

Specific Illnesses, Injuries, and Job Hazards Associated with Absenteeism

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Thirty-six specific illnesses and injuries and 17 job hazards are assessed according to their contribution to absenteeism. Data are drawn from the 1977 Quality of Employment Survey, which is national probability sample of 1515 workers who worked 20 or more hours per week in 1977. Both frequencies and lengths of absences are analyzed. Illnesses and injuries that appear to contribute most to absenteeism are back injuries, broken bones, colds and flus, physical strain injuries, hits and falls, and joint inflammation. Job conditions resulting in the greatest amount of absenteeism are dangerous methods and machines, exertion, bad weather, human error, and dangerous workspaces. Although women reported physical strain injuries and working in awkward positions as the most frequent causes of absenteeism, men found back pain and working with dangerous machines to be the greatest causes of their absenteeism.

The recent literature review by Farrell and Stamm¹ located 121 studies of employee absences published within the past 28 years. A somewhat older review by Steers and Rhodes² listed 114 references. Clearly, absenteeism has received substantial research attention, yet two kinds of possible predictors appear to have been slighted: physiologic health problems and job hazards. Farrell and Stamm, for example, concluded that "work environment" and organization-wide correlates are better predictors of absence than psychologic or demographic correlates. Although the "work environment" Farrell and Stamm discussed concerns work autonomy and variety, job hazards would appear to be natural work environment variables for future study. Yet none of the titles of Farrell and Stamm's 121 references

suggests a study dealing with job hazards, risks, or unsafe conditions.

Steers and Rhodes² provide modest attention to predictors in the "ability to attend" category. They mention commuting costs and the presence of small children in the home as especially important predictors for women. But again, illnesses and injuries receive only brief mention, perhaps because, apart from back pain,³ specific illnesses or injuries have not been widely studied. Steers and Rhodes indicate that "little has been done" on topics relating to the ability to attend. Yet, illnesses and injuries may be the primary reason for most absences. Chadwick-Jones et al⁴ and Leigh⁵ find the general category of illnesses to be the most frequently mentioned excuse people offer for their absences. Paringer⁶ finds a general measure of health to be the most important predictor of absenteeism in her regression analyses.

The present study makes use of a national probability sample of data on 36 illnesses and injuries and 17 job hazards that respondents claimed contributed to their absences (Table 1). The data are drawn from the University of Michigan's Quality of Employment Survey for 1977. Since respondents were asked directly about the contribution of the specific illnesses, injuries, and job hazards to their absences, it is not necessary to use regression analyses to determine the separate effects.

Methods

In 1977, the University of Michigan's Survey Research Center administered the Quality of Employment Survey (QES) to a cross-section of 1515 employees. The QES is a national probability sample of employees who worked for pay for at least 20 hours per week. Kallenberg⁷ provides a description of the sampling design and an outline of many of the studies that have relied on the QES. The data are old, but of high quality, and the extensive set of variables pertaining to job conditions and illnesses and injuries of employees is

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TABLE 1
Conditions and Circumstances Contributing to Absenteeism

Injuries, Illnesses		Job Hazards
Burns from heat	Bruise	Dangerous chemicals
Chemical burns	Fracture (broken bones)	Bad weather
Electric shock	Hit or fall	Temperature extremes
Heat stroke	Amputation	Dangerous storage areas
Radiation	Cuts, wounds	Dangerous machines
Friction burn	Dislocation	Traffic accidents
Other burns	Sprain	Dangerous methods
Concussion	Joint inflammation	Human error
Hernia	Back injury	Awkward positions
Strain injuries	Poisoning	Fire
Toxic dust	Other poison	Dust
Asphyxia	Skin rash	Dangerous workspaces
Freezing	Hearing loss	Noise
Cold or flu	Heart problem	Infectious diseases
Nervous breakdown	Eye injury	Personal attacks
Ear damage	Multi-injury	Stress
Ulcers	Nervous disorders	Exertion
Aggravation of another condition	Sensitization to new chemical	

unsurpassed for any national probability sample. Recently, for example, Robinson⁸ used the QES to look for correlations between desires for unionization and job hazards. Despite the fact that the QES was partially funded by the National Institute of Occupational Safety and Health, Kallenberg's recent review of studies relying on QES data reveals far more use by sociologists and economists than occupational epidemiologists or industrial psychologists.

