THE SECCAT SURVEY: I. THE COSTS AND CONSEQUENCES OF ALCOHOLISM

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Abstract — The SECCAT survey assessed the Socio-Economic Costs and Consequences of Alcoholism Treatment. Basic demographic and health service resource use data (for a previous 6-month period) were obtained for a cohort of 586 eligible patients who had had treatment at the Alcohol Problems Clinic (APC) in Edinburgh The cohort was 75% male with a mean age of 46 0 years. Seventy-six per cent had an initial diagnosis of alcohol dependence and 21% alcohol abuse Use of health services was highly variable. Thirty-six per cent agreed to be interviewed to provide data on their level of abstinence, on resource use, on quality of life (SF-36), on socio-economic characteristics and key adverse events These 212 individuals had similar age and sex ratios to the full cohort, but alcohol abusers were under-represented Nineteen patients reported no days of abstinence and 41 were abstinent over the whole 6-month period Patients experienced a much poorer quality of life than a normal population in terms of all dimensions of the SF-36 The average total health care costs of the interviewed patients were £1134 of which 38% were related to treatment at the APC Analysis suggests that alcohol-dependent patients make substantially more costly use of resources than abusers and experience a much poorer quality of life. No clear relationship of cost to degree of abstinence has been found. There is a clear and consistent relationship of SF-36 scores and drinking behaviour.

INTRODUCTION

The 1991 Health Survey for England suggests that 7% of men and 5% of women can be classified as problem drinkers [Office of Population Censuses and Surveys (OPCS), 1993]. It is widely reported that individuals with alcohol problems are a diverse group, from a wide range of social backgrounds, and that types of alcoholism vary considerably. Appropriate care often means individually tailored 'packages' of care, which to be effective need to be client-led, taking into account what is acceptable to the patient at a given time. Alcohol and alcoholism impose significant costs on the National Health Service (NHS). It has been estimated that in 1989 the cost of sickness absence associated with alcohol consumption was £779 million (Maynard, 1989). However, little is known about the overall magnitude of such costs, and even less about the social circumstances, quality of life and health service resource use of specific categories of patients. As a result, little is known about the potential cost-effectiveness of interventions aimed at this patient group, and there is a considerable problem to produce accurate cost and cost-effectiveness data given such a diversity of service provision (Godfrey, 1994).

This paper presents the findings of the SECCAT survey to assess the Socio-Economic Costs and Consequences of Alcoholism and its Treatment. The survey provides evidence of the socio-economic characteristics of a group of patients who had been treated for alcohol problems, their levels of abstinence, quality of life, key adverse events that they have suffered and the costs of providing health care and support to them. All the patients had had contact with the Alcohol Problems Clinic (APC) at the Royal Edinburgh Hospital (Lothian), chosen for its representative approach to the treatment of alcoholism. Service provision was available on an inpatient and outpatient basis and was directed at both the alcohol-dependent patient and those with milder

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forms of medical need, and ranged from intensive supportive therapy with individual counselling to a programme of detoxification with group therapy lasting 3 weeks, for a range of alcohol-related problems. Additional measures, such as supervised disulfiram therapy and antidepressants, were advocated as the need arose, and patients were encouraged to make contact with Alcoholics Anonymous and other voluntary agencies.

The paper first outlines the methods of data collection and costing used, and then describes the socio-economic circumstances of the full cohort. It then describes the limited socio-economic and the health service resource use data for the cohort as a whole, and the much fuller data available for those patients who agreed to be interviewed. Finally it presents two important sub-group analyses comparing patients in different diagnostic classifications and by levels of abstinence.

METHODS

The study surveyed a cohort of patients who had had contact with the APC. Referrals to the APC came chiefly from general practitioners (GPs). Other sources of referral included general psychiatrists, general hospitals, self-referrals and referrals from the courts, voluntary bodies and social work services. Ethical approval was sought and approved for the methods to be used in the survey. A case register was used to identify 685 patients who have been in contact with the APC during 1992. Case notes of these patients were checked to ensure that they satisfied the inclusion criteria for the survey: namely, that the patients had an alcohol problem and had been in contact with the APC for treatment at a point 12 months previously. Patients were excluded if they were of no fixed abode or had an address outside the Lothian Region. In total, 85 patients from the database were found to be ineligible. The remaining 600 patients were entered into the study and allocated a survey number. If the case notes indicated that the patient was in current contact with APC, their keyworker confirmed their most recent contact. In addition, the keyworker was asked if there was any reason why a patient should not be approached for the survey.

Patients were then written to and invited to return a reply-paid card stating whether or not they wished to take part in the survey. If no reply was received within 2 weeks, a further letter was sent. If after 2 weeks there was still no response, the patients' addresses were checked with their general practitioner. If the address was incorrect the patient was written to at their new address. For patients who were no longer in contact with the general practitioner (GP) recorded in their hospital notes, the name and address of their new GP along with their new address were obtained from primary care administration. These patients were then reapproached as above. If, following these procedures, patients did not reply, or declined to be interviewed and for patients who had died during the past 6-month retrospective time-frame, then the baseline information on the patient was completed in the case-record file (CRF) using data from the hospital case-record and additional information about NHS resource use from a questionnaire sent to the GP.

