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# Physician Practice Characteristics and Satisfaction: A Rural- urban Comparison of Medical Directors at U.S. Community and Migrant Health Centers

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**ABSTRACT:** For this study, the association between physician practice characteristics and satisfaction of medical directors at rural and urban Community and Migrant Health Centers (C/MHCs) was investigated. Data for this study came from a 1996 cross-sectional survey of C/MHCs' medical directors. A total of 411 centers (68.3 percent) responded to the survey, including 240 rural (67.4 percent) and 171 urban (68.7 percent) C/MHCs. Factor analysis was used to synthesize physician practice characteristics related to overall satisfaction. The resulting factors were entered as new variables in a predictive logistic regression model of overall satisfaction. Growing up in an inner-city community was significantly associated with practicing in an urban center; whereas, growing up in a rural or frontier community was more likely to result in practicing in a rural center. The majority of medical directors (82.3 percent) were either somewhat satisfied or very satisfied with their work. Satisfaction with work was most significantly associated with overall level of satisfaction, followed by satisfaction with administration, peers and patients. Recruitment efforts are more likely to succeed when they target individuals with prior exposure to underserved areas. Improving the working conditions and interactions with administrators would help sustain the high level of satisfaction experienced by medical directors at C/MHCs.

**I**n the United States, despite an aggregate surplus of physicians, particularly specialists (Shi, 1995), there is a significant shortage of physicians in rural and inner-city areas (Ricketts, 1991). The urban-rural and inner-city-suburban imbalances of physician distribution have persisted throughout the last four decades. For example, although 22.5 percent

of the U.S. population live in nonmetropolitan areas, only 13.2 percent of all patient care physicians practice in these areas (Bureau of Health Professions, 1991). Many of these areas are designated as primary care health professional shortage areas (HPSAs). The numbers of these areas and individuals without primary care have increased despite a net influx of more than



150,000 physicians into the work force. In addition to physician shortages, these areas typically have high infant mortality rates, low ratios of primary care physicians to population, high percentages of population age 65 and older, and high percentages of population below the poverty level.

For nearly four decades, Community and Migrant Health Centers (C/MHCs) have been providing primary care and preventive health services to populations in medically underserved areas (Freeman, et al., 1982; Zuvekas, 1990). Currently, there are more than 600 C/MHCs, providing care to an excess of 6 million individuals, or about 25 percent of the nation's indigent population, at more than 1,800 sites (Department of Health and Human Services, 1994; Office of Technology Assessment [OTA], 1986; Samuels, et al., 1995; Zuvekas, et al., 1991). The operating budget of this federally assisted enterprise surpasses \$1 billion annually. The patients are drawn principally from minority groups: 31 percent black, 28 percent Hispanic and 5 percent other minorities. C/MHCs are expected to continue to play a critical role in the care of the indigent and medically underserved as a result of Clinton's failed bid for universal coverage.

Because C/MHCs primarily rely on physicians to provide comprehensive and coordinated health services, it is important to have a clear knowledge of the demographic profile and practice characteristics of physicians practicing in C/MHCs and factors associated with their satisfaction. Knowledge of physician profiling is useful in addressing recruitment issues and in identifying training needs. Physician satisfaction is critical to providing high-quality care and retention. Quality care leads to better health outcomes and substantial health improvement in the underserved populations, and it is essential to the nation's overall health profile. To a large extent, the continuance of C/MHCs depends on the successful recruitment of primary care physicians. Dissatisfaction can create tensions in the workplace, adversely affecting C/MHCs' staff relationships and patient care. These tensions also can make it more difficult to retain physicians and other health care professionals.

However, little systematic research has been conducted on physicians practicing in C/MHCs. Studies of physician satisfaction have typically concentrated on main-stream settings, including private practice (Movassaghi, et al., 1989; Nesbitt, et al., 1992; Skolnik, et al., 1993), hospitals (Donaldson, 1995; Fogel, 1989; Lichtenstein, 1984; Mackesy, 1993; Mick, 1993; Reames, et al., 1989), residency programs (Salive, 1997), managed care or capitated arrangements (Collins, et al.,

1997; Kerr, et al., 1997; Schulz, et al., 1992), and medical schools (Crandall, et al., 1993).

