

The Prevalence of Diabetes Mellitus in a Typical English Community

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Diabetes mellitus is a chronic medical disorder which, although eminently treatable, still has a considerable mortality and morbidity[1,2]. Evidence is now accumulating to suggest that well-controlled diabetics suffer fewer complications than poorly controlled diabetics[3,4]. It is, therefore, incumbent upon the Health Service to provide adequate management and follow-up.

There has recently been considerable interest in the organisation of diabetic care in the UK[5-7]. However, to plan effectively, it is important to know the extent of the problem in both quantitative and qualitative terms. This survey identifies the number and type of diabetics in a well-defined population in the Poole area.

Method

The study population consisted of all the patients registered with 40 general practitioners working from 10 practices in the Poole district. The geographical area covered in the survey was divided into two parts. In part A, a semi-rural area north-west of Poole, all the 28 GPs in the area were included. In part B, an urban area, 12 GPs were included, that is only about 25 per cent of all the GPs in the town of Poole.

During an 18 month surveillance period all the known diabetics in the study population were identified from the following sources: (a) a previous diabetic survey[8]; (b) the Poole Diabetic Register, a computerised record of all diabetics, listed by GP; (c) diabetic registers held by the GPs; (d) all the diabetic clinics held in the hospital during the study period, and (e) repeat prescription requests and letters in each practice, collected by the GPs' receptionists.

A card index file of the names of the diabetics was maintained in each surgery. All records were scrutinised to ensure that each patient fulfilled the diagnostic criteria set by the WHO Expert Committee on Diabetes Mellitus[9]. If they had been treated continuously with insulin or had had a break of less than one month since diagnosis, or had suffered a documented episode of diabetic ketoacidosis, the patients were classified as insulin-dependent. All other patients were classified as non-insulin dependent.

All diabetics were called for review by one observer (W.G.) as part of another study. When a majority had been seen in each practice, a count was made of the total number of people registered with that practice, using the age/sex register, when available, or the patient record folders. Thus, for each of the 10 practices a point prevalence of diabetes mellitus was determined. These were added together to produce the prevalence for the study population.

Results

In the study population, 917 diabetics were identified. At the beginning of the study, the Poole Diabetic Register and the previous survey[8] had found 604 (65.8 per cent) diabetics alive and still registered with the 40 GPs. During the surveillance period a further 313 diabetics were identified, 248 (27.1 per cent) from the GPs and 65 (7.1 per cent) from the hospital diabetic clinics. The 40 GPs had 90,660 people registered on their lists; 66,542 in part A, the semi-rural area and 24,118 in part B, the urban area. Thus, the prevalence of known diabetes mellitus in the study population is 1.01 per cent. Table 1

Table 1. Age distribution of patients registered with 40 GPs compared with UK population (1981 Census).

Age (yr)	No. of patients registered	%	% UK
<5	5,497	6.1	6.1
5-14	12,176	13.4	14.7
15-29	17,961	19.8	22.5
30-44	19,309	21.3	19.5
45-64	20,214	22.3	22.3
65-74	9,204	10.2	9.2
75 and over	6,207	6.8	5.7
Unknown	92	0.1	
Total	90,660	100	100

shows the age distribution of the study population and a comparison with that of the UK. There is a small but insignificant excess of over 65-year-olds but otherwise the

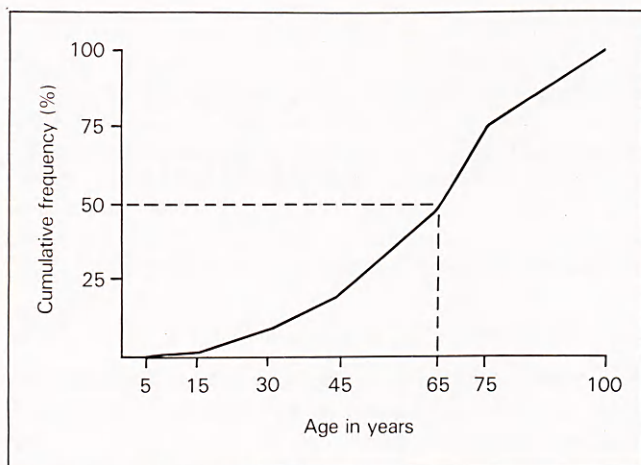


Fig. 1. The cumulative frequency in the 917 diabetics with respect to increasing age.

age distribution of the study population is comparable with that of the general population.

The cumulative frequency with respect to age in the diabetic patients is shown in Fig. 1, which clearly demonstrates that more than half the diabetics are aged over 65 years. Table 2 shows the age specific rates for diabetes in

Table 2. Age specific rate for diabetes mellitus in the female and male populations.

Age (yr)	No. of patients registered		No. of diabetics		Rate per 1,000 study population	
	F	M	F	M	F	M
<5	2,661	2,836	0	1	0	0.4
5-14	5,694	6,482	6	9	1.1	1.4
15-29	9,199	8,762	34	36	3.7	4.1
30-44	9,973	9,336	50	43	5.0	4.6
45-64	10,474	9,740	105	154	10.0	15.8
65-74	5,169	4,035	128	134	24.8	33.2
75 and over	3,973	2,234	115	102	29.0	45.7
Unknown	47	45				
Total	47,190	43,470	438	479		

the female and male populations respectively. The rates are similar in both sexes in the under 45-year-olds, but in the older age groups the rate is strikingly higher in the male population. The prevalence of diabetes in the female population is 0.93 per cent against 1.1 per cent in the male population.

