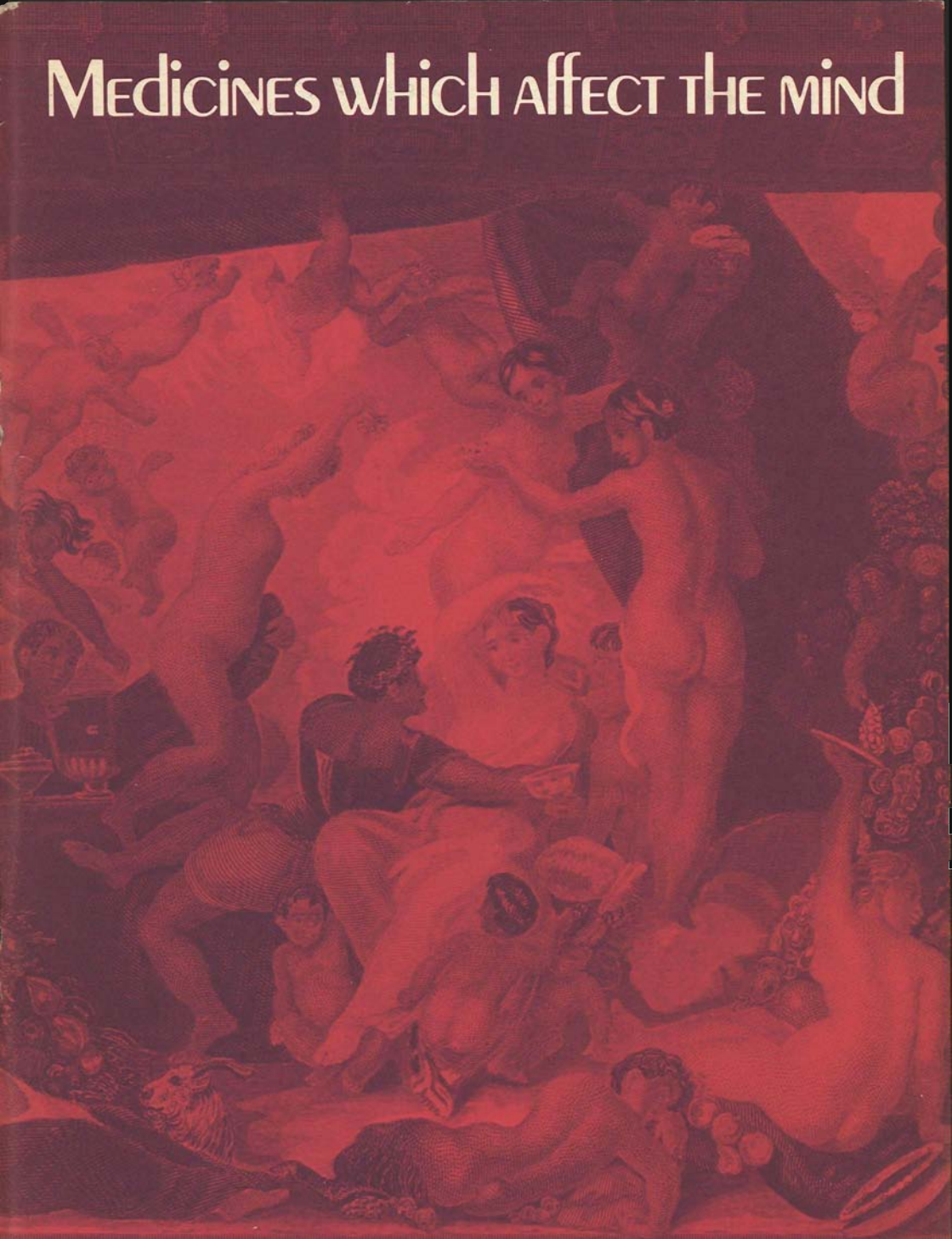
Medicines which affect the mind



INTEMPERANCE

Mind

. . . The seat of consciousness, thoughts, volitions, and feelings; also, the incorporeal subject of the psychical faculties; the soul as dist. from the body ME. . . .

Oxford English Dictionary.

Cover 'Intemperance' from a sketch by T. Stothard.
Courtesy of Mary Evans Picture Library.

Medicines which affect the mind

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Introduction

Mankind has used mind affecting drugs throughout and probably for many thousands of years before recorded history. In European culture alcohol, tobacco, caffeine and to a lesser extent opium have played particularly important roles as psychoactive agents; but in other parts of the world a wide variety of alternative intoxicants, stimulants and hallucinogens have been employed. These include cocaine, mescaline and cannabis.

Such substances have frequently been of considerable importance to the societies or social subgroups in which their use has been permitted. Control over access to the dominant drugs of a culture has often acted as a focus of authority whilst the experiences they promote have been seen as providing mystical insight as well as direct pleasure. At times they have also been thought to have military or economic significance through their capacity to remove or at least dull normal fears and inhibitions or to alleviate fatigue.

The dividing line between the hedonistic use of drugs and their medical application is often less distinct than it is usually assumed – a point which can be well illustrated with regard to opiate consumption in Victorian Britain as described by de Quincey and subsequent writers. The relief of minor physical or mental discomfort by psychoactive substances (or indeed analgesics) will be seen as either necessary medication, arbitrary self indulgence or fashionable habit according to the values and knowledge of the day. However in certain cases, such as the use of rauwolfia (containing reserpine) in ancient Indian Ayurvedic medicine to treat some forms of psychotic disturbance, therapeutic intent can be clearly discerned regardless of cultural factors.

The development of modern pharmacology has considerably increased the stock of medically as opposed to socially employed psychotropics available, although some of the former may of course be subject to the same uses or, depending on the view of the observer, abuses as the traditionally available drugs.

The impact of the new anxiolytics, neuroleptics and antidepressants of the last two decades has been such that some authorities regard their significance in terms of the relief of human suffering as equivalent to the benefits associated with the antibiotics in the 1940s and 1950s. Yet other informed individuals see the recent expansion of psychiatric treatment based on tranquillisers and kindred medicines as a significant threat to the quality of care for the mentally ill or distressed.

This paper examines some of the reasons for this dichotomy of view and argues that an extreme polarisation between the protagonists of psychotherapy and those of psychiatric chemotherapy is inappropriate in the light of modern knowledge about the causes and nature of mental ill-health. In analysing the data relevant to public concern over the use of psychoactive medicines it also attempts to clarify the distinction between 'medical' and 'social' psychotropics.

THE CONCEPT OF MENTAL ILLNESS

Anxiety and depression, the states of mind which characterise the great majority of cases of diagnosed mental illness, are in the main normal moods which everyone experiences from time to time. Indeed, the capacity to do so may have played a significant part in mankind's evolution and survival against environmental threats.[1] It would be absurd to regard all individuals who sometimes experience non-incapacitating but nevertheless unpleasant states of mental distress as psychiatrically ill and in need of treatment. Not only might the results be considered undesirable in that they would very probably involve the 'medicalisation' of essentially social problems, the causes of which may be obscured by an assumption of individual ill health, but they could also be economically disastrous, throwing an unacceptable load on to the health service's capacity for psychiatric care.

