

Rural Health Professions Education at East Tennessee State University: Survey of Graduates From the First Decade of the Community Partnership Program

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ABSTRACT: *Context:* To help meet rural Appalachian needs, and with initial support from the W.K. Kellogg Foundation, East Tennessee State University partnered with 2 counties to implement a health curriculum for nursing, public health, and medical students in a rural setting. The Community Partnerships Program 3-year longitudinal curriculum included theoretical, conceptual, and practice elements of the 3 disciplines incorporated into an experiential, inquiry-based, service-learning program. Interdisciplinary learning, problem solving, and reinforcement of career choices in medically underserved rural communities were emphasized. **Purpose:** To compare career choices, attitudes, and practice locations of Community Partnerships Program graduates with traditional graduates. **Methods:** Surveys were mailed to Community Partnerships Program and traditional program graduates matriculating from 1992 to 2002 (response rates 58/84 and 72/168, respectively). **Findings:** Community Partnerships Program graduates indicated a significantly greater interest in rural primary care, care for the underserved and interdisciplinary group collaboration, and were more likely to practice in rural locations than did their traditionally educated peers. Family, personal factors, and the availability of employment were major influences in determining the decision to choose a career in a rural location. Community Partnerships Program graduates indicated they were better prepared to work in interdisciplinary teams and were more likely to work in community-based programs and activities than did the traditional graduates. **Conclusion:** A program that enrolls students interested in rural health care and provides training in rural communities produces graduates who will practice in rural areas.

The needs of rural Appalachian counties for access to health care by well-qualified professionals have a long history of going unheeded.¹ Addressing these needs, in 1991, the W.K. Kellogg Foundation awarded nearly \$50 million to 7 universities to initiate the Community Partnerships for Health Professions Education Program (CPP). East Tennessee State University (ETSU), 1 of 7 universities chosen, received \$6 million to support development of a model health professions education program in partnership with 2 rural Appalachian counties.² Development of the model program at ETSU involved identifying common learning objectives from the curricula in medicine, nursing, and public health, which could be taught in a community-based interdisciplinary setting. A governance body was developed in which the university and community had equal decision-making authority. Students who volunteered to participate in the program spent at least 1 d/wk in the rural sites.

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The program focused on developing knowledge, skills, and attitudes relating to assessing the health care needs of rural individuals and communities and developing interventions for meeting these needs, which involved interdisciplinary teams and use of community resources. The goal of the model program was to increase the number of health care providers who could function within an interdisciplinary health care team, would remain sensitive to community health needs, and would practice in rural underserved communities.

Purpose and Background. The focus of this report is to assess career choices, practice locations, and attitudes of CPP graduates compared with traditional graduates of our institution. The study addressed 3 questions: (1) do CPP graduates differ significantly from matched traditional graduates in terms of career choices, practice location, or attitudes toward professional practice? (2) what factors influence a decision to work in a rural location or primary care? (3) how important was the academic program in enhancing graduates' ability to work in interdisciplinary teams?

At ETSU, the CPP curriculum focused on disease prevention, health promotion, and primary care needs of rural underserved Appalachian counties. Medical, nursing, and public health students electing to participate were educated together over a 3-year period using an inquiry-based curriculum.³ Community curriculum committees were developed in each of 2 rural counties. These committees comprised full-time university faculty assigned to work in the communities, volunteer community clinical faculty, and community leaders representing various disciplines. The committees identified community service-learning opportunities with the potential to fulfill the established learning objectives of the program. The full-time faculty (representing the disciplines of medicine, nursing, and public health) worked with the community members to actually implement the learning activities. Each county provided classroom facilities where the students could meet for class and organizational activities. However, an emphasis of the program was getting students into the community. Thus, students were assigned as teams to work in a variety of settings such as physician offices, nurse-managed clinics,⁴ public health departments, nursing homes, public schools, home health agencies, correctional facilities, worksites, community mental health centers, and hospitals. All teaching-learning situations were interactive with students, faculty, and community members engaged in health-related activities.⁵ Every teaching strategy included multiple

areas of emphasis requiring students to examine the cause and effect nature of health behaviors and environmental conditions as they impacted the individual, the family, and the community.

