

Strategies used by interdisciplinary rural health training programs to assure community responsiveness and recruit practitioners

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Summary *In this article, the strategies used by five US rural interdisciplinary training grant programs to respond to local needs and to promote recruitment in rural communities are described. The programs provide training to 17 health care disciplines and serve disadvantaged Hispanic, African-American, Amish, Native American, and Anglo populations. Four programs are based in academic institutions; one is based in a community health center. The programs provide services to the rural communities through individual clinical or case management services, population-level interventions, and collaborative research. All programs use specific mechanisms (e.g. case conferences or participation in local coalitions) to facilitate collaboration with residents and to link student activities with community or individual needs. Unique strategies include the use of problem-based learning and community health workers on the interdisciplinary team to increase responsiveness. The programs also provide educational support to students while they work in the rural communities. Finally, the primary strategy used to promote recruitment is the training experience in rural communities. The programs also appear to indirectly improve the environment of rural practice.*

Key words: *Interdisciplinary; rural; recruitment; community responsiveness; case management; population health.*

Introduction

Shortages of physicians in rural areas have been characteristic of health care in the USA for about a century; that is, since the publication of the Flexner Report in 1910 (Gesler *et al.*, 1992; Rosenblatt *et al.*, 1992). The report changed the approach to medical education from a focus on general medicine and small medical schools to large medical schools, preferably associated with a university, that were located in urban population centers. A shortage of rural physicians became evident during the depression of the 1930s and continues to the present. To alleviate the shortage, the US Government has supported a number of programs, including programs for hospital construction, neighborhood health centers, community

health centers, demonstration projects, and loan forgiveness for some providers (Gesler et al., 1992). One of the more recent initiatives by the US Government has been the Quentin N. Burdick grant program. It focuses on providing training experiences in rural communities for a number of health care disciplines. The program design is consistent with observations that health care providers often practice near where they have trained (Gordon & Denton, 1992; Rosenblatt et al., 1992).

The funded programs provide demonstrations of innovative interdisciplinary training and curriculum development. The academic institutions involved are expected to develop linkages with rural health care agencies or practice facilities, health professionals who practice in rural areas, and health departments. Additionally, applicants need to show that the proposed training program addresses the health needs of the collaborating rural communities (Bureau of Health Professions, 2001). That is, student activities should provide needed services to community residents as well as increase the skills of the student. The purpose of this article is to describe the strategies used by selected rural interdisciplinary training programs to: (1) provide training experiences for health sciences students that respond to the needs of the target rural community; and (2) encourage program participants to practice in rural communities.

Descriptions of the training programs

Because diversity among rural communities is considered the most prominent characteristic of rural America (Cordes, 1989), strategies for providing community responsive services can be expected to vary between communities and their associated rural health training programs. In this section, we briefly describe five training programs participating in the Quentin N. Burdick grant program and the diverse rural context in which they exist. Further information on currently funded programs is available on the grant Web site (Bureau of Health Professions, 2001). Strategies for providing community responsive services are described in the next section.

The training program in Arizona, known as the Nuestra Comunidad, Nuestra Salud Project, provides training for graduate and undergraduate students in nursing, pharmacy, medicine, social work, public health, and nutrition. Practicums are offered during the spring, summer, and fall semesters. The program involves the University of Arizona, Arizona State University, Mariposa Community Health Center, and the Southeast Arizona Health Education Center. During the 1999–2000 grant year, 34 students participated in the direct training component of the project. The target community for training is Santa Cruz County (population density 25.7 people per square mile), which is located on the international border and is a port of entry between Mexico and the USA. Its position on the border provides the setting for its primary economic activity, border crossing by individuals or shipment of goods across the border. The heavy border traffic results in increased stress on the environment (e.g. air pollution and raw sewage), law enforcement (including illegal crossings), road maintenance, and social and medical services. The county is primarily Hispanic (78%), only 32% are high school graduates, 54% do not have health insurance, unemployment is high (24% in August 1999), and the median income is 23% of the state average.