Studies of job satisfaction typically consider two different relationships: the relationship between satisfaction and the characteristics of the individual, and the relationship between satisfaction and the characteristics of the job (Lawler, 1977). Both have been found to impact job satisfaction because personal factors influence what individuals think they should receive, and job conditions influence what individuals actually receive. Personal and job characteristics studied in the literature included age, gender (Lichtenstein, 1984; Mackesy, 1993; Reames, et al., 1989; Schulz, et al., 1992), income (Salive, 1997), work hours (Mackesy, 1993; Movassaghi, et al., 1989; Salive, 1997; Schulz, et al., 1992; Skolnik, et al., 1993), practice size (Mackesy, 1993; Skolnik, et al., 1993), the influence of patient care, administrative paperwork, autonomy in decision making, and peer relationships (Kindig, et al., 1992; Mackesy, 1993; Pathman, et al., 1994; Skolnik, et al., 1993).

Most studies found that the overall level of satisfaction for all physicians was high (Kerr, et al., 1997; Lichtenstein, 1984; Mackesy, 1993; Pagliccia, et al., 1995; Reames, et al., 1989; Salive, 1997; Schulz, et al., 1992). Dissatisfiers among primary care and rural physicians were typically related to income, the number of hours worked, and professional isolation (for rural physicians) (Movassaghi, et al., 1989; Schulz, et al., 1992). Physicians in larger group practices (three or more physicians) reported greater satisfaction with time demands of their practice, opportunity for continuing medical education, opportunity for contacts with colleagues, and the amount of time they have available for their families and leisure activities than those in smaller groups (with fewer than two physicians). While these studies provide guidance for the study of C/MHC physicians, it is expected that there will be significant differences between physicians practicing at C/MHCs and elsewhere. For example, C/MHC physicians generally have less control of their environment than physicians elsewhere. Few, if any, of the C/MHC medical directors are in private practice.

The purpose of this study was to identify the

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*This survey was made possible by a contract from the National Rural Health Association. Funding for the contract was provided by the Bureau of Primary Health Care. For further information, contact: Leiyu Shi, Associate Professor, Johns Hopkins University, Health Policy and Management, School of Hygiene and Public Health, 624 North Broadway, Room 409, Baltimore, Md. 21205-1996; e-mail: Lshi@jhsph.edu.*



demographic and practice characteristics of medical directors at rural and urban C/MHCs and examine the association of these characteristics with their satisfaction. Such information will aid policy-makers and administrators in developing programs aimed at physician recruitment and retention and high-quality patient care. Rural and urban centers were compared because of the different environments they face and their differences in size. While both urban and rural underserved areas are burdened by poverty and lack of access, rural communities are further complicated by inadequate transportation, large geographical distances, an aging population base, and economic decline (Orloff, et al., 1995). In terms of size, small centers—with fewer than three full-time equivalent (FTE) physicians—were predominately rural, and the majority of large centers—with more than eight FTE physicians—were urban.

## Methods

**Data.** Data for this study came from a 1996 survey of C/MHC medical directors in terms of their demographic and practice characteristics and factors associated with their satisfaction. All medical directors at C/MHCs in the contiguous United States designated by the Bureau of Primary Health Care (BPHC) as recipients of Section 329 or Section 330 funding formed the target population. The survey was conducted by the authors under contract with the National Rural Health Association. A list of medical directors of all 329- and 330-funded C/MHCs was obtained through the BPHC (N=634) (DHHS, 1994). Review of the medical directors listed for South Carolina revealed that six of the 16 medical directors (37.5 percent) were no longer in practice in the designated centers. Therefore, corresponding state primary care associations were sent a list of medical directors for confirmation or correction. Those centers with no corresponding state association were contacted directly to determine the correct names of the medical directors. Twenty-nine C/MHCs either had closed, merged with another center, or did not have a medical director, thereby reducing the population sample to 605 centers. The final corroborated list served as the sampling frame for the survey.

The survey questionnaire was developed based on a thorough review of the literature on determinants of satisfaction by health professionals in general and physicians in particular. The questionnaire was sent to academicians, researchers, and state and federal associations affiliated with C/MHCs. Also, administrators

and medical directors from the 16 C/MHCs in South Carolina were consulted on two occasions for their comments and recommendations, with assistance from the South Carolina Primary Care Association. The purpose of eliciting the response of these reviewers was to improve the completeness of the survey and assure that the questionnaire addresses the intended issues and improves the validity of the survey. The reviewers' comments were incorporated in the revised questionnaire.

