

The health of industrial employees four years after compulsory redundancy

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SUMMARY. *A controlled, longitudinal study of the health of workers made redundant when a meat products factory closed has been performed using morbidity data extracted from the records of a group general practice. Increases in consultation rates and the number of visits to hospital outpatient departments in the group made redundant are contrasted with opposite trends in a control group who remained securely employed. As in earlier findings, the increases in morbidity in the study group began when they learned that their jobs were in jeopardy.*

The subsequent employment history of those made redundant was obtained by questionnaire. In the four years after redundancy, 50 of the 76 men in the study group found new full-time jobs. The other 26 men remained out of work for most of this time or were made redundant once again. This 'jobless' group consulted their general practitioners 57% more often about 13% more illnesses, were referred to hospital outpatient departments 63% more often and visited hospital 208% more frequently than when enjoying secure employment. During an intervening two-year period of job insecurity, there were increases of 45%, 9%, 25% and 28% respectively, for this jobless group.

The implications of these findings for primary care, for the National Health Service and for future research are discussed in the present context of high levels of unemployment.

Introduction

THE right to work was one of the central tenets of the Universal Declaration of Human Rights adopted unanimously by the General Council of the United Nations Organisation in 1948.¹ But within four decades the unemployment statistics of the 1930s have reappeared.

Some of the unemployed manage to turn the experience to their eventual advantage but when jobs are scarce, many remain out of work, are forced to take lower paid jobs or are laid off again. The loss of income, status and purpose compounded by the despair of repeated rejection may reduce their ability to adapt and may impair their health. If the jobless report more symptoms, when and how do these become apparent? Are their families affected? Is there an 'unemployment syndrome'? It is surprising that such questions remain unanswered when so many households are currently affected. Even an exhaustive series of review articles published recently²⁻¹⁵ was only able to relate piecemeal evidence that, overall, unemployment is a health hazard.

It is widely argued¹⁶⁻²⁰ that to prove that unemployment causes ill-health longitudinal investigation is necessary, that is comparing the health of identified subjects before and after

redundancy. The difficulty with such studies is obtaining adequate pre-jobless data.¹⁹⁻²¹ It is here that the unique list system of British general practice with its comprehensive records can be used to advantage. We have already reported earlier findings arising from a study of a factory closure based on such data.²²⁻²⁷ We test here the hypothesis that the length of time for which a subject remains unemployed is a significant variable in any resultant ill health.

Method

On 1 July 1982 the remaining 302 productive and clerical employees in the meat products factory of C. and T. Harris (Calne) Ltd were made redundant when the factory closed. Having been the town's largest employer for two centuries, the enterprise had declined rapidly over three years: 86 skilled men had been laid off in June 1979 and a further 411 workers in March 1980.

Of the residual workforce of 302 employees, 153 had been full-time workers with the company and registered patients at Calne Health Centre since July 1976 or earlier. Those who remained patients at Calne Health Centre formed the final study group (together with their dependent relatives.) Twenty workers nearing retirement age (men aged over 60 years, women over 55 years) were excluded. An analogous control group was available consisting of practice patients (and their relatives) who worked in other local factories and who remained employed for the whole study period.

Consultations, episodes of illness and referrals to and attendances at hospital outpatient departments were monitored. Each of these features was recorded for every employee, for spouses and for children under 16 years of age (on 1 July 1982) for four years from 1 July 1976 until 30 June 1980 (jobs secure for all employees); for two years from 1 July 1980 until 30 June 1982 (jobs insecure for Harris employees) and for the next four years ending on 30 June 1986 (after redundancy for the Harris workers). The 10 years of the study period were denoted as years 1 to 10.

More complete details of the study method and of the events leading to factory closure are given in an earlier report.²²

Subsequent employment

At the end of the study period, a short questionnaire was sent by post to each of the ex-Harris employees remaining in the study group. Those who had not responded after 21 days were approached personally or by telephone. The questionnaire enquired into their employment history following redundancy.

The likelihood of finding new work was small for those still unemployed after two years and this was used to differentiate three groups of employees: (1) those who found a permanent full-time job within 24 months of job loss; (2) those who found no work or a job after more than 24 months only; (3) those who found work for less than 20 hours per week.

