RHEUMATISM IN LIGHT INDUSTRY

BY

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Although considerable attention has been paid to the prevalence of rheumatic diseases in the community, relatively little work has been done on the occupational and environmental factors that may contribute to rheumatic complaints or which may aggravate those that already exist. The Industrial Survey Unit has been sponsored by the Arthritis and Rheumatism Council to study these factors and, in addition, to investigate the social and economic effects of rheumatic diseases in the working population. The broad aims of the Unit were given by Duthie and Anderson (1962).

Observations made by the Unit on a group of coal miners (Anderson, Duthie, and Moody, 1962) indicated that 47 per cent. of the men studied either had rheumatic complaints at the time of the interview or had had symptoms in the previous year. Using the same technique and observers, a survey was undertaken subsequently at the Admiralty Dockyard at Rosyth amongst a large group of dockyard workers (Anderson and Duthie, 1963). The dockyard workers were on the average older than the coal miners, but in spite of this fewer men (37 per cent.) admitted having suffered rheumatic symptoms in the previous year. This difference could be accounted for by increased complaint rates for disk disease in younger miners and osteo-arthritis in the older men (Partridge, Anderson, and Duthie, 1964). The complaint rate varied among different occupational groups in the Dockyard, but it did not appear to be related to the heaviness of the work involved. Neither was any difference demonstrated between indoor and outdoor workers in this respect. Sickness absence from rheumatism, however, was higher amongst men in the heavier manual occupations than in the lighter ones.

As part of a continuing study of the prevalence

and effects of rheumatic conditions in the working population it was decided to make similar investigations in light industry. An industry was sought in which the work performed was physically less strenuous than in most of the heavy manual occupations so far studied. In this way it would be possible to test the validity of the conclusions drawn from previous surveys. It was also felt that male workers should be compared with females doing similar light work, which had not been possible in the heavy industries.

Background and Method

Permission was obtained to conduct a survey in an engineering factory in Edinburgh where men and women were employed on similar work under the same environmental conditions.

Four main departments of the factory were selected for study and it was decided, if possible, to interview 100 per cent. of men and women on the nominal rolls of these departments. The work consisted of assembling, checking, and testing light electronic components and circuits. Some of the workers were sedentary and little outdoor work was involved. A few men were employed on light labouring duties which consisted mainly of fetching and carrying small objects. The work was performed in light, airy workshops under as reasonable and constant conditions of lighting and heating as possible in modern light industry. The workers were paid a basic wage plus production bonus. During sickness absence, many employees received money (men £3 per week, women £1 13s. per week) from a Sick Benefit Fund in addition to National Insurance.

Each individual in the sample was asked to attend for an interview and brief medical examination, at which time a questionnaire was completed. The interview was conducted and the diagnosis made in the way described by Anderson and others (1962).

Those who had had rheumatic symptoms at the time of the interview or during the 12 months before the examination were classed as positives; those who had had symptoms at some other time in their working lives were classed as intermediates; the remainder, who denied

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rheumatic symptoms at any time, were classed as negatives.

A selected group of positives was referred to the medical social worker (M.S.W.) for interview in order to assess in greater detail some of the social and economic consequences of their rheumatic conditions. For this interview, workers with a history of rheumatic complaints (positives only) with whom it was possible to match a negative control of similar age, sex, and occupation were selected.

The possibility that psychological factors may influence the prevalence of rheumatic complaints in different industries was discussed by Anderson and Duthie (1963). In the present survey an attempt was made to measure two personality dimensions in the workers selected for interview by the M.S.W.: Neuroticism or emotionality, and Extraversion. For this purpose, the Maudsley Personality Index (M.P.I.: Eysenck, 1959) was used. Each trait was measured by 24 questions relating to the individual's feelings about himself and his relationships with others. The questionnaire was administered in the way recommended by Eysenck.