On the other hand certain forms of anxiety can be both acutely distressing and socially disabling whilst some depressive episodes generate so much misery that the sufferer eventually kills him or her self. Major psychiatric disturbances can completely destroy an individual's ability to live a satisfactory life. Although even some forms of severe mental distress may be

1 The capacity to maintain a condition of high arousal (which exists in anxiety states) may, for example, serve to the considerable advantage of individuals living in primitive circumstances who may be subject to sudden physical attack or who themselves may need to hunt their food. Depressive reactions may curb tendencies towards excessive individualism amongst people living in small, close knit groups in that they may be triggered by the loss of self esteem generated by the withdrawal of group approval which may occur when an individual breaks social norms. In communities such as small nomadic hunting groups which are entirely dependent on activities requiring close co-operation such mechanisms of reinforcement of the stability of the social order could provide some selective evolutionary advantage.

quite 'normal' in the short term (as in the response of many individuals, for example, to bereavement) where they persist over longer periods of time it is reasonable to suggest that mental illness exists. Similarly where individuals seem to loose their ability to perceive the world in the same way as the great majority of their contemporaries do, as in cases of schizophrenia, it generally appears justified to conclude that they have become sick.

Yet such terminology should always be used with caution. For example, to regard many mentally distressed people as 'sick' or 'ill' in the sense that these words are commonly used in everyday life in the context of acute physical conditions may well be inappropriate. Avoidance of or recovery from mental illness depends frequently not on 'beating it off' like an infection but instead in adjusting to a more acceptable way of life or acquiring a more complete self-knowledge, with or without the aid of medicines and psychotherapy.

Thus even where mental disturbances clearly owe their origin primarily to physiological factors as in, say, organic dementia amongst elderly people, they cannot be understood fully except in the light of the social and psychological factors influencing the behaviour of affected individuals. This is of course the case with most other forms of illness, although perhaps not to the same degree. Hypertension, for instance, may be related to psychological factors and is to some extent amenable to treatment by psychological interventions (*Lancet* 1975). But it is also measurable in an objective sense which differs from the techniques of observation used to identify the occurrence of psychiatric morbidity.

The development of the social sciences since the beginning of this century has helped to increase awareness of the extent to which abnormal behaviour may be regarded as evidence of mental illness simply because it deviates from the expectations and values of those observing it rather than because it is associated with distress on the part of the individual exhibiting it. Diagnoses in such circumstances often involve the assumption that the individual concerned lacks insight into his or her condition as measured by the supposedly 'objective' standards of the society in which the person concerned happens to live.

The use of psychiatry to impose on a community an absolute concept of normal behaviour, deviance from which is prevented by 'treatment', may obviously be regarded as a mechanism of social control. Although in cases where individuals present a genuine threat to those around them such action may be legitimate in extreme circumstances it may seriously erode

political freedom. More prosaically the extension of psychiatric care may have some dangers with regard to, say, the education services. Children who may simply be bored or unhappy and who therefore indulge in behaviour outside the norms imposed by school authorities may sometimes be exposed to potentially damaging chemotherapy or psychotherapy on the strength of diagnoses such as 'hyperactivity'.

Postulations along these lines have led some commentators, like Thomas Satz (1973), to argue that in some senses the concept of mental illness is a myth largely perpetuated by people who purport to cure it. Although the reality and gravity of the more handicapping forms of psychiatric morbidity are undeniable, such arguments are to an extent supported by evidence relating to the social determinants of mental illness and by numerous surveys indicating the looseness with which terms like schizophrenia are sometimes used.

This 'anti-psychiatry' stands in contrast to other extreme approaches to the understanding of mental illness, some of which centre on psychotherapeutic disciplines like psychoanalysis and others on exclusive genetic and biochemical explanations of mental disorder.

However, the weight of neurobiochemical, epidemiological, sociological and psychological information which today exists with regard to the genesis and experience of the major psychiatric conditions suggests that a unified approach to mental illness would be far more productive than the pursuit of individual and conflicting disciplinary theories. It is beginning to be more widely recognised that physical, social and other factors join in a synergistic relationship to determine an individual's mental threshold of acceptance for particular types of stress.

Hence psychiatry today is in a considerable state of flux. The inadequacy of much of the traditional terminology in this field, for instance, is now generally accepted although much of it is still generally used, if only for convenience. (Table 1 provides a brief explanation of some commonly encountered phrases and disease states.)

Knowledge about many forms of mental illness is still at a stage where treatment is based essentially on empirical experience rather than on fully developed theoretical explanations. The use of psychoactive medicines since the Second World War provides several examples of the former approach to therapy, although the subsequent studies into why and to what extent psychotropics are effective are now contributing significantly to our understanding of mental disturbance at a fundamental level. This is so not only in fields such as biochemistry but indirectly in

Table 1 *Some commonly encountered terms and disease states in psychiatric medicine*

Anxiety

Anxiety is one of the most commonly used terms in psychiatry. It refers to an unpleasant emotional state, characterised by a sense of dread, foreboding and above all fear. Where it differs from the latter in normal experience is that in its pathological forms it is frequently not immediately associated with any rationally identified threat to the individual concerned. The physical symptoms are as with fear. They include raised heart beat, sweating, flushing, nausea and a high micturition rate.

The available literature suggests that at any one time a third of the population will have a raised level of anxiety although clearly the great majority of these people remain within acceptably 'normal' levels of distress. Where anxiety can be traced to external stress the most appropriate treatment would of course be to remove or lessen the latter. This is, however, often difficult to achieve and may in any case be of little short term help to the individual experiencing discomfort. Anxiolytic medicines are therefore frequently employed. Each year about one man in ten and one woman in five now takes such preparations in Britain.

Depression

Like anxiety the term depression can range in its meaning from a normal mood of moderate discomfort to a clinical state of life threatening seriousness. In its morbid forms depression is characterised by the loss of an individual's sense of his or her own value and ability to enjoy any aspect of life. Associated symptoms include inability to concentrate, insomnia and weight loss.

Extrapolating from current figures it is estimated that between a million and a million and a half people in Britain have suffered or are suffering depression seriously enough to enter hospital for treatment during their lifetimes. Over half a million people are treated for depression each year by family doctors whilst perhaps ten times that number experience depression to some degree but do not seek treatment.

There has been a traditional conceptual distinction between endogenous, internally generated, depression (normally more serious and thought of as a psychotic condition) and exogenous or reactive depression (normally thought of as a neurotic complaint). In practice this separation is often blurred. Yet in many instances it is possible to identify manic (bi-polar) or uni-polar depression occurring with a regular periodicity and with apparent genetic links as opposed to other cases where a depressive episode is an isolated event clearly linked to some external cause.

In the latter circumstances minor tranquillisers may be of short-term value in assisting affected individuals to live through their temporary distress. Failing these an antidepressant should be employed. Where possible, of course, every attempt should be made to remove the external source of distress. In dealing with genuine depressive psychoses a psychotherapeutic or social approach is often of little directly curative value and sustained chemotherapy is usually the most desirable approach. In very severe and otherwise intractable cases many experts still believe electro-convulsive therapy to be the treatment of choice, despite risks such as selective amnesia.