The Interdisciplinary Rural Health Training Program (IRHTP) in rural eastern North Carolina provides training for undergraduate or graduate students in health education, health information management, clinical laboratory sciences, nursing, nurse practitioner, medicine, pharmacy, physician assistant, nutrition, occupational therapy, physical therapy, and social work. The program is operated by East Carolina University (ECU) and the Eastern Area Health Education Center. Students from UNC-Chapel Hill, UNC-Greensboro, Duke University, North Carolina A & T State University and North Carolina Central University

participate, although most are from ECU. The students are placed in teams in one of three model rural community training sites with a common interdisciplinary curriculum which complements their discipline-specific training. Although each community served is different, they are all racially diverse, economically impoverished, and underserved by health professionals. All three communities are heavily dependent upon agriculture and/or fisheries for their economic base. In this region, morbidity and mortality rates for most chronic diseases exceed state and national averages. During the 1999–2000 grant year, 92 students participated.

A previously funded interdisciplinary program, the Rural Alabama and Mississippi Interdisciplinary Program (RAMIP), consisted of the disciplinary departments of the participating academic institutions, community health centers, and other health-related organizations. The program provided training to students from all primary care disciplines: allied health, dentistry, medicine, nursing, pharmacy, physical therapy, physician assistants, public health, social work, and optometry. A total of 29 students participated in the 1999–2000 grant year. The target communities were in rural Alabama and Mississippi where Federally supported community health centers have been located. The area is economically depressed and skilled, mobile, rural residents have migrated to urban areas leaving behind a disproportionate number of poor, unskilled, and elderly residents. Hence, the service entities that remain have experienced drastic reductions in revenue and increasing difficulties in recruiting and retaining health care professionals.

The interdisciplinary training grant in Michigan is known as the Rural Health Education Program and is located at Western Michigan University. Students from several disciplines are eligible to participate, including students from occupational therapy, speech–language pathology, nursing, physician assistants, social work, gerontology, substance abuse, holistic health, and dietetics from Western Michigan University and pharmacy students from Ferris State University. During the 1999–2000 grant year, 47 students participated. The target geographical area is a five county region in southwest Michigan, which is an area of considerable cultural and ethnic diversity. The dominant population is Anglo, but the area is home to two Potawatomi Indian tribes, African-Americans, Amish, and Latinos, primarily Mexican-Americans who immigrated to Michigan from the migrant farm labor stream.

The New Mexico Interdisciplinary Health Care for Rural Areas Training Program is administered through the University of New Mexico Health Sciences Center and provides training for students in medicine, pharmacy, nursing, nurse practitioner, dental hygiene, medical laboratory sciences, speech and language pathology, public health, social work, health education and physical, respiratory, and occupational therapies (Borrego *et al.*, 2000). The program consists of both on-campus (spring semester) and off-campus (summer sessions) training experiences that make extensive use of the problem-based learning case tutorial method. The problem-based learning method helps the students become acquainted with each other's disciplines, promotes the development of team work skills, and fosters respect for the contribution of other health care professionals. A typical problem-based learning session includes eight to 10 students from at least five different disciplines and at least two faculty facilitators from different disciplines. The off-campus experiences are located in rural communities representing five areas (northwest, northeast, southwest, southeast and central) of the state. Given the rural and medically underserved nature of the state (26 of 33 counties are primary health profession shortage areas; New Mexico Department of Health, 2000), the provision of services by the 361 students trained during the 10 years of the program has been not only significant, but welcomed. The participating communities also represent areas of high poverty (from 14 to 27% are at poverty level) and contain a high percentage (39–80%) of ethnic minorities, primarily Hispanics and Native Americans.

Strategies for providing community responsive services

Rural interdisciplinary training programs appear to have three venues through which they provide services responsive to community needs: (1) by providing services directly to individual community residents; (2) by providing population interventions or by working with local coalitions or agencies to develop community-level interventions; and (3) by conducting research with community residents.