As a result of the partnerships and community assessments, students conducted numerous projects. In 1 project, students used their epidemiology and biostatistics skills to study a possible cancer cluster involving Johnson County and adjacent North Carolina counties. In another project, students assessed every child in grades kindergarten through 6 in all Hawkins County Schools to determine the extent of childhood obesity. Classroom projects were developed to address the problem of obesity and community coalitions were formed. Students engaged in community-wide campaigns to inform county residents of the need for organ donation, living wills and durable powers of attorney, and implemented programs to improve access to mammograms and Pap smears by low-income women. Multidisciplinary teams organized a variety of health fairs for the community, workplaces, schools, and farm families.

The 2 counties chosen to participate in the model program were selected based on their level of need, willingness as a community to become a part of the education of health care students, and their previous partnerships with the university. Hawkins County, located 50 miles northwest of ETSU, has a population of 55,000. It is a county of small towns and rural areas divided by mountains and rivers. One third of the county borders the city of Kingsport and Sullivan County, which is classified as a small metropolitan region. The townships of Mount Carmel and Church Hill characterize typical bedroom communities driven by the proximity to Kingsport. The remaining area of Hawkins County is the prototype of a rural Appalachian county. There are numerous unincorporated townships surrounded by subsistence farms and mountainous timber areas. The county has a 50-bed hospital and an array of health care providers. However, access to health care is still limited for segments of the population due to an employment structure that often does not include health care benefits. Johnson County, 40 miles northeast of the university, has a population of 18,000 and is the third poorest county in the state. The entire county is rural. The county economy is making a transition—it once had a strong manufacturing base, but most plants were closed in the 1990s and the county lost jobs. Bordered by North Carolina and Virginia, the county is now being marketed as a tourist destination. As is true in Hawkins County, access to health care is challenging, with winding 2-lane highways, limited health insurance coverage for residents, and too few health

care providers, as evidenced by the county's health professional shortage area designation.

While university administration and faculty have been supportive of this innovative approach to health professions education for the past 12 years, the primary question remains, "Does it work?" Earlier studies chronicled the impact of the program on ETSU, the faculty, the students, and the communities.^{6,7} This report assesses the career choices, attitudes toward professional preparation and practice locations of medical, nursing, and public health graduates of the CPP compared with traditional graduates.

Methods

Instrument Development. The primary data collection instrument was a 21-item questionnaire specifically designed for the 10-year program assessment. The survey instrument was developed by an interdisciplinary team of ETSU researchers and consisted of a combination of Likert scale items and open-ended questions. The questionnaire focused on 3 essential domains:

1. Practice locations and career choices.
2. Incorporation of interdisciplinary, community-based philosophies.
3. Attitudes toward professional preparation.

The initial draft of the questionnaire was reviewed by a jury of 31 experts from 3 of the other Community Partnership grantees to assess content validity, construct validity, and readability. Each of the 3 institutions had comparable programs designed to impact health professions education in rural communities. The instrument was redesigned to accommodate suggested changes and then administered to a pilot group of health professions students and graduates from another institution, which had implemented a similar rural community-based program. Subsequent changes in the instrument were made to enhance ease of response and to improve the appropriateness of all items.

Rural practice location was defined as practicing in a town with a population of less than 25,000, based on respondent self-report. Assessment of baseline attitudes was retrospective based on respondent recall. Underserved patients were defined as those who would not have readily available health care alternatives other than the responding professional, based on respondent self-report.

