

Patient and Physician Perspectives of Work-Related Illness in Family Practice

E. Carol Stein, MD, MPH, and Peter Franks, MD
Rochester, New York

A questionnaire survey was administered to 362 patients at a family medicine center to define the occupational characteristics of the patient population. Thirty-eight percent of patients reported current health problems related to their work. A chart review of a random sample of 100 of these patients revealed no documented differences between those who reported and those who did not report work-related health problems. Forty-one charts had no occupational data recorded. Only five charts had any record of hazardous exposures, whereas 60 of these patients had reported hazardous exposures. It is concluded that work is commonly perceived as an important determinant of health status and that family physicians currently tend to overlook this fact. The introduction of some formal occupational health teaching in family medicine residencies is needed, with particular emphasis on preventive aspects.

The family medicine literature has relatively few references to the relationship between family medicine and occupational health. Those articles that do exist comment on the inadequacy of training in occupational medicine both at the predoctoral and postgraduate levels.¹⁻⁴ It has been suggested that this inadequacy creates a particular deficit for the family physician who by definition takes a biopsychological view of the patient.

The relevance of occupational health to family practice is more than theoretical. Campbell and

Nicolle⁵ surveyed 325 family physicians in Louisiana in 1980. Eighty-five percent of the respondents stated that they did encounter work-related illness or injury in their practices, and 49 percent reported such encounters at least once a day. The authors concluded that "occupational and environmental disease should be part of family practice training at all levels in order that family physicians be better equipped to meet the needs of patients for those services."

No studies have been found that attempt to evaluate whether workers believe their jobs adversely affect their health. A questionnaire survey was thus designed to study the nature and extent of the perceived relationship between work and illness. It was followed by a chart review, conducted to document how providers recorded the perceived work-related problems and other occupational information.

From the Department of Preventive, Family, and Rehabilitation Medicine, University of Rochester School of Medicine, Rochester, New York. Requests for reprints should be addressed to Dr. E. Carol Stein, 601 Elmwood Avenue, Rochester, NY 14642.

Table 1. Age and Sex Distribution

Age Group (years)	Men No. (%)	Women No. (%)
Under 30	25 (27)	153 (57)
30 to 45	30 (32)	72 (27)
Over 45	38 (41)	44 (16)

Methods

The study was conducted at the Rochester Family Medicine Program Model Practice Unit. The socioeconomic and age distribution of the patient population approximately reflects that of Rochester, New York.⁶ For a four-week period a self-administered questionnaire was given to pre-scheduled patients aged 18 years and older at the time of their visit. Excluded were those patients known to be currently not working outside the home (homemakers, the unemployed, or retired), students, those in the armed forces, and those unable to read.

The self-administered questionnaire consisted of 21 questions that included the following: current employment status, job description, company name, major product of company, exposures, protective equipment, work-related health problems, similar problems in fellow employees, whether there was a workplace health program, whether there was a union, whether the patient had ever had a sickness absence, the amount of time off work during the previous three months, and job satisfaction.

In analyzing the questionnaire, job descriptions were grouped into five categories: managerial group (including managers, administrators, professionals, technical and farm managers), crafts group (including craftsmen, operatives and transportation operatives), labor group (including laborers, service workers, and private household workers), sales group, and clerical group. Exposures were grouped into three categories: chemical, respiratory, and physical. Medical problems were grouped into four categories: neuropsychological (stress, anxiety, headache, and nervousness), musculoskeletal (neck, back and extremity), hearing, and all other somatic problems.

A chart review was performed on a weighted random sample of respondents: 50 patients who reported work-related health problems and 50 who did not. Items gathered for chart review were grouped as demographic, medical, or occupational. Demographic included age, socioeconomic status, marital status, number of adults and number of children in the household, insurance category, date of index visit, date of first visit, and total number of visits. Medical included the provider's ascertainment of work relatedness of all medical problems, separately analyzed for those active at the time of index visit and for all previous medical problems. Occupational included the provider's ascertainment of job characteristics, work environment, and exposures. Complete versions of the patient questionnaire and chart review form are available from the authors.

The data were analyzed using the SAS statistical package.⁷ Univariate tests used were chi-square, Fisher's exact, and Student's *t* tests. In addition, a stepwise logistic regression model⁸ was developed to examine the relationship between work-related health problems and several variables including age, sex, job satisfaction, exposures, presence of a union, presence of a medical department, and job category. The regression approach was also applied to the four categories of work-related health problems.

