (2005)[20]	*J Rural Health*	Nationwide 1997-2002	Data drawn from 6 years of National Ambulatory Medical Care Surveys on prescribing trends	Physicians, rural and urban—2,500	PAs more likely to prescribe controlled substances than NPs or physicians; PAs wrote fewer prescriptions than NPs in rural areas
Isberner (2003)[16]	*Perspect Physician Assist Educ*	Rural Illinois 2000	Mailed survey	Rural physicians—226	Reveals the positive and negative perceptions of MDs regarding the role and practice of PAs
Krein (1997)[15]	*J Rural Health*	Eight Midwest states 1994	Telephone interviews	Hospital administrators—407	Identifies characteristics of rural PA practice and employers' hospitals
Larson (2007)[28]	*J Allied Health*	Nationwide 1967-2000	Data from the AAPA supplemented with data from the ARF	PAs working in the United States—49,641	Discusses how trends in practice specialization and education affect retention and recruiting
Larson (1999)[29]	*J Rural Health*	Nationwide 1993-1994	Mailed survey	PAs – 1,521	Verifies a health care shortage in rural practice locations and discusses retention and recruitment
Legler (2003)[30]	*Perspect Physician Assist Educ*	Pacific Northwest 1999–2002	Results from funded project	PA students/whole community—35	Reveals methods of rural recruitment and retention of PAs
Lindsay (2007)[34]	*J Rural Health*	New York and Pennsylvania 2003	Semi-structured interviews	PAs, NPs, and nurse anesthetists—55	Reveals the role of gender in PA location decisions
Martin (2000)[8]	*J Am Acad Physician Assist*	Pennsylvania 1996	Mailed survey (Dillman's total design method) 1996	PAs—1,002	Describes differences between PAs in rural and urban practice
Muus (1998)[36]	*J Rural Health*	Nationwide 1996	Mailed survey	Rural PAs—1,263	Describes the relationship between job satisfaction and rural PA retention
Muus (1996)[37]	*J Am Acad Physician Assist*	AAPA membership database 1994	Mailed survey	Primary care PAs 2,500 surveyed; 1,534 responded	Discusses the implications for recruitment by comparing urban and rural PAs
Nelson (1974)[27]	*JAMA*	Eighteen practices in upper New England 1972	Mailed survey	Patients—449	Describes the community perceptions of rural PAs in upper New England

Continued

Table 1 Continued

First Author Year Reference#	Journal	Location Year Studied	Methods	Target Population Number Studied	Results
Oliver 1986 [24]	*Physician Assist*	Midwestern rural communities 1985	Questionnaire distributed following visit	Patients—308 PAs—11	Describes the community perceptions of rural PAs in Midwestern communities
Pan (1996)[35]	*Hosp Health Serv Adm*	Nationwide 1993–1994	Mailed survey	Members of American Academy of Physician Assistants—1,560 responses	Discusses the factors that relate to PA retention and recruiting in rural practice
Shi (1993)[14]	*J Rural Health*	Nationwide 1991	Mailed survey and telephone interviews	Community and migrant health center administrators—243	Reveals patterns of retention and recruitment among community and migrant health centers
Staton (2007)[22]	*J Am Acad Physician Assist*	Nationwide survey 1997-2003	Weighted logistic regression analysis	Retrospective Analysis of National Ambulatory Medical Care Survey Data—N/A	Discusses the contributions of PAs to rural health care and the issues that contribute to their retention
Travers (1996)[39]	*J Am Acad Physician Assist*	Communities in Maine with populations <10,000 1988-1990	Mailed survey, telephone interview	Former rural PAs 25	Reveals reasons for PA departure from rural practice

*N/A, not applicable.