Patients who agreed to take part were then invited to attend a single interview, at which the CRF was completed. In addition, a questionnaire was sent to the patient's GP to confirm details of medical history, medication and to obtain information on NHS resource use. The process provided for all patients basic demographic data, clinical diagnosis (at time of initial contact) and information on some items of resource use. For patients who agreed to be interviewed, social circumstance, drinking behaviour in the previous 6 months, use of NHS resources including prescribed drugs, and the incidence of a variety of events relating to employment, the legal system and accidents was collected. During the interview, patients completed the UK version of the SF-36 health status questionnaire (Brazier et al., 1992). The SF-36 measures health status according to eight dimensions: physical functioning; social functioning; role limitations due to physical problems; role limitations due to emotional problems; general mental health; energy/vitality; bodily pain; and general health perceptions. A score is derived for each dimension of between 0 (for poor health) and 100 (good health). Comparative norms from a survey of a UK population are available (Jenkinson et al., 1993). In addition, the Alcohol Related Problems Questionnaire (ARPQ) (Chick et al., 1988, 1991) was completed. The results of the ARPQ will be presented in a separate paper (Patience et al., 1997).

Recruitment and interview of the patients took

Table 1. Unit cost and components of total cost

Component	Items	Unit costs (£)	Source
APC costs	Individual counselling session	36.25	Netten (1994)
	Group counselling session	3.65	Netten (1994)
	In-patient stay at APC	1422.30*	ᴬᴾᶜ Edinburgh
	Home visit by APC staff	22.00†	ᴐn (1994)
GP costs	Visit to GP	7.62	Netten (1994)
	Visit to practice nurse	3.83	Netten (1994)
	Visit from GP	22.00	Netten (1994)
	Visit from practice nurse	7.89	Netten (1994)
Other costs	Non-APC counselling sessions	3.65	Netten (1994)
	Week in residential units	275.00‡	
	Outpatients visits	29.50	National Health Service in
	Non-APC inpatient day	200 00	Scotland (1993)
	Visit to A&E	57.00	
Drugs costs	Specific drugs prescribed	Specific cost	BNF; MIMS

APC = Alcohol Problems Clinic, Royal Edinburgh Hospital; A&E = Accident and Emergency department; BNF = British National Formulary (1994); MIMS = Monthly Index of Medical Specialities (1994)
*Average of the two programmes offered at the Unit (2 weeks).
†Costed as equivalent to GP home visit
‡Mid-point of range of Edinburgh residential units.

place over 1 year, each month dealing with those who had been in contact 12 months previously. Of the 600 patients allocated a survey number, 212 agreed to be interviewed; 59 declined to be interviewed; 18 had died during the relevant period; 297 did not respond; 14 were eventually found to be ineligible. Thus for the purpose of subsequent analysis the full cohort is 586 (600 minus 14) patients. Data were collected for the 6-month period immediately prior to the interview date. For those not interviewed, the period was taken as 6 months prior to their being allocated an interview number. Where data were sought and obtained from more than one source (e.g. the patient and his GP), a predetermination was made for each item on the basis of an *a priori* likelihood of accuracy as to which source would be used in the analysis. For example, the GP was taken as the preferred source of data on medications.

For each individual, a total cost of health service contacts during the 6-month period was calculated. This calculation applied standard unit costs to the number of each type of contact for each individual, to estimate four component costs and the total cost. The make-up of the four components and the principal unit costs are summarized in Table 1. All drug prescriptions have been costed for the full 6-month period using prices from *Monthly Index of Medical Specialities* (June 1994) or *British National Formulary* (March 1994). Rather than making subjective decisions about causality, all health service resource use (including prescribed drugs), whether or not obviously related to their alcohol problem was costed.

RESULTS

Characteristics of the full cohort

The cohort consisted of 586 individuals and its demographic characteristics are shown in Table 2. The group is 74% male, has a mean age of 46.0 years and the most common diagnosis is alcohol dependence (DSM-III-R, 303.90) [DSM Classification of the American Psychiatric Association (1987)]. The cohort had had a mean (SD) length of contact with the APC of 4.48 (5.56) years. The median length of contact was 2.11 years, with an interquartile range of 0.57–6.16 years. The longest period of contact was nearly 30 years. Data on some aspects of health service resource use, in the 6-month survey period, is available for the full cohort from routine records. This is presented in Table 3. A wide range of usage is observed within the group, with some striking maximum values.

