Job-loss and family morbidity: a study of a factory closure

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SUMMARY. A controlled, longitudinal study was performed to investigate the consequences of unemployment on health. A significant increase in morbidity was demonstrated in the families of 129 workers (80 men and 49 women) made redundant when a factory manufacturing meat products closed. A significant increase was also found when the employees themselves were studied as a separate group. The decline in health began when, two years prior to job-loss, the management intimated that production might have to cease. In the four years after this news, consultation rates in the study group showed a highly significant increase. Both referrals to and attendances at hospital outpatient departments also increased significantly. The results suggest that the threat of redundancy is a stress which is equal to, if not greater than, the actual event. Extrapolation from these findings implies an increase in work-load and cost for the National Health Service directly attributable to a rising unemployment rate.

Introduction

THERE can be little doubt that losing one's job is likely to be a traumatic experience. However, work itself is often stressful — many people are paid poorly for jobs which are tedious, grimy and sometimes dangerous. Nevertheless, despite the economic support provided by social security, most unemployed people repeatedly look for a job, at least while there remains any prospect of obtaining one. Clearly there must be incentives to work over and above any financial gain. These 'latent functions' of work were first described in the 1930s[1] and later classified by Jahoda[2] as follows:

— the imposition of a time structure on the day;
— regularly shared experiences;
— the linking of an individual to goals and purposes which transcend his own;
— the donation of personal status and identity;
— the enforcement of activity.

If work can gratify so many needs, the effects on the individual losing his job must be substantial. Childbirth, marriage and retirement are other examples of important psychosocial transitions[3] but the event for which increases in morbidity and even mortality have been most clearly demonstrated is bereavement.[4] The psychopathology of job-loss has been staged chronologically (as with bereavement): shock, optimism, pessimism, fatalism and eventual adaptation.[5] However, in the case of unemployment, there is little real evidence that these emotional upheavals result in increased psychiatric and/or physical morbidity. Watkins has summarized the problem of studying the health of the unemployed:

> 'Comparisons of the health of employed people with that of the unemployed are confounded by the fact that unemployment falls disproportionately on groups who would be expected to have worse health, such as the lower social classes, people who live in deprived areas, people who work in declining industries, and people whose ability to work has been affected by their health.'[6]

It is possible to overcome this problem by studying a group of workers who have stable work records and subsequently lose their jobs because of the closure of their place of work. This type of investigation can demonstrate a causal relationship between unemployment and health; for example, that job-loss results in a decline in health.

Few studies of this type have been performed. Of the five studies reported in the literature[7-13] none studied families and none were carried out by British general practitioners. Comparative review of these studies is difficult since all the groups used different criteria to measure morbidity. The longest (three and a half years) and most recent study was carried out by Iversen and Klausen.[7] Fisher[8] and Westin and Norum[9] studied women as well as men but did not distinguish between them. The only large, controlled study was that of Kasl and colleagues who examined 105 men before and after job-loss in two factories in the USA in the early 1960s.[10-12] This particular study and also that of Jacobsen[13] detected an increase in morbidity on anticipation of unemployment.

None of these workers was able to use sequential long-term records, such as are available in general practices in this country, to establish a baseline of morbidity for their study subjects. Moreover, as Kasl has recently reported,[14] many of the findings may not now be applicable with the increase in unemployment rates in the last decade. If unemployment does influence health this is likely to be of increasing significance, particularly for general practice as family doctors in Britain manage over 90% of all reported illness without referral to specialist facilities.

Redundancies in Calne

In the first six months of 1982, the unemployment rate in the Calne area was 8.1% — 9.3% for men and 6.4% for women (local Department of Employment statistics). Then, on 1 July 1982, the factory of C. and T. Harris (Calne) Ltd (manufacturers of bacon, sausages and pies) established in Calne in 1770, finally closed. For over two centuries the factory had been the most important work-place in the town and, until the mid-1960s, the only significant industrial concern.

The slaughterhouse and bacon-curing departments had closed, with little warning, in June 1979 — 86 men had lost their jobs leaving a workforce of approximately 800 in the factory. In January 1980, a further mass redundancy of 411 employees was announced. The workforce remaining after March 1980 were then given to understand that the company had a year in which to 'break even' and this veiled threat of complete closure took two years to realize.

