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# Use of Medical Services and Satisfaction with Ambulatory Care among a Rural Minnesota Population

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STUDIES OF THE HEALTH CARE UTILIZATION of random samples of the population in the United States have suggested that differences exist in the use of physician services in rural and urban settings (1,2). Information derived from such studies, however, does not permit conclusions to be drawn as to whether lower use of health care resources in rural settings reflects real differences in the availability of the resources or is related to differences in health attitudes. In addition, little information is available concerning the satisfaction with ambulatory care expressed by the high and low users within a population. The authors are unaware of community studies that

employed cross-sectional patterns and performed followup surveys to determine cohort changes over time. This study is the first phase of a two-part survey to determine if adding manpower changes health attitudes and the use of ambulatory health care services in rural settings. The initial survey was conducted in 1974, before the three local practicing physicians were joined by two additional family physicians.

The scarcity of information related to rural health care highlights the difficulty of assessing the need for medical manpower. The assumption that fixed ratios of population to physician are the best measure of manpower needs for all geographic areas may be fallacious. Indeed, some researchers have concluded that the availability of health facilities has little impact on the volume of services used by families (3,4). These observations assume particular significance in the context of the present concern about inadequate health resources in rural areas. In sum, projections based solely on physician-to-population ratios may be erroneous because they fail to take into account demographic, and more pertinent, the attitudinal variables which may influence the use of professional medical care (5,6).

The importance of patients' perceptions of medical care has been emphasized in the 1970s. Patients are not able to evaluate the quality of care clinically; however they do form impressions of their experience. Quantified data regarding patient satisfaction that are statistically significant can enable providers and health care planners and evaluators to maintain or improve standards of care.

Patient satisfaction can be conceptualized as the degree of congruency between a patient's expectation of services and care and his perception of the services and care he receives. The patient and the provider of services may differ significantly in their perceptions of high quality service. The value of surveys that include measures of patient satisfaction is in increasing the awareness of health planners and providers of a salient variable related to evaluating the effectiveness of treatment and the utilization of services.

Little information is available concerning the satisfaction of rural residents with health care services. Further, some data suggest that farm workers are more concerned about basic economic survival than about health services (7). Farm workers have considerable uncertainty regarding a guaranteed in-

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come. They may be conditioned to hardship if they have had to endure the fluctuations of dealing with crop successes and failures. With uncertainty regarding their source of livelihood dominating their lives and perennially looming as a threat, any other misfortune that may occur may be accepted in stride and secondary to their economic well-being. They may be primarily concerned with their basic need to live, rather than improving their quality of life, that is, maintaining their health.

Thus, persons in farm communities may tend to overlook health care needs, have lower percentage rates of insurance coverage, and tend to ignore symptoms of illness in order to do their daily work and earn a livelihood. In addition, they have lower expectations about health care services because they have less knowledge of and infrequent contact with the health professions.

## Methods

**Sampling procedure.** The universe of this study consisted of all households in selected adjoining townships in southeastern Minnesota that surround the main town of Zumbrota. Zumbrota is 25 miles northwest of Rochester and 50 miles southeast of Minneapolis. An area sample was selected from this universe that was expected to yield about 425 households representing overall about a 10 percent sample of the resident population. There are 12 townships in the 6-mile square area around Zumbrota.

Two strata were defined for sampling purposes, one consisting of six towns and the other consisting of the remaining rural area. A single overall sampling rate was used so that each household in the universe had the same probability of being selected.

Sampling in the six towns was

carried out in two stages. Blocks were selected systematically, with the probability of being selected proportional to their sizes in terms of the number of housing units identified in aerial photographs.

With each sample block, housing units were selected at a rate such that within-block sampling rates, multiplied by the probability of having selected the block, equalled the desired overall sampling rate. Area segments containing the requisite number of housing units, (again aerial photographs were used as a guide) were delineated on large block sketches. It should be noted that aerial photographs were used only to define the boundaries of segments. Once the boundaries were established, all housing units actually within the segment were included in the sample, whether or not they had been detected in the photographs.