The Arizona project utilizes all three venues to provide community responsive care. Population interventions are provided through community health activities and individual services are provided through case management. The first strategy to assure responsiveness to community needs is to have the students conduct an assessment using a systems model (Anderson & McFarlane, 2000) that enables the students to identify the needs and resources of the community across a range of systems, including government, education, and economics, as well as health and social services. The students use the key informant method (interviews of knowledgeable residents; Gregor & Galazka, 1990) to obtain residents' perspectives.

Second, interventions are identified by working with a community liaison to identify an appropriate intervention for student involvement. Residents notify the liaison if their agency or coalition would like student assistance with their program. The liaison then presents the options to the students and together they identify an appropriate intervention. Example interventions include health fairs, an assessment and community forum related to the treatment of domestic violence perpetrators, educational programs on child development, and a television series on adolescent health.

The responsiveness of case management services is assured by knowledge derived from the community assessment described above. Assessments have revealed that disadvantaged Hispanics are at high risk for certain diseases such as diabetes (prevalence may be as high as 18%) and that they have a great deal of difficulty managing the disease. Case management data on needs indicate that 80% of clients have problems with low income and that 54% have difficulty obtaining services because of a lack of knowledge or a language barrier (Slack & McEwen, 1999). Also, community health workers are included as members of the team. They know the local culture and resources (Witmer et al., 1995) and can provide critical information on the appropriateness of interventions within the context of the community.

Collaborative research projects with community professionals also facilitate responsiveness. Projects have been completed to establish the prevalence of domestic violence in patients seen in the Emergency Room, to determine if the diabetes care provided meets standards, and to identify the factors that patients believe affect their ability to manage their diabetic treatment regimen.

Finally, a structured process [as suggested by Knapp et al. (2000)] is provided to assist the students while they learn about and are involved with the community. When the students begin their practicum, they are provided with self-instructional modules. Then throughout the practicum, the students meet in weekly seminars for case management or community health with the community health workers, other community practitioners, and faculty.

Although the population served is different, the IRHTP in eastern North Carolina utilizes many approaches similar to the Arizona program. In addressing population health needs, the students are linked to local (county-specific) task forces that are part of the state's Healthy Carolinians 2010 Program. The students review community-wide needs with local citizens and other task force members. This provides an important and unique opportunity for the students to observe local citizens, most of whom have no formal health sciences education, engaging in health improvement activities. The students then work collaboratively with the local task force to identify and implement a specific community health intervention targeted

to the needs identified by the local citizens. Examples include health fairs, targeted disease screening, mammography needs assessment/education, disaster recovery and care procedures, and an indigent medication program. A specific area of the program's Web site is also set aside for local citizens/agencies to 'post' specific community needs and activities.

The students are actively engaged in direct patient care for underserved citizens through an intensive case management program. Student teams review a patient's records, make a home visit, and write a summary of the case which is posted on a secure Web site. Once on the Web site, students, preceptors, and faculty can comment on the issues relevant to the focal patient's care. From a list of issues raised on the Web site, a formal, live, case conference is held in which the students develop a care plan for the patient. It represents the product of their team work and collaboration with local preceptors and faculty. Then the local provider implements the plan. Additionally, the students at one site case manage diabetic patients to minimize the likelihood of diabetic complications and to enhance quality of life.

Like the programs described above, RAMIP provided direct service through clinical training, community activities, and research. The clinical experience included didactic learning and hands-on training in community health centers. The community component encompassed home visits, health screenings, and the provision of health education through the schools and other community organizations. However, unlike the other programs, which are based in academic institutions, RAMIP was based in a community organization, a community health center. Because the community health center served local residents, student-provided services were responsive to the needs of the population.

Students in the Rural Health Education Program at Western Michigan University provide direct service to residents of the target communities through their clinical intern experiences with local practitioners in their discipline and through the Summer Institute on Migrant Farmworker Health. During the Summer Institute, all clinical placements are at a migrant health center or with the migrant Head Start program. To increase the responsiveness of the institute to the needs of migrant farm workers, interpreter training is offered to students studying Spanish and to the interpreters serving the two clinical sites.