Hysteria

It is now widely argued that hysteria as a discrete psychiatric entity is a dubious concept and that it is preferable to think of it as a syndrome which may occur in association with any form of mental illness or distress. It is normally thought of as an attempt on the part of an affected individual to cope with the world either by the distortion of reality (dissociation) or by avoidance of his or her situation through the development of an intervening hysterical symptom (conversion). Typical forms include selective loss of memory and hysterical paralysis.

Some forms of hysteria appear as social events, that is to say that they may strike at particular communities or sections of a community (like a school) and spread like an epidemic. There is also some suggestion that hysterical syndromes may be culturally defined and more prevalent in relatively primitive communities.

Mania

Manic states are characterised by extreme physical and/or mental activity which often eventually give way to disorganisation of thought and eventually result in undesirable behaviour of some type (such as excessive spending or ill-advised sexual adventures). Although initially patients may be free from depression most eventually experience it, their mood swinging from one extreme to the other. This complicates the management of such cases, as does the fact that few sufferers realise that their condition is abnormal (and thus some people would argue should not be regarded as an illness in need of treatment unless it imposes severe distress on others). Lithium salts are now used to control manic states either prophylactically or during acute attacks.

Neurotic Conditions

These include all the forms of anxiety, hysteria, phobia, obsession and depression which are in theory at least defensive reactions against external stresses or inner conflicts. They are estimated to significantly affect 15 per cent of the population. They are traditionally separated from the psychoses in that the experiences and behaviours related to them are said to be quantitatively rather than qualitatively different from those of everyday life. Most sufferers are aware of being in an abnormal state. The prognosis for such complaints hinges to a great degree on the availability of suitable means of environmental manipulation to remove sources of stress.

Operant Conditioning

This term refers to learning induced by the rewarding (reinforcement) of desired behaviours (operants) and/or the negative reinforcement of undesired ones by punishment or simply lack of reward.

The success of such conditioning, which is of course based on behaviourist theories, depends to some considerable extent on a sensitive awareness of the overall meaning for and intent of acts on the part of the actors concerned.

In some cases therapies involving punishment may seem justified, although such regimes involve a risk of brutalising those who administer them and repressing desired as well as undesired behaviour in the subjects.

Organic Brain Reactions

Organic brain reactions are commonly characterised by symptoms such as memory impairment and loss of intellectual ability or the retardation of its development. They may be caused by events ranging from trauma to infections to metabolic abnormalities to the growth of neoplasms, although the most common syndrome is that associated with senile degeneration. Roughly 10 per cent of all people aged 80 or over are affected by senile dementia. As a group they represent one of the largest in need of intensive psychiatric/supportive care and one which will grow still larger in the future.

It should be noted that certain organic diseases may provoke mental disorders. For instance, an attack of influenza may cause a subsequent depression or surgical operations on elderly patients may induce post operative confusion or psychotic disturbance. Such illness should not be confused with organic syndromes as such or with the original condition.

Phobic States

Phobias are a form of anxiety in that they are characterised by a persistent sense of fear, although this is not free floating but is associated with some object or event which is not in rational terms a significant threat to the person concerned. Phobias may occur alone or in combination with other psychiatric symptoms, and can severely affect a person's life. The most common form is agoraphobia (fear of going out) which is probably experienced by over a quarter of a million people in this country, most of them females in their twenties and thirties.

Psychoanalysis

Strictly speaking the term psychoanalysis refers to the form of psychotherapy (treatment based on psychological rather than physical techniques) initiated by Freud. However, the separate approaches developed by his near contemporaries like Jung and Adler are also sometimes loosely referred to as psychoanalytical techniques.

Psychopathic Disorders

A term which is today widely regarded as obsolete, 'psychopathic' has been used to describe individuals whose behaviour is antisocial in that it may be, for example, abnormally aggressive. Clearly there is a large normative component in the judgements involved, although doubtless the condition of many of the individuals who have been so described also relates to more clearly defined forms of psychiatric morbidity. Disorders described as psychopathic tend to show a familial pattern of incidence, probably due in part to 'cycles of deprivation' affecting socialisation, although there may of course also be a genetic component in the overall psychopathology.

Psychotic Conditions

The term psychosis refers usually to the more serious and conspicuously disabling types of mental illness, the symptoms of which are well outside normal experience. The schizophrenias and the more severe types of depression and mania (affective disorders) are included in this category. At any single moment

it is likely that 1 per cent or more of the total population is affected by such a condition. Although treatment has greatly improved in recent years the psychoses are now arguably the greatest threat to an enjoyable, healthy life presenting to the population of working age in developed countries.

Schizophrenia

Schizophrenia is a term which should not be taken to refer to a single disease but to a number of related states, all of which to some degree involve the fragmentation or disordering of the normal pre-morbid personality and/or perceptual experience. The pioneer taxonomist of psychiatric conditions Kraepalin identified four categories of schizophrenia – paranoid (involving delusions of persecution), catatonic (involving periods of total withdrawal and sometimes also of over excitement) hebephrenic (characterised by bizarre emotion or thought) and simple, where there is an insidious progression towards abnormal behaviour and social handicap. Diagnosis is often complicated by intercurrent psychiatric symptoms such as depression, in which case individuals may be said to suffer a schizo-affective disorder.

Occasionally individuals under severe stress suffer a transient schizophrenic episode but usually the disease is long lasting, twin studies suggesting that there is a genetic element involved in many cases. Extrapolations from available statistics indicate that these are approaching half a million people in Britain who have at some time in their lives suffered a diagnosis of schizophrenia.

Roughly speaking a third of all diagnosed cases suffer chronic illness and severe social disability, a third an episodic course with remissions and the remainder recover stability over long periods. The major tranquillisers are of value in controlling acute attacks and in preventing relapses, although the costs of side effects (which can be very serious) should be weighed against the benefits gained. Friendly social support may be of considerable use to those handicapped by schizophrenia, although over protection might exacerbate their condition.

more unexpected areas like the sociology of psychiatric disorders. For example, the increasing use of minor tranquillisers in cases of ill-defined neurotic disturbance has served to concentrate the attention of social scientists on this area of medicine. Their consequent investigations may help to define social pressures which affect the structure of mental health care and clarify the nature of mental 'illness' in circumstances where its physiological component may be relatively trivial.

Psychotropic medicines

The development of mind affecting medicines during the course of the last few decades has hinged mainly on the synthesis of chemical compounds not found in nature, a factor which serves

to distinguish modern as opposed to traditional psychopharmacology. The first important advance in the former was the discovery of barbituric acid in the 1860s and subsequently of barbitone and phenobarbitone, which at the turn of this century started to supersede chloral hydrate (first produced by von Liebig in 1832) as the most commonly used hypnotic. The barbiturates were also prescribed as tranquillisers and are still employed in areas like the treatment of epilepsy. Their introduction was followed in the 1920s by the development of the amphetamines, which have stimulant properties.