Table 2. Cohort demographics

Characteristic	Full cohort (586 individuals)	Interviewed group (212 individuals)	Non-interviewed group (374 individuals)
Sex			
Female	150	55	95
Male	436	157	279
Age			
Mean (SD) cohort age	46.0 (10 8)	48.3 (9.7)	44 5 (11 1)
Range	20–82	21–70	20–82
Disease classification (DSM III-R)			
Alcohol intoxication (303.00)	10	3	7
Alcohol dependence (303.90)	447	180	267
Alcohol abuse (305.00)	125	29	96
Missing data	4	–	4
APC contact			
Mean (SD) length of contact in years	4.48 (5.66)	5.15 (5.79)	4 08 (5.56)
Median length of contact in years	2.11	2.59	1.60
Proportion in current contact	24.8%	48.1%	11.4%
Missing data	11	–	11

APC = Alcohol Problems Clinic.

Table 3. Health service resource use: full cohort (586 individuals)

Resources	Total number of responses	Total number of non-zero responses	Number of contacts			
			Mean	Median (90% central range)	Minimum	Maximum
Individual sessions at APC	580	174	1.87	0 (0–6)	0	31
Group sessions at APC	582	62	2.28	0 (0–2)	0	150
Home visits by APC staff	582	20	0.18	0 (0–0)	0	22
IP admissions at the APC	582	54	0.11	0 (0–0)	0	2
Visits to GP	558	477	4 94	4 (0–10)	0	59
Visits to GP (alcohol related)	551	322	2.71	1 (0–7)	0	50
Visits to a practice nurse	551	72	0.40	0 (0–1)	0	51
Hospital OP visits (except APC)	547	167	0.75	0 (0–2)	0	28
Visits to A&E	551	124	0.37	0 (0–1)	0	12
IP admissions to a hospital or clinic (except APC)	551	92	0.24	0 (0–1)	0	5

APC = Alcohol Problems Clinic; A&E = Accident and Emergency department; IP = inpatient; OP = outpatient; GP = general practitioner.

An APC inpatient stay was recorded only for 54 patients (<10% of the cohort) with no patient being treated more than twice as an APC inpatient, but over the 6-month period at least one individual attended the APC for individual counselling 31 times and another attended 150 group sessions, i.e. more than five sessions per week. One patient made 59 visits to a GP. Two individuals made 12 visits each to accident and emergency departments.

A comparison can be made with data for 1992 for the population of Great Britain as a whole (OPCS, 1993). Nationally, the average number of contacts with a GP per 6-month period would only be ~2.5, approximately half that observed in this cohort. It would also appear that the rate of inpatient stays of this cohort is considerably higher than that of the population as a whole which had an average of only 0.06 inpatient stays per 6-month period.

Table 4. Health services resource use: comparison of interviewed and non-interviewed groups

Resources	Interviewed patients (212 individuals)* mean (SD)	Non-interviewed patients (374 individuals)† mean (SD)
Individuals sessions at APC‡	3.8 (5.92)	0.76 (2.86)
Group session at APC‡	5.93 (19.7)	0.2 (1.52)
IP admissions at the APC	0.18 (0.45)	0.06 (0.13)
Visits to GP	5.59 (4.76)	4 54 (5.40)
Hospital OP visits (except APC)‡	1.01 (2.42)	0.57 (1.52)
Visits to A&E	0.36 (0.79)	0.38 (1.21)
Inpatient admissions to a hospital or clinic (except APC)	0 28 (0.62)	0.22 (0.69)

*Due to missing data, observations for specific items range from 208 to 212.
†Due to missing data, observations for specific items range from 337 to 374.
‡Difference statistically significant $(P \leq 0.05)$: calculated using the Wilcoxon rank sum test.
For abbreviations see Table 3.

These figures for the full cohort clearly indicate the higher use of health service resources made on average by alcoholics who have had recent contact with a clinic. However, they do not provide any indication as to which sub-groups make greater or lesser demands.

Characteristics of the interviewed group

The interviewed group of 212 individuals represented 36% of the full cohort. The sex ratios and ages of those interviewed (Table 2) reflect well those of the group as a whole, but alcohol abusers are under-represented, as are those who have not maintained contact with the APC.

Table 4 compares the use of those health service resources for which data were available from the APC routine data or from a questionnaire to GPs, of the interviewed group and the non-interviewed group. The interviewed group made significantly greater use of APC services, of visits to their GPs, and outpatient visits to hospital.

Column 1 of Table 6 shows that the mean (SD) costs of health care in the 6-month period for interviewed patients totalled £1134 (£1809), of which only 38% were costs at the APC.

The number of abstinent days has been used as an outcome measure in clinical trials and serves as a proxy for alcohol consumption. Interviewed patients were asked if there had been a period in the last 6 months when they had been completely abstinent and, if so, were helped to calculate the total number of abstinent days using the time-line follow back method (Sobell et al., 1980). Forty-one patients were abstinent over the whole period.

Nineteen patients had no days of complete abstinence. A graphical presentation of individual patient values for the number of abstinent days is shown in Fig. 1.

Figure 2 compares the subjective health status, as measured by the SF-36, of those interviewed with that of the UK population norms. These patients experience a much poorer health status on all dimensions than a normal population. (This effect is unchanged by age standardizing the comparison.)