Health care in Calne

Calne is a small market town with a population of 11 000. It is surrounded by numerous sparsely populated rural communities with a further 4000 people. The main employment within the town is now light industry.

Primary care in Calne is provided by two long-established practices. One group of four doctors (on which this study is based) works from a purpose-built health centre which was opened in 1970; 11 500 patients are registered there. The other practice is two handed and serves the remainder of the population. There have been no substantial changes in the characteristics of the population for the last 10 years and patient turnover is below the national average.

The nearest district general hospital is 17 miles away and there is no community hospital in the town. Therefore, even when patients are emergencies or casualties, virtually all would first contact their own general practitioner or one of his partners.

Aims

This longitudinal study aimed to examine consultations, episodes of illness, referrals to hospital, and attendances at hospital outpatient departments in the families of workers made compulsorily redundant and in their control counterparts — families of other industrial workers who remained stably employed. As with other factory closure studies the null hypothesis for testing was that there would be no significant differences in these indices of morbidity in relation to job-loss. It was also hoped that the general practice records for these families (the only source of the data) would indicate our professional awareness of the employees' present occupational status.

Method

Subjects

A list of the names and addresses of all 302 employees made redundant from C. and T. Harris (Calne) Ltd between 18 June and 16 July 1982 was obtained from the personnel department of the firm. The company also supplied the following information for each such employee: date of entry into the factory; hours of work; type of occupation — productive, clerical and so on; and department in the factory.

Identification of those employees who were registered with the practice proved to be quite simple using this information. Cross reference with practice records and the local electoral roll allowed identification of dependent relatives — defined as spouses and, as at 30 June 1982, children aged 16 years and under who lived at home.

The employees and their dependent relatives were incorporated into the study if:

1. The family were registered with the practice for the entire study period.
2. The employees were engaged by the company continuously for the entire study period (prior to redundancy).
3. The employees were engaged full-time, that is, 37 hours or more per week (there were insufficient part-time employees to form a separate group).
4. The employees were engaged in a productive or clerical capacity, that is, in Registrar General's social classes 3, 4 and 5 (there were insufficient managerial staff to examine separately).

After applying these criteria, men aged 61 years or over and women aged 56 years or over were omitted from the study as, in effect, they were experiencing early retirement.

C. and T. Harris (Calne) Ltd had been the largest employer in the practice area. Therefore, all the other local firms were approached in seeking control subjects. Seven firms, dealing in a variety of products and services, were each able to provide a minimum of 10 long-term employees who fulfilled criteria analogous to the employees at the Harris factory but they had not been subject to redundancy at any time during the study period.

Study period

The study period was taken to be 1 July 1976 to 30 June 1984. The eight years of the study period were denoted as years one to eight. The study period allowed observation of the study cohort during six years of continuous employment and during the two subsequent years after redundancy. Similarly it allowed observation of the control cohort for eight years, a period in which they remained continuously and fully employed.

Observations

Consultations, reported episodes of illness and referrals to specialists were recorded as defined in the instructions for the third national morbidity study (1981–82).[15] However, attendances at antenatal clinics and other similar patient-contacts were not recorded. The number of attendances at hospital casualty and outpatient departments and the number of admissions to, and number of days in hospital were also recorded for each year. At no stage were any of the subjects approached personally — all the information was obtained from their medical records.

A search was also made in the medical file of each employee for any written record of their place or type of occupation. For the group employed by Harris Ltd, it was also ascertained whether or not there were any comments intimating unemployment.

A data card was constructed for each individual and these were filed in family groups.

Statistical testing

In this study the Mann-Whitney U test was applied to the data concerning consultations and episodes of illness while the Wilcoxon rank sum test was used for the data concerning referrals to, and attendances at hospital outpatient departments.

Results

Subjects

The study group originally consisted of 133 Harris employees. Four of these employees left Calne in the two years after redundancy and they were omitted from the study. The remaining 129 employees consisted of 80 men (62%) and 49 women (38%). Seventy-four of their spouses were registered with the practice and 72 of their children. During the study period a further 16 children were born, five spouses died, seven employees married and one employee divorced.

There were 99 employees in the control group — 77 men and 22 women. Sixty-six of their spouses were registered with the practice as were 55 children. A further 16 children were born during the eight years of the study. No deaths were recorded, three employees married and one employee divorced.

