Papers and Originals

Some International Trends in Sickness Absence 1950-68

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Summary: Annual sickness absence rates in Great Britain since 1950 have been compared with similar measurements obtained from eight other countries. Frequency has tended to rise more than severity, indicating a shortening of the average length of a spell. The rise in British rates is not unique, and has been exceeded in Sweden, Holland, Italy, and West Germany. From the Swedish experience with self-certification some caution is necessary before recommending its adoption in Britain.

Introduction

National economic growth depends in large part on productivity, to which the health status of a population in terms of its ability to work can contribute greatly (Denison and Poullier, 1967). While the considerable increase in working life expectancy in the more-developed nations has been of great benefit, the relative importance of morbidity as a cause of lost working-time is increasing (Vacek, 1965).

Sickness absence has for long been a subject of concern in industry, but the recent growth of national schemes of social security and medical care now involves large sums of public money in many nations of the world (International Social Security Association, 1968). While comparisons of sickness absence rates between different countries require many approximations and adjustments if they can ever hope to be valid, Enterline (1964) estimated that the percentage of employed persons absent from work due to illness on an average day in 1956 varied from 1.1% in Canada to 5.7% in West Germany, with 4.3% in Great Britain.

Morris (1965) noted a dramatic increase in sickness absence in this country in the previous decade, and recently it has been suggested that British rates are exceptionally high and contribute to the country's economic problems (Einzig, 1969). The obligation to provide certificates of incapacity, which is a key part of the sickness benefit scheme, is unpopular with many doctors, and suggestions for altering the present system were discussed at the Annual Representative Meeting last summer (British Medical Association, 1969).

This paper analyses sickness absence trends in nine countries since 1950 in an attempt to put the whole problem in perspective.

Material and Methods

Information was requested concerning annual rates of medical incapacity for work among all employed persons (or all insured persons of working age) from individuals or Government

departments in 20 countries in Europe, America, and Australasia. The stated aim was to observe trends in national rates since the early 1950s and before the pandemic of A2 influenza. Some countries were unable to provide information for the whole period; adequate data, however, were obtained from nine countries.

Unlike birth or death, sickness absence is a repetitive phenomenon which cannot properly be described by a single variable. While all nine countries provided a measure of severity (average days lost or proportion of persons away at one time), only five of them were able to provide a measure of frequency (average episodes of absence per person). Though comparisons of morbidity statistics between communities within one country are possible given adequate data, the problems of doing so on an international scale are indeed formidable (W.H.O., 1968). Rules for eligibility of sickness benefit differ, and a number of countries have separate schemes for long-term sickness. Moreover, not only must the same methods of measurement be used but the rates should be standardized for age and sex; and even where this information does exist the latest year for which it is available may be long past.

Provided, however, that the method of measurement within each country has remained unchanged, trends can be studied by relating annual rates to those at a common point in time. The mean rate for the years 1955 and 1956 was chosen as the basis for this study, since the two succeeding years were affected by the A2 influenza pandemic. Though it might be preferable to include more years as the baseline, three countries could not provide annual severity rates back to 1950. Thus the variable used in this study is for each country the ratio:

$$\frac{\text{Annual rate}}{\text{Mean rate for 1955-6}}, \text{ calculated separately for frequency and severity.}$$

Results

The mean sickness absence rates for the two reference years (1955 and 1956) varied considerably among the countries. Direct comparison, however, is not possible because of differences in methods of measurement, and also in regulations concerning sickness benefit where this is available.

For example, of the five countries reporting frequency rates the highest was Czechoslovakia with 95.5 spells per 100 persons and the lowest was Great Britain with 38.9. The Czechoslovak records, however, include all spells of one day or more, whereas the British virtually exclude those lasting for less than four days. With severity rates there were additional complications of measurement by calendar days, nominal or actual working days, or point prevalence rates. The British rate was 13.6 days per person per year and is based on a 312-day year, but the Czechoslovak rate of 19.3 days refers to a 365-day year. The sources of these crude annual rates are listed at the end of this paper.