Population- or community-level interventions are provided through the community development component of the program. The students conduct a needs assessment, then work with the community to address those needs. For example, needs assessment of the Pokagon Band of the Potawatomi Indians revealed that tribal members had to drive 12 hours to the upper peninsula of Michigan to access the only substance abuse program specifically for Native Americans. To address the issue, the tribal council formed a taskforce that held a series of meetings with tribal members about substance abuse in the community. As a result, out-patient services for substance abuse were developed locally for tribal members and the taskforce began working on establishing a halfway house. The taskforce itself has become the Substance Abuse Committee and training program staff are voting members of the committee.

Community-based research is conducted by interdisciplinary faculty teams in collaboration with rural practitioners or organizations. Researchers are mandated to work in collaboration with the community so that the findings can be used to improve the health of rural residents.

Educational support is provided to practicum students during the fall and spring semesters through a Rural Health Seminar. The seminar consists of four themes, learning about rural communities, experience in interdisciplinary practice, cultural competence, and empowerment of rural people. By including community professionals and rural residents as instructors, the perspectives of rural residents are well represented in the course.

In the New Mexico program, community needs are met by providing services directly to individuals and through the provision of community-based projects. During the off-campus portion of the program, the students are required to complete at least 2 months of

their fieldwork in a rural community or underserved area. Most students complete 40 hours per week of direct patient services with their disciplinary preceptor(s). In addition, the student groups meet in their problem-based learning tutorial for 4 hours per week.

The problem-based learning tutorial case typically reflects actual patients seen by the students and incorporates community-specific challenges in the resolution of that patient's problems. To obtain the patient's perspective, the students invite the patient to the tutorial session. They also organize field trips to rural health care settings or invite speakers to present on community health topics to increase their understanding of the issues (medical, social, economic, etc.) of the community.

Although not required, student groups have identified and provided services through participation in community-based projects. These projects are coordinated by the rural community coordinators, who are members of the community. They also publicize the program to facilitate community involvement and accessibility to the students. Student projects include: (1) screenings, education provision, and distribution of health profession recruitment information at community health fairs, (2) youth mentoring in liaison with existing community groups, and (3) a health article for a weekly newsletter for a Native American community.

The general characteristics of interdisciplinary student teams also support the provision of community responsive care. By incorporating multiple disciplinary perspectives into care, the particular needs of the community or the rural resident are more likely to be considered. In addition, interdisciplinary care increases the ability of the community to maximally use the knowledge and skills of all providers, an important advantage in rural communities with limited resources. Finally, having students provide services may also promote responsiveness, particularly for disadvantaged populations. Some authors (Slack & McEwen, 1999) have noted that disadvantaged clients develop increased self-efficacy through their interaction with students.

Strategies for recruiting practitioners in rural communities

Three primary strategies are available to promote practice in rural communities: tuition payment programs, recruitment and retention programs, and telemedicine initiatives (Orloff & Tymann, 1996). Recruitment and retention strategies include: (1) rural rotations, in which students are placed in a rural health facility for a period ranging from 1 week to 1 year, a strategy used by the majority of states; (2) site match programs where interested providers are matched with professional positions in rural areas; (3) spousal programs in which a community resident addresses the concerns of the provider's spouse and family; (4) the J-1 Visa program, which is a visa waiver program enabling physicians from foreign countries to practice in rural communities; (5) financial/tax incentives such as subsidizing malpractice insurance or an income tax credit; and (6) locum tenens programs that provide time off and backup to rural practitioners. Telemedicine initiatives are primarily concerned with providing support to rural practitioners through continuing education programs and access to specialist consultation.

The selected interdisciplinary training programs are not directly involved in tuition repayment programs. However, students participating in Federal or state loan repayment programs often also participate in the training programs. The interdisciplinary training programs are directly involved with rural rotation programs; that is, they provide health sciences students with the opportunity for training in a rural community. They may be indirectly involved with site matching or telemedicine programs.