Not all of the 1515 respondents interviewed by the QES researchers are included in the analysis. Four persons are excluded because of their coded responses to a key question about the effect of an illness or injury on their absence from work. These four stated that they were absent for more than 52 weeks a year. Undoubtedly, the coding on these four is incorrect, but the correct coding is not immediately obvious. None of the remaining 1511 respondents is excluded for missing data; rather, missing data are so identified in the tables appended.

Respondents were asked several questions to ascertain their absences, illnesses and injuries, and job conditions. (1) "Within the last three years, have you had any illnesses or injuries you think were caused or made more severe by any job you had during the period?" Responses were coded as either "yes," "no," or "don't know." (2) "Could you tell me what these illnesses or injuries were?" Thirty-six illnesses or injuries were identified in addition to responses for "maybe," "other," "don't know" and "not appropriate." "Maybe" indicated that the respondent believed that one of the 36 illnesses or injuries *may* have contributed to an absence. "Other" indicated an illness or injury not on the list of 36. "Don't know" and "not appropriate" are self-explanatory. Very few people answered in the "maybe," "don't know," and "not appropriate" categories. Unfortunately, "other" claimed many responses. (3) "How long altogether did it keep you away from your job during the past three years?" Responses were coded in weeks from 1 to 200, or as "don't know" or "not applicable." (4) "Which of

the following things at work caused or made it more severe?" Seventeen hazards were identified. The 17 hazards responses did not permit "don't know" or "maybe" or "other."

In addition, if more than one illness or injury was mentioned in answering question 1, then questions 2 through 4 were again asked about each of two additional illnesses or injuries. Altogether, no more than three illnesses or injuries were recorded by the QES investigators.

Questions 1 through 4 appear to be unique. I am unaware of any national probability sample that collected information on specific illnesses and injuries and on specific job hazards. The respondents' answers to questions 1 through 4 form the basis for this study.

The frequency measure used in the "Results" section for illnesses and injuries is a simple summation of the number of times respondents mention a particular illness or injury, regardless of whether it is the first, second, or third illness or injury mentioned. For example, if a respondent stated for question 2 that back pain was the most recent complaint, and another respondent stated for question 2 that back pain was the second most recent complaint that was caused or exacerbated by his or her job, and if no other persons stated back pain as a complaint in any of three most recent illnesses or injuries, then the frequency count for back pain for the entire sample would be 2. This example illustrates that the frequency measure will count up to three illnesses or injuries that the respondent mentions. Although the sample size is 1511, it is theoretically possible, although unlikely, to have a frequency for back pain, for example, that exceeds 1511.

By adding the responses to question 3, severity of the illnesses and injuries may also be assessed. First, the weeks response (question 3) for each person within each of 36 categories will be noted. Second, weeks will be multiplied by frequency for each person to construct overall severity. For example, if four people reported fractures and three reported a week or less of absence,

whereas one person reported three weeks of absence, then the severity measure would equal 6 (ie, $[1 \times 1] + [1 \times 1] + [1 \times 1] + [1 \times 3] = 6$). The severity measure can be used to rank the 36 categories from most to least important in accounting for total absence time rather than number of absent episodes.

The occupations will be defined according to the broad US census categories of professionals and managers; clerical and sales workers; craftworkers, laborers, and operatives; and service workers.

The frequency measure used in the "Results" section for job hazards is a simple summation of the number of times respondents mention a particular job hazard, regardless of whether it is the first, second, or third hazard mentioned. By multiplying frequencies by the answer to question 3, a severity measure can be constructed. The frequency and severity measures for job hazards are exactly analogous to corresponding measures for illnesses and injuries.

Results

Frequencies and severity scores for the 36 illnesses and injuries and the 17 job hazards were tallied and stratified by occupation. Occupations were compared by adding the frequencies and severity scores in each column. Absences occur most frequently among craftsmen, operatives, and laborers and least frequently among clerical and sales workers. Craftsmen, operatives, and laborers also report the greatest number of dangerous conditions, whereas clerical and sales workers report the least number of dangerous conditions.

