Factors Influencing Retention Of Rural Pennsylvania Family Physicians

Esther M. Forti, PhD, RN, Kenneth E. Martin, PhD, Robert L. Jones, DEd, MCP, and James M. Herman, MD, MSPH

Background: **Rural areas suffer from a lack of primary care physicians. Efforts to retain physicians should focus on modifying or changing attributes of rural practice that are considered by physicians to be undesirable. A practice support outreach program (PSOP) is one initiative expected to enhance retention in rural areas by addressing negative aspects of rural practice. The purpose of this study was to assess factors related to satisfaction and retention of family physicians to develop and implement a PSOP in rural areas of Pennsylvania.**

Method: **In 1993 a mail survey was conducted on a convenience sample of 398 family physicians practicing in 39 counties in Pennsylvania.**

Results: **Twenty percent of respondents were considering leaving rural practice. Bivariate analyses indicated that professional isolation, lower reimbursements, and sharing on-call with only 1 other physician were associated with physicians' reasons for considering leaving rural practice. A multiple logistic regression revealed that sharing on-call rotation with only 1 other physician and having a solo practice were significant influences in considering leaving rural practice.**

Conclusions: **Findings suggest support strategies that minimize perceptions of professional isolation and policy efforts that address reimbursement differentials and compliance issues are needed to minimize many complaints of rural family physicians. (J Am Board Fam Pract 1995; 8:469-74.)**

There is a documented shortage of primary care physicians in rural areas,[1] and reports indicate a continual decline in the number of physicians who choose family medicine and rural practice.[2] Current health reform efforts stress the importance of increasing the number and availability of these physicians, because they are essential for rendering basic health care and acting as gatekeepers in providing referrals for specialized care. Longstanding difficulties in retaining physicians in rural areas, however, have not yet been resolved.[3] If America's health care system is to have a positive impact on the rural primary care physician supply, it needs to seek ways to improve structural characteristics and financing of rural practice.[4,5] Several researchers contend that retention in rural practice is influenced by practice characteristics and the changing needs of physicians and their families.[6]

Previous research on practice characteristics related to physician retention suggests numerous reasons physicians decide to leave rural practice, including fear of professional isolation and limited access to medical centers and local hospitals with state-of-the-art equipment,[7] excessive on-call hours,[8] lack of time for family and self,[9] social and cultural isolation,[10] spousal dissatisfaction,[11] lack of trained personnel and resources,[12] and lower incomes and federal reimbursements for services similar to those in more urban areas.[13] Opportunities for partnership or group practice,[14] arrangements for on-call rotation coverage, continuing education, consultation and referral systems,[8,15] and availability of health care providers and resources[12] are support mechanisms that rural physicians want. Satisfaction with patient care,[4] a practice support system,[7] residency training in family medicine,[3] perceptions of being accepted or appreciated,[16] professional autonomy,[5] and financial well-being[4] are positive determinants that affect physicians' decisions to remain in rural practice.

Organized strategies and programs for retention are viewed as essential in satisfying the rural primary care physician supply and in meeting the

Submitted, revised, 26 June 1995.

From the Pennsylvania Office of Rural Health, The Pennsylvania State University (EMF, KEM) and the Department of Family & Community Medicine, The Pennsylvania State University College of Medicine, Milton S. Hershey Medical Center (RLJ, JMH). Address reprint requests to Esther M. Forti, PhD, RN, Pennsylvania Office of Rural Health, 7 Armsby Building, University Park, PA 16802.

This project was funded by The Public Health Service, Department of Health & Human Services (5D2PE13013), Establishment of Departments of Family Medicine.

health care needs of smaller rural communities.[4] Several organizations involved with rural health care have recommended that medical schools and colleges of medicine can play an important role in retaining primary care physicians in rural areas.[17-19]

Pennsylvania, with the largest rural population among the states, is faced with a rural primary care physician shortage.[20] At The Pennsylvania State University College of Medicine, the Department of Family and Community Medicine, with funding from a Robert Wood Johnson Foundation Generalist Physician Initiative grant, is developing a practice support outreach program (PSOP) to strengthen rural practice environments. The purpose of our study was to determine factors related to satisfaction and retention of rural Pennsylvania family physicians. Findings would be used to develop and implement relevant practice support strategies. It was assumed that these efforts can help alleviate physicians' perceptions of professional isolation and enhance their morale to facilitate retention of providers in rural areas of Pennsylvania.

