

Survey of a Royal Air Force practice in Germany

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SUMMARY. Throughout 1974 records were kept of all patients seen by the medical staff at Royal Air Force Bruggen, an RAF Station in Germany. Full details of patients and diagnoses were recorded and an analysis was made of the patterns of consultation and morbidity. The method of storing and analysing the information on punched cards is discussed, and the results are compared with service and civilian general practice in the UK and abroad.

Introduction

ROYAL Air Force Bruggen is situated on the Dutch-German border between the German town of Mönchen-Gladbach and the Dutch town of Roermond. In addition to RAF personnel, small units of the British Army and the US Air Force are sited on the Station. All the servicemen are registered with the service medical officers, as are most of their families. Those who live some distance from the station usually register with other British Forces doctors. Single servicemen are accommodated in messes and barrack blocks. There are 491 houses on the main camp and there is a complex of flats about two miles away in the village of Elmpt. There is a waiting list for both types of accommodation, and a small number of families live in private accommodation in the local area.

There is a constantly changing population. An age-sex register was compiled at the end of the survey (Table 1) and whilst it is not necessarily accurate for any day other than the one on which it was compiled, it is a fair reflection of a practice in which there were no major changes in structure during the year. The average number of patients registered through the year was 4,942.

As stated in a previous survey of an RAF practice (Beeton, 1969) the population distribution is abnormal compared with civilian general practice, with a disproportionately large number of young people and virtually

no infirm old people. There are many expectant mothers and many small babies, but the practice does not provide care during confinement except in an emergency.

Structure of the practice

The practice is recognized as a training practice by the Royal College of General Practitioners, and the senior medical officer is a trainer recognized by the College. Medical treatment is carried out at the station medical centre, a purpose-built building on the station.

There are four doctors, two nursing sisters employed by the Soldiers', Sailors' and Airmen's Families Association (SSAFA), and two civilian (female) SRNs. The SSAFA sisters are health visitors; the civilian SRNs, who work in the treatment room, deal with minor casualties, carry out immunization, provide nursing care for inpatients in the medical centre, and act as chaperones for the doctors. There are two male SENs, a trained dispenser, seven medical secretarial airmen who act as medical receptionist/clerks during the day and nursing attendants at night, and a civilian typist. A senior non-commissioned officer (SNCO) is responsible to the senior medical officer (SMO) for the administrative organization of the medical centre and in many ways corresponds to a civilian practice manager. The RAF hospital at Wegberg is about 20 minutes by road from RAF Bruggen and it deals with all the hospital requirements of the practice. Local civilian hospitals are used only in cases where local civilian agencies are first on the scene of the accident, or in an emergency.

In addition to the usual instruments for dressings and minor surgery, the practice has an electrocardiograph, established for routine examination of aircrew but obviously available also for wider clinical use.

Transport consists of a Mini car for the medical officers, and three ambulances, one of which is a crash vehicle based on a four-wheel drive long wheel base Landrover. These, and two civilian drivers, are from service sources. The SSAFA sisters have cars provided when required for visits.

Table 1. Age/sex distribution of patients.

Age	0-1	1-10	11-20	21-30	31-40	41-50	51+	Total
Male	30	585	376	997	545	183	55	2,771
Female	35	610	337	684	372	118	40	2,196
Total	65	1,195	713	1,681	917	301	95	4,967

The practice provides:

1. Medical cover for flying emergencies.
2. Clinical care for all registered patients, with emphasis on the special needs of aircrew and aviation medicine.
3. Preventive medical care in public health, hygiene, and industrial health, including medical examination of adults and schoolchildren.

A clinic for servicemen is held daily from Monday to Friday between 08.30 and 09.30 hours and, for dependants, between 10.00 and 12.00 hours. A further clinic for dependants is held by one doctor each afternoon. Antenatal clinics are held two mornings a week with the assistance of the SSAFA sisters, and cervical cytology and postnatal clinics are run on two afternoons a week. There is a well-baby clinic one afternoon a week. Clinics are held at 10.00 and 17.00 hours at weekends. In addition, the medical centre functions as a casualty department for the station throughout the day and night. Night and weekend cover is also supplied for a small British Army camp five miles away.