In lieu of the raw number tables (available from the author), Tables 2 and 3 present the 10 highest ranking illnesses and injuries (Table 2) and working conditions (Table 3) based upon severity scores. Severity scores are the frequencies multiplied by the number of weeks absent. There are three reasons for relying on only the severity rankings: (1) From the economic standpoint of

TABLE 2
Ten Most Frequent Illness and Injury Complaints, with Severity Percentage Scores, by Occupation

Total	Clerks and Salespeople		Professionals and Managers		Craftmen, Operatives, and Laborers		Service Workers		
Back injury	28.8%	(tie) Strain injuries	20.6%	Back injury	41.3%	Back injury (tie) Other	23.5% 6.6%	Back injury	44.6%
Fracture (broken bones)	6.3%	(tie) Cold or flu Hit or fall	20.6% 17.5%	Heart problem Cold or flu	11.5% 11.1%	(tie) Fracture Joint inflammation	6.6% 6.4%	Fracture	11.5%
Cold or flu	5.7%	"Maybe" a job condition influenced health	14.3%	(tie) Fracture (broken bones)	2.4%			Nervous disorder	10.8%
Strain injuries	4.6%	Back injury	7.9%	(tie) Nervous disorder	2.4%	(tie) Hit or fall (tie) Strain injuries	5.4% 5.4%	Strain injuries	10.2%
Hit or fall	4.3%	Fracture (broken bones)	4.8%	(tie) Hernia	2.4%	Cuts, Wounds	3.3%	(tie) Hernia	3.8%
(tie) Joint inflammation	4.2%			Not applicable	1.6%	Skin rash	3.2%	(tie) Not applicable	3.8%
(tie) Other	4.2%	(tie) Eye injury	3.2%	(tie) Cuts, wounds	1.2%	(tie) Cold or flu	2.6%	Other	2.5%
Chemical burn	3.9%	(tie) Ear damage	3.2%	(tie) Skin rash	1.2%	(tie) Sprain	2.6%	Eye injury	1.9%
Sprain	2.9%	(tie) Nervous disorder	1.6%	Strain injuries	.8%			(tie) Ear damage	1.3%
Heart problem	2.8%	(tie) Aggravation of another condition	1.6%					(tie) Poisoning	1.3%
		(tie) Cuts, wounds	1.6%						
		(tie) Dislocation	1.6%						

TABLE 3
Ten Most Frequently Cited Job Hazards, with Severity Percentage Scores, by Occupation

Total	Clerks and Salespeople		Professionals and Managers		Craftsmen, Operatives, and Laborers		Service Workers		
Dangerous methods	13.4%	Dangerous methods	28.1%	Bad weather	17.7%	Dangerous methods	21.3%	Human error	25.1%
Dangerous machines	12.5%	Dangerous storage	18.8%	Temperature extremes	15.7%	Exertion	19.3%	Dangerous machines	24.7%
Exertion	11.1%	Stress	15.6%	Awkward position	11.6%	Dangerous machines	10.7%	Personal attacks	11.3%
Bad weather	10.2%	Human error	10.9%	Dangerous workspace	11.0%	Bad weather	10.0%	Stress (tie)	7.4%
Human error	6.4%	Infectious diseases	9.4%	Stress	10.1%	Dangerous storage	9.2%	Noise (tie)	7.4%
Dangerous workspace	6.3%	Bad weather	7.8%	Dangerous machine	9.0%	Dangerous workspace	6.7%	Exertion	6.1%
Awkward position	6.1%	Dangerous machines	4.7%	Infectious diseases	7.8%	Dangerous chemicals	4.0%	Awkward position	5.6%
Stress	6.0%	Temperature extremes	3.1%	Personal attacks	5.2%	Awkward position	3.8%	Infectious diseases	3.5%
Temperature extremes	5.9%	Exertion	1.6%	Dangerous methods	3.8%	Infectious diseases	3.5%	Dangerous methods	3.0%
Dangerous storage	5.6%	All others have 0	0.0%	Noise	2.9%	Dust	2.7%	Traffic accidents	2.2%

the firm and the health standpoint of the worker, severity is a more important number than frequency. (2) A correlation coefficient of .971 was calculated between severity scores and frequencies. (3) The rankings using frequencies were very similar with only a few exceptions.

Tables 4 and 5 present the different results for women and men. Leading the list of illnesses and injury complaints for women are injuries from strain, back injury, and colds and flu. Leading the list for men are back injury, fractures, and chemical burns.

Leading the list of job hazards for women are working in an awkward position, dangerous methods and stress. For men, the leading job hazards are dangerous machines, exertion and dangerous methods.

