Work Absenteeism in Diabetics

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SUMMARY

A new study of work absentee statistics was made of 108 employed diabetics, observed for an average of 4.3 years. The individuals in this group were absent on an average of 6.3 days per work year. The diabetic study group, age-matched to other studies of absenteeism in nondiabetics, compared favorably with the nondiabetics. DIABETES *23*:957-61, December, 1974.

It has been suggested that diabetics are absent from work more often and longer than nondiabetics. Since 1945 thirteen reports[1-13] have addressed themselves to confirming or denying this concept and with a remarkable divergence in results. Studies with control groups have indicated that diabetics are absent from work one-half to three times as much as nondiabetics. These thirteen studies have been reduced to comparable units and the absentee data, along with other information, are presented in table 1.

We believe that one of the major reasons for the divergence in these results is that the age distribution for the diabetic sample was different from the control group. One of the referenced papers[12] states that diabetics are absent 15.4 days per year while the control group is absent only 5.7 days per year. However, table 2 shows that the populations from which these figures were derived are quite different. The control population sample showed 46.5 per cent under age twenty-five and 8.8 per cent between age 55 and 64, whereas the diabetic sample showed only 4.8 per cent under age twenty-five and 26.6 per cent from age 55 to 64. On almost any health matter, a population with an average age in the late forties to mid fifties will compare poorly with a population whose average age is in the midtwenties. This is also the problem when the diabetic population of any group is compared with the remainder of the group because this "remainder" invariably shows a younger age distribution than does the diabetic population. Other factors that may bias the results in such studies are relatively small numbers of diabetics, absentee data from less than one year, and omission of reporting first day absences.[14]

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METHOD

In the past, absences have usually been reported as percentage of work force absent on a given day. While this figure has certain applications, it has limited usefulness for an in-depth absenteeism study. For many years this percentage has been in the vicinity of 3 per cent, though present data indicate that this rate is now increasing.[15]

Today, the use of computer information storage and retrieval systems makes it possible to study absenteeism in much greater detail. It is possible to retrieve absentee data for an individual or a group for any selected characteristics: age, sex, occupation, etc. In addition, standards are beginning to evolve for the recording of absentee data. What constituted an absence or a work year has varied from organization to organization. Now an average work year has been defined and the definition of an absence is more uniform.

We present a study which, in our opinion, provides a much more realistic view of diabetic absenteeism.

Hanford Diabetic Study

The *records* of all employees with a diagnosis of diabetes or hyperglycemia at the Hanford Operations, Richland, Wash., were reviewed. Hanford is a manufacturing and chemical separation operation with a research component. Individuals were included in our study if they (1) met the World Health Organization

TABLE 1

English Language Literature Since 1945 Regarding Absenteeism in Diabetics
(All Data Adjusted to Current Concept of Work Year Equaling 261 Days)

Reference	1	2	3	3	4	4	5	6
Population from which diabetics are drawn	NA	NK	7,000	350	286,622	3,508	7,140	NK
Number of diabetics in study	144	89	110	10	1,485	40	90	NK
Incidence			0.15%	2.8%	0.5%	1.1%	1.3%	
Number of females in study	8	30	NK	NK	NK	1	0	NK
Percentage in study with familial history of diabetes	NK	NK	NK	NK	NK	NK	37%	NK
Average individual duration of diabetes at time of study in years	NK	6	NK	NK	NK	3.9	8.6	NK
Average age of onset of diabetes	NK	44	NK	NK	NK	50.4	44	NK
Average age of diabetics in study	48.6	50	NK	NK	NK	54.5	52.7	NK
Average age of individuals in population from which diabetics were drawn or controls	49 (P)	NK	NK	NK	NK	46.1	43.8	NK
Absence rate of diabetics (days)	11.4	40% Exc. 19% Avg.	33% Better	2.4	SAME	18.3 (8.6)*	9.8	Slightly Elevated
Absence rate of controls (days)	8.0	16% Fair 15% Poor	Than Average	4.9		8.3	8.8	NK
Length of observation	2 Yr	20 Mo.	NK	NK	NK	9 Mo.	1Yr	NK
First day absence	Yes	NK	NK	NK	NK	Yes	Yes	NK
Diagnosis explained	Yes	No	No	No	No	Yes	Yes	NK