Research Design. All CPP graduates who participated in the program from 1992 to 2002 were identified. The CPP restricted enrollment to no more

than 8 medical students and 8 nursing students per county per cohort. There was no limit for public health students, though the number of public health students participating was small. A new cohort of students enrolled each year. For the purposes of this research, only students who successfully completed the entire program were included in the study. Student attrition was high (approximately one third of the students initially entering the program did not complete the entire 3-year program). Attrition was primarily due to: academic performance, changes in career choices, and in the case of medical students, the selection of an accelerated curriculum, which demanded clinical scheduling inconsistent with the CPP cohort model. The 84 CPP graduates who completed the entire program were compared to a matching cohort of traditional ETSU students to examine differences in the 3 domains of (1) practice locations/career choices, (2) incorporation of interdisciplinary, community-based philosophies, and (3) attitudes toward professional preparation. Graduates from the CPP and traditional programs in medicine (MD), nursing (BSN), and public health (BA) were contacted by telephone to verify current addresses, to inform them of the study, and request their cooperation. Questionnaires were mailed with return envelopes in the fall of 2002.

All 84 CPP graduates were mailed questionnaires. A control group of 168 traditional program graduates (a 2-to-1 proportion, representing the proportion of traditional graduates to CPP graduates) was matched to CPP graduates for the variables of discipline, age, gender, race, and cohort year. Fifty-eight of the 84 total CPP graduates returned questionnaires (69%) compared with 72 of 168 (43%) traditional program graduates. Likert scales were treated as continuous variables and *t* tests were used to compare means. All other analyses used chi-square tests.

Results

CPP graduates showed significantly greater interest in the program outcome areas than did graduates of the traditional campus-based program both at the baseline and at the time of the survey (Table 1; as noted above, baseline attitudes were assessed retrospectively at the time of the survey). This trend continued upon graduation with an increase in interest in all categories. Upon completion of the program, CPP students showed a statistically significant increase compared with entry into the program related to their interest in primary care or community health ($P = .009$), care for underserved ($P = .025$), and interdisciplinary group collaboration

Table 1. Pre- and Postprogram* Objectives Interest Trend†

Interest in: ‡	CPP Graduates		Traditional Graduates		CPP Versus Traditional P Values		Preprogram Versus Postprogram P Values	
	Preprogram	Postprogram	Preprogram	Postprogram	Preprogram	Postprogram	CPP	Traditional
Rural practice	4.1	4.3	2.4	2.5	<.001	<.001	NS	NS
Primary care or community health	4.2	4.6	3.2	3.2	<.001	<.001	.009	NS
Care for underserved	4.2	4.5	3.1	3.1	<.001	<.001	.025	NS
Interdisciplinary group collaboration	3.6	4.5	2.9	3.3	.007	<.001	<.001	.004

* "Pre- and Postprogram" were both assessed retrospectively at the time of the survey.

† NS, not significant.

‡ rating based on 5-point Likert scale (1 = least to 5 = greatest).

($P < .001$). Traditional students' interest in interdisciplinary group collaboration also increased ($P = .004$).

The ability to secure health care employment related to the specific academic preparation varied among the disciplines. CPP nursing graduates were significantly ($P = .001$) less successful than traditional program graduates in finding employment in either rural or rural interdisciplinary practice settings. Nursing graduates indicated that rural placements were not frequently available, but that nursing employment elsewhere was virtually always available. Public health graduates, while smaller in total number due to low enrollment, also had difficulty locating positions within rural areas but were able to secure positions. Most traditional public health positions were found in urban-based locations or within state or regional organizations. Medical graduates from both CPP and traditional groups were able to select practice locations with equal success.

An important CPP goal was to increase the likelihood of graduates practicing in rural locations. CPP respondents were more likely to practice in rural locations than traditional respondents with 46% of CPP respondents identifying rural practice locations compared with 28% of traditional respondents (Table 2). The respondents not currently practicing in a rural setting were asked if they planned to work in a rural area in the future. Of the 26 CPP graduates not currently working in a rural setting, 85% indicated future plans to work in rural areas compared to only 18% of the 40 traditional graduates not currently working in a rural setting.