Eleven papers discussed PA scope of practice in rural areas. Generally, there is consensus within the literature regarding the autonomy and scope of practice for rural PAs. Larson and associates observed that Medex-trained PA graduates from rural Washington State spent less time with their supervising physician and had a broader scope of practice than their urban cohorts.[7] Martin validated Larson's work studying Pennsylvania PAs. He found that compared to urban PAs, rural PAs spent more time with patients clinically, saw more patients on a daily basis, and had more patients for whom they were the principal provider. The authors thought that the PAs profiled were more likely to work in underserved areas than their urban counterparts.[8]

The most common type of practice for a rural PA is primary care.[7-12] The most represented practice settings in these studies were a solo physician's private practice or a small group practice clinic.[8,10] The federal government also employs rural PAs.[7,13] Typical government-sponsored sites included community health centers, migrant health centers, Indian health centers, and prison systems.[7,14] Krein's study of northern states indicated that more than 50% of rural hospitals utilized PAs.[15] Within these hospitals, most PAs provided services in emergency departments, surgeries, and during inpatient rounds, and they had admitting/discharge privileges.[10,15,16]

The literature identified many tasks performed by rural PAs. The most common duties observed included prenatal/postpartum care, house calls, night calls, nursing home rounds, and athletic team coverage. Other activities noted involved follow-up care for patients, routine administrative duties, ordering routine laboratory tests and radiological studies, recording patient histories, patient education, counseling, routine physical exams, diagnosing common illnesses, and performing minor surgical procedures.[7,10,11,15-18] Historically, the illnesses and procedures attended to by rural PAs were generally considered commonplace and not critical.[19] In the 1970s, Pacific Northwest patients in need of acute care tended to be seen by the supervising physician.[17] Researchers observing PAs in the 1970s noted that written guidelines and/or protocols were used with patients in making clinical decisions.[11] Later, protocols gave way to best practices and evidence-based medicine standards of care.

One study suggested that the delegated scope of practice, at times, might have been exceeded by PAs who were under pressure to increase patient volume or make decisions alone when their supervisor was unavailable.

Bergeron et al suggested that the PA might be encouraged to exceed his or her scope of practice for patients who fail to differentiate between PAs and physicians. The authors suggested that exceeding a defined scope of practice might lead to clinical error, which puts the patient's health at risk and increases a physician's liability for malpractice.[10]

Prescriptive authority is mentioned frequently throughout the literature as a critical aspect of the scope of practice. The ability to prescribe is especially important for PAs in rural practice due to the limited availability of supervising physicians. Chumber et al. found that the rural PA's years in practice with their supervising physician were inversely associated with greater autonomy in terms of routine prescriptive ability. The researchers believed that their findings implied a significant relationship between the age of the supervising physician and amount of prescriptive authority that they delegated to their PAs.[9]

> "Physicians who first employed PAs, particularly in rural areas, tended to be older physicians, a group who typically did not have training or experience in practicing with PAs. Thus, these older physicians did not delegate as often or at all. Conceivably, it is the younger physicians, who perhaps went to school with PAs, who are more likely to delegate responsibilities."[9]

A 1997–2002 national study found that, proportionally, rural PAs write fewer prescriptions than their supervising physicians do. However, they are more likely to prescribe a controlled substance when given the right to do so. The researchers hypothesized that this trend may have resulted from PAs having more on-call hours where they were available to patients in need of urgent care. In these emergencies, controlled substances may have been frequently required for treatment.[20]

In general, the rural PA's role includes a scope of practice that enhances health care delivery. Utilizing a PA appears to be cost-effective in numerous settings.[10,11,13-16,21,22] PAs also appear to supplement care provided by physicians.[10,15] The literature indicates that PAs decreased the time patients spent waiting for an appointment, spent more time with patients, and increased overall patient volume.[10,15,21]

Physicians' Perceptions of Rural Health Physician Assistants

A physician's perception of what PAs can do appears to be important in a rural setting. Not only does it affect the PA's job satisfaction, it influences how physicians utilize PAs. Nine papers discussed issues surrounding incentives and constraints associated with employing a PA in rural practice.