Sampling in the area outside the six towns was carried out in a similar manner except that county maps were used rather than aerial photographs. The area was subdivided into units analogous to blocks. A sample of these was selected, with the probability of being selected proportional to the number of dots they contained; the dots indicated the approximate location of the houses. The dots were used only as a means of finding segment boundaries; again, these boundaries were determined and then all houses within the segments were included in the sample.

Since a uniform sampling rate was maintained throughout, the sample is considered to be self-weighting. For this reason, estimates of population means and proportions can be obtained directly from the corresponding sample means and proportions without the necessity of weighting the sample data.

**Sample size.** A total of 427 households were contacted, representing 92.6 percent of the 461 households in the survey design, and 10 percent of the total population of about 12,400. Of the 34 households not surveyed, 12 were refusals (a 2.8 percent refusal rate), and the others could not be contacted for a variety of other reasons, for a total nonresponse rate of 7.4 percent. The households that were contacted provided a sample of 1,361 respondents, of whom 1,332 completed the field questionnaires. Twenty-nine questionnaires were not completed accurately enough for the data to be used.

**Instrument.** The basic questionnaire consisted of 224 items. Questions were designed to obtain socioeconomic and demographic data, such as number of persons and their ages in the household, and a health profile of the family. Many thorough and detailed queries pertaining to the use of health services were included. For example, the respondent was asked who provided for his or her health care, the location of the health facility, the frequency and reason for visits, and the treatment or service rendered in the previous year. The name of the physician and the health facility where services were sought were recorded. The great majority of services were obtained in Zumbrota, with less than 1 percent of them obtained outside the area (from either Rochester or Minneapolis). Changes in trends for obtaining services can therefore be identified in the resurvey.

A second questionnaire, developed as the result of extensive factor analytic studies by John T. Ware of the Rand Corporation and associates, was also utilized. This was completed by 796 respondents. This instrument included 40 items pertaining to patient satisfaction

(8). The items form the following 18 health care opinion indices:

Overall general satisfaction with medical care

Satisfaction with—

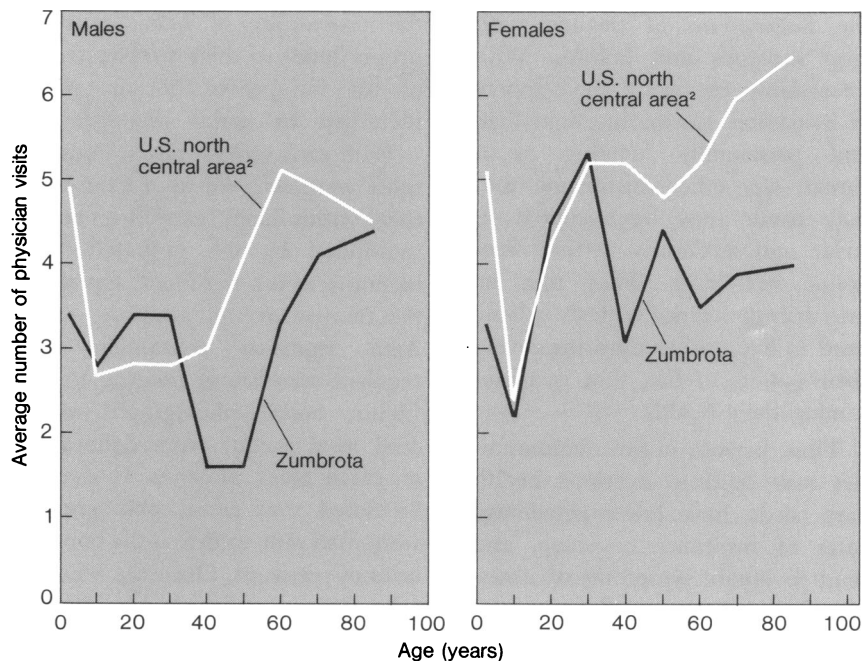
- Fees
- Insurance
- Payment mechanisms
- Appointments
- Answering of questions
- Emergency care
- Convenience
- Parking
- Availability of physician
- Availability of specialists
- Availability of hospitals
- Availability of office hours
- Comprehensiveness of facilities
- Humaneness
- Quality of medical care
- Continuity of care by the same physician for self
- Continuity of care by the same physician for family

Ware and co-workers reported that the internal consistency reliability co-efficient for the general satisfaction index ranged from .63 to .77 in four sample populations that they studied (8a). All indices in this paper have been scaled so that the minimum value is 1, representing low satisfaction and the maximum is 5, representing high satisfaction.