Controls were selected for the male employees in groups (1) and (2) by a process of blind selection, matching both for age and for previous consulting tendency in study years 1-4.²³

Statistical testing

The Mann-Whitney U test or the chi-square test (with Yates correction) were used to test for significant differences between the

study and control patients in respect of characteristics such as age, sex, job tenure, marital status and family size.

The Mann-Whitney U test was also used to test for significant differences in the numbers of consultations and episodes of illness per patient per year in the Harris and control groups and subgroups over the periods of secure employment, insecure employment and after compulsory redundancy. To check the assumption implicit in this use of the U test, that the numbers of consultations and episodes of illness in a given year are independent of the corresponding numbers in the previous year, the Wilcoxon signed rank test was performed on the average number of consultations and episodes of illness per patient per year in one period, paired with the corresponding average for that patient over the alternative period under consideration.

The Wilcoxon signed rank test was also used to test the data concerning referrals to and attendances at hospital outpatient departments.

Results

When the factory closed, 133 Harris employees fulfilled the study inclusion criteria. Over the next four years, one subject died and eight others moved to outside the practice area. The questionnaire revealed that two subjects had left Harris's before being made redundant although their names had been on the list supplied by the company in 1983; they were also omitted. The final study group consisted of 76 men and 46 women.

Five of the 99 employees in the control group were made redundant in 1984/85 and were excluded from the study. A further three control families moved to outside the practice area after 1984 and seven other workers left their jobs voluntarily or retired early. The final control group consisted of 69 men and 15 women.

The final study group contained significantly more women than the control group and for this reason no cross-sectional statistical analyses were carried out on the complete groups of employees. The Harris workers were significantly older than the control employees (Table 1) but this is unlikely to be of clinical relevance. The groups did not differ with respect to family size. Table 1 shows the longitudinal trends in numbers of consultations, episodes of illness and referrals to and attendances at

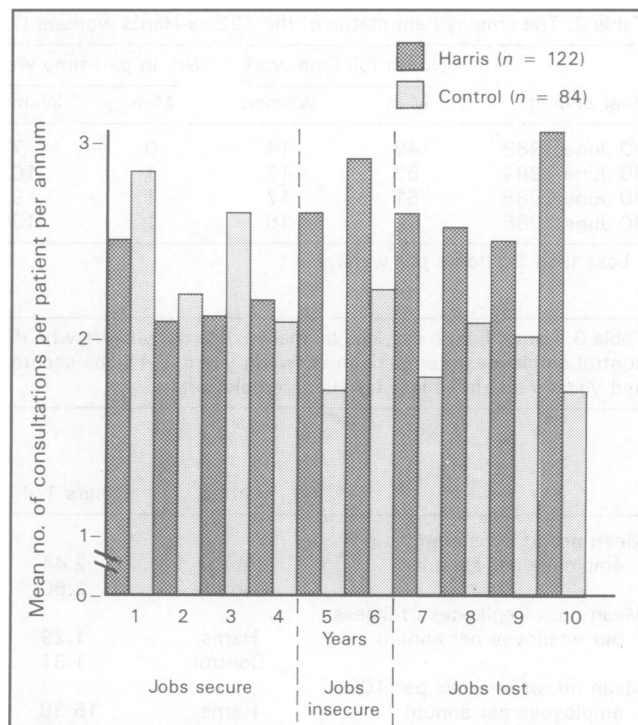


Figure 1. The mean number of consultations per annum for all the employees showing the periods when jobs were insecure and then lost for the Harris group.

hospital outpatient departments. Figure 1 displays the annual consultation rates of the employees.

The results for the spouses of the Harris employees (53 wives and 18 husbands) and their children (52) do not match those for the employees. The spouses showed a 20% increase in the number of consultations in the period when jobs were insecure ($P < 0.05$), not seen in the 60 control spouses, followed by a subsequent 23% decrease in the number of consultations after their partners had lost their jobs. This adaptive process was most pronounced in the wives. The 51 control children showed a 36%

Table 1. Use of health services by Harris and control employees: comparison between years 1-4 (jobs secure for both groups), years 5 and 6 (jobs insecure for Harris employees) and years 7-10 (jobs lost for Harris employees).