Method

Details of each consultation during the calendar year 1974 were recorded. They were then coded and transferred to 'Paramount' edge-punched cards.

The classification of the College of General Practitioners (1963) was used. Discussions were held between the doctors before and during the survey to standardize diagnosis and nomenclature. For a period of two weeks in December—chosen by random selection—the time each patient spent with the doctor was recorded. The work of the nurses in the treatment room was already recorded and the numbers of inoculations were recorded for the year. The SSAFA sisters complete a monthly return of their work and the figures have been drawn from these.

The information recorded on edge-punched cards is retrieved by inserting a rod through the hole corresponding to the information required, and lifting. The rod carries with it all cards unpunched at that hole, leaving behind the cards containing the information. This method was originally adopted so that the survey and analysis could be carried out using only equipment and facilities available in any RAF medical centre, and, in theory, to any doctor anywhere. After some experience it was decided that, because of the large

amount of information recorded, it would be more efficient to record the information on Hollerith cards, which were read on to a computer for analysis. This was done with much help from the statistics staff of RAF Bruggen and Headquarters RAF Germany, and the staff of the British Army of the Rhine (BAOR) Computer Centre. The analysis was done by an ICL 1902 computer.

Errors and validation

As the punched cards were read on to magnetic tape, the information contained on them was cross-checked to eliminate obvious errors. Consultations affecting only women (e.g. cervical smears) which were attributed to male patients, "servicemen under the age of 11", and so on were identified and corrected where possible. Nine hundred and seventy-two cards were corrected and 168 were removed.

Results

A total of 19,432 consultations was made, resulting in 20,529 diagnoses or reasons for consultation. The average number of consultations per patient was 3.91 and the average number of diagnoses per patient, 4.13. For the purpose of computer analysis, one patient with two complaints was counted as two doctor-patient contacts. The majority of consultations, 18,710 (91.1

Table 2. Commonest reasons for referral.

RCCP group	Number	% of total referrals
6. Disease of nervous system and sense organs	155	21.0
9. Diseases of genitourinary system	75	10.2
18. Prophylactic procedures	66	9.0
13. Disease of musculoskeletal and connective tissues	62	8.4
17. Accidents, poisoning, and violence	57	7.7
Total	415	56.3

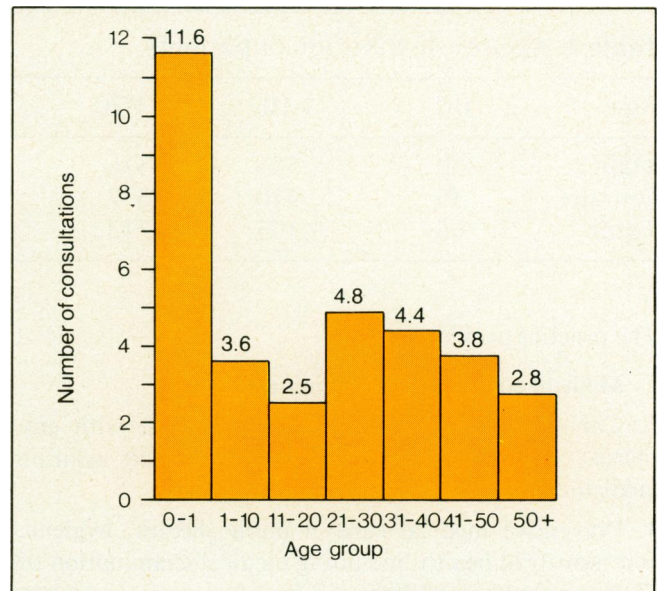
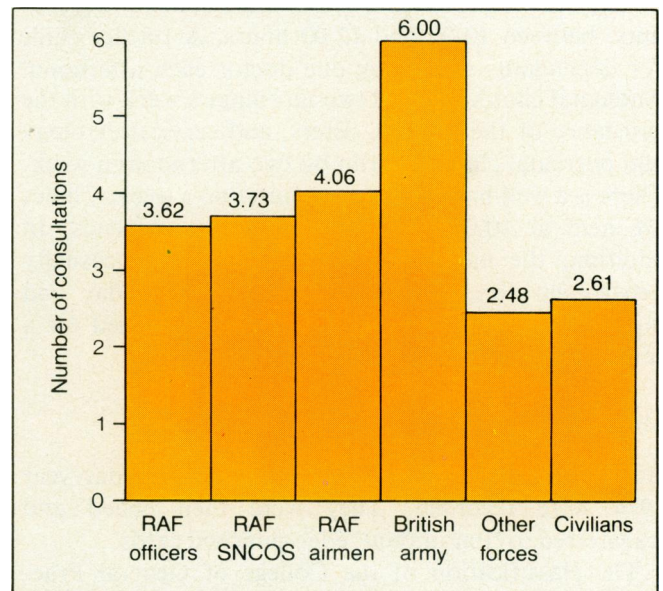
Table 3. Consultation number by disease groups.