**Definition of terms.** In this study we followed the definition of physician visits used in the 1969 National Health Survey—a consultation with a physician or an osteopath conducted in person or by telephone for purposes of examination, diagnosis, treatment, or advice (9). This definition includes office, emergency room, and home visits. The definition of outpatient visit also encompasses nurse consultation when the nurse was acting under a physician's direction.

**Data collection procedures.** The recall period in this study was the entire year of 1974. It was hypothesized that the respondents would have relatively low utilization rates

Figure 1. Comparison of physician visits in two surveys, by patients' mean age, Zumbrota 1974, and data derived from the 1969 National Health Survey<sup>1</sup>



<sup>1</sup> Sources for the national data were references 9 and 11.

<sup>2</sup> Includes North Dakota, South Dakota, Nebraska, Kansas, Ohio, Indiana, Illinois, Michigan, Wisconsin, Minnesota, Iowa, and Missouri.

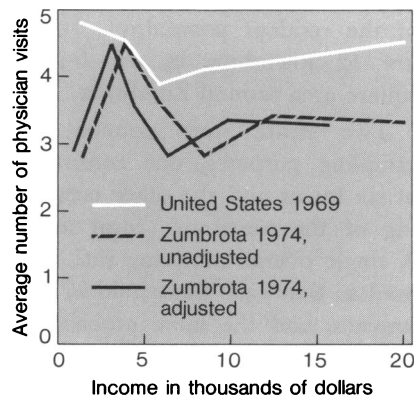
for services and thus would be able to recall easily the number of visits made in a year. The interviewers were trained to probe for possible lapses of the respondent's memory and cross-checked responses during the interview. The interviewers filled in the responses of the interviewees. A proxy response was obtained from the mother for all persons under 18 years and for a few adults who had a terminal illness or problems of communication.

Hospital patients and other institutionalized populations were not surveyed. Data concerning the nine deaths occurring during the survey period were not incorporated in the final analysis of use characteristics because they were so few.

**Statistical methods.** Most data were analyzed using a statistical analysis system (SAS), the general linear model procedure called G.L.M. (10). For example, if the hypothesis that the average num-

ber of physician visits did not differ with respect to occupational group were to be tested, a one-way analysis of variance would be performed using the G.L.M. If this hypothesis was rejected, Duncan's multiple range test would be performed to determine which occupation groups were significantly different (10a).

Figure 2. Comparison of physician visits and reported family income, United States, 1969, and Zumbrota 1974 (unadjusted and adjusted to 1969 dollars on the basis of the Consumer Price Index)



The 18 satisfaction indices in this study were not uncorrelated, and the tests done on these indices are not generally independent. Therefore, it must be noted that fewer than 18 indices might be sufficient to describe the population. However, we were not able to demonstrate which specific items to include and, as a result, have chosen to use Ware's indices as he derived them.

If the data in question were categorical in nature, chi-square tests using the SAS frequency procedure were performed to test hypotheses of no association.

## Results

**Demographic characteristics compared with use.** When the age distribution of the survey group was compared with that of the area's population in the 1970 census (11), no substantive differences can be noted. The mean frequency of patient visits for males in 1974 ( $2.99 \pm \text{S.D. } 5.4$ ) reflects a lower level of use than for females ( $3.73 \pm \text{S.D. } 7.1$ ). The distribution of visits indicates that a few persons accounted for a large proportion of total visits. The annual non-utilization rates by sex were 33 percent for males and 26 percent for females, with 30 percent of the overall population reporting no contact with a physician for the year under study and 20 percent seeing a physician only once during the year.

Age specific and sex specific use rates presented in figure 1 demonstrate relatively high use in the 20- to 30-year age groups for men in relation to the data from the 1969 National Health Survey for the North Central Region (9). Figure 1 also shows a low volume of use in the Zumbrota region among adults over age 40. Age-adjusted rates were 3.3 visits per person per year in Zumbrota compared with

the national estimates of 4.3 visits per person per year.