Of the 917 diabetics identified, 222 (24.2 per cent) were classified as insulin dependent and 679 (74 per cent) as non-insulin dependent. There were insufficient data available to classify the remaining 16 (1.8 per cent) diabetics. The type of treatment known for 901 diabetics was diet alone in 187 (20.4 per cent of the study group), oral hypoglycaemic agents in 358 (39 per cent) and insulin in 356 (38.8 per cent), of whom 222 were classed as insulin dependent and 134 as non-insulin dependent diabetics (NIDDs). The type of diabetes according to age is shown

Table 3. Type of diabetes mellitus in relation to age in 901 diabetics in the survey (excluding 16 unclassified diabetics).

Age (yr)	Insulin dependent			Non-insulin dependent		
	No.	% in that age group	M/F	No.	% in that age group	M/F
<10	6	100	1.0	0	0	
10-19	32	100	1.3	0	0	
20-29	43	90	1.26	5	10	0.3
30-39	40	71	1.35	16	29	0.6
40-49	30	37	1.0	52	63	1.38
50-59	24	19	1.67	101	81	1.25
60-69	21	11	1.1	175	89	1.33
70-79	18	7	0.8	245	93	0.87
80 and over	8	9	0.6	85	91	0.93
Total	222			679		

in Table 3. As expected, the proportion of non-insulin dependent diabetics increases with age.

Discussion

This survey is unusual in that it was population-based and sought to identify both hospital and GP treated diabetics. Because of the five different sources used, ascertainment of all the known diabetics was probably very high. The fact that over 25 per cent of the diabetics were picked up through the GP surgeries demonstrates that a hospital-based survey would have significantly under-estimated the prevalence of diabetes mellitus. The surveillance, especially in the GP surgeries, relied heavily on reviewing repeat prescriptions for insulin, oral hypoglycaemic agents and urine testing equipment. A small number of diabetics treated by diet alone, whose requests for urine testing equipment may be infrequent, may have been missed, particularly as some diabetics were found to have stopped testing their urine altogether. However, the GPs' own diabetic registers (available in five out of 10 practices) and other sources mentioned earlier were extremely helpful in identifying these patients.

The population under study was defined as all the people registered with 40 GPs. It is well known that GP lists tend to over-estimate the number of patients under their care because records of deaths and removals may not be kept up to date. Recent computerisation of all the records with the local Family Practitioner Committee (FPC) has reduced this problem to a minimum and the counts made at each practice were in close agreement with the FPC numbers for the nearest quarter. However, it is likely that the prevalence of diabetes mellitus is slightly higher than the 1.01 per cent determined.

Previous studies on the prevalence of diabetes mellitus in the UK have been either screening surveys[10], hospital-based studies[11] or small-scale community studies[12,13]. The Edinburgh group[11] attempted to identify all the diabetics alive on 1st January 1968, using the hospital clinic lists as a starting point. Although all the 263 GPs were contacted, no prolonged surveillance in the surgeries was attempted. They found a prevalence of diabetes mellitus of 0.63 per cent. However, only 13 per

cent of their diabetics were aged 65 years and over compared with 52.2 per cent in this survey, suggesting poor ascertainment in the older age groups. In Oxfordshire, Dornan[12] found a prevalence of diabetes mellitus of 0.8 per cent, identifying the diabetics principally by a postal survey. In a large practice in Norfolk (practice list 20,010), Tasker found a prevalence of diabetes mellitus of 1.2 per cent[13]. However, in neither of these two studies are the diagnostic criteria for diabetes defined.

The higher prevalence of diabetes in men aged 45 years and over is striking. This may reflect more frequent diagnosis of diabetes during routine employment and insurance medicals which men have more commonly than women. In addition, a higher percentage of male NIDDs (32.1 per cent) were treated by diet alone, compared to 22.3 per cent of female NIDDs. In 1965 Malins reported a change in the sex incidence of newly diagnosed diabetics towards more men being diagnosed[14]. However, the overall male:female ratio of new attenders was still less than 1.0.

These figures on the prevalence and type of diabetes mellitus will be useful in planning adequate facilities for the management of diabetic patients. An average District General Hospital in Britain serves a population of 250,000, which will contain approximately 2,530 diabetics. If reasonable diabetic care is to be offered to these patients, the district health authority must provide facilities for an annual eye and medical examination and twice-yearly blood sugar and HbA1 estimations as a minimum. Diabetic problems such as pregnancy, serious retinopathy, nephropathy, painful neuropathy and foot ulcers require specialist attention. In total, this represents a large workload. Health authorities, diabetologists and GPs must make detailed and integrated plans to provide an efficient workable system.

Summary

A survey was carried out in the Poole area to identify all the known diabetics under the care of 40 general practitioners. Surveillance in both hospital and general practice ensured maximal ascertainment. From a study population of 90,660, whose age distribution was similar

to that of the UK population, 917 diabetics were identified. The prevalence of diabetes mellitus was 1.01 per cent. The age-specific rate for diabetes mellitus was higher in men over 45 years old than in women. Of the diabetics, 479 (52.2 per cent) were aged 65 years and over; 222 (24.2 per cent) were classified as insulin-dependent diabetics, 679 (74 per cent) as non-insulin dependent and for the remaining 16 (1.8 per cent) insufficient data were available for classification.

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