With the benefit of hindsight both the barbiturates and the amphetamines may be seen to have had significant disadvantages associated with their use, although during the first half of this century these were not fully perceived. Indeed, it is often forgotten how radically knowledge of adverse reactions associated with medicines has advanced since the Second World War and how far reaching has been recent legislation such as the 1968 Medicines Act. Today's problems with regard to the use of psychotropics can be put into historical perspective when it is remembered that until the 1920s drugs like tincture of opium and cocaine were freely available 'over the counter' from pharmacists and that the same applied to the barbiturates until the 1930s. Amphetamines were on restricted sale in this country until the 1950s as were certain of the early minor tranquillisers.[2]

Recent advances in this and every other field of pharmacology must thus be seen in the light not only of very much more stringent tests of safety and efficacy than were applied in the past but also of increased care regarding the employment of medicines once their use has been officially approved. The remainder of this section describes briefly the biochemical effects of mind affecting medicines as a preliminary to a discussion of some broader issues relating to the desirability of their widespread use.

The role of neurotransmitters

The passage of impulses from one nerve cell to another is effected by chemicals known as neurotransmitters which are stored in reservoirs near the nerve endings and released into the synaptic gap, the space between nerve cells, at the appropriate moment and then swiftly broken down or re-absorbed. The existence of

2 'Oblivon' in the 1950s was an obvious example. Medicines containing morphine in low concentrations are still on free sale. Access to opiates in relatively large quantities for animal husbandry has only been controlled since the Medicines Act.

such substances was postulated at the turn of this century but it was not until 1921 that Leowi conclusively showed the existence of chemical transmitters in an experiment on frogs' hearts. This first neurotransmitter to be demonstrated was shown to be acetylcholine, a substance found throughout many parts of the nervous system.

Since that time a variety of other substances, including adrenalin and noradrenalin, dopamine, serotonin, histamine, glycine, glutamic acid, aspartic acid, gamma-aminobutyric acid and the prostaglandins have all been shown or strongly suspected to be neurotransmitters. Of these dopamine, noradrenalin and serotonin are, in addition to acetylcholine, believed to be of particular importance with regard to the functioning of the brain.

The different neurotransmitters have discrete roles within the nervous system, although these may sometimes be closely complementary to one another. For example, noradrenalin and acetylcholine to some extent balance their actions, the former promoting nervous system responses which are held in check via a system operated by the latter. Modern psychopharmacology has concentrated on developing means of adjusting neurotransmitter balances and/or concentrations and it is in terms of this area of neurobiochemistry that the actions of most psychoactive medicines are currently explained.[3]

Some psychotropics achieve their effects, in part at least, by acting as false transmitters. Thus the amphetamines may indirectly mimic the actions of noradrenalin within the nervous system as may possibly LSD those of dopamine, although LSD also has other significant effects particularly with regard to serotonin mechanisms. Most medicines used in psychiatry do not, however, work primarily in this manner. Rather they tend to alter the effective availability of the natural transmitters through accelerating or decelerating the rate of their release, breakdown, synthesis or re-uptake into the nerve cells.

The first of the major new psychotropic medicines developed after the Second World War, chlorpromazine, acts to reduce the

3 Yet it would be wrong to suggest that the only field of research into mind affecting drugs is that which relates to neurotransmitters. There has also been some considerable interest in the distribution of electrolytes such as sodium and potassium within the nervous system, although at the present time there is no clearly authenticated picture of their significance. And currently some researchers are examining the significance of endocrine (hormone) imbalances in the aetiology of some forms of mental disorder. For example, it has been suggested that one of the fundamental abnormalities in depressive illness is a dysfunction of the hypothalamus which itself plays a role in facilitating or inhibiting the release of tropic hormones from the pituitary.

effects of dopamine, probably by blocking its access to appropriate receptors. In schizophrenia, broadly speaking, one of the major biochemical characteristics is now widely believed to be a relative or absolute excess of dopamine in certain parts of the brain. Thus chlorpromazine, which belongs to the general family of phenothiazines, controls this affliction to some extent.

The discovery of chlorpromazine's psychoactive properties, which were first noted by French researchers in 1952, stimulated much further work into other possible new antipsychotics. The medicines which followed chlorpromazine are known as neuroleptics or major tranquillisers (and are described in Table 2 together with others now commonly used in psychiatry). In fact the latter title is somewhat misleading in that although certain of these medicines are of value in controlling the manic phase of manic depression or hyperactivity in some forms of schizophrenia others may stimulate withdrawn or inhibited schizophrenics into more normal, animated, contact with the world.

It was also in the early 1950s that it was first observed that iproniazid, a medicine at that time being used in the treatment of tuberculosis, caused a euphoric reaction amongst many of the people receiving it. Shortly afterwards research showed that this was due to the inhibition of the enzyme monoamine oxidase, which breaks down biogenic amines such as noradrenalin and serotonin inside the nerve cells. Its inhibition therefore raises the levels of these neurotransmitters with, apparently, consequent antidepressant effects. Monoamine oxidase inhibitors (MAOIs) thus became established in this field of psychiatric medicine.

In 1957 trials with imipramine, which is similar in structure to the phenothiazines[4] and was originally developed in the hope that it would be effective in treating schizophrenia, showed that it too had an antidepressant effect. This is probably associated with the prevention of the re-uptake of noradrenalin and serotonin.

And so by the end of the 1950s there were two groups of medicine,[5] the MAOIs and the so-called tricyclics, available for the treatment of depressive psychoses and, where effective, neuroses, whereas previously electro-convulsive therapy was all too often the only means of relief. These medicines are effective in about three-quarters of the cases of severe depression encountered today. Since then there have been a number of other advances in this area, including the use of lithium salts both in

4 As with the phenothiazines drugs like imipramine are based on a three ring structure, although the former have a 'flatter' molecular geometry.

5 Older sympathomimetric stimulants such as dextroamphetamine sometimes alleviate depressive episodes although their value is limited.

Table 2 *Types of psychotropic medicines and 'social drugs' in common use*

Group and specific examples	*Comments*
Antidepressants (Psychic energisers, thymoleptics) Tricyclics: Imipramine, nortriptyline, clomipramine MAO Inhibitors: Iproniazid, phenelzine, isocarboxazid Others: Viloxazine, maprotiline, (amphetamines) Lithium	The tricyclic antidepressants are of three main types. Some have a sedative action and are particularly potent in cases of anxiety associated with depression (like amitriptyline). Others, the demethylated derivates like nortriptyline, enhance the drive and energy of depressed people. And the third group, which consists of tricyclics like clomipramine, affect the mood of depressed individuals, probably because of their special action on serotonin uptake. The MAOIs are not simply alternatives to the tricyclics. Studies indicate differential responses to such medicines which probably stem from genetic and related biochemical variations in the aetiology of depressions. In the past sympathomimetic stimulants like dextroamphetamine have been used to treat depression in some forms, although amphetamines are not now normally used. Certain other stimulants are, however, occasionally employed. Lithium salts are used in the prophylaxis and treatment of mania and in the prophylaxis of manic depressive disease. Their mode of action is probably complex. It may in part relate to competition and substitution between lithium and sodium ions in various parts of the nervous system and perhaps also to a catalytic effect on the action of the enzyme monoamine oxidase.
Anxiolytics (anxiolytic sedatives, minor tranquillisers) Benzodiazapines: Chlordiazepoxide, diazepam Carbomates: Meprobomate, tybamate Others: Chlormezanone, hydroxyzine, (barbiturates) Alcohol as a social drug	Anxiolytics reduce pathological anxiety, tension and agitation. They have no direct antidepressant effect although they may serve to relieve the distress surrounding depressive reactions, at least in the short term. Whether an anxiolytic action should be regarded as distinct from sedation is sometimes disputed. Perhaps the most sensible approach is to remember that these psychotropic medicines affect various functions of the CNS and to varying relative degrees, depending on

Anxiolytics *(continued)*

dosage and form of delivery. Hence their action varies with the circumstances of their usage.