The Neuroticism Scale of the M.P.I. gave a rough measure in each individual of his emotional lability and of his liability to break down under stress. Eysenck quoted a mean score of 19.89 in a large sample of English normal subjects and indicated that patients with psychosomatic complaints and those with neuroses had high scores. The Extraversion Scale provided a measure of the sociability of an individual. A mean score of 24.91 was quoted by Eysenck for English normal subjects.

Results

Whilst the workers seen in this survey were not all doing exactly the same kind of work, strenuous physical effort was not demanded of any of them, and for this reason they have been treated as a single occupational group. Occupation was taken into account, however, in matching positives and controls for the social and psychological investigations.

The number of workers on the nominal rolls of the four departments was 412 (222 men and 190

women). Of these, 212 men (95.5) per cent. and 179 women (94.2 per cent.) were interviewed.

Prevalence of Symptoms

The prevalence of rheumatic complaints by age in the male group is shown in Table I: 76 men (35.9 per cent. of those interviewed) were positives, of whom 27 (12.7 per cent.) claimed to have had rheumatic symptoms at the time of interview; a further 24 (11.3 per cent.) were classified as intermediates; the remaining 112 men (52.8 per cent.) admitted no rheumatic complaints at any time. There was a steady rise in the percentage of positives with age from 18.7 per cent. in the 15 to 24 age group to 55.6 per cent. in those over 45.

The prevalence of rheumatic symptoms by age in the female group is also given in Table I: 56 women (31.3 per cent. of those interviewed) were classed as positives, of whom fifteen (8.4 per cent.) had symptoms at the time of interview; nineteen women (10.6 per cent.) were intermediates, and 104 (58.1 per cent.) were negatives. There was again a correlation between prevalence of rheumatic symptoms and increase in age, although the percentage of positives was lower in the 25 to 34 age group than in the previous decade.

Comparison of prevalence rates in male and female workers in this survey did not demonstrate any significant difference between them.

Diagnosis

The diagnoses reached by simple clinical examination of positives and intermediates in the different age groups are given in Table II (overleaf) for both sexes. Both osteo-arthritis and disk disease were present in five men.

The diagnosis of osteo-arthritis, on the basis of degenerative joint changes clinically obvious to the observer, was made in ten men (4.7 per cent.)

TABLE I
PREVALENCE OF RHEUMATIC COMPLAINTS, BY AGE AND SEX

Sex		Male							Female						
Rheumatic Complaints		Positive		Intermediate		Negative		Total	Positive		Intermediate		Negative		Total
		No.	Per cent.	No.	Per cent.	No.	Per cent.		No.	Per cent.	No.	Per cent.	No.	Per cent.	
Age (yrs)	15—	9	18.7	1	2.1	38	79.2	48	19	25.7	2	2.7	53	71.6	74
	25—	30	32.6	10	10.9	52	56.5	92	7	18.9	5	13.5	25	67.6	37
	35—	22	48.9	8	17.8	15	33.3	45	22	41.5	10	18.9	21	39.6	53
	45—	15	55.6	5	18.5	7	25.9	27	8	53.4	2	13.3	5	33.3	15
	All 15+	76	35.9	24	11.3	112	52.8	212	56	31.3	19	10.6	104	58.1	179