	Group	Years 1-4	Years 5 and 6	Years 7-10	% change	
					Years 5 and 6 vs. 1-4	Years 7-10 vs. 1-4
Mean no. of consultations per employee per annum	Harris ^a	2.29	2.82	2.74	+23 *M	+20
	Control ^b	2.53	2.08	1.97	-18	-22 *MW
Mean no. of episodes of illness per employee per annum	Harris	1.25	1.37	1.29	+10	+3
	Control	1.49	1.19	1.04	-20 *W	-30 ***M,***W
Mean no. of referrals per 100 employees per annum	Harris	11.08	17.60	16.60	+59	+50
	Control	15.75	16.68	14.88	+6	-6
Mean no. of attendances per 100 employees per annum	Harris	20.28	36.25	38.75	+79	+91 *W
	Control	32.25	26.75	28.25	-17	-12

* $P < 0.05$, ** $P < 0.01$, *** $P < 0.001$. M = Mann Whitney U test. W = Wilcoxon signed rank test.

^a $n = 122$; 76 men, 46 women; mean age at 1 July 1982 43.2 years (standard deviation 9.9 years); 62% of group married; mean size of family 2.1; mean job tenure at 1 July 1982 16.2 years (SD 8.9 years).

^b $n = 84$; 69 men, 15 women; mean age 41.7 years (SD 9.1 years); 71% of group married; mean size of family 2.3; mean job tenure 13.4 years (SD 5.1 years).

Table 2. The employment status of the 122 ex-Harris workers (76 men and 46 women) at successive anniversaries of factory closure.

Year ending	No. in full-time work		No. in part-time work ^a		No. self-employed		No. (%) re-employed		
	Men	Women	Men	Women	Men	Women	Men	Women	Total
30 June 1983	42	14	0	7	2	0	44 (58)	21 (46)	65 (53)
30 June 1984	53	17	1	10	2	0	56 (74)	27 (59)	83 (68)
30 June 1985	51	17	1	9	2	0	54 (71)	26 (57)	80 (66)
30 June 1986	48	16	1	13	2	0	51 (67)	29 (63)	80 (66)

^a Less than 20 hours per week.

Table 3. Use of health services by male ex-Harris workers who did not find re-employment within two years of job loss and by matched control employees: comparison between years 1-4 (jobs secure for both groups), years 5 and 6 (jobs insecure for Harris employees) and years 7-10 (jobs lost for Harris employees).

	Group	Years 1-4	Years 5 and 6	Years 7-10	% change	
					Years 5 and 6 vs. 1-4	Years 7-10 vs. 1-4
Mean no. of consultations per employee per annum	Harris ^a	2.44	3.53	3.83	+45*	+57*
	Control ^b	2.60	2.53	2.08		
Mean no. of episodes of illness per employee per annum	Harris	1.29	1.40	1.46	+9	+13
	Control	1.31	1.23	0.95		
Mean no. of referrals per 100 employees per annum	Harris	15.38	19.23	25.00	+25 ^c	+63 ^c
	Control	19.23	23.08	12.50		
Mean no. of attendances per 100 employees per annum	Harris	24.00	30.75	74.00	+28 ^c	+208 ^c
	Control	27.75	44.25	26.00		

* $P < 0.05$, Mann Whitney U test.

^a $n = 26$; mean age at 1 July 1982 48.6 years (standard deviation 9.8 years); 69% of group married; mean size of family 1.9; mean job tenure at 1 July 1982 17.3 years (SD 9.6 years).

^b $n = 26$; mean age 47.0 years (SD 8.9 years); 77% of group married; mean size of family 2.1; mean job tenure 13.7 years (SD 4.4 years).

^c Not statistically tested.

rise ($P < 0.05$) in the number of consultations in years 7-10, compared with years 5 and 6, while the Harris children, who matched them for age, showed no such increase — this difference between the two groups was highly significant ($P < 0.001$).