The use patterns by income level of the North Central Region of the United States (9) and Zumbrota were compared, using both unadjusted income and income adjusted to 1969 dollars on the basis of the consumer price index (fig. 2). There was no significant difference in use between those in the highest and lowest income categories. Persons in the next to lowest income category (\$3,000-\$4,999 in 1974) had the highest use rates (4.7 visits per person). Of this income group, 55 percent of the patients were on Medicare. However, the Medicare patients in this group did not have a significantly higher utilization rate than those not on Medicare. The income-specific visit rate was lower for Zumbrota than for the U.S. population in each income category.

Comparisons of use with respondents' education and occupation were also made (table 1). Education and utilization were not related significantly. Among the occupational categories patient visits, including visits by telephone, were significant only for housewives and retired persons. Their average number of visits was higher than those of the students and those engaged in agriculture or

trade. If visits by telephone are excluded, the relationship is significant only for the retired; that is, they had higher average visits than the student and trade categories ( $P < .05$  Duncan's multiple range test).

**Levels of use.** No recent data on the high and low users in other populations are available for comparison with the Zumbrota group. The distribution of physician visits was compared by computing the proportion of the total visits (excluding the telephone calls) cumulatively from the highest to the lowest users in the survey. Ten percent of the population consumed about 50 percent of the total physician visits. The data suggest that a large proportion of ambulatory care loads are generated each year by a small segment of the population. In general, heavy users are slightly older, are housewives, or retired, and are more likely to be female than male.

**Patient satisfaction indices in five populations.** Table 2 presents the mean values and standard deviations of the satisfaction indices for Zumbrota and for four other populations (8) In 13 of the 18 indices, Zumbrota was higher than the other four populations. In two

Table 1. Respondents' average number of visits, by occupation, Zumbrota, 1974

Occupational status	Number of persons	All visits		In person visits	
		Mean	S.D.	Mean	S.D.
Housewife .....	269	<sup>1</sup> 4.57	8.62	3.56	5.11
Retired .....	92	<sup>1</sup> 4.45	5.73	<sup>2</sup> 3.97	5.17
Clerical .....	72	4.04	5.51	3.26	3.83
Unemployed .....	12	3.92	9.22	3.83	9.23
Disabled or other .....	117	3.09	4.28	2.42	3.09
White collar .....	98	3.05	5.11	2.71	4.52
Student .....	395	2.79	5.35	2.35	4.97
Agriculture .....	150	2.77	7.17	2.61	6.69
Trade .....	127	2.36	3.98	2.17	3.77

<sup>1</sup>  $P < .05$ . Significantly higher than the categories of trade, agriculture, and student.

<sup>2</sup>  $P < .05$ . Significantly higher than the categories of trade and student.

Table 2. Mean score and standard deviation (S.D.) of 18 attitudinal factors for the Zumbrota group and four other populations