TABLE II
DIAGNOSIS, BY AGE AND SEX

Sex			Male					Female					
Age (yrs)			15—	25—	35—	45+	All Ages	15—	25—	35—	45+	All Ages	
Diagnosis	Osteo-arthritis		Number	—	3	3	4	10	1	—	3	—	4
			Per cent.	—	3·3	6·7	14·8	4·7	1·3	—	5·7	—	2·2
	Disk Disease ..		Number	1	9	6	10	26	1	—	5	4	10
			Per cent.	2·1	9·8	13·3	37·0	12·3	1·3	—	9·4	26·6	5·6
	Undetermined Pain	Back Hips Legs	Number	6	19	12	3	40	9	3	7	3	22
			Per cent.	12·5	20·7	26·6	11·1	18·7	12·2	8·1	13·2	20·0	12·3
		Neck Shoulders Arms	Number	1	6	6	1	14	4	4	10	1	19
			Per cent.	2·1	6·5	13·3	3·7	6·6	5·4	11·8	18·9	6·7	10·6
		Diffuse	Number	2	2	2	2	8	1	3	5	1	10
			Per cent.	4·1	2·2	4·4	7·4	3·8	1·3	8·1	9·4	6·7	5·6
	Other Specified Rheumatic Conditions		Number	—	3	2	2	7	5	2	2	1	10
			Per cent.	—	3·3	4·4	7·4	3·3	6·8	5·4	3·8	6·7	5·6
	All Rheumatic Complaints		Number	10	40	30	20	100	21	12	32	10	75
			Per cent.	20·8	43·5	66·7	74·1	47·2	28·4	32·4	60·4	66·7	41·9
No Symptoms			Number	38	52	15	7	112	53	25	21	5	104
			Per cent.	79·2	56·5	33·3	25·9	52·8	71·6	67·6	39·6	33·3	58·1
Total Interviewed (on which percentages are based)			48	92	45	27	212	74	37	53	15	179	

Note: There were five male cases of double diagnosis: osteo-arthritis and disk disease.

and four women (2.2 per cent.). This low incidence was only to be expected in a population in which most of the members were under the age of 45.

Disk disease was diagnosed in 26 men (12.3 per cent.) and increased in prevalence with age. The lumbar spine was affected in 22 men and the cervical spine in three. One man had multiple disk lesions. Ten women (5.6 per cent.) had disk disease; in seven women it was confined to the lumbar spine and in the other three the cervical spine was also affected.

Prevalence of disk disease was similar in men and women between the ages of 35 and 54 years, but below the age of 35 there were ten men (7.1 per cent.) with this complaint and only one woman (0.9 per cent.). This difference is significant (2 S.E.D. = 5.5 < 6.2; $P < 0.05$).

A large number of positives and intermediates, both men and women, complained of diverse rheumatic aches and pains for which an obvious cause could not be found. Complaints of this nature occurred in 62 men (29.2 per cent.) and 51 women (28.5 per cent.); 62 per cent. of men and 68 per cent. of women with rheumatic symptoms were placed in this category. Symptoms referable to

the back, hips, and legs were noted in 39 men (18.8 per cent.) and 22 women (13.9 per cent.). Between the ages of 15 and 54 years, 56 men (28.0 per cent.) and 32 women (17.9 per cent.) complained of back or lower limb pain either due to disk disease or of undetermined cause. The difference is significant ($\chi^2 = 4.9$; $P < 0.05$). Detailed consideration of the different age groups showed that, in the 25 to 34 age group, 28 men (30.4 per cent.) and three women (8.1 per cent.) were so affected ($\chi^2 = 6$; $P < 0.02$). The differences between men and women in the other age groups were less marked and did not reach a significant level.

There was no difference between the sexes in the prevalence of undetermined pains of the neck and shoulder girdle, nor was there any difference if these symptoms were considered in association with cervical disk disease.

Other specified rheumatic diseases occurred in seven men and ten women. These included five cases of rheumatoid arthritis; two men (0.9 per cent. of men interviewed) and three women (1.7 per cent.).

92 per cent. of the rheumatic complaints in men and 93 per cent. in women were described as being episodic in nature. In 39 men out of the 76

positives (51.3 per cent.), the rheumatic symptoms had developed before they started work in the electronic engineering factory; similarly, 31 out of 56 female positives (55.3 per cent.) had developed symptoms in some previous occupations.

Functional Capacity

Eight men (10.5 per cent. of positives) had moderate impairment of their working ability and a further six (7.9 per cent.) had some slight impairment. The comparable figures for women were six with moderate impairment (10.7 per cent. of positives) and two (3.2 per cent.) with slight disability.