Methods

This study consisted of a convenience sample of family physicians practicing in rural areas of Pennsylvania who participated in a needs assessment mail survey conducted during the winter and spring 1993. The sample was drawn from two sources: the current membership list of the Pennsylvania Academy of Family Physicians (n=391) and medical directors of community health centers (CHC) (n=7) in 39 counties of Pennsylvania chosen as the rural areas to be studied. A modified version of Dillman's "Total Design Method" (an original mailing followed by a postcard reminder and two additional mailings)[21] was used as the data collection protocol, yielding a response rate of 58 percent (229). This response rate was higher than a mail survey conducted by other researchers on a national sample of physicians.[5]

The instrument contained forced-response and short open-ended items to obtain self-report data on physician practice characteristics, factors associated with satisfaction with rural practice, factors related to the possibility of leaving rural practice, and barriers to rural practice. An advisory panel of family physicians and social science faculty with survey expertise reviewed the instrument for content validity.

The data were analyzed using descriptive and inferential statistical procedures. Univariate frequency distributions and means were calculated to provide information on the instrument variables. Chi-square tests were computed to determine whether bivariate significant differences exist in the dichotomous dependent variable, considering leaving rural practice, and selected predictors. A multiple logistic regression was estimated to assess the independent effects of years in rural practice, number of patients seen per week, residency training in family medicine, presence of physician assistants, number who share on-call rotation, lower federal reimbursements, solo practice, and perceptions of professional isolation on the odds of considering leaving rural practice while controlling for other variables in the model. These predictors were selected from the literature and findings from the bivariate analyses. The criterion for statistical significance was $P<0.05$.

Results

Findings are reported on practice characteristics, satisfaction, reasons for considering leaving rural practice, barriers to rural practice, and correlates of considering leaving rural practice.

Practice Characteristics

Table 1 provides the frequency distributions of practice characteristics of rural Pennsylvania family physician respondents. Seventy-seven percent had residency training in family practice. About three-fourths of respondents reported sharing on-call rotation with other physicians, with a mean of 3 and a range from 1 to 15 (higher numbers indicate involvement with hospital-based emergency department on-call rotation). Among the types of midlevel practitioners working in family practice offices, physician assistants were the most common (30.3 percent), followed by nurse practitioners (22.8 percent) and nurse midwives (5.6 percent). Regarding organization of practice, more than one-half of the physicians were involved in group practice compared with about one-fourth in solo practice. Seventeen percent worked in managed care, hospitals, nursing homes, and university health centers. The mean number of patients treated per week was 125, and the mean number of years physicians practiced at their present location was 10.72 with a range from 1 to 45 years. Eighty-eight percent

Table 1. Practice Characteristics of Family Physicians (n = 229) in 39 Rural Pennsylvania Counties.

Characteristics	Number	Percent
Residency trained	161	77.0
Share on-call rotation	151	76.1
Number share on-call hours		
1	24	15.9
2	32	21.2
3	40	26.5
4	24	15.9
5+	31	20.5
Midlevel practitioners		
Physician assistant	63	30.3
Nurse practitioner	47	22.8
Nurse midwife	11	5.6
Organization of practice		
Solo	57	26.9
Group	119	56.1
HMO or CHC	15	7.1
Hospital-based	14	6.6
Other	7	3.3
Patient visits per week		
20–99	39	19.6
100–150	118	59.3
151–250	42	21.1
Years practice present location		
1–10	133	61.9
11–20	48	23.0
21–49	28	13.4
Hospital admitting privileges	190	88.4

HMO = health maintenance organization.
CHC = community health center.

reported having admitting privileges at a local hospital.

Practice Satisfaction

Respondents were queried about their overall satisfaction with rural practice using a yes-or-no format (Table 2). Eighty-nine percent (204) reported being satisfied. An open-ended multiple response question followed allowing up to three responses to explain why. Approximately 65 different responses were generated and classified into 13 broad categories as described in the literature. Even though respondents reported being satisfied, problems and frustrations were frequently mentioned. Twice as many positive responses as negative ones were offered regarding practice satisfaction.