*Absentee rates of diabetics if 2 individuals are dropped from the sample.
(P) = Paired Study; NK = Not Known; NA = Not Applicable

criterion for the diagnosis of diabetes,*[16] (2) were taking insulin, or (3) were regularly under the care of a private physician and taking oral hypoglycemics and/or had a work restriction because of their diabetes. Table 3 shows the number of individuals and the percentage of the group that was admitted to this study by each of these criteria.

Absentee data retrieved from an information system were made available to us for the 108 individuals identified as diabetics. Since there were approximately 8,000 employees at Hanford at the time of our study, the prevalence of diabetes was 1.4 per cent, which approximates the national average.[17] Because absences of one hour are often used for dental appointments or physician visits, we considered any sickness absence over one-half day as being due to illness. Individuals were included in this study only if they had worked at least one calendar year. Each study member's individual absentee rate was calculated for a work year (261 days) and this rate was then averaged with the other 107 members in the study.

Table 4 shows the occupational breakdown of the diabetic study group with use of a standard classification.[18] Although the Hanford work force is approximately 16 to 17 per cent female, only five

TABLE 2

Age group distributions for diabetics and for total population

Days of work lost	15.4	5.7
Age groups	Diabetic	General population
Under 25	4.8%	46.5%
25-44	12.2%	24.0%
45-54	16.8%	11.5%
55-64	26.6%	8.8%
65-74	26.5%	5.9%
75 & Over	13.1%	3.3%

Ref. 12: "Characteristics of Persons with Diabetes." *National Center For Health Statistics*, Ser. 10, No. 40, Oct. 1967, Public Health Service, Washington, D.C.

*The World Health Organization believes that someone would be accepted anywhere in the world as being diabetic if, in the absence of causes for abnormal glucose absorption (gastrointestinal, hepatic, thyroid) an individual under forty-five years of age had a two-hour postprandial blood sugar exceeding 140 mg. per 100 ml. (value adjusted for our laboratory). In a person over forty-five years of age this circumstance plus other clinical data such as family history or physical examination should provide the main guides to diagnosis and treatment needed.

TABLE 1 (Continued)

English Language Literature Since 1945 Regarding Absenteeism in Diabetics
(All Data Adjusted to Current Concept of Work Year Equaling 261 Days)

Reference	7,9	8,9	10	11	12	This Paper	13
Population from which diabetics are drawn	90,596	96,000	NA	NK	NA	8,000	NK
Number of diabetics in study	408	622	56	273	2.3M (Est.)	108	NK
Incidence	.0045%	.0074%				1.4%	
Number of females in study	38	41	11	3	1.3M (Est.)	5	NK
Percentage in study with familial history of diabetes		47.6%*	NK	NK	NK	36%	NK
Average individual duration of diabetes at time of a study in years	NK	NK	NK	5.84	NK	7	NK
Average age of onset of diabetes	NK	NK	NK	"40+"	NK	44.6	NK
Average age of diabetics in study	49	51	52	54.2	To	51.6	NK
Average age of individuals in population from which diabetics were drawn or controls	49 (P)	51 (P)	55	54.0 (P)	Be Dis-cussed	43.7	NK
Absence rate of diabetics (days)	10.8	13	12.0	10.5	15.4	6.3	3.2†
Absence rate of controls (days)	5.6	6.9	8.3	3.5	5.7	To Be Discussed	NK
Length of observation	1 Yr	1Yr	1 Yr	5.4 Yr	1 Yr	4.3 Yr	NK
First day absence	Yes	Yes	Yes	No	Yes	Yes	Yes
Diagnosis explained	Yes	Yes	Yes	Yes	Yes	Yes	No

*Familial history published in another paper, later date.
†Computed annual average absence due to diabetes alone.
(P) = Paired Study; NK = Not Known; NA = Not Applicable

female diabetics appeared in our study, making the diabetic study group approximately 5 per cent female. The age span of the diabetics ranged from twenty-three to sixty-five with an average age of 50.6 years. The average age of the work force from which this group was drawn was 43.6 years with an average male population age of 44.2 years. The duration of diabetes averaged seven years with a range of one to twenty-nine years. Ninety per cent of the diabetic study group became diabetic after they were hired. The individual observation periods ranged from one year through 5.75 years with an average of 4.3 years. Absences ran from one-half to 133 working days per year.