Sickness Absence

Sickness absence for male workers during the year before interview amounted to 237 weeks, an average of 111.8 weeks per 100 men per annum. The number of weeks lost from rheumatism and from other causes in men is given by age in Table III. Absence from work from rheumatic conditions totalled 14 weeks, 5.9 per cent. of total sickness absence and an average of 6.6 weeks per 100 men per annum. Rheumatism was responsible for 4.4 per cent. of sickness absence in men below the age of 45, and 15.1 per cent. in the small group of men over the age of 45. 223 weeks of work were lost from other illnesses—an average of 105 weeks per cent. per annum. There was little variation in the rate of sickness absence between the decades.

Among female workers a total of 298 weeks of sickness absence occurred in the previous year, an average of 166.5 weeks per 100 workers per annum. The number of weeks of absence is given by age in Table III; 19 weeks were lost from rheumatism which was responsible for 6.4 per cent. of the total sickness absence in this group (10.6 weeks per 100 workers per annum). Under the age of 45, 4.6 per

cent. of sickness absence was caused by rheumatic complaints, a similar proportion to that in men; in the small group over the age of 45, the rate rose to 18.9 per cent.

279 weeks were lost from other non-rheumatic conditions, an average of 155.9 weeks per 100 workers. The rate was lowest in the 25 to 34 age group (110.8 weeks per cent. per annum) and was at a maximum in those over 45 (200.0 weeks per cent. per annum).

Backache, including lumbar disk disease, was responsible for 79.0 per cent. of time off work from rheumatism (11 out of 14 weeks) in male workers and for 65.0 per cent. (15 out of 23 weeks) in female workers.

Sickness absence from all causes other than rheumatism was higher in both male and female positive groups than it was amongst negatives and intermediates combined. These results are shown by age in Table IV (overleaf).

101 working weeks were lost by the male positive group because of non-rheumatic illnesses (average 133 weeks per 100 men) compared with 122 weeks by the other men (average 90 weeks per 100 men). The difference between the two groups with respect to working time lost (on the basis of a 49-week working year) is significant ($\chi^2 = 8.4$; $P < 0.01$).

The female positive group lost 121 working weeks from non-rheumatic conditions (average 216 weeks per 100 women). 158 weeks were lost by the negative and intermediate groups (average 128 weeks per 100 women). The difference in working time lost between the two groups is significant ($\chi^2 = 19.0$; $P < 0.001$).

33 male positives (43.4 per cent. of the positives) were absent from work in the year before interview for illnesses other than rheumatism. The average time each man was absent was 3.1 weeks. 44 other men were also absent during that year (32.4 per

TABLE III
REASONS FOR SICKNESS ABSENCE, BY AGE AND SEX

Sex			Male					Female				
Age (yrs.)			15—	25—	35—	45—	All Ages	15—	25—	35—	45—	All Ages
Sickness Absence	Rheumatism	Weeks off in Year	0	9	0	5	14	8	0	4	7	19
		Rate per cent.	0·0	9·8	0·0	18·5	6·6	10·8	0·0	7·5	46·7	10·6
	Other Causes	Weeks off in Year	50	96	49	28	223	115	41	93	30	279
		Rate per cent.	104·2	104·3	108·9	103·7	105·2	155·4	110·8	175·5	200·0	155·9
	All Causes	Weeks off in Year	50	105	49	33	237	123	41	97	37	298
		Rate per cent.	104·2	114·1	108·9	122·2	111·8	166·2	110·8	183·0	246·7	166·5
Number Interviewed			48	92	45	27	212	74	37	53	15	179

TABLE IV
NON-RHEUMATIC SICKNESS ABSENCE IN POSITIVES AND OTHERS, BY AGE AND SEX

Sex			Male					Female				
Age (yrs)			15—	25—	35—	45—	All Ages	15—	25—	35—	45—	All Ages
Non-rheumatic Sickness Absence	Positives	Weeks off in Year	20	36	25	20	101	35	10	57	19	121
		Rate per cent. ..	222.2	120.0	113.6	133.3	132.9	184.2	142.8	259.1	237.5	216.1
		No. Interviewed ..	9	30	22	15	76	19	7	22	8	56
	Others	Weeks off in Year	30	60	24	8	122	80	31	36	11	158
		Rate per cent. ..	76.9	96.6	104.3	66.7	89.7	145.5	103.3	116.1	157.1	128.5
		No. Interviewed ..	39	62	23	12	136	55	30	31	7	123

cent. of intermediates and negatives) for an average of 2.8 weeks each.