Factor	Zumbrota (N=796)		Sangamon County (N=432)		Family Practice Clinic (N=520)		East St. Louis (N=323)		Los Angeles County (N=640)	
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
Overall general satisfaction .....	3.5	0.6	3.0	0.8	3.0	0.8	2.8	0.8	2.9	0.8
Satisfaction with—										
Fees .....	2.6	0.9	2.5	1.0	3.0	1.0	2.4	0.9	2.2	0.9
Insurance .....	2.8	0.8	2.6	1.0	2.5	1.0	2.4	0.9	2.4	0.9
Payment mechanisms .....	3.4	0.8	2.9	0.9	3.1	0.9	2.4	1.0	2.3	1.0
Appointments .....	3.3	1.1	2.4	1.1	2.9	1.2	2.4	1.1	2.7	1.2
Answering of questions .....	3.9	0.9	3.3	1.1	3.4	1.1	2.8	1.2	3.2	1.2
Emergency care .....	3.3	1.1	3.1	1.1	3.3	1.1	2.4	1.3	2.9	1.2
Convenience .....	3.6	0.9	3.5	0.9	3.4	1.0	3.0	1.2	3.2	1.1
Parking .....	3.4	1.2	3.1	1.1	3.5	1.0	2.9	1.1	3.1	1.1
Availability of physician .....	2.8	1.1	2.2	0.9	2.3	0.9	2.1	1.0	2.7	1.0
Availability of specialists .....	3.2	1.1	3.2	1.0	3.3	1.0	2.2	1.1	3.1	1.0
Availability of hospitals .....	3.6	0.9	3.1	1.1	2.7	1.1	2.2	1.1	3.3	1.0
Availability of office hours .....	3.6	0.9	3.3	1.0	3.1	1.1	3.1	1.0	3.0	1.1
Comprehensiveness of facilities .....	3.5	0.8	3.4	0.8	3.3	0.9	2.9	1.0	3.4	1.0
Humaneness .....	3.5	0.5	3.2	0.5	3.2	0.6	3.1	0.5	3.1	0.5
Quality of medical care .....	3.3	0.5	3.1	0.7	3.2	0.7	3.0	0.6	3.1	0.7
Continuity of care by the same physician for self .....	3.8	0.9	3.9	1.0	3.8	1.1	3.5	1.3	3.6	1.2
Continuity of care by the same physician for family .....	3.4	1.0	2.7	1.2	3.3	1.2	3.0	1.2	2.9	1.2

SOURCE: for the data on the other groups is reference 8, pages 269-272. NOTE: 1 = low satisfaction, 5 = high satisfaction.

indices (fees, availability of parking) the Zumbrota sample's satisfaction was higher than three of the other populations. In the remaining three indices (satisfaction with emergency care, availability of specialists, and continuity of care for self) Zumbrota was higher than two of the other populations. It can be concluded, therefore, that the Zumbrota sample is more satisfied with medical care than the other four populations studied by Ware.

**Income, education, and patient satisfaction indices.** The income, education, and occupation of respondents were compared to their scores on Ware's 18 indices of patient satisfaction. Only one index was significantly related to income (table 3). Those with the lowest income (less than \$3,000 per year) were significantly less satisfied with emergency care than the other income groups ( $P < .05$ , Duncan's multiple range test).

Five indices were significantly ( $P < .05$ ) related to educational level as measured by the respondents' academic degrees. Nurse respondents without a degree were placed in a distinct education category used by the nursing profession. Nurse educators commonly rank this group of nurses above the high school graduate but below the baccalaureate degree holder (table

4). Respondents with no high school diploma have higher general satisfaction scores than all other educational categories. Those with a B.S. degree have higher satisfaction (mean score) with respect to fees than do those in all other categories. Those with a high school diploma, college degree, or who are registered nurses or licensed practical nurses have

Table 3. Respondents' income related to satisfaction with emergency care index,<sup>1</sup> Zumbrota, 1974

Income	Number	Decreasing mean	Standard deviation
Won't reveal .....	21	3.67	1.02
No response .....	1	...	...
\$15,000-\$24,999 .....	173	3.53	.96
\$25,000 .....	72	3.42	1.20
\$7,000-\$9,999 .....	107	3.38	1.16
\$10,000-\$14,999 .....	192	3.32	1.05
\$3,000-\$4,999 .....	84	3.23	.98
\$5,000-\$6,999 .....	70	3.20	1.11
0-\$2,999 .....	76	<sup>2</sup> 2.84	1.12

<sup>1</sup>  $P < .05$ , significantly lower when the 18 indices were compared.  
<sup>2</sup>  $P < .05$ , significantly lower than the other categories of utilization.