Incidental data indicated that thirty-one individuals or 27 per cent of the study group had some medical condition that could be reasonably related to their diabetes.

RESULTS

The diabetics had an average annual sickness absentee rate of 6.3 days. Table 5 shows that their absentee rates, categorized by each of the three criteria (W. H. O., insulin, and oral agents), were not significantly different.

Absentee rates of the diabetic group were compared

TABLE 3

Number of Hanford diabetics by study inclusion criterion

Criterion	Number of Diabetics	Percentage of total diabetics
1 (W. H. O.)	65	60.2%
2 (Insulin)	21	19.4%
3 (regular care) (hypoglycemics)	22	20.4%

TABLE 4

Occupations of Hanford diabetic group
(Expressed as number of individuals)

Officials and managers	27
Professional	16
Technicians	12
Office and clerical	5
Craftsmen	30
Operatives	6
Laborers	1
Service Workers	11

TABLE 5

Absentee rates of Hanford diabetics by study inclusion criterion

Criterion	Absentee rate
1 (W. H. O.)	6.19 D/yr.
2 (insulin)	4.89 D/yr.
3 (regular care) (hypoglycemia)	7.99 D/yr.

by attained age with absentee rates of a nondiabetic segment of the Hanford work force. Table 6[19] shows that in every age group the absentee rate for diabetics is less than that of nondiabetics.

Tables 7, 8, and 9 show the comparison of the diabetic study group's absentee rates by age group with those of a heavy industry work force,[20] a Department of Labor study,[21] and the National Center for Health Statistics studies.[22-27]

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TABLE 6

Comparison of Hanford diabetic study group absenteeism by age with a work force from same area (Absentee rates in days per work year)

Age group	Absentee rate of Hanford diabetics	Absentee rate of 291 nondiabetic Hanford employees
Up to 35	6.48	6.8
36-41	3.68	5.3
42-47	3.13	4.4
48-53	5.94	6.3
54-59	6.27	7.1
60-64	9.27	17.0

Age group	Number of Hanford diabetics	291 Nondiabetic Hanford employees
Up to 35	10	53
36-41	7	47
42-47	14	57
48-53	19	53
54-59	35	57
60-64	23	24

TABLE 7

Comparison of Hanford diabetic study group absenteeism by age with a heavy industry work force (Absentee rates in days per work year)

Age group	Absentee rate of Hanford diabetics	Absentee rate of heavy industry work force
25-34	6.79	3.9
35-44	2.98	6.19
45-54	5.35	9.34
55-64	7.63	5.73

Age group	Number of Hanford diabetics	Number of heavy industry employees
25-34	9	1,335
35-44	13	908
45-54	34	1,042
55-64	52	692

TABLE 8

Comparison of Hanford diabetic study group absenteeism by age with department of labor estimates (Absentee rates in days per work year)

Age group	Absentee rate of Hanford diabetics	Department of Labor absentee rate estimates
25-34	6.79	3.4
35-44	2.98	4.0
45-54	5.35	5.4
55-64	7.63	7.9

Age group	Number of Hanford diabetics	
25-34	9	Rate based on
35-44	13	35,000 interviews
45-54	34	per week
55-64	52	

TABLE 9

Comparison of Hanford diabetic study group absenteeism by age with National Health Survey estimates (Absentee rates in days per work year)

Age group	Absentee rate of Hanford diabetics	National Health Survey absentee rate estimates 1965 thru 1970
25-44	4.5	4.6
45-64	6.7	6.6

Age group	Number of Hanford diabetics	Samples 800 households per week
25-44	22	
45-64	86	

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