In the female group, 34 of the positives (60.7 per cent.) were off work sometime during the year because of other illnesses (average 3.6 weeks each), compared with 55 of the other females (44.7 per cent.) who were absent for an average of 2.9 weeks each.

Comparison of male and female groups shows that 77 men (36.3 per cent.) and 89 women (49.7 per cent.) were off work during the year for reasons other than rheumatism ($\chi^2 = 6.2$; $P < 0.02$).

Each worker in the sample was asked about sickness absence from rheumatism in other years. 23 men (10.7 per cent.) and eighteen women (10.0 per cent.) had lost work because of rheumatic conditions at some time in their working lives.

Use of Medical Services

25 men (25.0 per cent. of positives and intermediates) and nineteen women (25.4 per cent. of positives and intermediates) had been referred to hospital at some time during their working lives for investigation and treatment of rheumatic complaints. Eight men (8.0 per cent.) and five women (6.7 per cent.) were in-patients and the rest were treated as out-patients. Of those men who had been referred to hospital for rheumatism, the rate rose with age from 10.0 per cent. in the 15 to 24 age group to 44.5 per cent. of those over the age of 45. In women 23.8 per cent. of those affected in the 15 to 24 age group had been referred to hospital. In the next decade the percentage fell to 8.3 per cent.; thereafter the rate was similar to that in males.

Eighteen out of 100 affected men (18.0 per cent.) had consulted their general practitioner in the year before interview and twenty women (26.6 per cent.) had also consulted their family doctor in the same period. Consultation rates were high in the 15 to 24

age group for men and women (30.0 and 33.4 per cent. respectively) and fell progressively in the succeeding decades to 9.1 per cent. in males over 45 and 18.8 per cent. in females aged 35 to 44.

Change of Occupation

A history relating to previous employment was obtained from each worker and particular note was taken of changes of occupation for reasons of ill-health. 26 men (12.3 per cent. of the total) had changed jobs for this reason and seven (3.3 per cent.) had done so because of rheumatism. 24 women (13.4 per cent. of the total) had changed their occupation because of ill-health and eight of them (4.5 per cent.) gave rheumatism as the cause.

All seven men and five out of the eight women who had changed occupation through rheumatism had done so because of disk disease.

Change of occupation because of non-rheumatic illnesses was noted in thirteen (13.0 per cent.) of male positives and intermediates and in eight (10.7 per cent.) of similarly affected female. In comparison, six (5.4 per cent.) male negatives and seven (6.9 per cent.) female negatives had changed because of non-rheumatic illnesses. The difference between the groups (positives plus intermediates compared with negatives) is not significant for either sex. 39 of the fifty workers who changed their job for any health reason had come into the present firm from elsewhere; the other eleven had changed within the firm.

Other Social Effects

Seventy positives (41 male and 29 female) were matched for age, sex, and occupation with an equal number of negative controls. These workers were interviewed by the medical social worker after the medical part of the survey was completed. An extensive social questionnaire was completed for

each worker which was designed to obtain information related to:

- (1) Social and economic effects of illness in the previous year.
- (2) Early environmental influence on the subject up to the age of 15.
- (3) Present environmental influences, including marriage and housing conditions.
- (4) Attitude of the individual towards present employment.
- (5) Use of leisure time.

In addition, each of these workers was asked to complete the Maudsley Personality Inventory.

It was again demonstrated that sickness absence from non-rheumatic causes was higher in the positive group (78 weeks lost) than in the control group (48 weeks lost) ($\chi^2 = 6.2$; $P < 0.02$).

No significant differences were found between the two groups in respect of other medical problems, facets of early environment, marriage relationships, attitude towards their present job, and uses of leisure time.