Reasons for not hiring

Some physicians expressed that PA employment would increase their liability.[10,16,21] Another important issue was the time and effort (or the perception of it) required to supervise and delegate.[10,21] Theoretical issues raised among respondents to some survey questions included opposition from patients, increased competition for patients, decreased quality of care, confusion between the providers and their delegated roles, and loss of continuity of care.[10,14,16,21]

Incentives for PA employment included positive contributions to quality of care, patient education, and freed-up time for physicians, which in turn relieved workload. Additionally, PAs enabled the physician to focus on more complex cases.[10,11,16,21] More tangible economic considerations included cost-effectiveness, increased patient volume, reduced patient wait time, and increased patient satisfaction.[10,11,13-16,21,22] Burgess suggested that physicians highly receptive to PAs often delegated a broader scope of practice to their PAs when compared to those who were less receptive.[21]

The early literature suggests that there were mixed feelings among physicians about PAs and their role in rural health care. Some felt that they played a "vital role" and were very useful in the hierarchy of care, whereas others viewed them as a burden.[16] Some unreceptive physicians also indicated that they were confused by the ambiguity of the PA's role and were unsure of their capability as a provider.[14,21] Rural Minnesota physicians who responded to a mailed survey in the mid-1990s considered the most important duties of the PA as those that were routine and required fewer diagnostic skills. This same study also identified opposition to laws that permitted PAs to establish their own practice.[23] South Carolina physicians responded that the lack of prescriptive authority impeded PAs' service in rural areas.[21] In studies since the late 1990s, attitudes have shifted and physicians seem to believe that PAs possess the necessary skills and knowledge to provide basic care, to diagnose independently, and to treat stable health care conditions.[21]

Generally, it seems that rural physicians accept PAs and recognize many benefits associated with their role. This acceptance seems to have grown with each survey year. Some of the early researchers speculated that doctors might benefit from education about a PA's capabilities as a provider. Bergeron and associates suggest that educating potential employing doctors about PAs could prevent role confusion and assist in delegating an appropriate scope of practice.[23]

Communities' Perceptions of Physician Assistants

A community's perceptions concerning PAs in rural practice can influence the pattern of PA utilization within that area. Eight publications addressed the perceptions of patients. The majority of rural residents felt most comfortable with the PA providing simple treatments and minor procedures.[12,24] Some residents chose to commute out of their area, in spite of the distance, in order to see a doctor with whom they were already established.[10,12] The reasons for doing so generally included a critical health condition that required a specialist, a long-term relationship with a specific provider, or a lack of confidence in the PA's ability to provide for their needs.[12]

Four articles employing qualitative research methods indicated that many community members tended to be unaware of the PA's capabilities and role within a rural practice.[10,12,25,26] In some instances, there were patients who failed to distinguish between physicians and PAs.[23] This lack of knowledge or understanding might need the attention of the rural medical community.[10,25,26] Some patients suggested various means of incorporating PAs into the rural community and educating their fellow townsfolk about the PA's potential as a health care provider.

Rural residents suggested certain conditions that the PA would have to meet before being accepted into the community as a viable health care provider.[25,26] These conditions included both personal and system-related issues. Personal issues identified within the community included friendliness, competence, a willingness to participate in the community's lifestyle, trustworthiness as a provider, and knowledgeable and easy to understand during clinical consultation. System-related issues included the type of services they offered, the ease of integrating them into the existing health care system, the length of wait time for an appointment, the geographic proximity to the PA's clinic, and the time allotted for a single appointment.[12,22,24-26] Most of the literature suggested that PAs and the rural medical community generally meet the personal and system-related conditions that community members set.

Trends in the literature revealed several sociodemographic issues that relate to the acceptance of PAs in rural communities. Female residents within a small town, for example, were generally more comfortable visiting a PA than were males. It also seemed that a patient's degree of education and amount of previous experience with PAs positively correlated with their acceptance and comfort level.[27-30]

Generally, those living in small towns have a high level of satisfaction with PAs in rural practice, especially concerning the personal factors listed above.[27] However, when questioned about their satisfaction with the community's health care in general, rural residents in the Pacific Northwest believed that improvements could be made.[30] For those communities utilizing autonomous PAs, residents expressed a desire for the availability of health care that was outside of the PA's scope of practice.[29,30] In the aggregate, the literature suggests that a high level of patient acceptance tends to be associated with familiarity and exposure resulting from the retention of PAs within the community. Satisfaction and acceptance by town residents were lower where the PA commuted in and out of the community for work and spent little time participating in the community life.[12,27,29,30]

Retaining and Recruiting Rural Physician Assistants

Trends in education, specialty, health care, and compensation are key reasons for the loss of rural health providers. Recruiting and retention of valued personnel is at the heart of organizational efficiency. If the person recruited fits into the culture of the organization (or community), he or she will be welcomed. If the work situation is conducive to retention, the person will remain. Understanding the issues that affect patterns of PA retention and recruiting among underserved rural populations becomes challenging as lucrative opportunities in urban areas increase. Fifteen papers addressed aspects of retention or recruitment of rural PAs.

