Some Facets of the Epidemiology of Alcoholism

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There was once a professor who devoted half his systematic medicine lecture course to typhoid fever; its study illustrated all aspects of medicine. Alcoholism could fill that position today. Every bodily and mental system may be involved in its varied and fascinating clinical forms and it has important social consequences. It illuminates a general medical difficulty in deciding where normality verges upon the pathological. Detection may be difficult, but, once a definition is accepted, the diagnosis can be made relatively easily. Alcoholism raises problems of health education, prevention and rehabilitation, which involve doctors with social controls, fiscal programmes and political pressure groups. Alcoholism has been described as the epidemiologist’s graveyard; I shall therefore offer only a few gleanings that touch on clinical practice and a few asseverations on which every physician should ponder.

The definition of alcoholism has two limbs. First, there must be a high level of excessive drinking extending over some years. Then this drinking must produce harms. They may be somatic; these are well known. They may be psychological, arising from brain damage (and therefore somatic) or involving mood, emotions, and adjustment in personal relations. They may be social; problems such as the breakdown of family life or friendships, loss of the stability of a home, loss of employment and economic downfall. If dependence develops, either physical with withdrawal symptoms, or psychological with craving, that, too, is a harm; but it is not obligatory to the diagnosis. Given the two limbs of the definition, we see that any population can be divided into abstainers, normal social drinkers, and alcoholics. Some people restrict the term 'alcoholic' to those whose harms are clearly somatic, and use the euphemistic term 'problem drinker' for the remainder. In practice it is difficult to draw such a distinction. Some alcoholics are dependent, some manifest other harms and some both (Fig. 1).

The search for an alcoholic, therefore, involves establishing the drinking history, its quantity, frequency and style, and consideration of harms. Population surveys have concentrated on the former. Agency detection techniques look for harmed individuals among groups who have either asked for help or drawn clinical or social attention to themselves. Not surprisingly, estimates vary; quite surprisingly, they do not vary all that much. A figure for the UK of 500,000 alcoholics is relatively unchallenged. It is unlikely to be too low. The Brewers' Society has stated that, of the 40 million drinkers in this country, '98 per cent drink moderately and suffer no problems'[1]. Simple arithmetic tells us that the other two per cent amount to 800,000. The addition of those disadvantaged by an alcoholic in the home or by the bad work or absenteeism of a fellow employee, and those injured in accidents involving alcoholics, gives the much greater number who suffer the consequences of alcoholism. The Office of Health Economics estimates that the number of heavy drinkers (without reference to their being harmed) is three million; those physically dependent on alcohol are estimated at 150,000[2]. One method of quantitating drinking habits is the unit system; half a pint of beer, one glass of wine and one single measure of spirits are taken as equivalent quantities called one unit. The Royal College of Psychiatrists[3] considers that the daily consumption of eight or more units constitutes a reasonable guideline for the upper limit of drinking. Using that yardstick, and allowing for a small measure of under-reporting (which reliability studies always show) and for the lower weights of women, a recent survey[4] found that 6 per cent of men and 1 per cent of women were drinking above this level. In the age group 18-24 the figures were 13 per cent and 4 per cent. There was a considerable association between heavy drinking and those harms about which enquiry was possible.

We may conclude that an average sized general practice will contain about 30 alcoholics. Only about a tenth of them are recognised as such by their doctors, although they are known as sick individuals[5]. Owens[6], working with me in Manchester, studied random admissions to male medical wards in the four principal general hospitals. He enquired in a detailed way into both drinking
and harms. According to his criteria 18 per cent of these admissions were alcoholics and in two-thirds alcohol could be implicated in the aetiology of their medical illness. Gastroenterological disease and drug overdose were the principal clinical disorders. The medical staff were aware of the alcoholism in only half of these patients and when they did know, it was frequently not clinical acumen but the patient's history of treatment for the condition that was the indicator. Is there any other medical condition so frequent in its occurrence, so serious in its consequences, and so potentially susceptible to treatment, that physicians fail to diagnose half the times they should?

Doctors need to recognise alcoholism and should learn how to detect it. They should know how to elicit a history of drinking and how to enquire into the harms of alcohol.

The harms of alcoholism include medical disease. Professor Adams's study[7] conducted in the Manchester Royal Infirmary more than supports Owens's work, as do Jarman and Kellett[8]. In 27 per cent of admissions to Adams's acute medical beds, alcohol was considered to be a relevant factor and this was so for 16 per cent of patients with physical illness, i.e. excluding overdoses. Since medical diseases are so closely involved in alcoholism the doctor must not exclude himself, or let himself be excluded, from the processes of recognising and helping alcoholics. It is not sufficient for social workers to detect excessive drinking in their clients, and to 'counsel' them to reduce their drinking until physical and psychological illnesses have been excluded. It is not sufficient to rely on Alcoholics Anonymous, however large and helpful its impact, to provide the anti-alcoholic services of this country. Doctors must be involved in the evaluation of each alcoholic.