Analysis of housing standards for all workers indicated that 49 (25.0 per cent.) of the men and 37 (20.7 per cent.) of the women lived in homes without a bath, but there was no difference between positives and others in this respect. Other factors, such as number of children, duration and mode of travel, finance in the home, and recent change of house, were also studied, but no difference could be detected between those affected with rheumatism and the rest.

The psychological questionnaire (Maudsley Personality Inventory) was answered by all the 140 workers and scores on the Neuroticism (N) and Extraversion (E) scales were obtained for each worker.

On the N scale, the 41 male positives had a mean score of 21.9 (S.D. ± 10.5) and the controls a mean score of 21.3 (S.D. ± 9.7). The difference is not significant. The 29 female positives had a mean score of 29.1 (S.D. ± 7.54) and the controls a mean score of 23.7 (S.D. ± 9.46). The difference between female positives and controls is significant ($P < 0.05$).

On the E scale, male positives had a mean score of 26.0 (S.D. ± 8.9) compared with a mean score of 24.7 (S.D. ± 8.1) for male negatives. The mean score for female positives was 24.3 (S.D. ± 8.4) compared with 25.1 (S.D. ± 8.9) for female negatives. In neither case was the difference between rheumatic positives and controls significant.

33 of the 82 male workers who answered the psychological questionnaire were off work because of illness during the year; 49 had had no sickness

absence. The mean N score for those who had been absent was 22.9 and for the others it was 20.4. The scores on the E scale were 23.4 and 25.4 respectively.

36 of the 58 female workers were absent from illness during the year with a mean N score of 26.8; the 22 others had a mean N score of 25.7. The mean E score for those who were absent was 25.7 and for the others 24.0.

The differences in the N and E scores between those who were absent from illness and those who were not are not significant for either sex. The mean N and E scores of absentees in the positive and negative groups again showed no significant difference from the others, neither was there any correlation with duration of sickness absence.

Discussion

The present study of workers in an electronic engineering factory formed part of a more extensive survey of industrial workers undertaken to evaluate the nature and consequences of rheumatic complaints among them. This particular occupational group was chosen because their work was physically lighter than that performed by the majority of workers studied previously and because a direct comparison could be made between men and women doing similar work under similar conditions.

It was suggested by Anderson and Duthie (1963), in a study of rheumatic complaints in dockyard workers, that whilst differences in complaint rate existed between different occupational groups in the dockyard these differences did not seem to depend upon the heaviness of the work concerned.

It is interesting, therefore, to compare the complaint rates in male electronic engineering workers with the rates found amongst other industrial workers. To make allowances for the correlation between rheumatic complaints and age, the standardized complaint ratios (S.C.R.) have been calculated for men working in four industries—a coal mine, a brewery, a dockyard, and the electronic engineering factory. The S.C.R. for each industry was obtained from the fraction:

$$\frac{\text{Observed number of positives}}{\text{Expected number of positives}} \times 100.$$

The expected number of positives was calculated by applying the total complaint rate in each group to the numbers in each industry using the same age distribution. The observed and expected complaint rates and the standardized complaint ratios for the four industries concerned are given in Table V (overleaf).

TABLE V
MALE COMPLAINT RATES IN FOUR INDUSTRIES
STANDARDIZED RATIOS

Occupation	Number of Workers Interviewed	Number Positive		Standardized Complaint Ratio
		Observed	Expected	
Coal Miners	402	185	158·6	116·6
Brewery Workers	412	172	155·9	110·3
Male Electronic Engineering Workers	212	76	70·9	107·2
Dockyard Workers	1,422	522	569·6	91·6
Total.. .. .	2,448	955	955	100·0

Coal miners and brewery workers, most of whom were doing heavy work, had high ratios, but the figure for dockyard workers, also doing heavy work, was low. The S.C.R. for male workers in light industry had a ratio above the mean value of 100. Whilst it was true that over half the male positives in the present survey initially developed their complaints when they were working in different jobs, it did not appear that a change of employment had made any substantial difference to the recurrence of rheumatic complaints in the majority of them.