The revised questionnaire was mailed to the medical directors of the 16 C/MHCs in South Carolina for a pretest. The questionnaire was again modified based on respondents' feedback and sent to the medical directors of all remaining C/MHCs in the contiguous United States. Each questionnaire was personalized to improve the likelihood of response. The cover letter outlined the importance of the survey to each respondent, offered to share the results of the study, and assured confidentiality of the respondent. A return business reply envelope was included with each survey to facilitate the response. The first mailing of the survey yielded a response rate of 39 percent (238 out of 605). A follow-up questionnaire was sent to those medical directors who did not reply to the first mailing. The second mailing improved the response rate to 60 percent. Nonrespondents to the first two mailings were sent a facsimile reminder of the survey. Telephone or fax followup also was conducted, and additional surveys were sent if necessary.

As a result of the two mailings and telephone and fax followup, a final total of 411 centers (68.3 percent) responded to the survey, including 240 rural (67.4 percent) and 171 urban (68.7 percent) C/MHCs. Centers were identified as rural if they were designated as "rural" grantees by virtue of having one or more of their clinical sites or a significant portion of their clientele located in rural areas (United States Public Health Service, 1991). There was no significant difference in the nonresponse rates between rural and urban medical directors. Included among the C/MHCs that returned the questionnaire were 20 respondents who did not complete the entire survey, were not medical directors or were from centers that did not have a medical director. In these cases, only the completed questions were used in the analysis.

**Measures.** For the purpose of this analysis, questions included were related to the demographic and practice characteristics of the medical directors and factors associated with their satisfaction. These questions were largely drawn from the literature. Their opera-



tionalization can be seen from the tables, and the questionnaire is available from the authors on request. A five-point Likert scale was used to measure all items associated with job satisfaction (1=very dissatisfied, 2=somewhat dissatisfied, 3=neutral, 4=somewhat satisfied, and 5=very satisfied). In addition, respondents were asked to rate their overall level of satisfaction (similarly coded as the other items).

**Analysis.** Descriptive statistics (means, standard deviations and frequency distributions) were computed to provide a profile of the demographic and practice characteristics of C/MHC medical directors. Comparative analyses (Chi-square analysis for categorical variables and *t*-tests for continuous measures) were performed on these characteristics between rural and urban C/MHC medical directors.

Factor analysis was used to reduce the number of factors related to overall job satisfaction. Using the orthogonal (Varimax) rotation yielded the strongest factor loading. The Varimax method is the most commonly used procedure and attempts to minimize the number of variables with high loadings on a factor (Norusis, 1994). A score plot of the eigenvalues from the principal axis factor analysis resulted in four factors with eigenvalues greater than 1 and accounting for 62.3 percent of the variance among the items. Cronbach alphas were computed to assess the reliability of the factor loadings. The analysis showed that removal of "financial compensation" improved the reliability of the scale from 0.684 to 0.747. Therefore, this variable was removed. The items were then re-run, producing slightly stronger factor loadings, accounting for 63.4 percent of the variance.

The reduced factors were entered as new variables in a predictive logistic regression model of overall level of satisfaction. The dependent variable of overall satisfaction was recoded as a dichotomous measure, i.e., 1=satisfied (by combining the very satisfied and somewhat satisfied) and 0=not satisfied (by combining the very dissatisfied and somewhat dissatisfied). In addition to the reduced factors, other potential correlates such as individual demographic and practice characteristics also were included in the logistic regression model as controls. The significance level of all tests was set at *P*-values of 0.05 and 0.01, respectively.

## Results

**Demographic Characteristics of Medical Directors.** Rural and urban C/MHCs differed significantly

in the number of FTE clinical positions, including pediatricians (0.82 rural vs. 2.40 urban,  $P<0.01$ ), internal medicine (1.08 rural vs. 2.17 urban,  $P<0.01$ ), obstetricians and gynecologists (0.39 rural vs. 1.05 urban,  $P<0.01$ ), dentists (0.83 rural vs. 1.52 urban,  $P<0.05$ ), nurse practitioners (1.44 rural vs. 2.38 urban,  $P<0.01$ ), and nurse midwives (0.30 rural vs. 0.59 urban,  $P<0.05$ ). There were no significant differences in the number of general or family practice physicians (2.83 rural vs. 2.70 urban) and physician assistants (1.19 rural vs. 1.17 urban). Among 136 small centers (defined as having fewer than three FTE physicians), 106 (78.5 percent) were designated as rural and 29 (21.5 percent) as urban. In contrast, among 109 large centers (defined as having eight or more FTE physicians), 41 (37.6 percent) were rural and 68 (62.4 percent) urban. Thus, rural centers were predominantly small and urban centers large.