The action of certain barbiturates in limited doses is in some ways similar to that of medicines such as the benzodiazapines and in the past they have been employed in cases of anxiety. Today, however, such a use is to be discouraged.

Alcohol in modest amounts may limit anxiety without marked intoxicating or hypnotic action.

Hypnotic Sedatives

Barbiturates: Barbitone, phenobarbitone, amylobarbitone, hexobarbitone
Non-barbiturates: Chloral hydrate, glutethimide, methaqualone, nitrazepam
Alcohol as a social drug

Barbiturates, despite their toxicity and dependence inducing properties, are still widely prescribed as hypnotics. They differ widely in their safety margins and duration of action, those of intermediate length action being the most suitable for use as hypnotics in that this reduces 'hangover' effects, which may be particularly serious in elderly people. In recent years safer medicines like the benzodiazapines have been more widely employed as hypnotics, although even their use has been questioned. It is probable that all such drugs affect natural sleep, possibly with some undesirable consequences.

Alcohol is sometimes recommended as a sleep-inducer in preference to medically prescribed substances. However, it too can cause dependence and the sleep disturbance effects associated with it are marked.

Neuroleptics
(Major tranquillisers, ataractics, anti-psychotics)

Butyrophenones: Haloperidol, trifluperidol
Phenothiazines: Chlorpromazine, thioridazine, fluphenazine
Thioxanthenes: Thiothixene, chlorprothixene
Others: Rauwolfia alkaloids, diphenylbutylpiperidenes, dibenzothiazepines

The various phenothiazines and related medicines differ in their relative sedative or stimulating effects and in the level of extrapyramidal dysfunction associated with their actions. For example, the butyrophenones and the piperazine phenothiazines are particularly valuable in treating withdrawn schizophrenics whereas phenothiazines with a dimethylaminopropyl side chain, like chlorpromazine, have more marked sedative properties.

Rauwolfia alkaloids are not now normally prescribed, partly because of the risk of severe depression induced by brain amine depletion.

Psychodysleptics
(Hallucinogens, psychedelics, psychotomimetics)

Lysergide (LSD)
Dimethyltryptamine
Harmine
Mescaline
Psilocybin
Cannabis
(Mostly used as illegal social drugs)

These substances produce abnormal mental responses which resemble some of the symptoms of psychotic states. Some, such as lysergic acid diethylamide, have been used as adjuncts to psychotherapy although there are risks attached to their consumption and the therapeutic value of such measures is unproven.

Cannabis was used medically in nineteenth century Britain but is no longer so employed. It has been claimed that there are significant risks associated with cannabis use although these have in the main been considerably exaggerated. In some circumstances the drug may have psychodysleptic effects, but these are not frequently encountered amongst moderate users in any serious form.

Psychostimulants
Amphetamines:
Dextroamphetamine, methamphetamine
Others: Fencamfamin, pemoline pipradol
Caffeine and nicotine as taken in cigarette smoking as social drugs

Medicines with a stimulant effect on the central nervous system are frequently categorised with anorectics (appetite suppressants). This can, however, be misleading. For example, the appetite suppressant effect of amphetamines is probably independent of any increased metabolic stimulation due to sympathomimetic action. And certain other anorectics, such as fenfluramine, may have no CNS stimulant effect whilst certain stimulants have no anorectic action.

There is a danger of misuse and dependence associated with stimulants, although this may have been exaggerated.

In the form of tea and coffee and through smoking most of the population uses stimulants in the form of social drugs on a daily basis.

the direct treatment of mania and the prophylactic (preventive) control of manic depression and the introduction of further new types of antidepressant. These generally appear to have a therapeutic action similar to that of the tricyclics coupled with advantages such as reduced side effects or contra-indications and a greater speed of action.

Other significant developments during the past decade included the introduction of long acting ('depot') neuroleptics which have proved of considerable value in treating individuals with schizophrenia who might otherwise fail to comply with therapeutic regimes (Daniel 1968). And increased knowledge about the neurobiochemical regulation of the circulatory and respiratory systems has been applied to the treatment of some forms of anxiety, or rather the physical symptoms associated with such conditions.

However, by far the most widely discussed of all the more recent innovations in psychopharmacology since the beginning of the 1960s has been the introduction of the benzodiazapines, which are now the most widely employed of all psychotropic medicines. They emerged after a long search for safer alternatives to the barbiturates and for improved anxiolytics. This led to the introduction of meprobomate in the 1950s and, at the end of that decade, thalidomide, which tragically led to the birth of several hundred congenitally handicapped children in this country alone.

The action of the benzodiazapines is in some ways similar to that of the barbiturates in certain parts of the brain, although their effects are more specific and localised. Turnover of CNS noradrenalin, serotonin and dopamine is reduced, although concentrations within the brain remain at normal levels (Lidbrink *et al* 1973). Other changes, as in the rate of carbohydrate metabolism in the brain, are also apparent. It should be noted that even the more commonly prescribed benzodiazapines are believed to have muscle relaxant as well as anxiolytic or sedative properties. This is not always explained to patients who may resent being prescribed a 'tranquilliser' for a reported minor rheumatic pain if they are unaware of the therapeutic rationale.

Safety and side effects

The thalidomide tragedy has strengthened public, professional and governmental awareness that there are hazards associated with any form of new medical intervention which may be difficult to predict. This is not to argue that pharmacological or other

medical progress should be halted but that a careful analysis of the potential risks and benefits of any new medicine should always play a strong part in guiding policy regarding its introduction.

The problems inherent in reaching a balanced judgement in such areas are, however, immense. In the case of thalidomide itself, for instance, although the costs of its general use in terms of its teratogenic effects were in the event totally unacceptable it did have the advantage of being the first (and for some time the only) hypnotic which was not lethal in large overdoses. It is paradoxical that the delay in approving the use of benzodiazapine hypnotics (which are also relatively safe) in the USA as compared to Britain probably led to about 3,700 avoidable deaths because other more dangerous drugs were employed (Wardell 1974), including those of 50 children. Yet because of similar delays America avoided the earlier thalidomide tragedy.