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The time trends within each country since 1950, or the first year for which information was available, are shown in the accompanying figures. The effect of the "Asian" influenza pandemic of 1957–8 is clearly visible as a sharp rise in the frequency ratios to a mean of 1.26 (Fig. 1). Its effect on severity was not so pronounced (mean 1.14), though a rise was observed in each country except Czechoslovakia (Fig. 2). The sudden fall in the Czechoslovak severity rate in 1957 was due to an administrative rearrangement in which most persons incapacitated for over six months were transferred to a disablement scheme, which concealed the effects of the pandemic.

FIG. 1.—Sickness frequency ratios. Mean rate 1955 and 1956 = 1.0. (From national reports.)

FIG. 2.—Sickness severity ratios. Mean rate 1955 and 1956 = 1.0. (From national reports.)

The long-term trend for sickness absence to rise over the years can be seen to have taken place in most of the countries, particularly in terms of frequency. For the four countries from which annual rates have been obtained back to 1950 (Great Britain, West Germany, Italy, and Czechoslovakia) the mean ratio for 1950–1 was 0.88 and that for 1966–7 1.18, a rise of 34%. On the other hand, severity ratios rose less over the same period for the five countries providing data for those years, from 0.92 to 1.09, a rise of only 19%. The most dramatic increase has occurred in Sweden, Italy, the Netherlands, and West Ger-

many, while Czechoslovakia is the only country of the nine to show a consistently lower severity ratio in recent years.

Comment

Morbidity statistics can not only describe what has occurred in the past but can also serve as an indication for future trends. The statistically crude nature of the data available for this study, however, makes prediction difficult. Nevertheless, these figures indicate that rising sickness absence rates are not confined to this country, and that in some other countries the phenomenon is more pronounced. Furthermore, the trend which has been demonstrated for spells to rise faster than days confirms the observation already made in industry (Society of Occupational Medicine, 1968), and shows that the pattern of sickness absence is changing mainly because of an increase in short-term sickness.

No attempt has been made to compare national rates with each other, since there is inadequate information to allow reasonable estimates to be made. Estimates such as those of Enterline (1964), though widely quoted, are dependent on the application of various correction factors and may still be misleading. Thus he calculated "average day" point prevalence rates for 1956 as 1.9% for the United States and 4.3% for this country. The data for the former came from household interviews by the Bureau of the Census and included only persons *normally at work* in the week before the interview or temporarily absent owing to illness. The British social security figures include virtually all insured members of the population, even if they have been sick for years. In 1956 there were some 295,000 persons certified as unfit for work for more than one year (Department of Health and Social Security, personal communication). Since very few, if any, of these would still be holding jobs after this time off sick, an *absence from work* rate should allow for this, and the average British prevalence for 1956 would then be 3% or less, instead of the quoted estimate of 4.3%. Moreover, the rate quoted for the United States is probably an underestimate, since subsequent figures from the National Health Survey tend to be higher than those from the Bureau of the Census (Enterline and Stewart, 1960). Even after these reservations the figures would still not be comparable.

The time trends shown in this paper may also have some relevance to the controversy about methods of certification. One suggestion made at the B.M.A. meeting was that the Swedish system, which allows self-certification for periods of up to a week, should be adopted in this country. If their experience can be taken to reflect the system there may be grounds for caution, though the greatest increase occurred in 1967, when "waiting days" were abolished and benefit was paid from the first day of incapacity. The arrangement in the Netherlands involves checks through medical examination by sick fund doctors who are not responsible for treatment; while the countries of Eastern Europe require certificates to be issued by factory doctors whenever possible. The data presented in this paper could lead one to conclude that, where the existence of an occupational medical service allows, the last method may have much to recommend it.