The second research question addressed the factors that influenced a decision to work in a rural location or

primary care. Graduates from both programs were asked to prioritize the importance of factors (based on a list given in the survey) that influenced their decision to work in a rural location. The most frequently cited factors in order of the priority assigned by the CPP respondents were lifestyle/personal preferences, family considerations, desire for continuing relationships with patients, position availability, focus of primary educational program, and income potential. There was no significant difference between CPP students and traditional students in the influence of educational program, income, personal reasons, position, or relationships on the rural practice decision. In both CPP and traditional groups, family and personal factors had the highest impact on the decision to choose a career in a rural location while income had the lowest.

Employment consistent with academic preparation was less available for nurses prepared in rural health than for the traditionally prepared nurses. All traditional nursing graduates found jobs consistent with their training, while only 70% of CPP nursing graduates could find jobs consistent with the rural interdisciplinary focus of their training ($P < .001$). There was no significant difference expressed by responders from medicine or public health regarding their ability to secure the type of health care employment consistent with their academic preparation.

The selection of rural versus nonrural employment was influenced by position availability in all professions. When the issue of rural career availability was removed and respondents were asked about being employed in a primary care or community setting as opposed to hospital based and specialty care, the impact of CPP preparation was significant.

Table 2. Work Location of Graduates n = 122

	Currently Working in a Rural Setting*	If No, Planning to Work in a Rural Setting†
	Number Responding Yes (%)	Number Responding Yes (%)
CPP, N = 54	25 (46)	22 (85)
Medicine, n = 24	11 (46)	12 (83)
Nursing, n = 25	10 (40)	11 (73)
Public health, n = 5	4 (80)	1 (100)
Traditional, N = 68	19 (28)	7 (18)
Medicine, n = 36	11 (31)	3 (14)
Nursing, n = 29	7 (24)	3 (27)
Public health, n = 3	1 (33)	1 (50)

* $\chi^2 = 4.397, df = 1, P < .05.$
 † $\chi^2 = 28.85, df = 1, P < .001.$

A significantly greater percentage (85%) of CPP graduates were working in primary care or community health settings or planned to work in these settings compared to 60% of traditional program graduates ($\chi^2 = 11.58, df = 1, P = .001$).

The philosophy of providing health care for underserved populations was central in the CPP, and we sought to determine if this principle impacted practice upon graduation. Responders from the CPP group indicated that they provided health care for a significantly greater percentage of underserved patients than did the traditional program graduates (Table 3).

The distribution of time within employment settings was examined. CPP graduates spent more time in patient education activities and in community programs and activities than did their counterparts in the traditional track, while devoting less time to direct patient care. The CPP graduates had a slightly longer workweek than the traditional students.

The third domain of the study pertained to attitudes toward professional preparation. It was expected that since a significant focus of the CPP training was both interdisciplinary and community based, CPP graduates would be better prepared to practice in such settings. The CPP graduates rated their preparedness to work in interdisciplinary teams significantly higher than did traditional graduates (CPP = 4.5 and Traditional = 4.1 [5-point Likert scale, 1 = least to 5 = greatest], $P = .016$). CPP alumni were also more likely to work in community-based programs and activities as part of their work or in a volunteer

capacity than the traditional program graduates (CPP = 3.0 and Traditional = 2.1, $P = .005$).

Discussion

This postgraduation survey of students electing to participate in a community-based, interdisciplinary, rural primary care training program demonstrates that the program was successful in fulfilling its goals. Students who participated in the program were more likely to report working in rural primary health care settings caring for underserved patient populations than their counterparts who participated in traditional training programs.

Attitudes toward professional practice comprised an important component of our first research question. Student attitudes were assessed regarding 4 different areas—rural practice, primary care/community health, care for the underserved, and interdisciplinary group collaboration. Students in the CPP had higher levels of interest in each of these areas than did their traditional counterparts. The level of interest significantly increased from program entry to graduation for primary care/community health, care for the underserved, and interdisciplinary group collaboration among CPP students. Only interest in interdisciplinary group collaboration increased among traditional students. Students in the CPP reported that their academic program helped them work effectively in interdisciplinary groups at a significantly higher rate than did the traditional students. The high proportion of CPP graduates practicing or planning to practice in rural areas compared to the traditional graduates demonstrates that the CPP maintains an interest in rural health care throughout the academic program.