Table 1 presents the demographic characteristics of sampled C/MHC medical directors and compares rural-urban medical directors in terms of these characteristics. Typically, the C/MHC medical director was male (67.8 percent), white (66.9 percent), married (82.8 percent), and had at least one child (58.4 percent). African-American medical directors were more likely to work in urban centers than in rural ones (22.4 percent urban compared with 10.1 percent rural,  $P<0.05$ ), while a greater proportion of rural medical directors were white (70.9 percent rural compared with 60.6 percent urban,  $P<0.05$ ). Rural medical directors also were more likely to live with children than urban medical directors (67.6 percent of rural compared with 56.7 percent urban,  $P<0.05$ ). Growing up in an inner-city community was significantly associated with practicing in an urban center (11.6 percent urban vs. 3.5 percent rural,  $P<0.01$ ); whereas, growing up in a rural or frontier community was more likely to result in practicing in a rural center (37.9 percent rural vs. 20.7 percent urban,  $P<0.01$ ).

In terms of educational background, 88.1 percent of the respondents were medical doctors, and 6.8 percent were doctors of osteopathy. The remaining came from a variety of other health care backgrounds, including nurse practitioners, physician assistants, registered nurses and dentists. Some respondents were in charge of the medical aspects of their agency, but the center used a voucher system or contractual physicians to provide direct medical care. Only 17.5 percent had more than one professional degree. Osteopathic physicians (8.8 percent rural vs. 4.1 percent urban,  $P<0.05$ ), and nonphysician practitioners (7.5 percent rural vs. 1.2 percent urban,  $P<0.01$ ) were more likely to serve as medical directors in rural than urban settings, an indi-

**Table 1. Demographic Characteristics of Medical Directors by Total, Rural and Urban Community and Migrant Health Centers (C/MHCs).**

	Total C/MHCs (Percentage) (n=411)	Rural C/MHCs (Percentage) (n=240)	Urban C/MHCs (Percentage) (N=171)
<b>Sex</b>			
Male	67.8	70.5	66.7
Female	32.2	29.5	33.3
<b>Race</b>			
White, non-Hispanic	66.9	70.9*	60.6*
African American	15.2	10.1*	22.4*
Hispanic	8.3	8.8	7.9
Asian	8.1	8.4	7.9
Other	1.6	1.8	1.2
<b>Marital Status</b>			
Married	82.8	85.7	80.6
Single	17.2	14.3	19.4
<b>Live With Child(ren) Younger Than 17</b>	58.4	67.6*	56.7*
<b>Childhood Residence</b>			
Rural community	30.4	37.9**	20.7**
Urban community	30.6	27.3	36.0
Inner city	6.8	3.5**	11.6**
Suburban community	31.1	29.5	31.7
Frontier community	1.0	1.8	0.0
<b>Education</b>			
Physician	88.1	83.7*	95.5*
Doctor of Osteopathy	6.8	8.8*	4.1*
Not physician	4.9	7.5**	1.2**
Master of Public Health	8.3	4.8*	13.8*
Master of Arts/Master of Science	5.8	8.4*	3.0*
Other	9.1	11.0*	5.4*
<b>Practice Specialty</b>			
General or family practice	58.8	69.0**	44.3**
Internal medicine	18.8	12.2**	28.1**
Pediatrics	14.0	10.0**	19.2**
Other	8.6	8.7	8.4
<b>Certification Status</b>			
Board certified	85.4	84.7	83.6
Board eligible	11.0	9.9	12.1
Not board eligible	3.6	5.0	4.2
<b>Reason for Initial C/MHC Employment</b>			
National Health Service Corps (NHSC) scholarship (n=80)	21.7		
Recruitment (n=56)	14.8	12.0	19.0
Self-interest (n=34)	9.0	9.8	7.6
Affiliated residency program (n=30)	7.9	6.0	10.8
NHSC loan (n=30)	7.9	6.5	8.9
State office of rural health (n=22)	5.8	7.4	3.8
Help poor and indigent (n=20)	5.3	4.6	6.3
Word of mouth (n=20)	5.3	4.2	7.0
State loan forgiveness program (n=17)	4.5	4.6	3.8
Other (n=63)	16.7	19.2	12.7

\* Indicates observed differences between rural and urban C/MHCs are statistically significant at  $P < 0.05$ .