Consultations

The preliminary results showed an obvious change in the number of consultations made per annum by the Harris group between years four and five (Table 1). The findings were therefore aggregated and examined during three time periods: years one to four (representing 'jobs secure'); years five and six (represen-

Table 1. Annual consultation and episode rates.

	Year	Mean number of consultations per patient per annum: Harris families (275 patients)	Mean number of consultations per patient per annum: Control families (220 patients)	Mean number of episodes per patient per annum: Harris families (275 patients)	Mean number of episodes per patient per annum: Control families (220 patients)
	1	2.66	2.78	1.54	1.68
Jobs	2	2.44	2.48	1.58	1.58
secure	3	2.44	2.66	1.46	1.71
	4	2.32	2.28	1.30	1.38
Jobs	5	2.87	2.11	1.54	1.34
insecure	6	3.06	2.40	1.68	1.54
Jobs	7	2.86	2.53	1.66	1.40
lost	8	3.05	2.51	1.68	1.49

ting, for the Harris workers, 'jobs insecure') and years seven and eight (representing, for the Harris workers, 'jobs lost'). No significant differences were found when testing years five and six against years seven and eight. Therefore all subsequent analyses were performed on data aggregated for years one to four inclusive and years five to eight inclusive.

Three sets of comparisons were made: (1) data for Harris employees in years one to four were compared with years five to eight, and the same for the control subjects. (2) data for Harris employees in years one to four were compared with data for control subjects in these years. (3) data for Harris employees in years five to eight were compared with data for control subjects in these years.

For the purpose of analysis, families were studied as units and then subdivided so that employees, spouses and children could each be examined as separate groups.

Table 2 shows those groupings for which significant increases in consultation rates were found between the years when jobs were secure (years one to four) and the years when jobs were insecure or had been lost (years five to eight) for the Harris employees. The second part of Table 2 shows significant differences between Harris employees and controls in the number of consultations over years five to eight. No significant differences in consultation rates were found between Harris employees and controls in years one to four.

Episodes of illness

The same statistical comparisons were applied to episodes of illness as for consultations. There was a 10.6% increase in episodes of illness reported by the Harris families in the period when jobs were insecure or lost compared with a 9.3% decrease for the control families over the same period. Although neither of these changes were significant, a decrease from 419 episodes (years one to four) to 330 episodes (years five to eight) reported by the control employees ($n = 99$) was found to be significant ($P = 0.05$).

The female Harris employees ($n = 49$) had significantly fewer ($P = 0.05$) episodes of illness than their control counterparts ($n = 22$) in the first four years and subsequently caught up.

Hospital referrals

The number of referrals to and attendances at hospital outpatient departments also showed obvious changes around 1980 and not, as had been expected, in 1982 (Figure 1). About one patient in seven only attends hospital in any one year in Britain and this severely reduces the data from the sample populations studied here. Therefore, the Wilcoxon rank sum test was the most appropriate statistical test and the results for the comparison of Harris employees in years one to four with years five to eight and the same comparison for control employees are presented in Table 3. No other comparison could be examined statistically since the Wilcoxon rank sum test requires paired samples.

No clear trends were apparent in the rates of admission to hospital inpatient departments. The mean hospital admission rate was 3.5% of patients per annum and a much larger study would be necessary to detect consistent changes.

Notification of occupation and/or redundancy

The search of the records for details concerning the type or place of occupation of the patients revealed a written record for only 31 of the Harris employees (24%) and 20 of the control

Table 2. Significant differences in consulting behaviour.

Group	Number of families	Number of individuals	Number of consultations over four years: Years 1–4	Number of consultations over four years: Years 5–8	Percentage increase	Significance levels for years 1–4 versus years 5–8
All Harris families	129	275	2792	3353	20.1	$P < 0.01$
All Harris employees	–	129	1202	1400	16.5	$P < 0.05$
Families of female Harris employees	49	81	748	1000	33.7	$P < 0.05$
Female Harris employees	–	49	528	605	14.6	$P < 0.05$

Group	Number of individuals	Number of consultations over four years (years 5–8)	Mean number of consultations per individual	Significance levels for Harris versus control employees
Male Harris employees	80	807	10.1	$P < 0.05$
Male control employees	77	603	7.8	
Spouses of Harris employees	74	930	12.6	$P < 0.05$
Spouses of control employees	66	733	11.1	

Years 1–4 = jobs secure; years 5–8 = jobs insecure or lost.