Whereas the univariate tests examine the relationship between two variables only, logistic regression investigates the relationship between a dichotomous dependent variable (the presence of work-related problems) and a set of independent variables. The effect of each variable is examined while controlling for the effects of the other variables. The contribution that each variable makes, adjusting for the other variables, is mathematically related to the adjusted risk ratio for that variable. The adjusted risk ratio is a measure of the rate of work-related problems in those persons who have the risk factor compared with the rate in those in whom the risk factor is absent. The adjusted risk ratio is less than 1 if the risk factor has a protective effect, 1 if there is no difference in the rates, and greater than 1 if the risk factor is a hazard. In stepwise regression, risk factors are added one at a time until no additional variables make a significant contribution to the relationship between the independent and dependent variables.

Table 2. Results of Stepwise Logistic Regression Showing Variables Significantly ($P < .05$) Predicting Risk of Work-Related Problems

	Beta	Standard Error	P	Adjusted Risk Ratio	95% Confidence Interval
Predictors of any work-related problems (n = 130)					
Exposure to physical hazard	.7	.23	.002	2	1.29-3.13
Clerical job category	-.71	.27	.009	0.5	.29-.84
Predictor of neuropsychological problems (n = 71)					
Managerial job category	.78	.28	.005	2.2	1.3-3.8
Predictors of musculoskeletal problems (n = 59)					
Exposure to respiratory hazard	1.28	.3	.000	3.6	1.99-6.48
Clerical job category	-.81	.4	.047	.44	.2-.99
Predictors of somatic problems (n = 45)					
Exposure to physical hazard	.82	.36	.021	2.3	1.3-4.58
Managerial job category	1.2	.39	.002	3.3	1.55-7.09
Crafts job category	1.08	.44	.015	2.9	1.24-7.02

Results

Table 1 shows that the women tended to be younger than the men (chi-square = 32, $P \leq .0001$).

The 362 patients worked at 259 different companies, and no single company employed more than 5.3 percent of the respondents. One hundred one respondents (28 percent) worked at companies with unions and 134 (37 percent) worked at companies with a medical department. A medical department was more likely to be present in unionized companies than in those that were not (52 percent vs 31 percent, chi-square = 12, $P \leq .0005$). One hundred three patients (28 percent) were in the managerial group, 13 (4 percent) were in the sales group, 96 (27 percent) were in the clerical group, 60 (17 percent) were in the crafts group, and 90 (25 percent) were laborers.

Exposure to one or more respiratory hazards was reported by 136 patients (38 percent). One hundred twelve patients (31 percent) reported

exposure at work to chemical hazards. One hundred sixty respondents (44 percent) said they were exposed to one or more of the physical hazards. The crafts group had the highest frequency of positive responses for each of these hazards. Exposures to the various types of hazards were highly intercorrelated. One hundred thirty-four respondents (37 percent) reported exposure to at least two types, and 62 (17 percent) reported exposure to all three types of hazard. Men reported exposure to each of the three hazard types more often than did women. Sixty-nine men (74 percent) and 143 women (53 percent) reported exposure to at least one of the hazards. This difference was significant (chi-square = 12.6, $P \leq .0005$).

One hundred thirty patients (38 percent) reported current work-related health problems. Table 2 shows the results of the stepwise logistic regressions with health problems as the dependent variables. For all work-related problems, exposure to physical hazards increased, except for

Table 3. Ascertainment of Work Relatedness of Medical Problems and Patient Perceptions

Category**	Ever Mentioned*		Active*		Patient Perception†
	No***	Yes***	No***	Yes***	
Neuropsychological	6	40	7	24	27
Somatic	62	32	54	38	18
Musculoskeletal	29	31	6	12	21
Hearing	1	4	0	0	15

Note: Numbers refer to numbers of patients in random sample (N = 100) with problem in each category
 *Ever mentioned problem or active problem
 **Categories of problems, see text
 ***No is no ascertainment, Yes is ascertainment of work relatedness
 †Patient perception of work-related health problems in each category (from questionnaire survey)

clerical workers. Being a clerical worker decreased the risk of work-related health problems. No other independent variable made a significant contribution.

Neuropsychological problems were the problems most often reported, with 71 patients (20 percent) reporting such problems. Only the managerial category was a significant risk factor.

Forty-five patients (12 percent) reported somatic problems. Somatic problems were associated with physical hazard exposure, the managerial job group, and the crafts job group.

Fifty-nine (16 percent) of patients reported musculoskeletal problems. Being a clerical worker reduced the risk of musculoskeletal problems, but respiratory hazard exposure increased. Forty-four patients (12 percent) reported hearing problems, but stepwise logistic regression did not reveal any significant risk factors.