The Arizona project directly promotes recruitment by providing training opportunities in a rural community. The students are in the community for 4 weeks to 1 year depending

on their requirements. Through the community assessment they become acquainted with the residents and the community. Through the case management experience the students are oriented to the issues of patient care in a rural community. And through the didactic portion of the experience the students learn the major issues of rural health care and issues of practice in a rural area. The project is indirectly involved with the telemedicine program; through the students' participation in the practicum they are exposed to the use of telemedicine. The students are also encouraged to attend the annual state rural health conference, which facilitates student interaction with rural practitioners and health care organizations.

The IRHTP in eastern North Carolina utilizes several strategies to encourage its program completers to practice in rural areas. First, faculty are encouraged to identify students with an interest in rural practice. Also, ECU specifically recruits students from rural areas. Second, the IRHTP places students in sites which provide well-structured experiences for a wide variety of health sciences students. The North Carolina Area Health Education Center provides for housing and other needs, and the ECU Health Sciences Division supports a rural scholars program, as well as preceptor development programs. Third, the IRHTP is linked with the North Carolina Office of Rural Health, which provides specific support for selected disciplines. Finally, the students are exposed to the ECU Telemedicine Program, which provides remote specialist consultation. It is also utilized for teaching sessions as well as administrative meetings. In addition, all of the students receive specific training and experience in Internet-based information sharing and patient care, which, we believe, help to minimize the sense of 'isolation' associated with rural practice.

The interdisciplinary training programs in Michigan and in Alabama and Mississippi also promote practice in rural communities through the students' intern experiences. In the Alabama and Mississippi program, students were recruited via the National Health Service Corps' Students/Residents Experiences and Rotations in Community Health program, and through the Area Health Education Centers which also operate the telemedicine system.

Similar to the interdisciplinary training programs described above, the New Mexico Interdisciplinary Health Care for Rural Areas Training Program uses a variety of strategies in promoting practice in rural communities. First, several loan repayment programs as well as potential practice sites (including community health centers and Indian Health Service facilities) are available for many of the participating disciplines. Student participation allows them to decide if they want to practice at a rural site. Additionally, several disciplines require that at least one clinical rotation or fieldwork experience be in a rural or underserved area.

Participating students spend 6 months in their interdisciplinary team; 2 months are spent living and practicing in rural or underserved communities, although some students extend their stay to complete additional fieldwork experiences. While in the community, the students are required to have an e-mail account for communicating with team members for writing problem-based learning cases. Most students also have Internet access through which they can conduct primary literature, library or Internet searches for problem-based learning case development or employ it as a tool in solving patient problems while completing clinical requirements. Use of these resources illustrates that rural practice does not necessarily mean being isolated from information or colleagues.

Finally, a crude evaluation of practice setting outcomes for the first 9 years of the New Mexico program found that 52 of 361 (21%) program participants have been employed in rural or underserved areas within New Mexico following graduation (Borrego et al., 2000). Several participants also work in rural communities outside the state of New Mexico. These placements are probably an underestimate as follow-up contact with many participants has proven difficult. A longitudinal follow-up study is being conducted to evaluate the question of rural and underserved placement, retention, and employment.

Discussion

The five programs described above represent four very different geographical locations: the upper Midwest, the east coast, the south, and the southwest. They serve various minority populations including Hispanics, African-Americans, Amish, and Native Americans, in addition to the Anglo population. The student disciplines represented in the five programs vary widely as well. Students from 17 disciplines participate in the training. Students from pharmacy, nursing, and social work and either medicine or physician assistants participate in all the described programs. Students from other disciplines, including optometry, dentistry, physical, respiratory, and occupational therapy, holistic health, substance abuse, nutrition, public health, medical laboratory sciences, speech and language pathology, and gerontology, also participate in specific programs. During the 1999–2000 grant year, about 240 students were trained in the five programs. Data from the New Mexico project indicate that about 20% of the students go on to practice in rural or underserved communities.