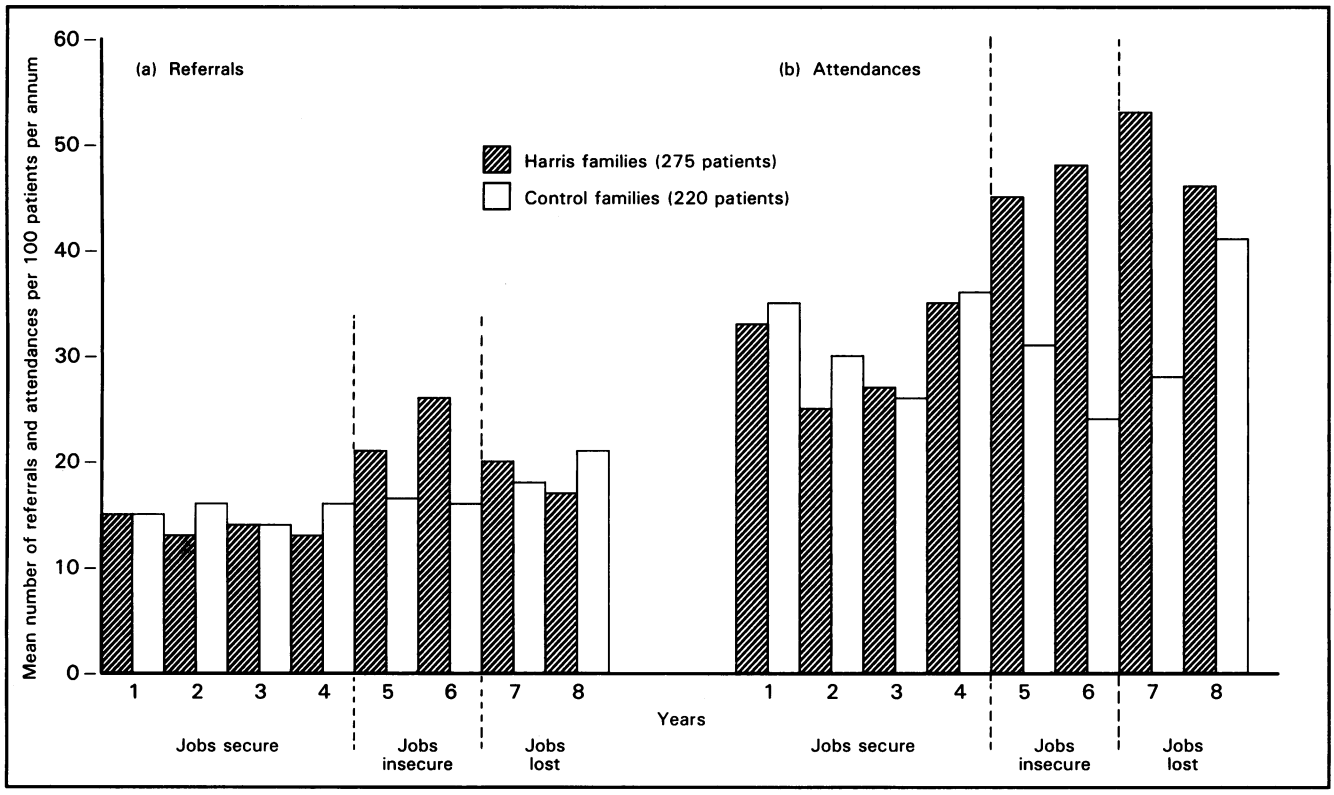

Figure 1. *(a) Referrals to and (b) attendances at hospital outpatient departments.*

employees (20%). Details of redundancy had been recorded in the notes of only 18 Harris workers (14%) by July 1984, that is, in the two years since they had been made redundant.

Discussion

This study demonstrates that unemployment results in a negative effect on health and not merely on welfare and morale. The results show a significant increase in the number of times that both men and women employees consult their doctors when subjected to compulsory redundancy. This increase is also shown by their spouses and when all the individuals studied are integrated into their family units.

