

# The Falkland Islands Morbidity Survey

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**SUMMARY:** A 12-month retrospective morbidity survey of the Falkland Islands in 1979 is described. A larger proportion of the population appear to have sought medical attention in this time than would be expected on the basis of comparable British figures. In general, cause-specific morbidity was similar in the two countries, although there were several discrepancies identified which may have been of environmental origin. The low prevalence of essential hypertension in males was particularly notable.

### Introduction

**T**HE Falkland Islands are a group of two large and numerous small islands in the South Atlantic Ocean. The total area covered by the group is approximately the size of Ireland. At latitude 52° south of the equator and 500 miles north-east of Cape Horn, the climate and physical aspect are reminiscent of northern Scotland.

The population of 1,800 consists almost entirely of British immigrants, some from families who have lived in the islands for several generations. They are divided equally between the capital Stanley and 22 farm settlements supporting from two to 50 persons. Contact with the farms is principally by Beaver seaplane, two of which operate out of Stanley. A ship also tours the settlements carrying heavy cargo to and from the farms. Contact with the outside world is by weekly flights to Patagonia, and thence to Buenos Aires.

The dominant commercial activity in the islands is sheep farming. The raw fleece is exported for sale, and very little craft work is undertaken locally. Although more imported goods are available now than formerly, and the introduction of the deep-freeze has enabled perishable foods to be eaten throughout the year, life is

essentially traditional. Mutton predominates in the diet, and peat is still burned extensively for heating and cooking.

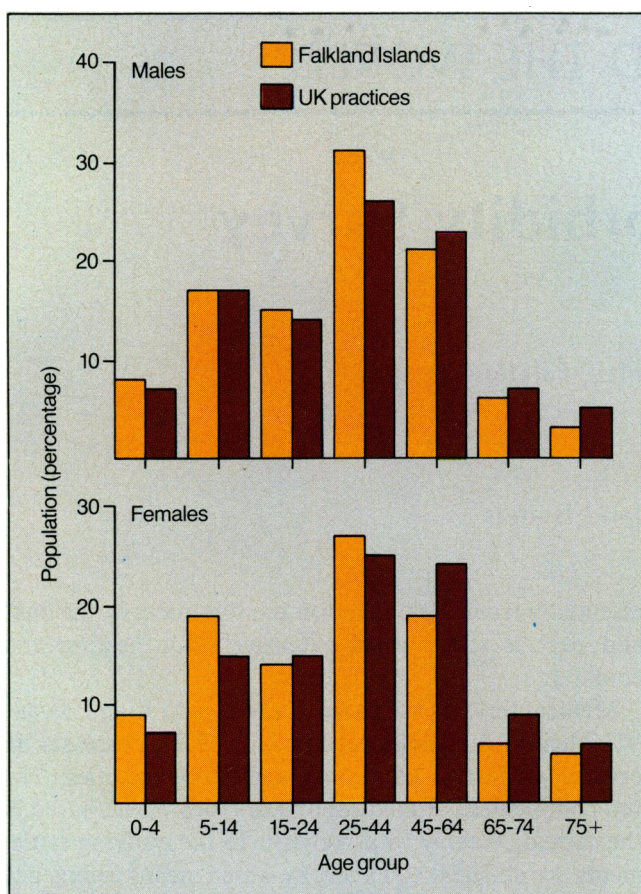
Medical services are based at the 32-bed King Edward VII Memorial Hospital in Stanley, which possesses an operating theatre, laboratory and x-ray facilities. The full complement of medical officers is three, all based in the capital. Weekly rotating visits to the outlying settlements are undertaken by air, by which means emergency cases are carried to hospital. Poor weather can occasionally prevent even emergency flights, though this did not contribute to morbidity or mortality during the study period.

In Stanley, doctor-patient contact may be initiated at the hospital outpatient clinic, held on five days per week, or by telephone. Problems occurring outside the town may await the routine medical visit, or may be dealt with by letter or on any day by radio telephone (R/T), by which means privacy is sacrificed. Cases which cannot be handled adequately by local staff are transferred to Argentina or to Britain.

### Materials and methods

Notes on all persons in the population who have sought medical attention are kept at the hospital in Stanley. A file on each subject records each consultation, diagnosis and treatment, and details the place and method of consultation. Should a patient have been admitted to hospital or referred overseas, details of these events are also in the file in chronological order, as are all laboratory and x-ray reports. By examining these files, therefore, it is possible to collect details of all health-related events occurring in the islands and for which help was sought. This study is the result of such a survey conducted retrospectively for the period 1 January to 31 December 1979 inclusive.