Data were also obtained at the interview relating to the socio-economic circumstances and to the incidence of certain adverse events. Twenty-five per cent of the interviewed group were single or widowed, 27% married, 42% divorced or separated. Forty-five per cent were living alone, and 36% were in owner occupied accommodation. Only 26% were in full or part-time employment, whilst 37% were permanently sick/disabled or prematurely retired due to ill health. Comparison with data for Great Britain indicates that the proportion living alone is very high (national figure of 14% of the adult population) as is the proportion not in employment, where nationally ~77% of men and ~66% of women of working age might be expected to be employed (OPCS, 1994).

Those who were employed had, as a result of their alcohol problem, missed a mean (SD) of 10.2 (33.2) days of work with their employer's agreement and a mean (SD) of 6.8 (12.9) days where absence was not planned. There was a high incidence of legal events in the 6-month period: 23
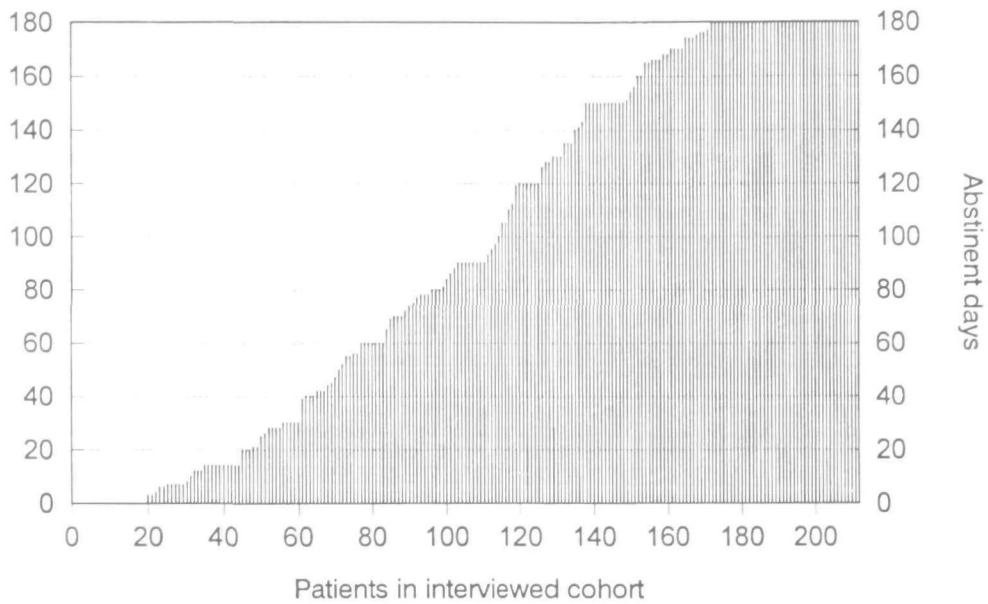
Fig. 1. Plot of individual patient values for number of abstinent days (in ascending order of value).
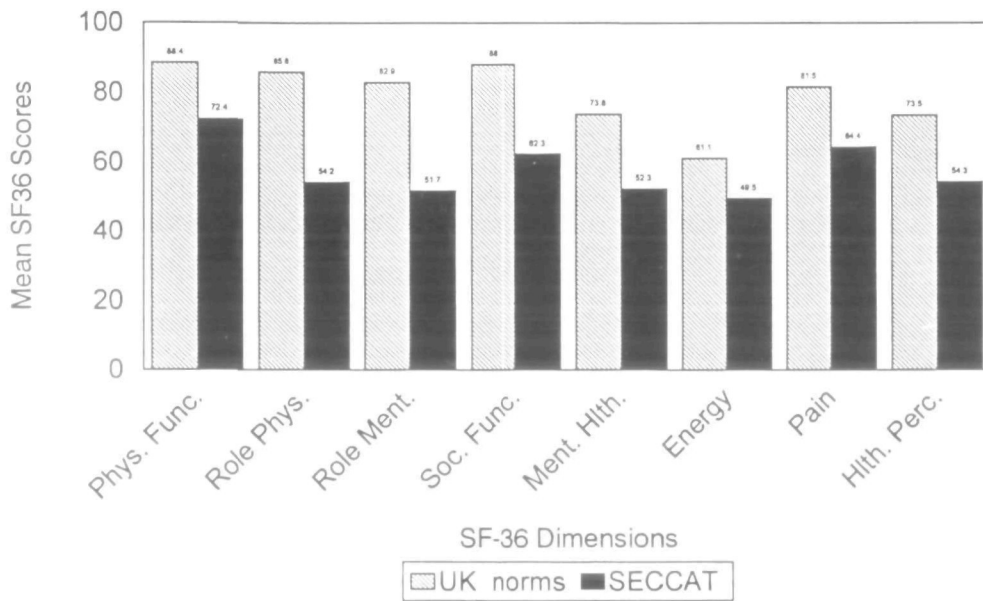
Fig. 2. SF-36: comparison of SECCAT data with UK norms.

individuals had been arrested at least once, 13 had been disqualified from driving, and 12 had been divorced or divorce proceedings were underway.