RCGP (1963) disease group	Number of consultations	% of total
1	979	4.8
2	122	0.6
3	628	3.1
4	128	0.6
5	1,102	5.3
6	1,715	8.4
7	371	1.8
8	4,755	23.1
9	1,455	7.1
10	1,221	5.9
11	744	3.6
12	1,399	6.8
13	839	4.1
14	33	0.2
15	5	0.1
16	241	1.2
17	1,286	6.3
18	3,451	16.8
Not known	50	0.2

per cent), were in working hours and 1,740 (8.5 per cent) took place out of hours. In 79 cases (0.4 per cent) the time was not recorded.

Seven hundred and thirty-seven patients were referred to hospital for specialist opinion either as inpatients or outpatients. This gives a referral rate of 3.6 per cent (3.7 per cent in hours and 1.4 per cent out of hours). The commonest disease groups for referral are shown in Table 2.

The incidence of diseases (using the RCGP's 1963 classification) is shown in Table 3. The consultations were not spread *pro rata* through the age spectrum of the practice, as is shown in Figure 1.

**Figure 1.** Average number of consultations per patient per year by age group.**Figure 2.** Average annual consultation rates by status of head of family (overall average = 4.13).**Table 4.** Commonest reasons for consultation.

RCGP code	Description	Number	% of total
585	Oral contraceptive advice	1,477	7.2
242	Tonsillitis and pharyngitis	1,386	6.8
511	Medical examination for administrative reasons	1,039	5.1
240	Acute non-febrile nasopharyngitis	851	4.1
247	Acute bronchitis	668	3.3
267	Cough	667	3.2
303	Acute vomiting and/or diarrhoea	646	3.1
480	Sprains and strains	517	2.5
352	Antenatal care (normal)	505	2.5
483	Minor trauma	504	2.5
Total		8,260	40.2

Table 5. Patients seen by SSAFA sisters.

<i>Visits</i>	
First (new baby)	93
First (new family)	195
1 year	1,230
1-5 years	1,527
'At risk' children	168
Families with problems	135
<i>Clinics</i>	
Antenatal (first)	99
Antenatal (subsequent)	1,124
Well baby 1 year	1,755
Well baby 1-5 years	108
School medicals and inspections	2,370

Table 6. Consultation rates related to patient's time in the practice.

	Number of consultations	Rate per year
First six months	1,095	4.14
Middle year	2,157	4.09
Last six months	986	3.73

Status of patients

Servicemen and their dependants were classified into officers, SNCOs (sergeants and above), and other airmen. Other population groups (British Army, other forces, civilians) were too small in number to make any division into status significant. The average number of consultations per patient by status during the year is shown in Figure 2.

Commonest reasons for consultation

The top ten reasons for consultation are shown in Table 4. They account for 40.2 per cent of all consultations.

SSAFA sisters

Figures are available for only one of the two SSAFA sisters and for the last eight months of the year. They have been extrapolated to give combined annual figures for both sisters (Table 5).

Treatment room staff

The treatment room is staffed from 08.00 to 17.00 hours by the two civilian SRNs. Outside normal working hours the duty medical airmen take over. During the year 3,031 patients were seen and treated.

Length of time per consultation

During a randomly selected two weeks (from 2 to 15 December) the length of time each patient spent with a doctor during a consultation was recorded. Times were

Table 7. Comparison of consulting rates for prophylactic procedures (RCGP group 18).