\*\* Indicates observed differences between rural and urban C/MHCs are statistically significant at  $P < 0.01$ .

Note: Differences between rural and urban C/MHCs were evaluated by *chi-square* tests for categorical measures.



cation of the greater likelihood of using these health care personnel in rural than urban settings.

More than 90 percent of the medical directors practiced in the primary care specialties (91.4 percent). Included in the other category (8.6 percent) were physicians specializing in obstetrics and gynecology, general surgery, preventive medicine and psychiatry, as well as nonphysician specialties such as dentistry, physician assistants, and certified nurse practitioners. The proportion of general and family practice physicians was greater in rural (69.0 percent) than urban (44.3 percent) centers ( $P<0.01$ ). Urban centers had a greater percentage of internists (28.1 percent urban vs. 12.2 rural,  $P<0.01$ ) and pediatricians (19.2 percent urban vs. 10 percent rural,  $P<0.01$ ).

Respondents were asked to identify which measure was most influential in their recruitment to the center. The most frequently cited measures were: National Health Service Corps, including both the scholarship and loan programs (29.6 percent), recruitment (14.8 percent), self-interest (9 percent) and affiliated residency programs (7.9 percent). Important factors related to retention (not shown in the table) were opportunity to care for medically indigent (41.3 percent), overall job satisfaction (40.2 percent), level of compensation (34.4 percent), adequate physician coverage (33.2 percent) and location of the center (32.2 percent). Surprisingly, relatively few medical directors rated family related concerns as important (quality of schools 6.7 percent and spouse employment 12.6 percent).

#### Practice Characteristics of Medical Directors.

Table 2 presents the practice characteristics of sampled C/MHC medical directors and compares rural and urban medical directors in terms of these characteristics. The average C/MHC medical director has been in medical practice for more than 12 years and served as medical director for 4.6 years. On average, rural medical directors see about 20 more patients each week than their urban peers (78.78 rural vs. 56.97 urban,  $P<0.01$ ). Urban medical directors earned significantly more (\$105,580) than their rural peers (\$96,620) ( $P<0.01$ ). However, the increase in average income is a reflection of the size of the center. Small-center (fewer than three FTE physicians) medical directors averaged less than \$90,000, while medium-size center (three to seven FTE physicians) medical directors averaged just more than \$101,000, and large-center (eight or more FTE physicians) medical directors earned more than \$114,000 ( $F=20.34$ ,  $P<0.0001$ ). Rural medical directors spent, on average, more time in patient care (26.35

hours) than urban medical directors (20.72 hours) ( $P<0.01$ ). Urban medical directors were likely to spend more time in various administrative aspects of their jobs (e.g., supervisory activities, teaching and training, committees and meetings, quality assurance and other administrative activities) than their rural counterparts.

Medical directors were generally satisfied with their work environment (rated 4.01 on overall level of satisfaction on a five-point scale). Specifically, 82.3 percent were either somewhat or very satisfied compared with only 11.8 percent somewhat or very dissatisfied. Items rated as highly satisfied included patient appreciation (4.28), quality of patient care (4.25), professional satisfaction (4.22), level of support from nurses (4.10) and level of responsibility (4.04). Items rated as comparatively less satisfied included administrative duties (3.20), lack of time spent in educational activities (3.37), lack of medical equipment (3.51), heavy patient load (3.66), flexibility of work hours (3.69), interaction with board of directors (3.66) and financial compensation (3.77). Rural medical directors were more satisfied with board of director interaction than their urban counterparts (3.81 vs. 3.48,  $P<0.01$ ). No other statistically significant differences were found when comparing measures of satisfaction between rural and urban medical directors.

**Factors Associated with Satisfaction.** The results of the final model of factor analysis are presented in Table 3. The number of job satisfaction variables were reduced from 20 measures to four component factors, i.e., satisfaction with administration, satisfaction with work, satisfaction with patients and satisfaction with peers. Cronbach's alphas, a test of the reliability of the factor loadings, indicate that, except for the satisfaction with patients factor (due mostly to the small number of loadings), the loadings were highly reliable, ranging from 0.75 to 0.91.