Discussion

The National Institute of Occupational Safety and Health (NIOSH) indicates there were 10 leading work-related diseases and injuries in the United States in 1982⁹: lung diseases, musculoskeletal injuries, nonlung occupational cancers, fractures, cardiovascular disease, reproduction disorders, neurotoxic disorders, noise, skin problems, and psychologic disorders. Many of the top 10 illnesses, injuries, and job characteristics in Tables 2 and 3 would be included as the top 10 in the NIOSH rankings. It is important to bear in mind, however, that the NIOSH rankings include many problems, such as asbestos and leukemia, that would contribute to death, but probably not to absences.

TABLE 4
Rankings for Women and Men—Working Conditions for all Occupations Combined

Women			Men		
Condition	Severity Count	Severity, %	Condition	Severity Count	Severity, %
Awkward position	66	22.6	Dangerous machines	135	14.2
Dangerous methods	48	16.4	Exertion	124	13.1
Stress	28	9.6	Dangerous methods	11	12.4
Infectious diseases	26	8.9	Bad weather	118	12.4
Dangerous machines	20	6.8	Human error	77	8.1
Temperature extremes	18	6.2	Dangerous workspace	67	7.1
Noise	17	5.8	Dangerous storage	57	6.0
Exertion	14	4.8	Temperature extremes	50	5.8
Dangerous storage	12	4.1	Personal attacks	48	5.1
Dangerous workspace	11	3.8	Stress	47	5.0
Dangerous chemicals	11	3.8	Infectious diseases	36	3.8
Bad weather	9	3.1	Dust	18	1.9
Dust	5	1.4	Dangerous chemicals	15	1.6
Personal attacks	4	1.4	Traffic accidents	10	1.1
Human error	2	.7	Noise	10	1.1
Traffic accident	1	.3	Awkward position	10	1.1
Fire, shock	0	.0	Fire, shock	3	.3
Total	291		Total	987	
Rate	.3%		Rate	.6%	

TABLE 5
Rankings for Women and Men—Illnesses and Injuries for all Occupations Combined

Women			Men		
Illness or Injury*	Severity Count	Severity, %	Illness or Injury†	Severity Count	Severity, %
Injuries from strain	57	22.4	Back injury	322	41.2
Back injury	47	18.4	Fracture, broken bones	81	10.4
Cold or flu	38	14.9	Chemical burn	50	6.4
Sprain	26	10.2	Joint inflammation	45	5.8
Nervous disorder	26	7.8	Hit or fall	43	5.5
Hit or fall	13	5.1	Heart problem	36	4.6
Poisoning	11	4.3	Cold or flu	35	4.5
Joint inflammation	9	3.5	Skin Rash	29	3.7
"Maybe" had an illness or injury	9	3.5	Cuts, wounds	27	3.5
Not appropriate	8	3.1	Amputation	16	2.0
Cuts, wounds	4	1.6	Hernia	13	1.7
Ear damage	4	1.6	Not appropriate	12	1.5
Other	2	.8	Sprain	11	1.4
Eye injury	2	.8	Eye injury	11	1.4
Ulcers	1	.4	Toxic dust	10	1.3
Total Severity	255		Total severity	781	
Rate	.3%		Rate	.5%	

* Except for dislocation, heat stroke, bruise, and multi-injury, all others had 0 severity.

† Except for other, ulcers, nervous disorder, poisoning, bruise, burns, aggravated, and friction burns, all others had 0 severity.

Table 2 indicates that, among all workers, back pain appears to be by far (29%) the most frequently cited health reason for absence. These results are in line with those found by Andersson et al.⁸ Back pain problems would also fall into the second category in the NIOSH ranking. Moreover, the absences associated with back pain are far more than for any other category for all occupations except clerks and salespeople. These results underscore the importance of businesses offering wellness programs for persons suffering back trouble. For desk jobs, expenditures on orthopedic chairs may lower absenteeism.

The second most important variable in terms of severity is the fracture or broken bones variable. Fractures rank fourth in the NIOSH rankings. Third is colds and flu, but colds and flus are not included in the NIOSH category in part because medical experts do not frequently view colds and flus as being job-related.

The nervous disorder variable displays an interesting pattern across occupations. Although nervous disorders are conspicuously absent from craftworkers, operatives, and laborers, the variable is in the top 10 for each of the other three categories. It is ranked fifth among professionals and managers, third among service workers, and tied for ninth among clerks and salespeople. Nervous disorders would likely fall into the tenth category on the NIOSH list if they are of purely psychologic origin. If the disorders were due to toxic exposure, they would be included in the seventh NIOSH category.