The general services provided by the five programs are also similar. All programs provide direct patient care either in a clinic or through case management. All include community health, and most engage in research activities.

Despite differences in geographical location, the populations served, and the disciplines represented, the programs use similar strategies for assuring that the provided services are responsive to community needs. The students conduct some type of assessment. Much of the assessment data is collected through key informant interviews or focus groups from the target community so that the data represent the residents' perspectives. One program uses the development of problem-based learning cases based on cases seen by students to assure responsiveness to local needs. The information derived from the data delineates the context for providing individual services or serves as the basis for developing community interventions.

The programs use specific mechanisms to facilitate interaction with community professionals and residents, including key informant interviews, focus groups, interactive Web sites, case conferences, and participation in community task forces or coalitions. In addition, one program includes community health workers who bridge the gap between academia and the clients from minority or disadvantaged populations. Another provides training for interpreters. Several programs use a case management model and home visits to provide clinical care, which facilitates consideration of client needs. The programs also provide educational support to students through self-instructional modules, didactic learning, seminars, and case conferences.

The training programs appear to respond well to the diversity of rural communities. They use similar strategies but the student activities are specific to the community. The ability to respond to the needs of diverse communities probably results from the way the Quentin N. Burdick grant program is structured and the involvement of the training programs. The grant program does not specify activities or disciplines. Its overall goal is to promote practice in rural communities; academic institutions and the communities then determine what type of program is suitable for them. Hence, individual programs are free to develop in a manner that best meets the needs of the community and the students.

The training programs described here also have students working at the community or population level in addition to providing direct clinical care. The community-level activities increase understanding of the community and its health issues. These activities seem critical to the training experience; they are the primary activity that expands students' knowledge beyond that needed for direct clinical care.

The primary strategy used by the interdisciplinary programs for promoting rural practice is that of providing training opportunities in rural communities; significantly, the training

opportunity can also serve students participating in tuition repayment programs. One program specifically recruits students into the health professions from the target communities. Several involve students in telemedicine and provide links to the state rural health office or to rural health associations.

Rural rotation programs seem necessary, but not sufficient, to promote practice in rural communities. That is, rural experience promotes practice in rural communities but other factors, for example, the availability of spousal employment or salary levels, also contribute to the decision to practice in a rural community (US Congress, 1990). Thus, the direct effect of the Quentin N. Burdick grant program on rural recruitment is through student rotations. And, if the student grew up in a rural area, rural rotation programs may be the most effective strategy (Conte *et al.*, 1992; Gordon & Denton, 1992; Sesney *et al.*, 1994).

The training programs also seem likely to have indirect benefits to rural practice primarily through reducing the isolation of practitioners. They increase connections between rural providers and academic institutions, which provide a venue for rural providers to access the expertise of the associated academic institution. This, in turn, reduces the isolation associated with rural practice. The programs may also promote networking between urban and rural providers. The students who have had a rural experience have connections to community providers; when the students become urban practitioners, they are then available for consultation or referral. Finally, the care provided by former students to rural residents who seek treatment in urban centers is likely to be more appropriate; that is, providers are more aware of the problems encountered by rural residents in seeking and adhering to treatments. Although the above aspects of recruitment and retention are indirect, they should not be dismissed or go unrecognized; they certainly contribute to the overall environment of rural practice.

The final aspect of rural practice to which the interdisciplinary training programs contribute is that of the development of a body of knowledge about rural health and the development of expertise in rural health. Faculty involved have the opportunity to develop expertise through student training and collaborative research in rural communities as well as through development of didactic classes on rural health. Additionally, students involved in the training may become faculty so that a cadre of faculty with expertise in rural health is being developed.

The above discussion of the strategies used by rural interdisciplinary training programs to assure community responsiveness and to recruit practitioners is limited to the few programs that are described here. In addition, the information used in the project descriptions was supplied by people directly involved in the programs, so their biases may have been imposed on the program descriptions. Hence, the strategies of other groups involved in rural health should be explored. Further, the discussion is primarily descriptive or exploratory; a more rigorous study design including collection of evaluative data from each project is required to provide more concrete evidence of the effects of the programs on rural recruitment and retention.