In 2009, 15% of all PAs in the United States reported working in a nonmetropolitan area and 8.2% of PAs worked in micropolitan areas of 20,000 or fewer people.[3] PAs and NPs are proportionally more likely than primary care doctors to practice in these nonmetropolitan areas.[21,27,30-33] Factors that encourage retention and recruiting include a high degree of practice autonomy, a broad scope of practice, and liberal prescriptive authority.[10,12,34-37] Other factors discussed by PAs include the desire for a small-town community lifestyle, a good relationship with the supervising physician, and the confidence to practice medicine without the constant presence of a physician.[12,35,37]

A number of studies identified certain factors of rural practice that discourage the recruitment and retention of PAs. The most frequently mentioned reason that PAs leave rural health care was professional isolation.[34,35,38] For example, most rural communities do not provide opportunities for PAs to further their education or work in specialty practice.[35,39] The remote location may also limit career opportunities for the PA's family. Additionally, some studies suggested that lower salary and long

on-call hours might be factors for PA retention in rural practice.[35-37]

A lack of medical equipment, technological advancement, and pharmacy availability were items identified as other sources of frustration for rural-practice PAs.[12,35] Dissatisfaction occurs when it is necessary for patients to travel to distant hospitals for X-rays, laboratory tests, and medication. Aside from practice-related issues, social isolation also deters PAs from committing to rural areas.[39]

Gender has become an increasingly important aspect of medical workforce research. A shift in gender has occurred in medicine, along with many other professions. This is especially true for PAs, with females making up 60% of the national cadre.[1] Historically, women have been less likely to choose a rural practice setting or to leave an urban location to practice in a rural area.[28,38]

Literature on medical practice location suggests that PAs are more likely to practice in locations similar to where they have lived. For example, a PA raised in a rural area is more likely to feel comfortable practicing there.[12,29,30,35] Some of the authors suggest that recruiting PA students from rural populations may increase the overall number of PAs practicing in underserved areas. These suggestions may be important considering that PAs with high levels of rural practice location stability tend to come from rural areas.[28]

Another important finding suggests that PAs with limited academic history prior to PA training were more likely to move to primary rural care. This may be particularly true for Alaskan Natives returning to Alaska to work in rural areas.[28,36] The same researchers noted that a PA's level of education prior to PA training is inversely related to their likelihood of choosing rural practice.[28,36]

Discussion

Reviewing the literature on the role of PAs in rural practice provides a number of important observations. Generally, the literature suggests that PAs are a cost-efficient supplement to medical service where this is centered on underserved rural populations, and that these services are valued. It also appears that the rural PA possesses a larger scope of practice than that of his or her urban counterpart.[40] This broad range of skills or procedures may be necessary to match the extensive health care needs of underserved rural populations. Such diversity of medical care services may be appealing to those in rural health. Furthermore, it appears that PAs are generally welcomed in rural communities, and they tend to do well if they are integrated into the community.

The long on-call hours and highly autonomous clinical practice that characterize remote community health care makes PAs susceptible to demands different from metropolitan colleagues. The most commons stressors are the lack of readily accessible medical education opportunities and isolation from peers. Concern was noted that PAs must sometimes step outside of their delegated scope of practice in order to fulfill the needs of patients in a rural setting, which can be taxing to the PA's sense of role.

Demand for medical services and familiarity with the PA in America has largely improved acceptance by employer and patient alike. However, we suggest there will always be a small percentage of doctors and patients who will not accept a PA.