Table 4. Education of adult respondents related to patient satisfaction indices, Zumbrota, 1974

Index	No high school diploma (N=313)		High school diploma (N=396)		Bachelor of science degree (N=50)		Masters degree and above (N=20)		Registered nurse, licensed practical nurse (N=11)	
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
General satisfaction <sup>1</sup> ..	3.58	0.54	3.48	0.63	3.48	0.70	3.20	0.62	3.39	0.72
Fees .....	2.59	0.85	2.61	0.88	<sup>1</sup> 3.09	1.06	2.73	0.87	2.59	1.09
Emergency care .....	3.18	1.08	3.41	1.06	<sup>1</sup> 3.62	1.03	3.20	1.24	3.36	1.12
Parking .....	3.24	1.20	3.49	1.20	3.76	1.15	3.40	1.23	<sup>1</sup> 4.09	.70
Availability of office hours .....	<sup>1</sup> 3.66	0.78	3.60	.86	3.28	.97	2.80	1.20	3.55	.93

<sup>1</sup> P < .05. Note: No response to education question on 6 questionnaires.

higher satisfaction with respect to emergency care and parking than those without a high school diploma. Persons with master's degrees, followed by those with bachelor's degrees, are less satisfied with the availability of physicians' office hours than the other educational categories.

**Occupation and patient satisfaction indices.** Only two of the 18 indices (general satisfaction and humanness) were significantly related to occupational status (table 5). Means scores for the other 16 indices did not differ significantly among the occupational categories. The retired, the clerks, and the housewives had higher general

satisfaction scores than the disabled. Those who were retired also had higher satisfaction scores on the humanness index than the other categories, except the clerks. The disabled had lower satisfaction scores than the retired, the clerks, and the housewives. All of these comparisons had a value of P < .05.

**Patient satisfaction indices and use of services.** No recent data that segregates persons in other populations into no, low, medium, and high users are available for comparison. Only three indices (questions answered, availability of comprehensive facilities, and continuity of care by physician for self) were

significantly related to the mean number of physician visits (P < .05).

Those with 10 or more visits had higher satisfaction scores on the questions answered index than the low or medium users categories (table 6). The medium users (3-9 visits) had higher scores on the availability of comprehensive facilities and the continuity of care indices than the other groups.

## Discussion

We will focus first on the characteristics related to the utilization of health services in this rural area and then comment on the measurement of patient satisfaction.

It can be hypothesized that among the characteristics of a population its size, demographic composition, and cultural attributes are the dominant influences on the use of health services and are independent of the availability of manpower (3,4). Our baseline data (figs 1 and 2) indicate that ambulatory health care services in this rural setting are used at rates lower than those reported in national surveys (1,2). How the level of health care resources existing in Zumbrota influenced the patterns of utilization cannot be known until the resurvey, the second phase of the study, which is to be completed

Table 5. Occupation of the respondents related to general satisfaction and humanness indices, Zumbrota, 1974

Occupational status	General satisfaction			Humanness	
	Number	Mean	S.D.	Mean	S.D.
Retired .....	80	<sup>1</sup> 3.64	0.51	<sup>2</sup> 3.64	0.41
Clerical .....	69	<sup>1</sup> 3.61	0.65	3.57	0.45
Housewife .....	263	<sup>1</sup> 3.53	0.59	3.50	0.52
Student .....	23	3.49	0.49	3.47	0.37
Agriculture .....	141	3.49	0.57	3.43	0.43
Trade .....	115	3.45	0.63	3.42	0.49
White collar .....	90	3.45	0.68	3.48	0.56
Unemployed .....	8	3.28	0.59	3.36	0.29
Disabled .....	7	2.96	0.78	3.05	0.37

<sup>1</sup> P < .05. Significantly higher than those in the disabled category.

<sup>2</sup> P < .05. Significantly higher than all other categories except the clerical category.

**Table 6. Utilization compared with patient satisfaction indices of questions answered, availability of comprehensive facilities, and continuity of care by the same physician**

Patient satisfaction Indices <sup>1</sup>	Visits Including phone calls							
	No visits (N=230)		1-2 visits (N=271)		3-9 visits (N=213)		10 or more visits (N=82)	
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
Question answered .....	3.75	.92	3.91	.86	3.83	1.03	<sup>2</sup> 4.17	.72
Availability of comprehensive facilities ...	3.42	.70	3.43	.79	<sup>2</sup> 3.64	.75	3.53	.86
Continuity of care for self .....	3.60	.95	3.77	.90	<sup>2</sup> 3.90	.85	3.78	1.02

<sup>1</sup> Scores on these 3 indices were significantly higher ( $P < .05$ ) when the 18 indices were compared.