Analysis of the chart review revealed no significant ($P > .1$) differences between those patients reporting and those not reporting work-related health problems in general or specific categories of health problems. The results reported here were thus derived from all 100 charts examined. Table 3 shows results grouped by the category of medical problem. Of 205 problems ever recorded, mention of the job was made by the provider within the medical history of 107 (52 percent). Of 147 active

problems, mention of the job was made in the history of 74 (52 percent). Mention of the job was more likely to be made for neuropsychological and musculoskeletal problems than for somatic problems. In only five charts were any kind of hearing problems recorded, whereas 15 patients reported by questionnaire the presence of work-related hearing problems. In no single case was the assessment made that the problem was indeed work related.

Of the 100 charts examined, 47 had the job title recorded, 41 the place of work, 52 the type of company, 14 the length of employment, and 29 had the job duties listed or described. Forty-one charts had none of these items recorded. Only two charts had recorded any items pertaining to the work environment, and only five charts had described any hazardous exposures. These five charts did corroborate exposures reported by patients in the questionnaire survey. In the survey sample, however, an additional 55 patients reported exposures that were not documented in the charts.

Discussion

The patient population at the family medicine center was found to have a diverse occupational

status. Employers were nearly as numerous as the individual patients. Seventy-four percent of men and 53 percent of women believed they had noteworthy exposures at work. Over one third believed they had work-related health problems. This finding is disturbing in the context of the chart review that followed the questionnaire survey, wherein it was observed that in 41 percent of the charts nothing about occupation or the work place was ever recorded. Although in 52 percent of charts some mention of work was noted in the history, the focus was primarily on neuropsychological and musculoskeletal complaints. There was in particular little documentation either of exposures or of hearing problems. In no case was any problem determined to be work related.

There are a number of possible factors that could account for what appears to be a disparity between the perceptions of provider and patient. This disparity may be an artifact produced by the inherent bias of the study. As the written instructions to the patient spelled out the study's purpose—to look at the relationship between work and health—there may have been some over-reporting of work-related health problems and exposures. Furthermore, the chart may not reflect what actually went on in the encounter. Although there was no control in the study to determine whether the recording of occupational data was worse than any other category of information, the large variations in those items that were recorded within the occupational domain presumably reflect the varying importance ascribed to them by the providers.

Even if the disparity between perceptions of providers and patients is real, some findings are not easily explained. One example is that both neuropsychological and somatic problems were seen more frequently in the managerial group. Although the former was not unexpected, it was somewhat surprising to find an association between somatic problems and the managerial group. Such an association could itself be a manifestation either of a higher level of stress or of increased reporting secondary to more education and greater health awareness. A further explanation would be the possibility of an inverse relationship between the sedentary occupation and musculoskeletal fitness. Another unanticipated finding was the association between respiratory expo-

sure and musculoskeletal complaints. This association could accurately mirror the multiple environmental stresses found in certain jobs. Alternatively it may reflect the way in which exposures were grouped together and the intercorrelation of the different exposure categories and, thus, be a statistical artifact.

Regardless of possible biases in the questionnaire and multiple explanations for some specific aspects of the findings, certain facts emerge from the study. Work is perceived to be an important determinant of health status by a substantial proportion of patients. Family physicians frequently fail to document either work status or exposures and their possible relationship to health status. There is thus at least a perceptual gap between providers and patients.

Clearly, documentation of exposures and awareness of preventable problems, such as noise-induced hearing loss, warrant more attention than currently given. It is concluded that there is a need for an introduction of some occupational health teaching into family medicine training programs, with particular attention to hazardous exposures and strategies for prevention.

References

1. Cordes DH, Rest KM, Hake JC: Occupational health: A core discipline of family medicine. *J Fam Pract* 1982; 15: 1193-1194
2. Hainer BL, Dannenberg AL, Schuman SH: Teaching occupational medicine in a family medicine residency program. *J Fam Pract* 1982; 14:1150-1153
3. Orris P, Baron S: Occupational medicine: A role for the primary care physician. *Hosp Pract* 1983; 195-197
4. Hainer BL: Family medicine and job related illness. *J Fam Pract* 1981; 12:575-576
5. Campbell V, Nicolle FI: Occupational and environmental disease in family practice. *J Fam Pract* 1981; 13: 118-119
6. Froom J: An integrated medical record and data system for primary care. Part 1: The age-sex register: Definition of the patient population. *J Fam Pract* 1977; 4:951-953
7. SAS User's Guide: Basics. Cary, NC, SAS Institute, 1982
8. SUGI Supplemental Library User's Guide, 1982 Edition. Cary, NC, SAS Institute, 1983