More than 20% of the group had had an accident at home, compared with the rate of 2–4% which earlier national data from the 1989 *General*

Table 5. Health service resource use: number of contacts [mean (SD)]

Resources	All interviewed patients (212 individuals)	DSM-III-R category		Abstinence			
		Dependence (303.90) (180 individuals)	Abuse (305.00) (29 individuals)	Quartile 1:* most abstinent (54 individuals)	Quartile 2:* (56 individuals)	Quartile 3:* (47 individuals)	Quartile 4:* least abstinent (55 individuals)
Individual sessions at APC	3.80 (5 92)	4 13 (6 28)	1.93 (2 56)	3 72 (6 03)	4 21 (5.78)	4.47 (5 86)	3.29 (6.27)
Group sessions APC	5.93 (19.7)	6 37 (20 8)	3.79 (12.19)	6.23 (18.95)	10 36 (30.92)	4.14 (9.19)	2.98 (9.54)
Home visits by APC staff†	0.36 (2.27)	0.43 (2 44)	0.20 (0.81)	0.00 (0.00)	1.20 (4.23)	0.31 (1.14)	0 04 (0.27)
IP admissions at the APC‡	0.18 (0.45)	0 20 (0 46)	0.03 (0.18)	0.07 (0.26)	0.23 (0.47)	0.31 (0.60)	0 16 (5 62)
Visits to GP	5.59 (4.76)	5 72 (4 78)	4.85 (4.72)	5.52 (5.79)	5.38 (4.95)	6.03 (4.39)	5 62 (3.89)
Visits to a practice nurse	0.32 (1.24)	0.29 (1 24)	0.46 (1 26)	0 33 (0 99)	0.18 (0.43)	0.38 (0.71)	0 42 (2.09)
Home visits instigated by GP or practice nurse‡	0.26 (0.93)	0.23 (0 95)	0.39 (0 78)	0 13 (0.39)	0.46 (1.53)	0.39 (0.95)	0.07 (0.26)
Home visits by GP instigated by patient†	0 43 (1.26)	0 48 (1 34)	0.14 (0 44)	0 13 (0 52)	0.51 (1 03)	0.51 (1.14)	0.58 (1.92)
Hospital OP visits (except APC)	1.01 (2 42)	1.03 (2.50)	0 96 (2.06)	0 75 (1 04)	1.05 (1 95)	1 52 (4 53)	0.76 (1.36)
Visits to A&E§	0.36 (0.79)	0.37 (0.75)	0.20 (0 41)	0 15 (0.60)	0.35 (0 67)	0 45 (0 80)	0.49 (0.77)
Inpatient admissions to a hospital or clinic (except APC)	0.28 (0.62)	0.28 (0 55)	0.31 (0.96)	0 39 (0.88)	0.24 (0.51)	0.45 (0.96)	0.26 (0.49)

*The quartile split is inexact to ensure that, given the distribution of values, all patients with the same number of abstinent days are allocated to the same quartile rather than arbitrarily split at the true quartile boundary.
†Difference between abstinence sub-groups statistically significant ($P \leq 0.05$); Wilcoxon rank sum test.
‡Difference between DSM sub-groups statistically significant ($P \leq 0.05$); Wilcoxon rank sum test.
§Difference between abstinence sub-groups statistically significant ($P \leq 0.01$); Wilcoxon rank sum test.
For abbreviations see Table 3

Table 6. Health service costs [£; mean (SD)]

Cost category	All interviewed patients (212 individuals)	DSM-III-R category		Abstinence			
		DSM-III-R 303.90 Alcohol dependence (180 individuals)	DSM-III-R 305.00 Alcohol abuse (29 individuals)	Quartile 1: most abstinent (54 individuals)	Quartile 2: (56 individuals)	Quartile 3: (47 individuals)	Quartile 4: least abstinent (55 individuals)
APC	429 14	474.38	137.44	260.51	497.06	614.42	364.52*
GP	52.73	55.01	40.49	46.17	52.64	56.09	57.21
Other	569.41	607.95	377.46	362.01	805.12	705 14	379 62
Drugs	82.70	84.72	76.25	114.30	87 88	70.02	60.25
Total	1133.98 (1809.46)	1222.06 (1878.13)	631.64 (1292.76)	782.99 (1265.47)	1442.70 (2138.27)	1445.67 (2165.73)	861.60* (1527.50)