The increase in stress exhibited was sufficient not only to provoke the Harris families into seeking the help of their doctors more often but also to give them symptoms which necessitate more frequent specialist advice. An equally important finding was quite unforeseen; the increase in morbidity began two years before redundancy — at the time when it became apparent to the Harris families that their economic futures were not secure.

All other studies of factory closures have been performed over much shorter time periods and none were able to demonstrate the distinct importance of the threat of redundancy. However, one recent study has examined the psychiatric morbidity of the threat of unemployment and it was found that there was a decrease in symptoms when the threat was lifted.[16] The majority of the working population probably experience concern that they may be made redundant when unemployment rates rise and perhaps there is now more evidence to suggest that, during an economic recession, those with a job may also feel under stress, as postulated by Brenner.[17]

Although the consultation rates for the Harris group rose by 20% in the second four-year period, the number of new episodes of illness increased by only 11%. Therefore, the number of consultations per episode of illness increased during the period of job insecurity and unemployment. Similarly, the number of attendances at hospital outpatient departments per referral increased for the Harris group while the same ratio dropped for the control group. The Harris families either developed an in-

Table 3. Referrals to and attendances at hospital outpatient departments.

Group	Number of individuals	Number of referrals per 100 patients		Significance levels for years 1–4 versus years 5–8	Number of attendances per 100 patients		Significance levels for years 1–4 versus years 5–8
		Years 1–4	Years 5–8		Years 1–4	Years 5–8	
All Harris employees	129	53	76	$P < 0.05$	84	145	$P < 0.05$
All control employees	99	65	82	NS	130	130	NS
Dependants of Harris employees	146	58	92	$P < 0.01$	147	230	$P < 0.01$
Dependants of control employees	121	58	69	NS	123	120	NS

NS = not significant. Years 1–4 = jobs secure; years 5–8 = jobs insecure or lost.

creased doctor-dependency or the symptoms with which they presented proved more difficult to diagnose and treat. It is possible that their problems were less clear-cut, their distresses more psychosomatic in type or their disorders less responsive to simple measures. These hypotheses are being tested at present by classifying the illnesses which were presented.

If the consultations with the Harris families were proving ineffective, were they also frustrating? Higgs has stated 'We do not always know what really brings a patient to the doctor.'[18] Many consultations are unsatisfactory because the real reasons for the consultation do not emerge and there is an increased risk of chronicity. The results of this study lend credence to this for redundancy was only recorded in a minority of cases.

The reluctance of the unemployed to admit to their predicament is well-known — they see it as a stigma. Other major events such as marriage or divorce, changes of address and even foreign holidays more usually come to the notice of family doctors because of the necessary documentation. Fourteen per cent of the workforce in Britain are now suffering, together with their families, from what might correctly be called an epidemic, and for only a small minority is that fact recorded in their notes.

Extrapolation of the observations made in this small study to the population at large is probably valid but several points could influence such projections. First, the rate of unemployment in the Calne area is lower than the national average. Secondly, the population of North Wiltshire is largely stable and closely-knit, has not been subject to any recent large migration and has no significant ethnic minorities. In addition, the employees themselves were a stable working group who were settled in their jobs (many for over 25 years) and worked in an unskilled or semiskilled capacity. However, it is interesting that the consultation and referral rates before 1980 for the Harris group and those for the controls throughout the study match closely the results of the second national morbidity study.[19]

At present it is not known how many of the ex-Harris workers have been successful in finding employment. It is hoped that a comparison of those remaining out of work for a long period with those who found a new job quickly will form the basis of a future study and that further analysis of the data might reveal other significant findings, such as the effect of the age of the employees. It had been expected that large numbers of the Harris families would have left the area in search of new work which would have complicated both the collection of data and the interpretation of the results. It is surprising that only four of the 133 Harris employees originally studied have moved away from the town in the two years since losing their jobs. This initial study shows that the information already stored in general practice records can provide useful facts about a population subjected to changes in its environment.

The organization of the National Health Service was an advantage in this study. When there is no cost to the patient at the point of service, those subject to financial hardship, such as unemployment, are not inhibited from seeking help. This would not be so in other countries where the inability to pay could obscure a real increase in morbidity or even result in an apparent decrease. On the other hand a 20% increase in consultations (65% of which generally end with a prescription) and a 60% increase in visits to hospital outpatient departments by the families of the 3.3 million unemployed in Britain is a projection of startling economic consequence to the National Health Service.

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