To broaden the scope of the exercise, the results were compared with similar data collected from British general practices during the Second National Morbidity



Age distribution. Percentage of population by sex and age group, Falkland Islands and UK practices.

Study (Royal College of General Practitioners, Office of Population Censuses and Surveys and the Department of Health and Social Security, 1979).

The greatest constraint on comparison of cause-specific rates was that in the Falkland Islands the 9th Revision of the International Classification of Diseases (ICD) was used (WHO, 1978), whereas the 8th Revision (WHO, 1967) was used in the British study. Despite this limitation, for 329 conditions prevalent during the study period, direct comparisons were possible in 114.

Medical files on the entire population (1,813 persons) were examined early in 1980 by the authors. Details of each episode of illness were recorded on a pre-designed record sheet, which was modelled closely on that used in the British study.

After transfer to punch cards, the data were analysed on the University of London computer, using the Statistical Package for the Social Sciences (SPSS).

Tables 1, 2 and 4 show the 5th and 95th percentiles of figures from the British practices. These are shown to give a measure of dispersion of the practice figures. The study was designed to be purely descriptive, and no attempt at statistical inference is being made in this report.

When standardized figures are presented, they were calculated by the indirect method, using the total populations of all UK practices participating in the 1971-72

survey as the standard population. It was fortunate that a population census was carried out by the Falkland Islands government shortly after our study (November, 1980). Denominators for all rates are derived from this census. A comparison of the age structure of the populations of the Falkland Islands and of the British practices is shown in the Figure.

## Results

For assessing all-causes morbidity in the British study, the most stable estimator of disease was considered to be the patients-consulting rate per 1,000 population. We chose this rate because the other two indices—episode rate and consultation rate—were more susceptible to doctor-generated variation. In all age groups, and for both sexes, the patients-consulting rate was higher in the Falkland Islands than in the UK practices (see Table 1).

In eight of the 14 age/sex categories, the Falkland Islands figure was above the 95th percentile for the British rate. Standardized sex-specific patients-consulting rates (Table 2) were above the 95th percentile in both sexes—705.7 per 1,000 population for males and 848.4 per 1,000 females. However, the sex-specific episode rate and consultation rate per 1,000 population were remarkably similar in the two countries.

A much smaller proportion of the population of the Falkland Islands did not contact the health services at all during the year—23.1 per cent as opposed to 40.7 per cent in the UK practices. This finding is in accord with the high patients-consulting rates.

Most of the consultations (70.1 per cent) occurred at the hospital outpatients clinic (Table 3). The smallest proportion occurred as emergency admissions, and town visits accounted for very few. Farm settlement visits and telephone, letter and R/T consultations accounted for 12 and 13 per cent respectively.

In order to examine the cause-specific morbidity, Standardized Morbidity Ratios (SMRs) were calculated for 18 major disease categories (Table 4). These were derived by dividing the Falklands patients-consulting rate for the particular category by that expected on the basis of age-sex-specific rates in the UK practices, and multiplying this figure by 100. An SMR of less than 100 implies a lighter disease burden in the index (Falkland Islands) population, and an SMR of greater than 100 the converse.

Crude one-year prevalence rates (that is, episode rates) and incidence rates were examined for all diseases. In those considered to be of special interest, and those in which rates differed markedly in the two countries, the prevalence rates were standardized; 48 conditions were adjusted in this way.

The SMR for infectious and parasitic diseases was low for males but higher for females. This higher SMR in females may be accounted for by the high rate for other diseases due to viruses and chlamydiae (ICD No. 078), dermatophytosis (ICD No. 110) and candidiasis

**Table 1.** Patients-consulting rates per 1,000 population by sex and age, Falkland Islands and UK practices.

Age group	Males			Females		
	Falkland Islands	UK practices (range—5th and 95th percentiles)		Falkland Islands	UK practices (range—5th and 95th percentiles)	
0-4	915.5	891.5	(616.4-1018.5)	1130.4	874.9	(577.9-1022.5)
5-14	756.1	611.9	(460.8- 732.3)	826.9	616.1	(464.9- 721.0)
15-24	719.2	584.8	(455.8- 707.0)	860.9	755.8	(612.0- 851.4)
25-44	637.2	574.6	(464.9- 691.5)	862.8	726.1	(548.3- 831.0)
45-64	663.5	605.5	(465.6- 713.3)	771.1	665.0	(522.3- 770.1)
65-74	672.4	644.5	(507.0- 736.8)	800.0	660.7	(514.1- 771.7)
75+	800.0	662.5	(424.8- 834.4)	769.2	662.1	(432.3- 808.1)
All ages	700.6	622.3	(497.0- 702.3)	851.4	700.0	(510.8- 774.4)

**Table 2.** Standardized episode, consultation and patients-consulting rates per 1,000 population, Falkland Islands and UK practices.