In fact all the more widely used psychotropic medicines expose the people who consume them to some degree of risk. The neuroleptics, for instance, can have toxic affects which may cause jaundice or mental confusion as well as causing a form of Parkinsonian syndrome, although this is reversible on withdrawal of the treatment. The tricyclic and MAOI antidepressants may react together or singly with other chemical substances with undesirable consequences ranging from minor discomfort to death. Perhaps the best known of these is the 'cheese' reaction in the case of MAOIs. Tricyclics in particular may cause cardiac abnormalities. The barbiturates often cause dependency and have been a commonly employed vehicle of suicide. And the imprudent use of lithium salts can lead to serious poisoning.

Hence it is essential that these medicines should be medically prescribed and their intake carefully monitored. Yet despite the fact that it is clearly desirable to advocate the cautious and rational employment of psychotropic medicines it would be wrong to do so in such a way as to deny their potential value to many people within the population. The problems associated with phenomena like patient non-compliance in the consumption of such drugs, particularly in cases of psychotic disturbance, may often be as serious as those which stem from the possible abuse of medicines.

It may also be argued that in some cases excessive controls over relatively safe medicines might be undesirable. This view is discussed in the context of benzodiazapine usage later in this paper, although even with this group of medicines problems associated with somnolence, paradoxical stimulation (mainly in

elderly people) and psychological dependence occasionally occur.

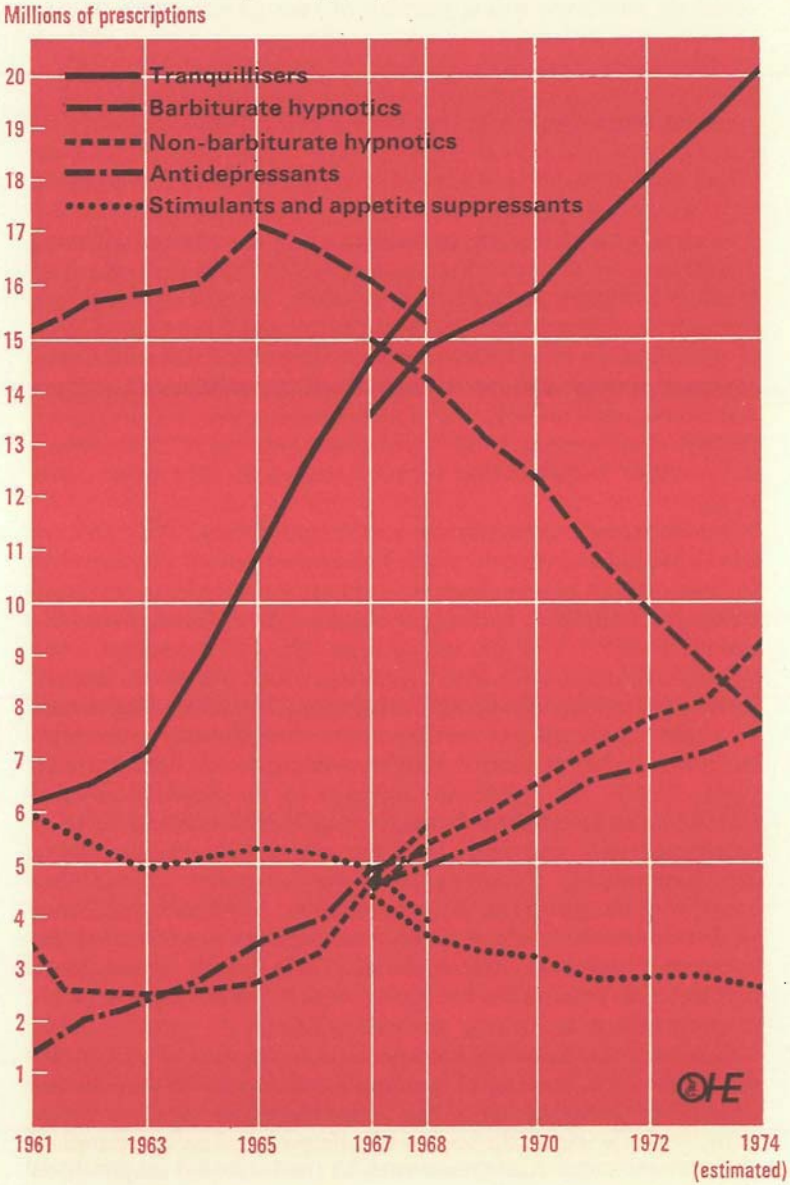
Psychotropic medicines in health care statistics

The statistics which relate to the increasing use of mind affecting medicines over the past two decades, which for drugs prescribed by family doctors are shown in Figure 1, are at first sight both dramatic and disturbing. In 1961, for example, the total volume of prescriptions for psychotropics issued in England and Wales was just over 32 million, costing about £7 million. In 1973 it was over 45 million in England alone, costing about £22 million. In 1961 there were only one third of the number of tranquillisers used outside hospitals that were consumed in 1973 (DHSS 1962, 1974).

However, such broad figures can be misleading. They obscure trends within sub-groups of medicines and ignore the fact that the advances in psychopharmacology mean that like is not being compared with like. In fact, as Figure 1 also shows, there has been a steady fall in the use of some types of medicines, most significantly the barbiturate hypnotics, which has been matched by the rises in other therapeutic sub-groups. It is interesting to note that the total volume of hypnotics, barbiturates plus non-barbiturate, has remained roughly stable over the past 10–15 years, despite the significant increase in the population aged over 65 (who currently take this type of medicine about three or four times more frequently than the average for other adults in the community). Although increases in minor tranquilliser usage and changes in the therapeutic intent of doctors prescribing medicines in this category may have to some extent distorted this balance it certainly contradicts the occasionally encountered picture of a population becoming rapidly more dependent on sleeping tablets and strong medical sedatives.

Similarly the threefold increase in consumption shown under the broad DHSS heading of 'tranquillisers' has to be seen in the light of the introduction of the benzodiazapines (such as diazepam) with their greatly improved safety record as compared to their predecessors. And trends such as the increased emphasis on community care for patients suffering from psychotic complaints means that there is a significant level of family doctor prescribing