Similar, separate, analyses were performed for male and female employees. In summary, the diverging trends shown in Table 1 and Figure 1 were more pronounced for the male employees than for all employees. There were significant decreases in the numbers of consultations and episodes of illness in the control men when study years 5 and 6 and years 7-10 were compared, separately, with study years 1-4. No significant differences were obtained when comparing the groups of female employees in longitudinal or cross-sectional analyses.

Subsequent employment

The response rate to the questionnaire was 100%. Of the ex-Harris workers who found a new, permanent, full-time job 51% were re-employed in service industries. The numbers who were in employment at successive anniversaries of the factory closure are shown in Table 2.

Figure 2 shows the differences in consultation rates for male ex-Harris workers who did and did not find re-employment within two years of job loss compared with matched control men. There were no significant differences with respect to age, marital status or family size between the Harris and control men in these groups. Table 3 shows the use of health services by male ex-Harris workers who did not find re-employment within two years compared with matched control men. The male ex-Harris workers who had found re-employment within two years worked for a mean of 41.8 months in the four years after redundancy while

those who had not found re-employment within two years worked for a mean of 6.4 months in the same four years.

Of the 14 ex-Harris men who were over 55 years of age when the factory closed only five managed to find a new job in the next four years. Of the 26 men who failed to find re-employment within two years six reached the age of 60 years in the four years following redundancy and a further six were issued with long term medical certificates. Ten of the 26 men who failed to find re-employment had worked at Harris's in skilled capacities as maintenance engineers, electricians, butchers or drivers of heavy goods vehicles.

The 48% increase in the number of consultations in year 10 compared with year 9 for ex-Harris workers who had found a new job within two years (Figure 2b) was tested statistically: the number of consultations in year 10 was significantly greater than in year 9 ($P < 0.05$).

There were significant age differences between the male ex-Harris workers who did and did not find re-employment within two years (Figure 2) and this precluded any family comparisons.

There were no significant differences in the morbidity trends in each of the female subgroups but the numbers in each group were small (Table 2).

Discussion

The results of this study are consistent with findings reported previously.²²⁻²⁶ The implication for clinical practice is quite clear — job insecurity and job loss should be considered when patients' symptoms do not resolve as expected. They may be one explanation why patients become 'temporarily dependent'