	Males			Females		
	Falkland Islands	UK practices (range—5th and 95th percentiles)		Falkland Islands	UK practices (range—5th and 95th percentiles)	
Episode rate	1405.3	1552.1	(879.2-2033.1)	1982.6	2095.7	(1293.3-2844.1)
Consultation rate	2430.6	2557.2	(1574.9-3706.4)	3999.8	3427.7	(2134.2-4548.1)
Patients-consulting rate	705.7	630.8	(497.0- 702.3)	848.4	709.4	(510.8- 777.4)

(ICD No. 112). There were two prevalent cases of tuberculosis (ICD Nos. 010-018), but neither was incident. Of the three prevalent cases of echinococcosis (ICD No. 122), two were incident.

There were more neoplasms in males than would be expected on the basis of the UK rates, and fewer in females; however, numbers are small in this disease category, and the distribution of cases according to type of neoplasm was unremarkable.

Endocrine, nutritional and metabolic diseases and immunity disorders had low prevalence in both sexes. This finding appears to be due to the almost complete lack of obesity and hyperalimentation (ICD No. 278) recorded in the Falklands. The prevalence of diabetes mellitus (ICD No. 250) was similar to that in the United Kingdom, with a standardized one-year prevalence rate of 4.4 per 1,000 males and 5.7 per 1,000 females. The standardized one-year prevalence rate for gout (ICD No. 274) was 6.4 per 1,000 males—approximately twice the rate in the UK practices.

For males, rates of diseases of blood and blood-forming organs were a little below the expected levels. For females, rates were very much lower. The SMR in females was 28, below the 5th percentile of the UK figures. The very low prevalence of iron deficiency anaemias (ICD No. 280) in Falklands women accounted for this.

Combined rates for mental disorders were lower in the Falklands than in the UK practices. The standard-

**Table 3.** Consultations by type. Number of consultations, rate per 1,000 population and percentage of total.

Type	Number	Rate/1,000	Percentage
Hospital outpatients	3904	2153.3	70.1
Town district visit	224	123.6	4.0
Routine visit to farm settlement	666	367.4	12.0
Telephone, R/T,* letter	722	398.2	13.0
Emergency admission	52	28.7	0.9
Total	5568	3071.2	100.0

\*Radio telephone.

ized prevalence rate for neurotic disorders (ICD No. 300) at 28.3 per 1,000 population in both sexes combined, was only one third of the UK rate. However, alcohol dependence syndrome (ICD No. 303) was recorded much more frequently in the Falklands, with a standardized prevalence of 13.2 per 1,000 men as against 1.3 in the UK practices. Prevalence was also higher in Falklands women, but less dramatically so.

Rates for diseases of the nervous system and sense organs were very similar in the Falklands and in the UK practices.

Diseases of the circulatory system had a higher prevalence in the Falklands than in the UK practices in both sexes. Examination of the disease-specific prevalence

rates suggests that this difference is due to a higher prevalence of varicose veins (ICD No.454) and haemorrhoids (ICD No. 455). Prevalence of acute myocardial infarction, angina pectoris and other forms of chronic ischaemic heart disease (ICD Nos. 410, 413 and 414) were comparable in both populations.

There was a very low standardized one-year period prevalence of essential hypertension (ICD Nos. 401-404) in men, 5.5 per 1,000 compared with 16.9 per 1,000 in the UK practices; this difference raises interesting questions about environmental determinants for this disease.

A similar situation was not seen in women, in whom the prevalence was akin to that in the United Kingdom.

For diseases of the respiratory system, the SMRs for males and females were close to 100. Both prevalence and incidence of acute nasopharyngitis, sinusitis, pharyngitis and tonsillitis, laryngitis and tracheitis, bronchitis and bronchiolitis (ICD Nos. 460-464, 466) were low in the Falklands in both sexes. There was a high prevalence of chronic sinusitis (ICD No. 473) in females, but not in males. Prevalence of allergic rhinitis (ICD No. 477) was similar in the two populations. There

**Table 4.** Standardized morbidity ratios (SMRs) for major disease categories in the Falkland Islands with 5th and 95th percentiles of the UK distribution.