The difficulty of some nursing and public health CPP graduates in finding jobs consistent with their

Table 3. Graduates' Report of the Percentage of Their Patients Who are From Underserved Populations*

Percentage of Patients From an Underserved Population (%)	CPP (%)	Traditional (%)
>50	48	22
25-49	16	31
10-24	17	18
<10	3	13
Don't know	10	8

* $\chi^2 = 12.8, df = 4, P = .025.$

training is a troubling observation. We believe that while the model of a collaborative interdisciplinary team is ideal to address the health care needs of rural underserved communities, the reality is that there are a limited number of such opportunities currently available in our region. Whether such opportunities will increase in the future is uncertain.

Attrition was significant, with only two thirds of students completing the program. The duration of ongoing exposure and health professions experiences was a key to the ETSU program design. Other W.K. Kellogg CPPs approached length and intensity of community experience differently (eg, 3-month long interdisciplinary block; semester-long clinical practice). The ETSU model stretched the experience over 3 years, requiring greater commitment but also encountering more events (eg, family changes, fluctuations in academic grades) that led to attrition.

Other W.K. Kellogg CPPs have shown similar results in a variety of locations.⁸⁻¹³ Based on the ability to implement such programs in multiple locales and the effectiveness in producing graduates who care for rural underserved populations, the rural health CPP demonstrates that such programs are one way to address rural health care needs.^{6,14,15} However, development of such programs requires significant resources and effort. Strong support from the highest levels of institutional leadership and community dedication are essential to their success.¹⁶

Limitations. This study has several limitations. Students elected to participate in the rural program; they were not randomly assigned. Thus, it is not surprising that CPP and traditional cohorts of students differed at program entry. The CPP students were more likely to have interest in rural programs. While our data indicate that students who participated in the CPP maintained their interest in rural health care, we lack data to compare this with similar students who participated in a traditional program. The data presented are based on self-report—there may be some inaccuracies in data reporting. We do not have independent confirmation of the accuracy of reporting rural practice locations and proportion of underserved patients. Additionally, as the data are retrospective, some of the data concerning attitudes at program entry may be biased by inaccurate recall.

Implications. This study found that a program that enrolls students interested in rural health care and which trains these students in rural, community-based settings in an interdisciplinary environment is successful in producing graduates who will practice in rural areas. Furthermore, these graduates provide a large proportion of their professional services to

underserved patients. They develop positive attitudes toward interdisciplinary collaboration.

CPP was costly to develop and implement, thus additional financial resources will be necessary for institutions to develop comparable programs. Six million dollars was granted to our institution by the W.K. Kellogg Foundation. The university and communities contributed additional resources beyond this. It is unlikely that it would have been undertaken at our institution without the additional resources initially provided by the W.K. Kellogg Foundation. However, the program has persisted long beyond the original grant period because it has proven to be successful. The cost of maintaining the program after its development has been manageable with available university resources and support from the partnering communities.

This program has significantly impacted the academic environment of ETSU. Curricular interventions identified as strengths of the CPP have been incorporated into the traditional curricula of both medicine and nursing. An interdisciplinary communications course for traditional students in medicine, nursing, and public health has been developed. New faculty collaborations across disciplinary lines continue to produce educational and research benefits. Earlier clinical activities for traditional medical students are now the norm. Nursing students have more community-based clinical activity. Other colleges within the university are implementing community-based and service-learning curricula based on the experiences of the CPP. ETSU is a better institution for having made the leap into community-based, interdisciplinary, rural primary care training, and the underserved rural Appalachian region has been the beneficiary.

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