In a similar vein, joint inflammation ranks high among craftworkers, operatives, and laborers, but is absent among the other three categories. This is significant because craftworkers, operatives, and laborers are likely to be in more physically demanding jobs than other workers.

The appearance of "other" with such a high percentage suggests that our lack of knowledge of illnesses and injuries may be greatest among blue-collar workers.

Heart problems rank second for professionals and managers, but are absent from the three occupational categories. Although this is consistent with the stereotype of professionals and managers suffering more heart attacks than other workers, it is inconsistent with current epidemiologic evidence indicating that heart disease is much more prevalent among the lower socioeconomic groups.¹⁰ Heart problems would be in the fifth category in the NIOSH ranking.

Table 3 provides information on the severity rankings for the 17 job hazards. The stress variable achieves the number one status for all occupations combined. Although this is an interesting finding, it is of little practical use to managers or administrators attempting to design safer workplaces, because stress is an amorphous concept. More practical are the findings pertaining to noise level and dust. These noise level results are consistent with those reported by Hill,¹¹ who claims that industrial noise may be currently damaging the hearing of greater than six million workers. The noise level obviously is under the control of management. To some extent, dust can also be removed from the work environment. Dangerous methods and machines appear to

contribute substantially to total absent time, but unfortunately, the data do not indicate the precise nature of the danger.

Tables 4 and 5 compare the results for women and men. Men, as expected, hold more dangerous jobs than do women, as the results in Table 4 indicate. After adjusting for sample size and the number of weeks available for absence, the ratio of greater absences among men to women is 2/1 (.6%/.3%). This 2/1 ratio means that men are roughly twice as likely as women to take absences because of adverse working conditions. These results were expected because men are disproportionately employed in dangerous jobs.^{12, 13} To the extent that dangerous working conditions contribute to any of the 36 illnesses or injuries, the results in Table 5 are also as expected. It would appear reasonable that many of the reasons for men's absence (fractures, chemical burns, skin rash, toxic dust) are not in the top list for women. Men have an absence rate of .5%, women have an absence rate of .3%. The excess of absences among men stands in contrast to the aggregate US absence statistics, which indicate that women are more frequently absent than men. It is worth noting, however, that the absences considered in the study are not all absences, but only those the respondent attributes to 36 illnesses and injuries and 17 job hazards. Evidence in Leigh¹⁴ suggests that a major cause of the aggregate absence disparity is due to women's greater tendency to stay home to take care of sick small children.

The results in Tables 2 through 5 should be regarded as tentative. The data are 12 years old. The percent of women in the workplace has grown considerably since 1977. The data are drawn from a population of full-time workers only. Although the questions are extensive, one might wonder about the validity of the answers. Long questionnaires tax the attention of respondents. Nevertheless, a number of results emerge that are consistent with prior findings. Craftworkers, operatives, and laborers report many more absences and job hazards than other workers. Almost all of the top 10 illnesses and injuries in Table 1 would fall into one of the top 10 NIOSH categories of work-related injuries and illnesses.

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The Physician in Society

We should be educating our students for the role of the physician in society. This statement may seem ridiculously obvious, but I wonder if we all have the same view of what it means. I would argue for a much larger role than that of the technocrat who alleviates the symptoms and signs of disease. The medical profession, and therefore the medical curriculum, is concerned with the *Science of Man*. Not only biological science, but the science of man writ large. Although in many ways modern medicine resembles a science, it is criticized for its lack of unifying theories. Because medicine is concerned with man not only as a biological being but also in the context of his culture and environment, unifying theories in our field are difficult to come by; doing so, however, is not impossible. The challenge of medicine is the need to understand all the etiological variables and to develop the skill and equanimity to deal with medicine's unending uncertainties. Some people study medicine because they are fascinated by the mystery of the nature of man. Medicine is a continuing journey of discovery. Some students do recognize the tremendous responsibility of functioning with other human beings in the very intimate way that medicine requires. What is then a proper education for this "science" and this responsibility? Knowledge and skill, an ability to communicate with others and to fathom the forces that affect the individual's sense of health and illness, and underlying all, integrity and absolute honesty in the face of limitations and uncertainty must be fostered.

—From "The Clinical Teacher and the Learning Process: Toward a New Paradigm for Clinical Education in Medicine," by M.P. Wilson. In: Gastel B, and Rogers DE, eds. *Clinical Education and the Doctor of Tomorrow.* New York, NY: The New York Academy of Medicine; 1989:33-46.