APC = Alcohol Problems Clinic; GP = general practitioner.
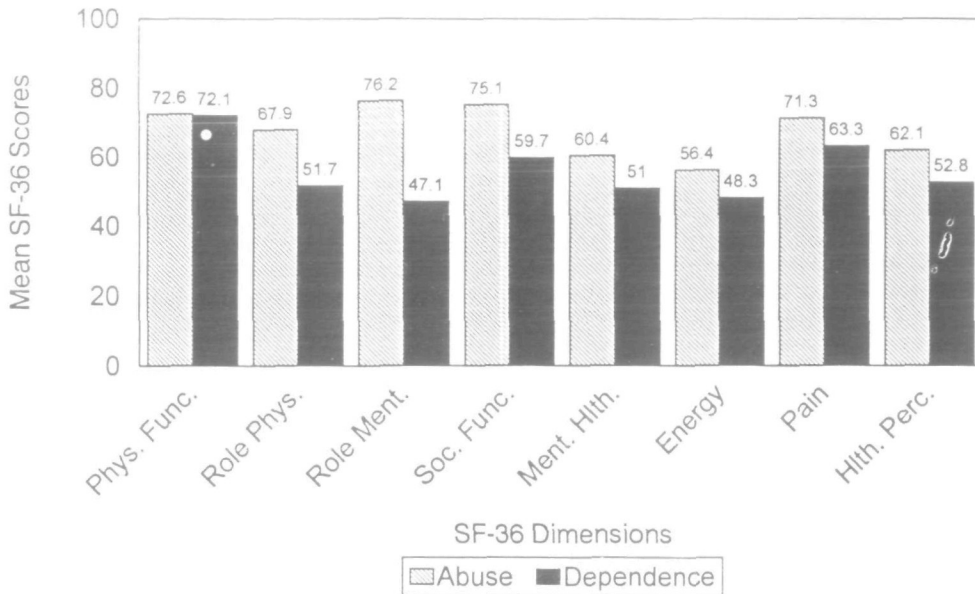* Difference between sub-groups statistically significant ($P \leq 0.05$); Wilcoxon rank sum test.

Fig. 3. SF-36: comparison of mean scores for DSM-III-R categories of 'alcohol abuse' and 'alcohol dependence'.

Household Survey suggests would be normal (OPCS, 1991). Thirteen per cent of those interviewed had been involved in accidents as pedestrians. Seventeen per cent of those working had had an accident at work. Thirteen per cent had taken an overdose or tried to harm themselves. (Despite these overall high incidence rates, the small absolute numbers prevent meaningful subgroup analysis of these data.)

Sub-group comparisons

Given the diversity of the groups, it was judged important to see whether resource use of quality of life varied according to diagnostic classification or to the degree of abstinence achieved in the 6-month period.

Diagnostic classification: abuse vs dependence. The comparison between diagnostic classifications relates to 209 individuals: the majority (180) were classed as alcohol-dependent (DSM III-R, 303.90), and 29 classified as alcohol abusers (305.00). The remaining three patients in the interviewed group had a clinical diagnosis of alcohol intoxication (DSM III-R, 303.00) and form too small a group for comparison.

Table 5 shows the mean number of health service contacts made by the two groups for each resource category. In most cases, alcohol-dependent patients average a higher number of health service contacts than alcohol abusers, although this is only statistically significant for inpatient visits ($P \leq 0.05$). For GP/practice nurse visits, abusers made more use than alcohol-dependent patients ($P \leq 0.05$). Table 6 shows the generally higher use of services made by alcohol-dependent patients, reflected in a higher average cost for this group. The difference is striking with average total health service costs of dependent drinkers almost double that of the non-dependent drinkers.

In terms of the SF-36, alcohol abusers score higher on every dimension than the alcohol-dependent group (Fig. 3). Dependent alcoholics exhibit very low scores on the 'role mental' and 'role physical' dimensions. Clearly individuals diagnosed as alcohol-dependent have a significantly lower subjective health status than alcohol abusers.

The usefulness of the clinical distinction between abuse and dependence has been questioned (Shuckit *et al.*, 1985). After following a group of alcoholics distinguished by DSM categorization for 1 year, the diagnostic criteria did not support different prognostic implications. The distinction is, however, important from an eco-
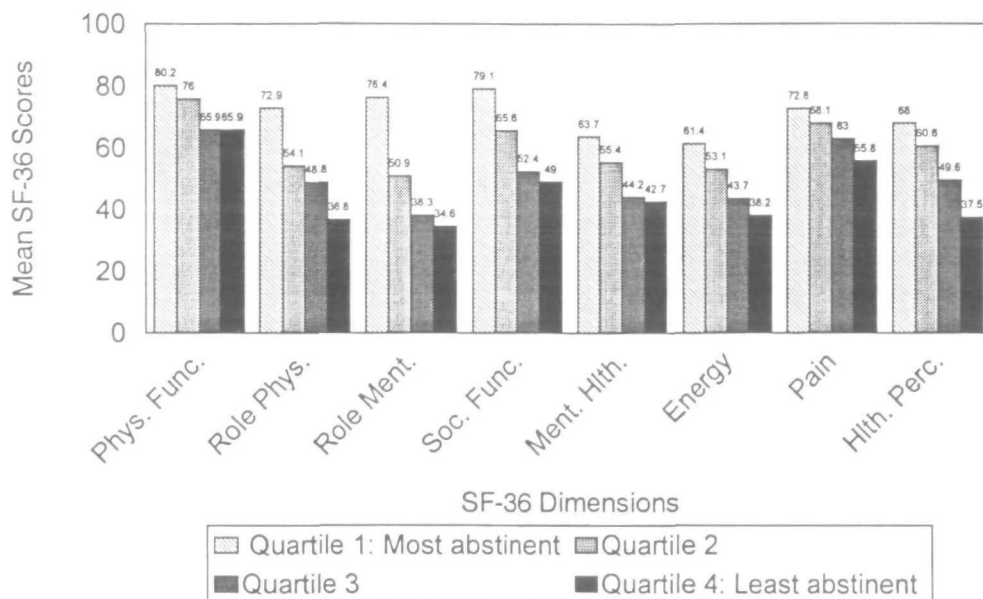
Fig. 4. SF-36: comparison of SECCAT mean scores for quartiles ordered by number of abstinent days.

nomic perspective. Alcohol-dependent patients impose significantly higher costs on the NHS and suffer much poorer health status.