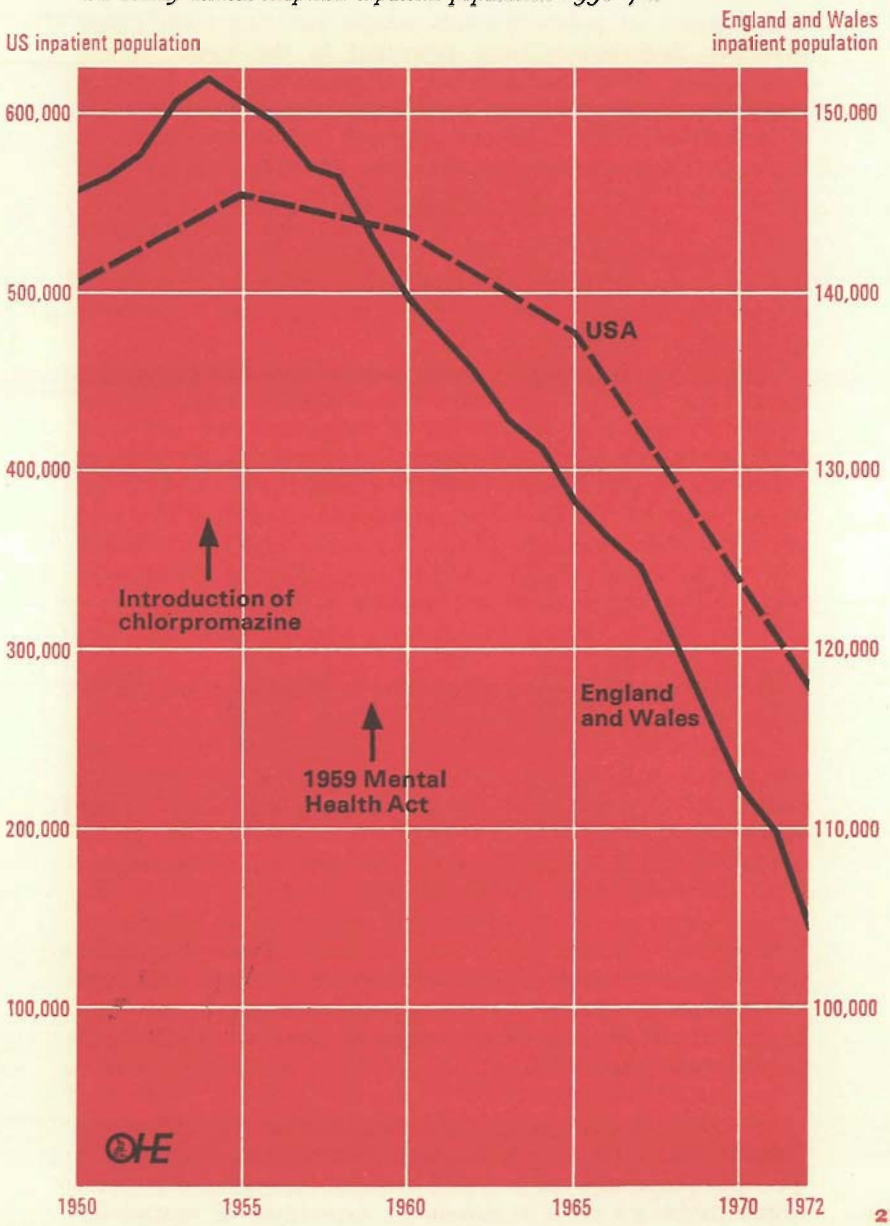
Figure 1 *Prescriptions for psychotropic medicines in England and Wales 1961–68, England 1967–74*



Note Certain of these classifications are not fully comparable over time. In particular the group 'stimulants and appetite suppressants' has changed markedly in composition even in the past 15 years.

Source DHSS Annual Reports

Figure 2 *Mental illness hospitals and units (England and Wales inpatient population 1950–72)*
US county mental hospitals inpatient population 1950–72.



Sources DHSS statistical Reports. USA National Institute of Mental Health

of major tranquillisers. These at present account for around 10 per cent of all 'tranquilliser' prescriptions outside hospitals.

In connection with the latter point there can be little doubt that changes in policy towards people suffering from major psychotic disturbances were promoted in the 1950s by the introduction of the short and long acting neuroleptics. Figure 2 shows the changes in the mental hospital inpatient population of both the United States and England and Wales from 1950 onwards. The remarkably parallel experiences of these countries suggest the working of a common factor which caused the inpatient populations to fall from their 1954–55 peaks. This was almost certainly the introduction of chlorpromazine, although it should be noted that in hospitals which already had a liberal therapeutic regime the new medicine probably had a relatively small impact (Odergaard 1964).

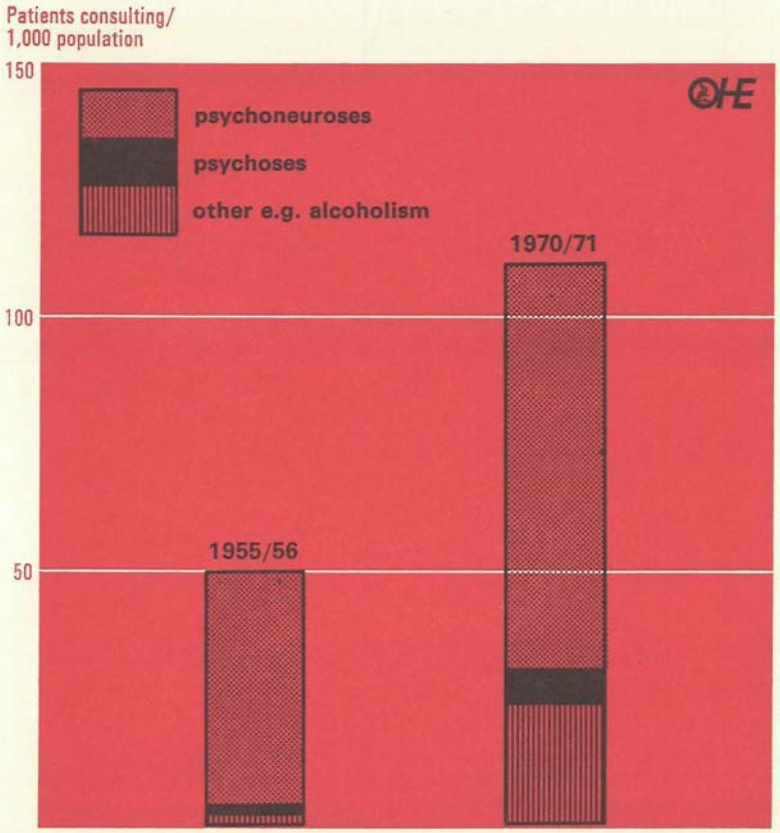
The falls in the overall mental hospital inpatient population have been balanced by increased admission rates, shorter lengths of stay and greater use of outpatient and day care facilities. In the case of psychiatric outpatient episodes the per capita rates approximately doubled in both the USA and the UK in the latter half of the 1960s, as did the number of new day patients and day care patient attendances in England and Wales between 1966 and 1972 (30,000 and 2.25 million in 1972 respectively). The latter trend still appears to be continuing, demanding new investment in this area, whereas the former now seems to be stabilising.

The changes in the statistics relating to the forms of mental ill-health seen and diagnosed by family doctors are just as marked. Figure 3 compares the rates of psychiatric illness found in the first and second National Morbidity Surveys which were conducted in 1955–56 and 1970–71 (HMSO 1958, 1974). They showed that overall the number of consultations in this group has doubled in the period, with the diagnosis of neurotic depression increasing over 20 times. This probably reflects increased awareness of the existence of depression on the part of both general practitioners and their patients. It should also be noted that the possible alternative diagnosis amongst women of 'menopausal symptoms' has undergone a corresponding drop to around half its former level, that is to about 10 consultations per thousand population.