<sup>2</sup> Significantly higher ( $P < .05$ ) than the other categories of users.

in 1980. It could be argued that expansion of health care resources by augmenting physician manpower will increase use in this community. A conceptual flaw in this reasoning may be the assumption that manpower availability is independent of other variables that influence use. More significantly, when utilization is reasonably high it may not be possible to increase it appreciably above the present level. This outcome may occur when the levels of satisfaction with available care are high. Thus, the alternate hypothesis may apply—that increasing the aggregate manpower may not increase the level of ambulatory health care use. This provocative hypothesis warrants further study in differing health care delivery frames.

The mean age-specific and sex-specific rates in Zumbrotta (fig. 1) do not describe well the utilization pattern of a typical person in the survey. The users' data reported in this paper are highly skewed, a characteristic that is apparent in this study, but unfortunately it is not reported in most utilization studies. For example, the mean utilization rate for this population was 3.3 visits per person per year, but 50 percent of the group either did not contact a physician or made only one contact during the entire year. Data presented as mean values conceal the tail end of the skewed

distribution, where use is maximal. The contribution of high users to overall volume of service is significant. If a case were to be made to improve access without augmenting available manpower, theoretically this segment of the population of users needs in-depth study. It can be stated that, generally, these data demonstrate high volume use by a small segment of the sample. For this reason, the importance of describing distributions cannot be overstated, because it is conceivable that patterns of utilization provide insights that would be helpful in health planning strategies within regions.

Several studies have reported on relationships of income and health care utilization (12-15). The failure of low income to curb use of physician services is consistent with national trends, but the persisting differences in utilization at equal income levels between the Zumbrotta and the national samples are intriguing (9,12), pointing again to other variables which have an important influence on the use of health services by rural populations.

Utilization was also not related to occupational status except for the housewives when phone visits were included and for the retired persons when phone calls were excluded. The finding for housewives is expected, since the role of the mother has been to assume responsi-

bility for the health care of family members. It is also not surprising that, if only "in-person" visits are considered, the retired have more visits than other groups. It is expected that the elderly person has more health care needs than a younger person as well as needs that cannot be met merely by a phone call. Elderly persons are also more likely to have free time and Medicare coverage, enabling them to visit a physician more frequently than younger persons.

Against the background of these general observations, the findings pertaining to the 18 patient satisfaction indices are somewhat unexpected.

Only the index of emergency care was related to income. It is not apparent why respondents who refused to reveal their income were the most satisfied with emergency care, and those with the lowest income, the least satisfied (table 3). It is reasonable to assume that those who refused to reveal their income may have high incomes and be easily able to pay for the high cost of emergency room services. Those with the lowest income may find it more difficult to pay.

The findings pertaining to education are not unexpected, since those with more education are more likely to be critical of the care they receive than those with less education (15) (table 4). However,

those with more education are more satisfied with the fees than those with less education. This finding may be attributable to the relationship between increased education and high income.

The finding that those with more education are the least satisfied with the availability of physicians' office hours is of interest. Conceivably, persons with more education might be more demanding in obtaining access to care. Doyle and Ware indicate that the more educated respondent tends to be more selective than their less educated counterparts with respect to the source of care (16). Selection of a source of care may be related to ease of access.

When the occupational status of respondents was compared to the patient satisfaction indices, it appears surprising that those who were retired scored highest on the general satisfaction and humaneness indices (table 5). However, it may be that physicians in this rural area are more aware of the needs of the elderly. This supposition is further substantiated by the fact that the retired persons had more visits to the physician, without counting phone calls, than any other occupational group (table 1).

Those who are disabled scored lowest on the general satisfaction and humaneness indices. It may be that the disabled respondents have chronic conditions which they expect to be cured. Thus, they may be more critical of the effectiveness of the care they receive and tend to visit the physician less as is evident in table 1.