Abstinent and non-abstinent drinkers. Table 5 also shows the resource use data for patients divided into quartiles according to their level of abstinence, as measured by the reported number of abstinent days in the 6-month period. This shows that the most abstinent group made significantly less use of emergency care, either in calling out their GPs or visiting Accident and Emergency. For other resource use, the picture is less clear, though there is a tendency for the middle quartiles to make greater use of services than the least or most abstinent groups. This tendency is confirmed in Table 6, which clearly shows that, whilst patients in quartiles 1 and 4 have similar mean total health service costs (£783 and £862 respectively), the costs of quartiles 2 and 3 are very much higher (£1443 and £1446 respectively). If the data are categorized slightly differently, separating out those 41 individuals who were completely abstinent (instead of quartile 1) and those 19 individuals who were never abstinent (instead of quartile 4) a similar pattern emerges, with the two extreme groups having very similar total costs of £735 (SD £1237) and £745 (SD £1828) respec-

tively. Within the total costs, the one component that is statistically significantly different is that of the APC costs. APC costs are lowest for those who were completely abstinent or who were not at all abstinent during the 6-month period.

Univariate analysis of the relationship between abstinence days and total cost produced a positive but non-significant rank correlation coefficient (0.03, Spearman's *rho*). A plot of the relationship emphasized the absence of a linear relationship. While the plot was suggestive of a curvilinear relationship (with individuals at both extremes of the abstinence days distribution consuming similarly low levels of resources and those in the middle of the distribution consuming a greater number) a one-way analysis of variance was unable to detect such a relationship ($t = 0.324$, df = 1, $P = 0.75$). In summary, as most observations were clustered along the x-axis, it appears likely that whatever the number of abstinent days achieved, most patients incurred a similarly low level of costs.

Multivariate regression analyses looked at the relationship between average total cost as the dependent variable against the number of abstinent days and the number of controlled drinking months. The age of individuals was also included

as an independent variable and dummy variables were included for sex and disease classification. The number of abstinent days was positively related to total cost and significant ($t = 2.62$, df $= 1$, $P = 0.034$), whilst there was a negative and significant relationship between controlled drinking months and total cost ($t = 1.17$, df $= 1$, $P = 0.002$). Age was also negatively related to average total cost and this was significant ($t = 3.75$, df $= 1$, $P = 0.046$). The model explains, however, only 5% of the variation in the data (adjusted $R^2 = 0.056$).

Figure 4 compares the SF-36 scores according to levels of abstinence. There is a great difference in subjective health status, and a clear and consistent gradient on each of the dimensions. The sub-group comparison reveals a very striking difference in subjective health status with the abstinent group enjoying broadly normal health status levels.

DISCUSSION

This study sought very detailed information on drinking behaviour, health service resource use, quality of life and key events from interviews with patients who had been in previous contact with an alcohol problems clinic. Given the nature of the patient population, the low interview response rate of 36% was expected, and the comparison of the resource use data for the respondents with equivalent data for the full cohort shows again, not surprisingly, that the interviewed group is biased towards those with greatest clinic and health service contact, although the age–sex breakdowns are similar. The interviewed group under-represented patients with a diagnosis of alcohol abuse.

The design of the study attempted to strike an effective balance between the ideal and the attainable. A long-term cohort study prospectively following the course of intervention and subsequent outcomes for new patients would obviously have been preferable, rather than this cross-sectional retrospective review of those who have had previous contacts with the APC. But the former would have required a very long, expensive and intrusive study, which itself might have impacted on patient outcomes and behaviour. If such a study were in future to be seriously contemplated, the current data would provide a basis for determining necessary sample size and duration. Within this retrospective approach, it would have been attractive to obtain data on resource use over a longer-period (for example 1 year), but research on patient recollection of hospitalization indicates that memory begins to deteriorate rapidly after $\sim$10 months (National Center for Health Statistics, 1965).