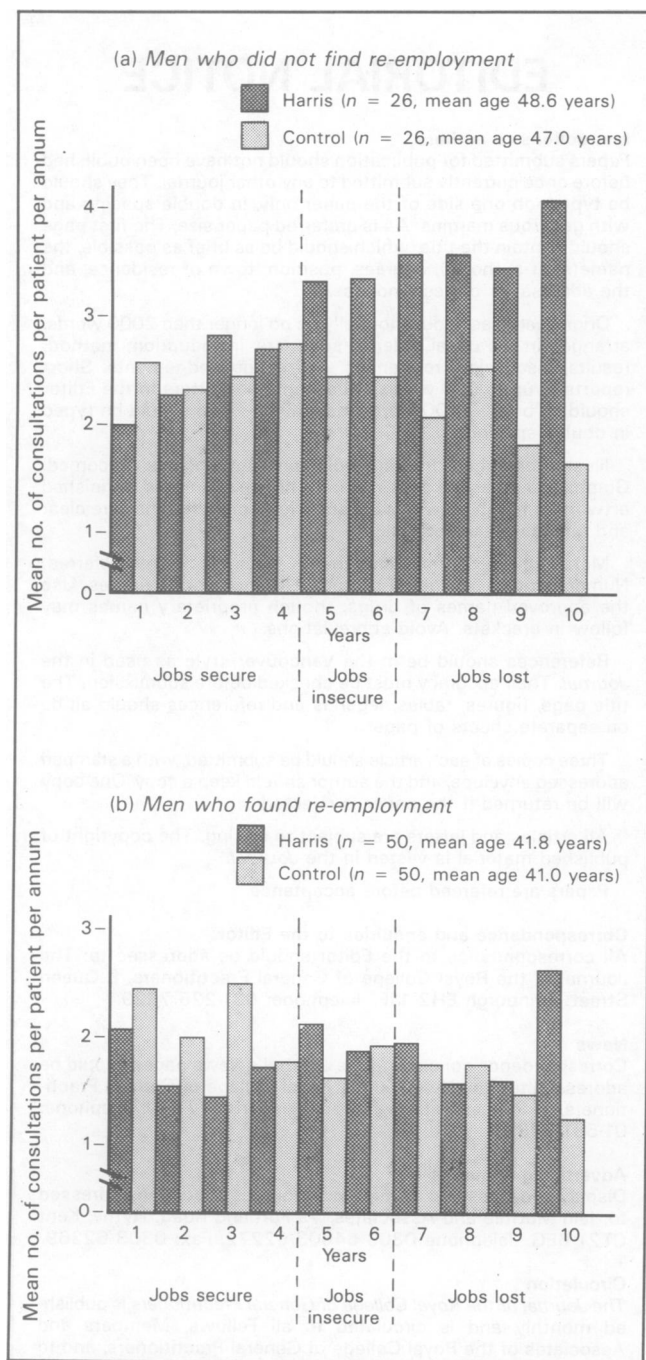


Figure 2. The mean number of consultations per annum (a) for male ex-Harris employees who did not find re-employment within two years of job loss and for matched controls and (b) for male ex-Harris employees who found a permanent full-time job within two years of job loss and for matched controls.

as reported by Thomas over a decade ago.²⁸ The implication for research is that the phases of employment — secure, insecure, lost, regained (securely or insecurely) — must be accurately defined both in longitudinal and cross-sectional studies. Similarly, subgroups must be defined precisely by factors such as age, sex, previous health and job tenure so that their varying responses to the trauma of unemployment do not cancel out and obscure important findings.

The 26 men most at risk in this study were older and despite their skills and experience, more likely to be overlooked in favour

of younger men by prospective employers. Almost half of these men could have been lost from the total of local unemployed either by reaching the age of 60 years or by being certified as unfit for work. National unemployment statistics may therefore be inaccurate if the size of this 'forgotten army' is representative.

A quarter of the Harris female employees accepted part-time work and this may help to explain why the women adapted more easily than their male colleagues to the change in circumstances. However, their contribution to family incomes would have dropped as a result and it is possible that their husbands may have had to bear more stress.

It is not clear why the Harris children consulted significantly less often than the control children after factory closure.

The sudden, significant increase in the number of consultations in year 10 among Harris men in new jobs (Figure 2b) is intriguing. Five of these workers have since been made redundant again and six others work for a company whose closure has just been announced. Perhaps this group were reliving their stressful experiences at Harris's in 1980–82.²⁵

More general conclusions can only be drawn cautiously. The unemployment rate in the area is relatively low (8.1% in 1982 and 8.3% in 1986) and the Harris employees had, in effect, a two to three year warning of impending job loss. In addition, about half of the employees were under 40 years of age and most were, and remain, happily married and enjoy lives which are part of a sociable community. Both study and control groups used the health services less frequently than comparable subjects in the latest national morbidity study.²⁹ Over a third of the study group were women who seem to adapt to unemployment more easily than men. These are all reasons why our findings may underestimate the global results of unemployment on health.

On the other hand, the small numbers involved in the study may result in an over-estimation of the effect of unemployment on health, although the consistency of the findings makes this unlikely. One very consistent finding was the steady decrease in the reported morbidity of the control workers. This supports the existence of the 'healthy worker effect'.³⁰ Employees in steady jobs have to maintain reasonable health in order to stay in their jobs but they may also derive such satisfaction from their stable work that their health actually benefits directly. Indeed, all studies of the health of the unemployed may be meaningless if changes are not compared with a control group whose health is possibly enhanced by the stability of a secure job.

All research projects are exploratory and subject to sampling error but studying the health of 150 of the 3.3 million unemployed can hardly be considered adequate. There is a desperate need for a national study of unemployment and health as proposed in 1984 by a joint working party of the Royal College of Psychiatrists and the Royal College of General Practitioners (*Economic change and family health*, unpublished report). We hope that this project, based in one general practice, has generated some hypotheses for testing and has been a useful pilot study. It certainly adds to the mounting evidence that unemployment is detrimental to health, particularly for older men, when the longer the period without a job, the greater is their decline in health relative to contemporaries at work.

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