On the positive side, lifestyle factors, such as hometown area, recreation and outdoors, interpersonal relationships, and know patients and families personally, were most commonly cited (21.5 percent), followed by a liking for autonomy and a full range of medical conditions (19.0 percent). Practice characteristics included such responses as serving a need and less competition from specialists (11.5 percent) and pleasant patient and family interactions (9.6 percent). Hospital factors such as adequate facilities and a good relationship with administration accounted for 1.4 percent of responses. The "other" category consisted of answers about limited hours working in an emergency department, clinic, or long-term care facility (3.3 percent).

On the negative side, government regulations, including paperwork and compliance issues (6.7 percent), and lower rural reimbursement rates (6.7 percent) topped the list. Other negative factors were low income potential (6.2 percent); lack of time for self, family, and continuing medical education (5.3 percent); work overload (4.3 percent); and professional isolation and disrespect from peers in other specialties (2.9 percent). Undesirable community factors, such as too many elderly persons and small town politics, were cited in 1.4 percent of answers.

Considering Leaving Rural Practice

Physicians were asked whether they were considering leaving rural practice using a yes-or-no response format (Table 3). About 20 percent (46)

Table 2. Factors Related to Satisfaction of Pennsylvania Family Physicians Toward Rural Practice.

Factor	Responses* No (%)
Positive	
Lifestyle and community factors	45 (21.5)
Full range and autonomy of practice	40 (19.1)
Desirable practice characteristics	24 (11.5)
Good patient interactions	20 (9.6)
Desirable hospital factors	3 (1.4)
Other	7 (3.3)
Negative	
Government regulations	14 (6.7)
Low reimbursements	14 (6.7)
Low income potential	13 (6.2)
Lack of time for self, family, CME	11 (5.3)
Work overload	9 (4.3)
Professional isolation and disrespect	6 (2.9)
Undesirable community factors	3 (1.4)

*Multiple response procedure to allow for estimation of the maximum number of possible responses.
CME = continuing medical education.

Table 3. Factors Related to the Possibility of Pennsylvania Family Physicians' Leaving Rural Practice.

Factors	Responses* No. (%)
Lack of time and long hours	11 (12.1)
Lower income	11 (12.1)
Career change	9 (9.9)
Professional isolation	9 (9.9)
Government regulations	8 (8.8)
Undesirable practice characteristics	7 (7.7)
Lower reimbursements	6 (6.6)
Cultural isolation	5 (5.5)
Undesirable community factors	4 (4.4)
Possible retirement	2 (2.2)

*Multiple response procedure to allow for estimation of the maximum number of possible responses.

answered "yes." Then, an open-ended multiple response question allowing up to three responses asked why. Reasons for considering leaving rural practice were classified into eight broad categories as described in the literature and included lack of time coupled with long work hours (12.1 percent); lower incomes than physicians in more urban locations (12.1 percent); professional isolation (9.9 percent); a career change in practice type such as university health center, emergency department, and academics (9.9 percent); government regulations (8.8 percent); undesirable practice characteristics, such as chronically understaffed, difficult business aspects, and less available services (7.7 percent); lower reimbursements (6.6 percent), cultural isolation (5.5 percent); undesirable community factors, such as financially unstable hospitals and inferior rural educational systems (4.4 percent); and possible retirement (2.2 percent).

One might question the disparity in percentage rates of those who were satisfied with rural practice, 89.0 percent, with those who are considering leaving rural practice, 20.0 percent. It seems physicians can be satisfied with rural practice and leave for reasons not necessarily related to practice satisfaction. For example, a few physicians offered retirement as a reason; one planned on moving to Wyoming because it is "more rural"; another was planning on leaving rural practice for an academic position; still another reported that he or she would leave if finances were inadequate.

Barriers to Rural Practice

Respondents were requested to check all that apply from seven predetermined barriers to recruitment and retention of primary care physicians to rural areas with an optional "other" category allowing for two responses (Table 4). Lower reimbursements headed the list (78.6 percent), followed by professional isolation (54.0 percent), lack of cultural amenities (47.9 percent), inferior school systems (31.6 percent), lack of equipment and technology (19.1 percent), lack of trained personnel (17.2 percent), and inadequate housing (11.2 percent). The "other" category included such factors as being overworked (30.3 percent), government regulations and paperwork (18.2 percent), low economic return for expended energy (12.1 percent), lack of personnel and support systems such as no house staff at the local hospital (12.1 percent), difficulty in recruiting adequately trained health personnel (9.1 percent), lack of professional esteem (9.1 percent), and spousal dissatisfaction (9.1 percent).