The four component factors were used as independent variables in the logistic regression model to identify correlates of overall level of satisfaction (Table 4). Also included in the model were demographic and practice characteristics of medical directors summarized in the footnote of Table 4. All four independent variables derived through factor analysis were significantly associated with overall satisfaction, with odds ratios ranging from 1.67 for satisfaction with patients ( $P<0.05$ ), 2.97 for satisfaction with peers ( $P<0.01$ ), 12.45 for satisfaction with administration ( $P<0.01$ ), to 14.34 for satisfaction with work ( $P<0.01$ ). The 95 percent confidence intervals also are provided. None of the other variables entered was significant.

**Table 2. Practice Characteristics of Medical Directors by Total, Rural and Urban Community and Migrant Health Centers (C/MHCs).**

	Total C/MHCs (n=411)		Rural C/MHCs (n=240)		Urban C/MHCs (N=171)	
	Mean	Standard Deviation	Mean	Standard Deviation	Mean	Standard Deviation
Years in Practice	12.75	(9.45)	12.86	(9.78)	12.77	(9.04)
Years as Medical Director	4.60	(4.25)	4.61	(4.11)	4.65	(4.45)
Average Number of Patients Seen a Week	69.40	(42.55)	78.78**	(40.78)	56.97**	(42.14)
Average Annual Income (In Thousands)	100.24	(30.25)	96.62**	(29.49)	105.58**	(30.27)
Average Number of Hours Worked a Week	47.20	(14.22)	46.75	(14.89)	47.69	(13.25)
<b>Distribution of Time (Average Hours/Week)</b>						
Center-related patient care	23.91	(12.20)	26.35**	(12.93)	20.72**	(10.45)
Supervisory activities	4.54	(5.57)	3.88**	(4.82)	5.44**	(6.38)
Other administration	4.37	(6.45)	3.39**	(5.78)	5.71**	(7.08)
Hospital-related patient care	4.10	(5.15)	4.46	(6.55)	3.50	(4.56)
Committees and meetings	3.69	(4.31)	2.83**	(3.24)	4.86**	(5.26)
Preparing patient records	2.81	(3.68)	2.71	(3.18)	2.96	(4.69)
Teaching and training	2.14	(3.15)	1.67**	(2.59)	2.74**	(3.70)
Quality assurance	1.93	(2.43)	1.59**	(1.85)	2.35**	(2.96)
Other professional activities	1.05	(3.23)	0.84	(3.26)	1.35	(3.21)
Research	0.19	(0.81)	0.14	(0.67)	0.25	(0.97)
<b>Overall Level of Satisfaction<sup>1</sup></b>						
Professional satisfaction	4.01	(1.02)	3.99	(1.02)	4.04	(1.03)
Financial compensation	4.22	(0.91)	4.26	(0.92)	4.18	(0.89)
Level of responsibility	3.77	(1.16)	3.77	(1.18)	3.75	(1.14)
	4.04	(1.07)	4.06	(1.06)	4.02	(1.10)
<b>Level of support</b>						
Physicians	3.91	(0.99)	3.94	(1.01)	3.89	(0.98)
Nurses	4.10	(0.94)	4.13	(0.99)	4.06	(0.89)
Administrators	3.89	(1.22)	3.96	(1.25)	3.79	(1.19)
<b>Autonomy of roles</b>						
Flexibility of work hours	3.82	(1.20)	3.85	(1.20)	3.77	(1.20)
Equipment availability	3.69	(1.13)	3.65	(1.15)	3.74	(1.10)
	3.51	(1.11)	3.52	(1.15)	3.49	(1.05)
<b>Time spent</b>						
Patient care	3.69	(1.01)	3.76	(0.96)	3.60	(1.06)
Administrative duties	3.20	(1.12)	3.17	(1.10)	3.23	(1.15)
Educational activities	3.37	(1.05)	3.40	(1.05)	3.35	(1.06)
<b>Challenge of learning and growing</b>						
Patient load	3.90	(0.96)	3.91	(0.97)	3.90	(0.96)
Patient appreciation	3.66	(0.96)	3.68	(0.96)	3.63	(0.97)
Quality of patient care in center	4.28	(0.86)	4.29	(0.38)	4.24	(0.89)
Goals compatible with center	4.25	(0.84)	4.32	(0.78)	4.16	(0.91)
Interaction with board of directors	4.16	(0.91)	4.14	(0.91)	4.18	(0.92)
Interaction with administrator	4.66	(1.17)	3.81**	(1.16)	3.48**	(1.15)
Sense of accomplishment	3.88	(1.21)	3.94	(1.21)	3.81	(1.19)
	4.03	(0.96)	4.08	(0.90)	3.95	(1.03)