ICD number	Diseases or conditions	Males			Females		
		Falkland Islands	UK		Falkland Islands	UK	
			5th percentile	95th percentile		5th percentile	95th percentile
001-139	Infectious and parasitic diseases	60	32	147	109	35	149
140-239	Neoplasms	114	44	141	72	40	143
240-279	Endocrine, nutritional & metabolic diseases & immunity disorders	64	45	143	60	45	146
280-289	Diseases of blood and blood forming organs	83	34	180	28	39	164
290-319	Mental disorders	72	52	159	60	58	146
320-389	Diseases of the nervous system and sense organs	91	66	124	97	60	122
390-459	Diseases of the circulatory system	140	66	135	146	63	132
460-519	Diseases of the respiratory system	92	52	132	114	58	123
520-579	Diseases of the digestive system	55	48	138	54	45	134
580-629	Diseases of the genito-urinary system	72	40	132	109	67	125
630-676	Complications of pregnancy, childbirth and the puerperium	—	—	—	141	18	189
680-709	Diseases of the skin and subcutaneous tissues	110	56	129	99	51	129
710-739	Diseases of the musculoskeletal system and connective tissue	115	50	138	122	54	148
740-759	Congenital anomalies	95	0	206	45	0	198
760-779	Certain conditions originating in the perinatal period	829	0	310	0	0	422
780-799	Symptoms, signs & ill-defined conditions	69	33	130	74	23	130
800-999	Injury and poisoning	200	62	170	149	47	168
V01-V99	Supplementary classification of factors and contact with health services	319	27	153	303	49	135
	All diseases and conditions	221	79	111	279	73	111

was a high prevalence and incidence of pneumonia (ICD Nos. 480-486) and influenza (ICD No. 487) in both sexes, suggesting an influenza epidemic during the study period. The prevalence of chronic bronchitis (ICD No. 491) was similar in the two populations in males. In females, however, prevalence in the Falklands was over twice that in the UK. The higher prevalence of emphysema (ICD No. 492) in Falklands males resulted in a higher overall prevalence for chronic lung disease in this sex also.

Prevalence of diseases of the digestive system was low in both sexes. It is possible that this is due to the contribution of the disease category "Acute vomiting and/or diarrhoea", which had a population prevalence of 22.2 per 1,000 in the UK practices, but was not classified as such in the 9th Revision of the ICD (WHO, 1978). Such cases were possibly classified under infectious and parasitic rather than digestive diseases in the Falklands. The combined rates for gastric ulcer, duodenal ulcer and peptic ulcer, site unspecified, (ICD Nos. 531-533) were comparable in the two populations. There was a higher prevalence of cholelithiasis (ICD No. 574) in the Falklands in both sexes.

The SMR for diseases of the genito-urinary system was low for males and unremarkable for females. Rates for cystitis (ICD No. 595) were low in the Falklands. However, rates for other disorders of the urethra and urinary tract (ICD No. 599) were very high, and combining the two categories gave comparable figures in the two populations, suggesting that the disparities in the rates for individual categories were due to diagnostic fashion.

For complications of pregnancy, childbirth and puerperium, the (female) SMR was 141. Because there was classification difference between the two studies, it was not possible to determine in which disease category(ies) the excess occurred.

Combined rates of diseases of the skin and subcutaneous tissues were similar in the two populations. However, urticaria (ICD No. 708) had a standardized prevalence rate of 0.6 per 1,000 population in the Falklands as opposed to 8.3 per 1,000 in the UK.

Diseases of the musculoskeletal system and connective tissue were slightly more prevalent in both sexes in the Falklands. The excess appears to be due to high rates of rheumatoid arthritis (ICD No. 714), osteoarthritis (ICD No. 715) and intervertebral disc disorders (ICD No. 722).

Congenital anomalies occurred less frequently than in the UK practices in both sexes. However, numbers were small in this category, and the dispersion of rates in the UK practices was very wide. There is certainly no evidence of an excess of congenital anomalies in the Falklands, as might be anticipated in a small island community.

The very high SMR for certain conditions originating in the perinatal period in males was based upon a single case.

Symptoms, signs and ill-defined conditions were less prevalent in both sexes. The lower prevalence may be due to cases assigned to this category in the UK study being ascribed to the supplementary classification (see below) in the Falklands.