The health care needs of rural Americans are increasing, and the shortage of primary care physicians remains a concern. It is estimated that over 85% of a family medicine doctor's work could be managed by 1 PA. Such task transfer permits the doctor more longitudinal care and the opportunity to take on new and more interesting tasks.[1]

Rural health care offers a distinctive work environment for PAs. The clinics where they work tend to be small and the range of services large.[40] They are more likely to be in primary care than their urban counterparts and are proportionally more likely than doctors to be in rural or underserved areas.[31] These observations have policy implications that may resonate in certain rural states where the ratio of doctor to population is dwindling. Since 2009, federally qualified rural clinics have been bolstered by new initiatives designed to improve staffing arrangements and delivery of services (http://www.hhs.gov/recovery/hrsa/healthcentergrants.html).

Efforts to retain and recruit PAs must take into account the unique role of rural health care, and provide opportunities for practitioners that complement and enhance the satisfying aspects of their role. Community outreach through Area Health Education Centers that fosters the role of rural practice may benefit PA programs. Financial incentives through the National Health Service Corps, loan forgiveness, education grants, and tax incentives are examples of federal and state initiatives designed to retain health care workers.

There are contradictions within the literature regarding patient acceptance of PAs. Some of this lack of acceptance is generational and some of it has faded with 4 decades of familiarity. However, the medical community may be able to play an important role in changing negative patient perceptions through education about the competent and high-quality care that PAs are trained to provide, followed by careful integration of the PA into the rural practice site. Community perception is also relevant to PA job satisfaction and retention. When PAs are accepted and respected by the residents and integrated into the community's lifestyle, their job satisfaction and

probability for retention are higher. Community members may benefit from learning about the PA's role, how that role can supplement their health care needs, and how important their perceptions and attitudes are in retaining these providers.

The qualitative methodologies utilized in several studies are useful in understanding the opinions of community members and supervising physicians. It may be that community members and physicians respond fully and truthfully during intimate interviews/group discussions, but they do not share the same opinions with the medical staff and researchers' surveys. We recommend that researchers consider the advantages of multi-community, longitudinal, qualitative research in rural areas. This type of research may provide a more precise understanding of PAs and aid in their retention.

Limitations

The limitations of this literature are characteristic of many systematic reviews: the breadth of the subject is wide and depth is limited. This rural PA literature review spans 35 years, and while it shows the evolution of the role and acceptance of PAs in American rural health, the daily characteristics of PAs are not well delineated. Longitudinal studies are nonexistent and even two time points of sampling the same PA or community are lacking. Another limitation is the lack of the narrative piece that anthropologists and sociologists can bring; more qualitative studies are needed. Such studies that are backed up with characteristics of locations where provider retention is highest and compared to those locations where a community's retention is problematic would be useful for recruitment strategies. Not only could additional well-developed longitudinal and qualitative studies be enlightening to American policy makers, but also nations grappling with a low doctor-to-population ratio and high dispersal of people in rural locations may find such research useful.

Conclusion

A growing body of literature contributes to understanding PA deployment in rural areas. Such knowledge about the PA's role in American society has improved task delegation and utilization. Concurrently, regulations governing PAs have improved substantially and, since the new century, have enabled more creative use of PAs. Acceptance of PAs by doctors and patients appears to be improving as well. Noticeably, a broad scope of practice and a moderate degree of autonomy positively correlate with PA job satisfaction and retention. Yet, retaining and recruiting PAs remains challenging.

In the aggregate, the literature is sufficient to generalize that PAs appear to be a good fit for rural practice, at least in America. They seem to be well-received, fit into the community, and are productive. Physician receptivity to PAs is high as well. In addition, rural communities desiring medical staff for their clinic may benefit from successful strategies that attract and retain medical providers such as PAs.

It is difficult to predict if the distribution of the nonmetropolitan PA will grow with changes in health care reorganization. Under current scenarios, we suggest that the PA role will continue to expand to meet the demands of an aging rural population, but improved access to health care is less predictable. As new methods for treatment become available, financing improves, and technology is more accessible for clinicians, interest in relocating to a small community may become more attractive. However, efforts to recruit and retain rural PAs will benefit from research that distinguishes the enablers and barriers to such human capital resources.

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