1. Satisfaction measures are coded as 1-5 where 1 indicates least satisfied and 5 most satisfied.

\* Indicates observed differences between rural and urban C/MHCs are statistically significant at  $P < 0.05$ .

\*\* Indicates observed differences between rural and urban C/MHCs are statistically significant at  $P < 0.01$ .

Note: Differences between rural and urban C/MHCs were evaluated by *t*-test for continuous measures.



**Table 3. Results of Factor Analysis: Identified Factors Related to Overall Satisfaction by Community and Migrant Health Center (C/MHC) Medical Directors.**

	Factor 1	Factor 2	Factor 3	Factor 4
Measures	Satisfaction With Administration	Satisfaction With Work	Satisfaction With Patients	Satisfaction With Peers
Interaction With Administrator	0.8904	0.1474	0.0424	0.0911
Level of Support Administrator	0.8465	0.2044	-0.0156	0.2363
Autonomy of Role	0.8040	0.2678	-0.0136	0.1054
Interaction With Governing Board	0.6923	0.1279	0.2654	0.0579
Level of Responsibility	0.6762	0.3428	0.0323	0.1527
Goals Compatible With Center	0.6676	0.0928	0.4087	0.1642
Sense of Accomplishment	0.6503	0.2652	0.3560	0.1746
Time Spent				
Educational activities	0.0732	0.7606	0.1744	0.0416
Administrative duties	0.3235	0.6919	0.0184	0.1222
Patient care	0.1088	0.6690	0.3272	0.0474
Patient Load	0.0662	0.6298	0.4877	0.0354
Flexibility of Work Hours	0.3256	0.5984	-0.0251	0.1700
Equipment Availability	0.2638	0.5504	-0.0412	0.3515
Professional Satisfaction	0.3955	0.5099	0.2264	0.2395
Challenge of Learning and Growing	0.3276	0.4357	0.4013	0.1127
Patient Appreciation	0.0224	0.1707	0.7925	0.1270
Quality of Patient Care in Center	0.2931	0.1208	0.5982	0.3341
Level of Support				
Other physicians	0.1369	0.1678	0.1909	0.8353
Nurses	0.2429	0.1558	0.1920	0.7976
Statistical Information				
Eigenvalue	7.8144	1.9093	1.3222	1.0055
Percentage of variance	41.1	10.0	7.0	5.3
Cronbach measure of reliability	0.906	0.853	0.559	0.747

## Discussion

One of the key findings of this study is that overall, C/MHC medical directors were satisfied with their jobs. More than 80 percent of the respondents indicated some level of overall satisfaction compared with fewer than 12 percent who had varying degrees of dissatisfaction. This finding is consistent with much of the literature regarding physician satisfaction (Kerr, et al., 1997; Lichtenstein, 1984; Mackesy, 1993; Pagliccia, et al., 1995; Reames, et al., 1989; Salive, 1997; Schulz, et al., 1992). Medical directors were most satisfied with

patient appreciation. They were more likely to be dissatisfied with the amount of time spent on administrative duties than with other measures of satisfaction. This coincides with previous research, which showed this variable to be more closely associated with dissatisfaction than other measures of job satisfaction (Lichtenstein, 1984; Mackesy, 1993; Skolnik, et al., 1993). Medical directors with more years of practice were more satisfied with work than those with fewer years of practice experience. This finding supports previous research showing that number of years in practice contributes to a physician's level of satisfaction (Kindig, et al., 1992; Skolnik, et al., 1993). There were



**Table 4. Logistic Regression Results: Correlates of Overall Satisfaction by Community and Migrant Health Center (C/MHC) Medical Directors.**

Independent Variables	Coefficient	Standard Error	Odds Ratio	95 Percent Confidence Interval
Satisfaction With Work	2.6633**	(0.4075)	14.3434	(6.45, 31.88)
Satisfaction With Administration	2.5216**	(0.3546)	12.4481	(6.21, 24.94)
Satisfaction With Peers	1.0895**	(0.2057)	2.9727	(1.99, 4.45)
Satisfaction With Patients	0.5102*	(0.2091)	1.6656	(1.11, 2.51)
Sample Size	311			

\*  $P < 0.05$

\*\*  $P < 0.01$ , two-sided.