Alcoholism causes considerable morbidity and mortality. Deaths occur principally from liver disease, suicide, accidents and violence. The effect of alcohol is indeed shattering, as an advertisement claimed. Nowadays the language is wiser; the same company writes: 'Remember, whatever happens, don't overdo it.'

Detection is best done clinically, yet Murray-Lyon's team[9] discovered that doctors did not take drinking histories from patients even when their medical knowledge surely indicated the need. It will be a relief to clinicians to learn that their diagnostic difficulties will be overcome by easily learned clinical skills. Tests are not as good. There is indeed some competition between testers. The haematologically or biochemically inclined know that a raised mean corpuscular volume, not otherwise explainable, suggests alcoholism, as does an elevated gammaglutamyl-transferase. Surprisingly, blood alcohol estimates are rarely asked for, although a high value must have strong implications. Those with a broad view of the consequences of alcoholism prefer detection by questionnaire. Of these, the best is the Michigan Alcohol Screening Test (MAST)[10], but it consists of 25 questions and there is no concealing from the patient what they are getting at. The CAGE test[11] consists of only four questions but is less reliable, yielding both false positives and false negatives. No published study has yet reported on the administration of both the blood tests and the questionnaire tests to a population suitable for screening.

Dodwell[12], in my department, has piloted such an investigation on populations of known alcoholics, and questionnaires emerged as much better detectors than blood tests.

Alcoholism is worth detecting. About a third of all alcoholics can be rendered abstinent and another third can reduce their drinking and be re-established in better social circumstances. Although, curiously, there is little evidence to confirm the point, I maintain that it must be worthwhile to detect the condition early. This is because of a singularity about alcoholism that makes it interestingly different from the generality of illnesses, for which we learn separately the pathological picture, the causes and the consequences. In alcoholism the causes and the consequences are largely one and the same, for the consequences lead to even more drinking (Fig. 2). The

![Fig. 2. Relationship of causes and consequences of alcoholism.](image-url)

drinker who develops dependence consequently drinks even more. Someone who drinks a lot may become somatically damaged and as a result may perform less well. This, in turn, often drives him to drink more. Similar vicious circles occur because both social disturbances and psychological problems can result from excessive drinking and can give rise to it. Moreover, any one vicious circle is likely to feed into another. That excessive drinking sets up circumstances predisposing to even more excessive drinking has profound implications for prevention. It forces doctors to look not only at the alcoholic harms but at the drinking itself. The importance becomes clearer as we consider causal factors separately.

A possible genetic influence emerges from twin studies and, more especially, from adoption studies[13]. Those with alcoholic biological parents, and who are adopted into non-alcoholic families, have an incidence of alcoholism approximating to that of their biological siblings and higher than that of their adoptive siblings[14, 15]. What is inherited seems to be an abnormality of alcohol metabolism, although there may also be a predisposition to depression to which the excessive drinking is secondary. This evidence implicating genetic factors is recent.
Alcoholism running in families used to be ascribed more to example than to genes. Nevertheless, example exerts a powerful influence, as do other environmental factors such as occupation and opportunity. These factors explain the high rates of alcoholism found in the drink industry and the catering trade. The relatively high prevalence among doctors stems, I am inclined to believe, not so much from the affluence or stresses of doctors’ lives as from their having spent five formative years as students in a culture in the habit was learned by example.

In the aetiological triad host factors and environmental factors are neatly tied in with agent factors—alcohol itself—by the vicious circles I have shown in Fig. 2. I developed that model to make clinical sense of data that revealed a strong correlation between national consumption of alcohol and the prevalence of alcoholism. Between-country comparisons and secular trends within a country both show conclusively that the greater the overall consumption, the greater will be the number of alcoholics. In the UK there was an 87 per cent increase in alcohol sales between 1950 and 1976. (Fortunately they are now falling slightly; every recessional cloud has a silver lining.) The increase in consumption has been paralleled by increases in admissions to both general and psychiatric hospitals of patients with a diagnosis of alcoholism or an illness consequent upon it, and by an increase in mortality from alcohol-related diseases. Criminal offences associated with drinking, the only type of social harm that can be accurately measured, have also increased. Consumption figures are inversely related to cost as a proportion of total disposable income (Fig. 3), consumption rising as price, in real terms, falls. The public health message of these data is clear. It is also challenging. If each one of us drank less there would be fewer alcoholics.

The amount we drink can be determined by public action. It might be decreased by health education, just as it is probably increased by advertising, but if the idea of health education is attractive its effectiveness is unproven. Some control could be exercised by means of the licensing laws, but the simplest, most effective measure would be price control. Is that what we, as doctors, should be urging? The £10 bottle of whiskey? Physicians cannot shut themselves away from considering public policy that affects health. Should we, for the sake of the public health, look forward to paying very much more for our College ‘dinner with wines’? Or for the sake of our own health? It is no secret that the new Health Committee of the General Medical Council has mainly been concerned with alcoholic doctors. Public health matters are always more disturbing when they touch one personally. You may well think that, because we are doctors, knowledge of the adverse consequences should be sufficient to limit our drinking. Yet the evidence is the other way. Our profession has a high prevalence of alcoholism. Do we never learn?

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