This survey tends to confirm, therefore, the impression formed previously that, whilst differences in complaint rate exist between industries, the difference does not depend upon the heaviness of the occupation.

Sickness absence from rheumatic complaints was low amongst male workers in the present industry, 6·6 weeks per 100 men per annum. This is in keeping with the findings at the dockyard that as a rule sickness absence due to rheumatism was lower in the less strenuous occupations. Table VI shows the total number of weeks' absence due to rheumatism and the crude rates per 100 men interviewed in the same four industries discussed previously. The effect of age on the crude rates has been taken into account by calculating the standardized ratios in the way used to calculate the S.C.R.

Coal miners, brewery workers, and dockyard workers all had high ratios; men in light industry had a low ratio. Absence from rheumatic causes in this group was less than a quarter of what it was in dockyard workers, and a sixth of that in miners.

Although it is generally accepted that rheumatic complaints are commoner in women than in men, there was no significant difference between the complaint rates of men and women in this factory. There were differences, however, in the type of complaint. A significantly higher number of men below the age of 35 were suffering from disk disease. Complaints of backache and pain referred to the lower limbs that were too vague to put into a definite category were much commoner in men than in women.

Sickness absence from rheumatism in women was not significantly different from that in men. Absence from non-rheumatic causes, however, was higher in women than in men in all age groups, with the exception of women between the ages of 25 to 34 where the two groups were similar.

It has again been demonstrated that sickness absence due to rheumatism occurred in addition to sickness absence from other causes and was not used as a substitute for some other diagnosis. It was surprising that sickness absence from non-rheumatic illnesses was significantly higher in both male and

TABLE VI
MALE SICKNESS ABSENCE FROM RHEUMATIC CAUSES IN FOUR INDUSTRIES

Occupation	Number of Workers Interviewed	Total Number of Weeks Absent in Year		Standardized Absence Ratio
		Observed	Expected	
Coal Miners	402	188	142·6	131·8
Brewery Workers	412	176	139·5	126·2
Male Electronic Engineering Workers	212	14	61·9	22·6
Dockyard Workers	1,422	482	516·2	93·4
Total.. .. .	2,448	860	860	100·0

female positives than it was in the intermediate and negative groups, a phenomenon that has not been seen in previous surveys. In both male and female groups, more positives were absent at some time during the year and they were off work for longer periods. It is possible that the presence of an additional rheumatic complaint in the positives may have tipped the balance in favour of staying off work because of another minor illness, but information on this point in a retrospective type of survey is difficult to obtain.

There was no evidence in this industry, from analysis of the results of the Maudsley Personality Inventory, that psychological factors were involved in determining duration of absence from work because of illness.

As might be expected in a young working population such as this, the majority of rheumatic complaints were of a vague and ill-defined nature, but the importance of backache, including disk disease, in determining rheumatic sickness absence and change of employment was evident.

Anderson and Duthie (1963) discussed the possibility that psychological factors might have a bearing on the difference of complaint rate between workers in different industries. With this in mind, the Maudsley Personality Index was used to provide a rough estimation in this group of light industrial workers of two personality factors, emotional lability and sociability. The score on the Extraversion scale was similar for positives and controls of both sexes. No difference was present in men between the positive sample and controls on the Neuroticism scale, but a statistically significant difference was seen between women who complained of rheumatism and those who did not. Too much stress should not be placed on this finding, however, as the numbers in the groups were small. Comparisons with other industrial workers are necessary before any conclusion can be drawn on the relationship between this psychological factor and complaint rate or sickness absence. It has been shown, however, that a psychological interview of this sort is possible in an industry provided the workers and management are prepared to devote the necessary time to it. The mean scores obtained from the M.P.I. for men and women, with the exception of the mean score on the Neuroticism scale for female positives, are within the range of normality as quoted by Eysenck (1959) when allowance is made for age and sex.

The analysis of other social factors demonstrated no difference between positives and controls.

Loss of earnings in the positive group was higher than in the controls as a direct consequence of

greater sickness absence. Most of the men who gave illness of any kind as a reason for changing their job in the past were compelled to take lower paid work. Rheumatism was not more important than other diseases in this respect.