In general, it appears on the basis of their high scores on each satisfaction index in this initial survey that persons in this rural area are highly satisfied with patient care. This conclusion appears to be particularly valid when the scores in Zumbrota were compared

with scores from populations in four other surveys (table 2). The environment and structure of care in those locales differed from Zumbrota's. East St. Louis respondents who were predominantly black were poorer, less educated, and in poorer health than the respondents in the three other surveys conducted by Ware and co-workers (8) and those in Zumbrota. Nearly all respondents in Sagamon County were white, and Los Angeles County respondents represented several racial groups. The respondents' socioeconomic status in both these surveys was lower than that of the Zumbrota respondents. Zumbrota respondents also were all white. The Family Practice Clinic, a model clinic in Springfield, Ill., had many specialists and medical staff available, and access to care was clearly not a problem. Yet respondents in Zumbrota had higher scores than those in the Family Practice Clinic survey on 15 of 18 indices.

A possible reason for the high score for Zumbrota could be that the proximity to a famous medical clinic causes people to have more favorable attitudes regarding medical care than those who are distal. The reputation for high quality care and the mystique of medical care may conceivably transfer to the physicians and medical care services in surrounding areas. There are, however, no data to support such a hypothesis.

Whether this community perceives a need for additional health professionals needs to be investigated. The issue also may be raised as to whether patient satisfaction with health care in other rural areas is equally high. If findings in other rural communities were similar to Zumbrota's, perhaps rural areas are not as deprived of health care as the literature has suggested. Physicians in rural areas

may be more accommodating to the needs of their patients and their prospective patients.

It is of interest that patients with 10 or more visits were the most satisfied with having their questions answered (table 6). Perhaps more visits were needed for the patient to feel comfortable about asking questions, for the patient and physician to get to know each other, and for the physician to become friendly and answer questions.

Patients who had 3 to 9 visits ranked highest in satisfaction with the availability of comprehensive facilities and continuity of care. This observation may imply that if adequate resources were available, more people would have 3 to 9 visits and, thus, an even higher level of satisfaction would be expressed by the community.

It is important that utilization needs, as defined by physicians, and patient satisfaction be understood in the context of trends. Since the shortage of physicians is of concern in some rural areas, it is important to evaluate whether augmenting the physicians in these areas makes a difference in utilization of care and patient satisfaction. The longitudinal Zumbrota study provides the framework for such an analysis. If followup studies substantiate a fixed pattern of utilization and patient satisfaction, the impact of such findings on long-range planning of manpower cannot be underestimated. On the other hand, increased use and patient satisfaction after the expansion of the available manpower would demonstrate a gulf between availability of services and the demand for them.

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## SYNOPSIS

CHASKA, NORMA L. (University of Illinois College of Nursing), KRISHAN, IQBAL, SMOLDT, ROBERT K., ILSTRUP, DUANE, WEIDMAN, KEVIN A., AND NOBREGA, FRED T.: *Use of medical services and satisfaction with ambulatory care among a rural Minnesota population. Public Health Reports, Vol. 95, January-February 1980, pp. 44-52.*

Patient satisfaction with health care services and the use of ambulatory care in rural southeastern Minnesota were surveyed before and after physician manpower was increased. This report is confined to the findings in 1974, before the three local practicing physicians were joined by two additional physicians. The physician to population ratio at the time of the initial survey was 1 to

6,200 in 1974 and 1 to 2,500 with the additional physicians in 1975.

In this area the population of 12,400 centered around the town of Zumbrota. A total of 1,332 persons completed questionnaires, and 796 filled out a second questionnaire concerning patient satisfaction with health care. The scores on 40 items formed 18 satisfaction indices.

Use of health services was lower than in the National Health Survey of 1969; the mean number of visits per year in Zumbrota was 3.3 compared with 4.3 for the national sample. The volume of use in the Zumbrota region was low, particularly among adults. Use of services was not significantly related to the education, occupation and income of the residents. About 10 percent of the popu-

lation accounted for half of the total number of visits.

Only a few of the 18 patient satisfaction indices were related to the respondent's income and occupation, but 5 were related to educational level. Satisfaction with health care services was generally higher in this rural population than among the people in four urban areas that were surveyed using the same satisfaction indices.

The question raised by the findings in this survey—are rural areas in general as deprived and unsatisfied with health care as the literature suggests—remains unsettled. Changes over time in use and patient satisfaction are being assessed in the re-survey to seek possible explanations of the low utilization and high degree of patient satisfaction in this area.