The SMR for injury and poisoning was high in males and females, though most pronounced in the former. The excess appears to be due to a higher incidence of trauma. The incidence of foreign body in the external eye, 16.1 per 1,000 males and 3.7 per 1,000 females, was notably high.

Supplementary classification of factors influencing health status and contact with health services (V01-V99) was recorded more often in both sexes in the Falklands. Possible contributions to the excess are inclusions of cases classified under symptoms and signs in the UK practices, the almost universal acceptance of vaccination in the Falklands, and the inclusion of childbirth in this category—which was recorded in the Falklands study, but likely to be supervised less frequently in Britain by a general practitioner.

## **Discussion**

In terms of the patients-consulting rate, all-causes morbidity was higher in the Falkland Islands than in the UK practices in both sexes. In considering the disparity, attention must be drawn to the fact that in the British study, only face-to-face consultations were recorded, whereas in the Falklands, telephone, R/T and letter communications—which resulted in advice or treatment—were also recorded. These had to be included because they were the only means of communication about acute illness open to the population living outside Stanley. However, any inequality introduced by easier access to medical assistance would tend to exaggerate morbidity in the Falklands.

Further bias could result from acute illness bypassing the general practitioner in Britain and presenting directly to a hospital casualty department. In the Falklands all such incidents would have been recorded. Since many of these cases would eventually be seen and recorded by the general practitioner in Britain as a follow-up to hospital treatment, the true effect of this anomaly may have been small.

Considering cause-specific morbidity, the higher SMR in females for infectious and parasitic diseases has no obvious explanation, unless it reflected an epidemic. In view of the isolation of the islands, a low rate of morbidity from these conditions might have been expected and, indeed, was seen in males. Considering the high prevalence of the disease in the past, a lack of incident cases of tuberculosis is reassuring. However, the two incident cases of echinococcosis underline the need for continued surveillance of this disease.

Geographical isolation may have been responsible for the generally low prevalence of viral upper respiratory tract infections, though the figures suggest an epidemic



of influenza during the study period which may explain the high incidence of pneumonia.

There is some evidence of an increased prevalence of chronic lung disease in the Falklands, perhaps related to the cold, damp climate. Cigarette smoking is widespread in the community, though comparative figures about this are not available.

Possibly associated with the high level of outdoor work was the low rate of obesity and the high rate of arthropathies, intervertebral disc disorders and trauma. A combination of outdoor work and frequent high winds probably accounted for the high incidence of foreign body in the eye.

It is tempting to suggest that the low prevalence of mental disorders was a consequence of the less stressful lifestyle traditionally associated with island communities, though the evidence for such an assertion is necessarily subjective. The high prevalence of alcohol dependence may well have been a result of greater ascertainment due to the small size of the community. The high prevalence of gout in males should be noted.

If not due to diagnostic fashion, the low prevalence of iron-deficiency anaemias in women may reflect the high proportion of red meat in the diet. If this was indeed the case, it follows that a different attitude towards the British diet might be called for.

There is no evidence of a lower rate for most forms of cardiovascular disease in the Falklands, though, in view of the findings of other studies in island populations (Beaglehole *et al.*, 1979; Zimmet *et al.*, 1980) the very low prevalence of essential hypertension in men warrants particular attention. If further research could substantiate this finding, there would clearly be a challenge to search for environmental or behavioural factors operating in this community which are protective against hypertension. Among the possible causes might be the active lifestyle, rural living, diet and low rates of obesity.

### Postscript

This paper was written very shortly before the recent conflict in the Falkland Islands. It serves as a summary of the *status quo* prior to this event, and alterations, such as change of tense, have not been made.

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## Inequalities in health

"I see promotion of health as a more social than a strictly medical problem; and a major thrust of our report on inequalities in health was that to correct social inequalities in health would involve sweeping social changes, so deeply embedded are inequalities of all kinds of privilege in our stratified society. This is not an argument either for complacency and neglect, nor on the other hand for violent revolution; but it is an argument for adhering to the philosophy of the welfare state, and for taking further practical steps towards its realization as resources permit.

"I believe that there should be an alternative to state provision, not only of health services, but also of education. On the other hand, and at the risk of appearing inconsistent, I am concerned about the present rate of growth in the private sector. This is because I believe that a doctor, whose education has been largely at public expense, should give some return by devoting the greater part of his time and interest to the NHS, not through compulsion, but from a sense of fairness. We are now in some danger of lessening interest in the public sector, when we hear talk of as much as 25 per cent of health care being given privately."

Source: Black, D. (1982). The aims of a health service. *Lancet*, 1, 952-954.