Summary

- (1) In a survey of a sample 212 men and 179 women doing similar work in a light engineering factory, it was found that 35.9 per cent. of men and 31.3 per cent. of women had had rheumatic symptoms in the previous year.
- (2) A comparison of the complaint rate of men in this light industry showed little difference from complaint rates in other industries where men were doing heavier work.
- (3) There was no significant difference in complaint rate between men and women in this industry, but complaints of back and lower limb pain were commoner in men.
- (4) Sickness absence because of rheumatic conditions in men was 6.6 weeks per 100 men per annum, and 10.6 weeks per 100 women per annum. Comparison with other industries showed that men doing light work had considerably less absence through rheumatism than men doing heavy manual work.
- (5) An attempt was made to assess certain psychological factors; their influence on rheumatic complaints and the significance of these findings is discussed.

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REFERENCES

- Anderson, J. A. D., and Duthie, J. J. R. (1963). *Ann. rheum. Dis.*, **22**, 401.
 —, —, and Moody, B. P. (1962). *Ibid.*, **21**, 342.
 Duthie, J. J. R., and Anderson, J. A. D. (1962). *Arch. environm. Hlth*, **4**, 511.
 Eysenck, H. J. (1959). "Manual of the Maudsley Personality Inventory". University of London Press, London.
 Partridge, R. E. H., Anderson, J. A. D., and Duthie, J. J. R. (1964). *Méd. et Hyg. (Genève)*, **22**, 360.

Le rhumatisme dans l'industrie légère

RÉSUMÉ

(1) Une enquête sur un échantillon statistique, comprenant 212 hommes et 179 femmes exécutant un travail similaire dans une usine de mécanique légère montra que 35,9 pour cent des hommes et 31,3 pour cent des femmes avaient présenté des symptômes rhumatismaux en cours de l'année précédente.

(2) On ne trouva qu'une faible différence dans la proportion des symptômes entre les travailleurs dans cette industrie légère et ceux qui exécutaient un travail plus dur dans d'autres industries.

(3) Il n'y eut pas de différence appréciable en ce qui concerne la proportion des symptômes entre les hommes et les femmes dans la même industrie, mais les hommes se plaignaient plus souvent de douleur au dos et aux jambes.

(4) La durée de l'absence due aux affections rhumatismales fut de 6,6 semaines par 100 hommes par an et de 10,6 semaines par 100 femmes par an. En comparant les industries, on trouve que l'absence des hommes accomplissant un travail léger était beaucoup plus courte que celle des hommes exécutant un travail manuel dur.

(5) On a essayé de déterminer certains facteurs psychologiques et on discute leur influence sur les manifestations rhumatismales et, en général, l'importance des résultats ci-dessus.

El reumatismo en la industria ligera

SUMARIO

(1) La investigación de una muestra de 212 hombres y de 179 mujeres haciendo el trabajo similar en una fábrica de maquinaria ligera mostró que un 35,9 por ciento de los hombres y un 31,3 por ciento de las mujeres habían presentado síntomas de reumatismo en el curso del año precedente.

(2) Poca diferencia fue encontrada en la proporción de los síntomas entre los trabajadores en esta industria ligera y otros, ocupados en un trabajo más duro, en otras industrias.

(3) No hubo diferencia apreciable respecto a la proporción de los síntomas entre hombres y mujeres en la misma industria, pero los hombres se aquejaban mucho más frecuentemente de dolores lumbares y de piernas.

(4) Ausencias debidas a afecciones reumáticas fueron de 6,6 semanas por 100 hombres por un año y de 10,6 semanas por 100 mujeres por un año. Al comparar las industrias, se observó que ausencias de hombres ocupados en trabajo ligero fueron mucho más cortas que las de hombres ejecutando trabajos manuales duros.

(5) Se hicieron tentativas para determinar ciertos factores psicológicos y se discute su influencia sobre manifestaciones reumáticas y, en general, la importancia de los resultados obtenidos.