Correlates of Leaving Rural Practice

Multiple logistic regression estimates of the relation between eight predictors and the odds of physicians' considering leaving rural practice (1=yes, 0=no) are presented in Table 5. The chi-square statistic for the model appears adequate ($\chi^2=18.30$, $df=8$, $P<0.01$). Findings revealed two significant associations. Physicians who shared on-call hours with only 1 other physician were almost four times more likely to consider leaving rural practice than those who share on-call

Table 4. Barriers to Recruitment and Retention of Rural Pennsylvania Family Physicians.

Factors	Responses* No. (%)
Lower reimbursements	169 (78.6)
Professional isolation	116 (54.0)
Lack of cultural amenities	103 (47.9)
Inferior educational systems	68 (31.6)
Lack of equipment and technology	41 (19.1)
Lack of trained personnel	37 (17.2)
Inadequate housing	24 (11.2)
Other	
Overworked	10 (30.3)
Government regulation and paperwork	6 (18.2)
Low economic return for energy	4 (12.1)
Lack personnel and support	4 (12.1)
Lack professional esteem	3 (9.1)
Difficult to recruit trained personnel	3 (9.1)
Spousal dissatisfaction	3 (9.1)

*Multiple response procedure to allow for estimation of the maximum number of possible responses.

Table 5. Logistic Regression of Factors Related to Pennsylvania Family Physicians' (n=229) Considering Leaving Rural Practice.

Variable	β	Odds Ratio	95 Percent Confidence Interval
Number of years	0.060	0.94	0.87–1.02
Number of patients	0.007	1.01	1.00–1.02
Residency training*	1.029	2.80	1.21–4.38
Physician assistants*	−0.851	0.43	−0.65–1.51
Share on-call hours†	1.326‡	3.76	2.67–4.84
Reimbursements*	0.916	2.58	1.09–3.91
Professional isolation*	0.224	1.25	0.32–2.18
Solo practice	1.113†	3.18	1.77–4.44

*1=yes, 0=no.
†1=1, 0=>1.
‡P=<0.05.

hours with more than 1 (odds ratio=3.76, CI=2.67–4.84). Physicians in solo practice were three times more likely to consider leaving rural practice than those involved in other practice types (odds ratio=3.18, CI=1.77–4.44). Initial bivariate results using chi-square statistics indicated that sharing on-call hours with only 1 other physician (χ^2=8.98, *df*=1, $P<0.01$), professional isolation (χ^2=4.13, *df*=1, $P<0.05$), and lower reimbursements (χ^2=4.90, *df*=1, $P<0.01$) were related to physicians' considering leaving rural practice. The latter two, however, were not significant predictors in the multivariate approach.

Discussion

The research presented here is characterized by two methodological limitations common to survey research: the issues of nonresponse bias and sampling bias. The issue of nonresponse bias is of concern when less than 100 percent of the selected sample chooses not to participate. It is unknown in what ways physicians who failed to participate might differ from those who did. Respondents are more likely to have stronger opinions about the issues than nonrespondents. The use of a nonrandom sample might also bias the results and limit generalization of results. Nevertheless, findings are consistent with other research on rural physician retention.[4,5,14]

This study examined factors related to retention of rural Pennsylvania family physicians. The 89 percent who indicated satisfaction with rural practice exceeded the 71 percent of physicians who responded favorably to rural practice in a national study.[5] Clearly a majority of physicians claimed satisfaction with rural practice but willingly offered numerous complaints. For the 20 percent who reported they were considering leaving rural practice, a lack of time for self, family, and continuing medical education; long work hours with heavy workloads; lower incomes and reimbursements than urban counterparts; a career change, professional isolation; and government regulations were cited as reasons. Other barriers to rural practice consisted of inferior educational systems, lack of technology and trained personnel, lack of adequate housing, lack of professional esteem, and spousal dissatisfaction.

Retention of physicians in rural practice is assumed to be largely contingent on their financial well-being and their satisfaction with patient care and aspects of rural practice. Efforts by educators and policy makers should focus attention on modifying or changing attributes of rural practice that are viewed by physicians as undesirable. By establishing practice support activities, medical schools and colleges of medicine can alleviate several of the above problems. For example, the PSOP of The Pennsylvania State University College of Medicine, in partnership with the state Area Health Education Center (AHEC) program and the Pennsylvania Department of Health generalist physician initiative, Practice Sites: State Primary Development Strategies, plans to address complaints concerning professional isolation. Strategies could include providing consultation and referral services through telecommuniation systems, continuing medical education, and miniresidencies. Support strategies will be more meaningful if they are tailored to the diversity among rural communities. Differences in practice styles, patterns, and needs probably exist; therefore, in-depth focus group sessions across regions of Pennsylvania are planned to gain a better understanding of the specific needs of family physicians.