	Report	% of total consultations
Service	RAF Bruggen	16.8
	Lyden and Robertson	Not stated
	Blackburn	2.0
	Beeton	Not stated
	Fanning	4.2 (families only)
	Gallagher	11.0
	Hardman	3.8
	McKnight and Jackson	0.2
	Marsh and McNay	Not stated
	Waterston	Not stated

recorded only on working days between 08.00 and 17.00 hours. A total of 507 consultations were timed and each had an average duration of 6½ minutes, with a range of 1 to 34 minutes.

Consultation rates related to patient's time in the practice

Previous reports have indicated that consultations decrease as a patient's time in a practice increases. Lyden and Robertson (1970) reported a decrease in the consultation rate during the last six months of a patient's three-year tour in Cyprus, and Whitfield (1972) noted a higher consultation rate during the first year of registration with a practice in the UK. A prospective and retrospective study of 528 RAF Bruggen patients showed no significant increase during the first six months of a three-year tour of duty in Germany, but a significant decrease ($p < 0.01$) during the last six months (Table 6).

Discussion

The average annual attendance per patient was 4.13. This is less than has been recorded in other service practices abroad. Lyden and Robertson (1970) in Cyprus give figures of 6.1 over three years and Blackburn (1971), in Singapore, 6.9 over one year. In the UK, Beeton (1969) at RAF Valley had a figure of 3.7 per year. Fanning (1967) recorded a rate of 3.10 for families in flats and 2.04 for families in houses in Germany, but this was based on a survey of only ten weeks' duration. Rates for civilian practices range from 2.1 (Fry, 1972) to 6.98 (Waterston, 1965), although an average figure for nine civilian practices is 4.41 (Waterston, 1965; Hardman, 1965; Manning, 1967; McKnight and Jackson, 1969; Morrell *et al.*, 1971; Rider *et al.*, 1969; Fry, 1972; Richardson *et al.*, 1973;

Table 8. Referral rates as percentage of total consultations.

Authors	Referral rates
Morrell et al. (1971)	11.9
*Fanning (1967)	11.2
Fry (1972) (for the year 1951)	10.5
Perkin (1972)	9.2
Ridley Smith (1973)	7.8
Starey (1961)	7.6
Evans and McBride (1968)	6.2
*Lyden and Robertson (1970)	4.0-6.0
*Blackburn (1971)	4.4
Fry (1972) (for the year 1971)	4.0
*RAF Bruggen (1974)	3.6
Waterston (1965)	0.55

*Service practices.

Marsh and McNay, 1974). Figures for first attendances, as defined by the General Register Office (1954), are RAF Bruggen 3.45, Hardman 4.09, and Fanning 3.10 (flats). The commonest cause of consultation in the surveys that have been referred to was respiratory disease. The figure for group 18 (prophylactic procedures) is seen to be much higher in this survey than in other surveys (Table 7). This high figure is mainly accounted for by two 'diagnoses': oral contraceptive advice (RCGP code 585), 7.2 per cent of all consultations, and medical examination for administrative purposes (RCGP code 511), 5.1 per cent of all consultations.

The ten commonest causes of consultation (Table 4) reflect the nature of the practice; that is, it consists mainly of young fit active people with young families. The relative lack of stress is shown by the low number of consultations for mental disorders (5.3 per cent of the total), although these do tend to take up more than the average amount of time. All the medical officers working at Bruggen have been aware of the different ways in which neurotic illness may present and are more likely to over-diagnose rather than under-diagnose them. Of the 1,102 consultations for mental disorders (RCGP group 5) 602 (54.6 per cent) were for anxiety and depressive neuroses (RCGP codes 130 and 134).

It has been suggested in the past that people living in flats suffer from more respiratory and mental disease than others. This problem has been studied in the RAF

in Germany by Fanning (1967) and by Moore (1972). Figures, for dependants only, for those living in the Elmpt flats show that respiratory diseases accounted for 23.6 per cent of all consultations, which is almost identical to the total figure of 23.1 per cent. Mental disorders accounted for 6.3 per cent of Elmpt consultations, compared with 5.3 per cent generally.

The referral rate of 3.6 per cent is low compared with some other studies (Table 8), but previous service studies have also shown a low referral rate (Lyden and Robertson, 1970; Blackburn, 1971). This probably reflects the higher attendance rates per person seen in service practice; it would seem that there is an inverse ratio between the two.

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