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Sources of Sickness Absence Rates.—*Great Britain*: Annual Reports of the Department of Health and Social Security (formerly the Ministry of Pensions and National Insurance). *West Germany*: Report of Bundesverband der Ortskrankenkassen and Statistical Atlas on Public Health. *Sweden*: Statistisk Årsbok. *Italy*: Annuario Statistico. *Czechoslovakia*: Demographic Handbook and Institute

for Social Medicine. *Yugoslavia*: Federal Institute for Statistics. *Netherlands*: Institute of Preventive Medicine. *United States*: Employment and Earnings and Monthly Report on the Labour Force, U.S. Department of Labour. *Poland*: Ministry of Health.

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Hypothalamic—pituitary—adrenal Function after Subarachnoid Haemorrhage

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Summary: In 18 patients with a ruptured aneurysm of the anterior communicating artery on the circle of Willis hypothalamic-pituitary-adrenal function has been assessed by the diurnal variation in plasma cortisol levels and by the response to metyrapone, dexamethasone, and pyrogen. Eleven patients had an abnormal diurnal variation, seven had an abnormal response to metyrapone, and eight had an abnormal response to dexamethasone. All who were given pyrogen reacted normally to this stress. Two patients who died had lesions in the anterior hypothalamus, and it is suggested that this localization of lesions was responsible for the pattern of pituitary-adrenal dysfunction which was observed. An improvement in function was seen in many patients after an interval of a month.

Introduction

The hypothalamus lies in close anatomical proximity to the circle of Willis, and in such a situation it might be directly influenced by the rupture of a cerebral aneurysm. Indeed, Crompton (1963) found that 61% of patients dying shortly after a ruptured berry aneurysm had ischaemic or haemorrhagic lesions of the hypothalamus. It is now recognized that the regulation of pituitary-adrenal function by the central nervous system is mediated through the hypothalamus, and both the feedback control of corticotrophin secretion and the response to stress are dependent on this area of the brain (Reichlin, 1963). It has also been shown that alterations in the normal diurnal pattern of plasma cortisol levels commonly accompany hypothalamic disorders (Krieger and Krieger, 1966). Symptomatic hypopituitarism has been reported as a late complication of subarachnoid haemorrhage on rare occasions (van 't Hoff *et al.*, 1961), but there is little information on the incidence in this condition of hypothalamic-pituitary-adrenal dysfunction which is not clinically apparent.

The study reported here explores some aspects of the hypothalamic control of pituitary-adrenal secretion following recent subarachnoid haemorrhage.

Patients and Methods

Eighteen patients were studied, all of whom had suffered from a subarachnoid haemorrhage at intervals ranging from 6 to 27 days before the first test. Clinical details, including the state of consciousness at the onset of the illness and during the tests, are shown in Table I. All patients had an aneurysm of the anterior communicating artery of the circle of Willis as demonstrated by carotid angiography. Investigation of this particular group was determined by the policy of treatment under trial for cerebral aneurysms, according to which patients with aneurysms of the anterior communicating artery were allocated in a statistically random manner for surgery or prolonged bed rest. It was the latter group which was available for study. Informed consent was obtained for the test procedures. Tests began with determination of the diurnal variation in plasma cortisol and always followed the order given below, the whole schedule occupying eight days. The entire series of tests was then repeated after an interval of about 28 days. Three patients (Cases 2, 3, and 15) died from recurrent haemorrhage before completion of the second series of tests. No drugs were administered which would impair the responses to the test procedures used.

Diurnal Rhythm of Plasma Cortisol.—Blood was taken at 10 a.m. and again at 10 p.m. for estimation of plasma 11-hydroxycorticosteroids.

Metyrapone Test.—Urine was collected for two control periods of 24 hours and then metyrapone was administered four-hourly for six doses. Urine was collected on the day of metyrapone administration and on the following day in order to determine the maximum change in the level of 17-oxogenic steroids.

Pyrogen Test.—A bacterial pyrogen (Organon) was given intravenously in a dosage of 0.005 µg./kg. body weight and blood was taken for the estimation of 11-hydroxycorticosteroids

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