Colleges of medicine and medical school efforts would be hard pressed, however, to address several of the factors that influence the physician who is considering leaving rural practice. Policy makers need to address the inequity in reimbursements between rural and urban sectors, to simplify paperwork and minimize the financial and management burdens of rural physicians, and to improve community structures, such as fragile eco-

nomic conditions and inferior educational systems. Sharing on-call hours with only 1 other physician and having a solo practice were factors found to be significantly related to physicians' reasons for considering leaving rural practice. These findings imply a shortage of rural primary care physicians, which, in turn, places an emphasis on recruitment efforts.

The search for reasons and remedies for the primary care physician shortage must continue. We believe collaboration of efforts among academic institutions and federal, state, local, and private agencies has a strong potential to facilitate both recruitment and retention of primary care physicians in rural communities and will reduce many of the complaints of rural physicians.

References

1. Frenzen PD. The increasing supply of physicians in suburban and rural areas, 1975 to 1988. Am J Public Health 1991; 81:1141-7.
2. AAMC data book. Washington, DC: Association of American Medical Colleges, 1991.
3. Pathman DE, Konrad TR, Ricketts, TC 3rd. The comparative retention of National Health Service Corps and other rural physicians. JAMA 1992; 268:1552-8.
4. Crandall L, Dwyer J, Duncan R. Recruitment and retention of rural physicians: issues for the 1990s. J Rural Health 1990; 6:19-38.
5. Movassaghi H, Kindig D. Medical practice and satisfaction of physicians in sparsely populated rural counties of the United States: results of a 1988 survey. J Rural Health 1989; 5:125-36.
6. Pathman DE, Konrad TR, Ricketts, TC. Medical education and the retention of rural physicians. Health Serv Res 1994; 29:39-58.
7. Cooper JK, Johnson TP. Evaluation of medical center support for rural physicians. J Rural Health 1986; 2:47-54.
8. Carpenter CE. Human resource planning and management. In: Bisbee GE, editor. Management of rural primary care — concepts and cases. Chicago: American Hospital Association, 1982.
9. Cooper JK, Heald K, Samuels M, Coleman S. Rural or urban practice: factors influencing the location decision of primary care physicians. Inquiry 1975; 12:18-25.
10. Brown EE, Miller HM, Duttera MJ, Hummel GR. New physicians setting up a new practice: it isn't easy. Rural Dev Perspect 1986; 2:20-3.
11. Ogle KS, Henry RC, Durda K, Zivick JD. Gender specific differences in family practice graduates. J Fam Pract 1986; 23:357-60.
12. DeFriese GH, Ricketts TC. Primary health care in rural areas: an agenda for research. Health Serv Res 1989; 23:931-74.
13. Dean T. Rural doc Medicare payments inadequate. Rural Health Care 1988; 1:1.
14. Rhoades J, Day F. Locational decisions of physicians in rural North Carolina. J Rural Health 1989; 5:137-53.
15. Curry RWJr, Crandall LA, Coggins WJ. The referral process: a study of one method for improving communication between rural practitioners and consultants. J Fam Pract 1980; 10:287-91.
16. Pathman DE. Retention of rural providers. Paper presented at the National Rural Health Association, Kansas City, MO, 1993.
17. National Rural Health Association Working Paper (NRHA). Graduate medical education reform to increase providers in rural areas. Kansas City, MO: National Rural Health Association, February 1993.
18. Schroeder SA, Zones JS, Showstack JA. Academic medicine as a public trust. JAMA 1989; 262:803-12.
19. Rosenblatt RA, Whitcomb ME, Cullen TJ Lishner DM, Hart LG. Which medical schools produce rural physicians? JAMA 1992; 268:1559-65.
20. Center for Rural Pennsylvania (CRP). Rural Pennsylvania enters the 1990s: health care outlook and opportunities. Harrisburg, PA: Center for Rural Pennsylvania, 1990.
21. Dillman DA. Mail and telephone surveys: the total design method. New York: John Wiley & Sons, 1978.