Note: Control variables included in the regression analysis are sex, race, primary residence until age 18, marital status, years in practice, years as a medical director, average number of patients seen each week, average hours worked a week, average annual income, number of physicians in the center, whether respondent is the only physician in the center, and rural or urban designation of the center. None of the variables is significant at  $\alpha = 0.05$ .

few significant differences in the various measures of satisfaction between rural and urban medical directors. The most significant correlate of overall satisfaction by medical directors was satisfaction with work, followed by satisfaction with administration, peers and patients. The significant relationship between satisfaction with administration and overall satisfaction confirms recent literature regarding the importance of the relationship between physicians and administrators (Crandall, et al., 1993; Donaldson, 1995; Fogel, 1989; Johnson, 1992).

Many of the results of this study have important implications for physician recruitment and retention in underserved areas. A sufficient supply of motivated and skilled providers is required to address the unique health care needs of the underserved population served by the nation's C/MHCs. With deeper penetration of managed care, however, greater competition for primary care physicians is expected. It is appropriate to concentrate less on the aggregate physician supply and more on preparing and making that supply available and accessible to those most in need (Politzer, et al., 1991). The finding that exposure to underserved areas (either through primary childhood residence or residency program) was significantly associated with C/MHC employment indicates that programs can be developed to actively recruit and provide fellowship or scholarship support for medical training to individuals with prior exposure to underserved areas, and that medical

schools should promote community-based training and residency in medically underserved areas. From a policy perspective, preferential admission and scholarship assistance can be given to students more likely to choose primary care careers and serve the underserved, i.e., students from rural areas and minorities.

The finding that more than two out of 10 medical directors sought C/MHC employment mainly as a result of the National Health Service Corps scholarship reflects the effectiveness of such a program in recruiting physicians. The National Health Service Corps scholarship provides funding for health professions education in return for service in health professional shortage areas. The mission of National Health Service Corps is to increase the recruitment and retention of health care professionals who provide needed services to communities and populations that otherwise would lack adequate health care (BPHC, 1996). C/MHC medical directors also cited National Health Service Corps loans as a facilitator for their initial employment. Policy-makers should continue to fund both National Health Service Corps programs to ensure that adequate number of primary care physicians provide services in underserved areas.

The finding that medical directors were least satisfied with the amount of time spent on administrative duties indicates that medical directors still are not comfortable in balancing the role of a clinician and a man-

ager. As management requirements become more complex, especially as health care shifts to a managed care environment, medical directors may find it increasingly difficult to maintain their clinical responsibilities and perform their management duties. As one medical director wrote in the questionnaire,

I have been medical director for three years. I have tried to resign, but we have been unable to find a replacement. I am very frustrated, and I feel that I am constantly putting out fires and doing crisis management. I find it very difficult to do all the functions that I should be doing as a medical director, as well as see patients, do hospital rounds, and take call.

Medical directors and physicians face greater challenges when they deal with managed care plans and their corporate, bureaucratic culture. The burden of paperwork associated with filing of claim forms and responses to quality review will be staggering. Appropriate management training should be provided to medical directors so they are equipped to handle a variety of administrative responsibilities along with patient care.

The finding that satisfaction with work, administration, peers and patients was significantly and independently associated with overall level of satisfaction after controlling for individual characteristics demonstrates that correlates of satisfaction are consistent across sociodemographic characteristics. Improving the working conditions and interactions with administrators would help sustain the high level of satisfaction experienced by medical directors at C/MHCs. High satisfaction would contribute to the retention of physicians and their continued services for the nation's poor and underserved.

There are a number of limitations with this study. It does not address all measures that may affect the medical directors' level of satisfaction. The possibility that factors outside the work environment may contribute to satisfaction or dissatisfaction was not covered by this study. Another limitation is that the study surveyed only current C/MHC medical directors, rather than other physicians. Nor did it study physicians who used to work at C/MHCs. Physicians who left C/MHCs may be less satisfied than those who stayed. Factors contributing to their satisfaction may be different. Future studies should take into account those limitations.

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