Conclusions

The above description of the five interdisciplinary training programs indicates that responsiveness to individual communities is facilitated by three program characteristics: (1) student activities are driven by community or individual need rather than disciplinary expertise; (2) the programs are structured to facilitate collaboration between students and community residents; and (3) educational support is provided to students while they are in the rural community. The model of interdisciplinary training used by the Quentin N. Burdick grant

program appears to be a training model that is adaptable to the needs and characteristics of diverse communities. Also, by providing support for student training in rural communities, the Quentin N. Burdick program appears to directly address previously identified factors affecting rural health practice and to indirectly improve the environment of rural practice.

References

- ANDERSON, E.T. & MCFARLANE, J. (2000). *Community as partner*. Philadelphia: Lippincott.
- BORREGO, M.E., RHYNE, R., HANSBARGER, L.C., GELLER, A., EDWARDS, P., MCCCLAIN, L. & SCALETTI, J.V. (2000). Pharmacy student participation in rural interdisciplinary education using problem based learning (PBL) case tutorials. *American Journal of Pharmaceutical Education*, 64, 355–363.
- BUREAU OF HEALTH PROFESSIONS (2001). Web site: //bhpr.hrsa.gov/interdisciplinary/rural.html
- CONTE, S.J., IMERSHEIN, A.W. & MAGILL, M.K. (1992). Rural community and physician perspectives on resource factors affecting physician retention. *The Journal of Rural Health*, 8, 185–196.
- CORDES, S.M. (1989). Rural economic development and health services: the relationship between health services and rural development. *Health Services Research*, 23, 757–784.
- GESLER, W.M., HARTWELL, S., RICKETTS, T.C. & ROSENBERG, M.W. (1992). Introduction. In: W.M. GESLER & T.C. RICKETTS (Eds), *Health in rural North America* (pp. 1–24). New Brunswick: Rutgers University Press.
- GORDON, I.T. & DENTON, D. (1992). The relationship of rural clinical rotations to where registered nurses practice. *The Journal of Rural Health*, 8, 298–304.
- GREGOR, S. & GALAZKA, S.S. (1990). The use of key informant networks in assessment of community health. *Family Medicine*, 22(2), 118–121.
- KNAPP, M.L., BENNETT, N.M., PLUMB, J.D. & ROBINSON, J.L. (2000). Community-based quality improvement education for the health professions: balancing benefits for communities and students. *Journal of Interprofessional Care*, 14(2), 119–130.
- NEW MEXICO DEPARTMENT OF HEALTH (2000). *Primary Care/Rural Health Bureau's Data Compendium 2000*. Santa Fe.
- ORLOFF, T.M. & TYMANN, B. (1996). *Rural health: an evolving system of accessible services*. Washington, DC: National Governors Association.
- ROSENBLATT, R.A., WHITCOMB, M.E., CULLEN, T.J., LISHNER, D.M. & HART, L.G. (1992). Which medical schools produce rural physicians? *Journal of the American Medical Association*, 268, 1559–1565.
- SESNEY, J.W., KREHER, N.E. & POTTS, M.J. (1994). Graduates' reflections on their rural medical education: the upper peninsula campus experience. *The Journal of Rural Health*, 10, 279–285.
- SLACK, M.K. & MCEWEN, M.M. (1999). The impact of interdisciplinary case management on client outcomes. *Family & Community Health*, 22(3), 30–48.
- US CONGRESS, OFFICE OF TECHNOLOGY ASSESSMENT (1990). *Health care in rural America* (OTA-H-434). Washington, DC: US Government Printing Office.
- WITMER, A., DEIFER, S.D., FINOCCHIO, L., LESLIE, J. & O'NEIL, E.H. (1995). Community health workers: integral members of the health care work force. *American Journal of Public Health*, 85, 1055–1057.

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