Despite the necessary design limitations, the interviews produced clear evidence of high rates of adverse socio-economic events and accidents, and striking data on the overall poor quality of life of patients, as measured by all dimensions of the SF-36 and its consistent relationship to abstinent days. The relationship of levels of abstinence and costs is more complex with both extremes of high and low abstinence associated with lower costs than those in between. Generally the diagnostic distinction between alcohol dependence and alcohol abuse appeared important. Alcohol-dependent patients made greater use of health service resources. Their health service costs as calculated here are on average double those incurred by abusing patients. There is also a clear distinction between the health status of dependent and abusing patients. As is customary in such studies, the estimates of cost incorporate average costs for the units of health care resources recorded on a patient-specific basis (Drummond *et al.*, 1987). No data were available on, for example, variation in length of counselling sessions. Allowing for such differences might well have slightly increased the between-patient variation in total cost.

Two implications may perhaps be drawn. First, alcohol dependence may be of greater significance than abuse in generating costs to the health service and imposing on the quality of life of patients. Studies of the natural history of the disease have shown that a progression from abuse to dependence occurs (Öjesjö, 1981). This emphasizes the costs that could be avoided in preventing the progression from abuse to dependence, and the need for effective therapies to achieve this. Second, whilst more effective treatment or support facilities for alcoholic patients may be unlikely to have a dramatic effect on the total health service costs of these patients in the short term, there would appear to be substantial scope for improving their quality of life, and reducing adverse socio-economics through achieving better control of their drinking. Longer-term follow-up might

confirm the finding of Holder and Blose (1992) that the cost of care for abstainers does decrease over time.

REFERENCES

American Psychiatric Association (1987) *Diagnostic and Statistical Manual of Mental Disorders*, 3rd edn, revised. American Psychiatric Association, Washington, DC.

Brazier, J. E., Harper, R., Jones, N. M., O'Cathain, A., Thomas, K. J., Usherwood, T. and Westlake, L. (1992) Validating the SF-36 health survey questionnaire: new outcome measure for primary care. *British Medical Journal* 305, 160–164.

British National Formulary (March 1994) No. 28. British Medical Association and Royal Pharmaceutical Society of Great Britain, London.

Chick, J., Ritson, B., Connaughton, J., Stewart, A. and Chick, J. (1988) Advice versus extended treatment for alcoholism: a controlled study. *British Journal of Addiction* 83, 159–170.

Chick, J., Rund, D. and Gilbert, M.-A. (1991) Orthopaedic trauma in men: the relative risk among drinkers and the prevalence of problem drinking in male orthopaedic admissions. *Annals of the Royal College of Surgeons of England* 73, 311–315.

Drummond, M. F., Stoddart, G. L. and Torrance, G. W. (1987) *Methods for the Economic Evaluation of Health Care Programmes*. Oxford University Press, Oxford.

Godfrey, C. (1994) Cost-effectiveness of alcohol service provision. *Journal of Mental Health* 3, 3–21.

Holder, H. D. and Blose, J. O. (1992) The reduction of health care costs associated with alcoholism treatment: a 14-year longitudinal study. *Journal of Studies on Alcohol* 53, 293–302.

Jenkinson, C., Coulter, A. and Wright, L. (1993) Short form 36 (SF36) health survey questionnaire: normative data for adults of working age *British Medical Journal* 306, 1437–1440.

Maynard, A. (1989) The costs of addiction and the costs of control. In *Controlling Legal Addictions*, Robinson, D., Maynard, A. and Chester, R. eds, pp. 84–100. Macmillan, New York.

Monthly Index of Medical Specialities (June 1994) Haymarket Publishing, London.

National Center for Health Statistics (1965) Reporting of hospitalization in the health interview survey. *Vital and Health Statistics* 2. US Government Printing Office, Washington, DC.

National Health Service in Scotland (1993) *Scottish Health Service Costs*. Information and Statistics Division, Directorate of Information Services, Common Services Agency, Edinburgh.

Netten, A. (1994) *Unit Costs of Community Care*. Personal Social Services Research Unit, University of Kent, Canterbury.

Office of Population Censuses and Surveys: Social Survey Division (1991) *General Household Survey 1989* (no. 20). HMSO, London.

Office of Population Censuses and Surveys: Social Survey Division (1994) *General Household Survey 1992* (no. 23). HMSO, London.

Öjesjö, L. (1981) Long-term outcome in alcohol abuse and alcoholism among males in the Lundby general population, Sweden. *British Journal of Addiction* 76, 391–400.

Patience, D., Buxton, M., Chick, J., Howlett, H., McKenna, M. and Ritson, B. (1997) The SECCAT Survey: II. The alcohol related problems scale as a proxy for resource costs and quality of life in alcoholism treatment. *Alcohol and Alcoholism* 32, in press.

Shuckit, M. A., Zisook, S. and Mortola, J. (1985) Clinical implications of DSM-III diagnoses of alcohol abuse and alcohol dependence. *American Journal of Psychiatry* 142, 1403–1408.

Sobell, M. B., Maisto, S. A., Sobell, L. C., Cooper, A. M., Cooper, T. and Sanders, B. (1980) Developing a prototype for evaluating alcohol treatment effectiveness. In *Evaluating Alcohol and Drug Abuse Treatment Effectiveness: Recent Advances*, Sobell, L. C., Sobell, M. B. and Ward, E. eds, pp. 129–150. Pergamon Press, New York.