Suicide

The difficulties involved in trying to assess the impact of psychotropic medicines on a community's experience of mental ill-

Figure 3 *Patients consulting their family doctors at least once per 1,000 population for mental illnesses in 1955–56 and 1970–71*



Source Crombie 1974

health or distress are well illustrated with regard to the suicide rate in Britain. This is normally thought to be linked with the incidence of depression, although this relationship may be affected by a number of cultural factors, as the early French sociologist Durkheim argued at the turn of this century (Durkheim 1897). It is interesting to note, for example, that although depression is generally diagnosed more frequently in women than in men male suicide rates have, until recently at least, been several times those of females of equivalent age, as is shown in Table 3.

Table 3 *Suicide and self-inflicted injury. Death rates/100,000*

Age	*Males*					*Females*				
	1969	*1970*	*1971*	*1972*	*1973*	*1969*	*1970*	*1971*	*1972*	*1973*
All ages	11	9·6	9·5	9·2	9·4	7·2	6·7	6·7	6·2	6·2
1– 4	–	–	–	–	–	–	–	–	–	–
5–14	0·18	–	0·05	0·12	0·07	0·06	0·05	0·05	–	0·1
15–24	5·6	6·1	5·2	6·3	5·7	2·3	2·6	2·6	2·9	3
25–44	11	10	11	11	11	6·4	5·9	5·8	5·8	6
45–64	18	16	16	15	15	13	12	12	11	11
65–74	24	21	22	19	19	16	15	14	11	12
75 and over	27	23	17	19	22	12	9·7	11	11	11

Source Registrar General

Figure 4 *Death rates per million from suicide, males and females 1901–1973*

Source Registrar General

Figure 4 traces the annual overall death rates from suicide recorded by the Registrar General from the turn of this century. It shows that for men they are now lower than the previous nadirs recorded during the two world wars and that for women they are as low as at any other time in the last 50 years. These figures are all the more striking when it is remembered that there are more people in high risk age groups as a proportion of the total population today than ever before and that the reporting of suicide is likely to be at least as complete as at any time in the past. Until 1961, for example, suicide was legally a crime in Britain.

It may be thought tempting to attribute the significant fall in suicide rates over the past decade or so to the availability of new antidepressant medicines. Yet although they have probably played some part in this trend, especially amongst the higher social classes who historically have been particularly prone to suicide, international comparisons show that in most other

countries where such treatment has been available suicide rates have risen. This is a clear indicator of the importance of other social or related medical factors such as the decreased toxicity of medicines used in suicide attempts in Britain or the activities of the Samaritans organisation (Fox 1975).[6] It underlines the need to avoid simplistic explanations of changes in the observed patterns of psychiatric illness or distress although the statistics relating to suicide also suggest that mental health care in modern Britain, whatever its defects, is probably as effective and widely available as that in most other similar countries.

It should also be noted that there are now an estimated 80,000 or more 'attempted suicides' each year, as compared with perhaps 30,000 at the start of the 1960s (MOH 1961). Although such figures should not be thought of as particularly reliable in terms of comparability or accuracy they are indicative of a real upward trend.

Whether they imply that more people simply feel free to express their distress via a cry for help in the form of a 'pseudocide' or whether they show any genuine increase in psychiatric morbidity or personal distress in the community is not possible to determine clearly at present, although the former appears to be a more likely explanation. If this is so then the statistics on attempted suicide may be taken to suggest that people have more faith in the availability of help, provided that they show need, than they did in the past and so in some ways may be thought to be encouraging. Such a postulation could imply a dynamic relationship between the falling rate of successful suicides and the increasing numbers of attempted ones, a hypothesis supported by the argument originally developed by Stengel and Cook (1958) that generally suicide and attempted suicide are distinct phenomena which characteristically occur in widely separated age groups.

However, it is obviously undesirable that individuals in mental distress are driven to such lengths (even though the overall risk of mortality associated with suicidal gestures is now relatively small at about 4 per 100 hospital admissions) as indeed is the consumption of scarce health care resources involved as a result of such calls for assistance.

6 Self poisoning is the predominant means of suicide in Britain, unlike European countries such as France and Germany where hanging and strangulation is the most common method or America where guns are most frequently used. Another possible explanation for falling suicide rates could be improved social and medical care for the elderly, amongst which age group the most dramatic declines in suicide have occurred in the past decade.

Criticisms of the use of psychotropic medicines

In that the availability and consequent widespread use of medicines like minor tranquillisers has probably led to an increase in the perceived incidence and prevalence of certain forms of mild psychiatric illness, like ill-defined neurotic depression, some commentators have suggested that psychotropic medicines have been partly responsible for the 'over medicalisation' of everyday life. This in turn may have generated both physical and social iatrogenesis of the types described by Illich (1975). There is doubtless an element of truth in such charges although they should be treated with some caution. For instance a strong case can be put forward to support the assertion that many early episodes of what ultimately becomes severe depression[7] are still untreated and that more rather than less medical vigilance is needed in this area even at the cost of a certain degree of unnecessary medication.

Perhaps more substantive criticisms stem from the argument that the prescribing of psychoactive drugs often represents the misdirection of therapeutic effort. In some cases, for example, psychotherapy may be more effective whilst in others the root cause of mental disturbances may lie firmly in social events outside the individuals concerned. It may be thought that an excessive concentration on the pharmacological or indeed the psychotherapeutic treatment of the individual has undermined efforts aimed at promoting social change, that is, the 'treatment' of society as a whole. It has even been suggested that the use of psychoactive medicines could be part of a deliberate policy to retard social progress in the developed Western nations and that they may serve as 'opium for the masses' (Lader 1975).

Psychotropics and social class

Cartwright and Dunnell (1972) in their study of the use of medicines in Britain (the survey work for which was carried out in 1968) found marked differences between the social classes. More 'middle class' (12 per cent) than 'working class' (8 per cent) people had taken psychotropic medicines during the period of the enquiry, although data from the same study suggested that

7 Particularly amongst groups such as the elderly and the physically and possibly the mentally handicapped.

there were no class differences in the proportions reporting 'nerves, depression, irritability or sleeplessness'. The survey results also suggest that lower down the social scale more people thought that they would consult a doctor in response to symptoms of mental distress as does the 1972 General Household Survey (HMSO 1975), thus eliminating straightforward non-consultation as a probable explanation of this phenomenon.

However, there is also international evidence that women of low socio-economic status may be inclined to consume psychotropic medicines more heavily than their middle class counterparts once they begin to have access to them. Table 4, for instance, shows American findings which support this supposition.

It may appear paradoxical that working class women are more likely to become chronic users of tranquillisers once they begin to take them but overall are less likely to commence a course of psychotropic medicines. Yet these two phenomena are in fact compatible. The probable explanation is that the quality of psychiatric care available to the professional and kindred classes is higher than it is to working class people, not least because the former's educational advantages and related social skills allow them to make better use of the services offered. They may be more sophisticated in recognising mental distress which may be alleviated by psychiatric care and in communicating awareness of it to their physicians.

Better care in the first instance often includes wider access to modern mind affecting medicines. But in the longer term it also involves fuller use of alternative therapies such as behavioural retraining or psychotherapy, where appropriate or preferred, and sometimes the substitution of more effective drug regimes where minor tranquillisers prove inadequate. The firmest evidence to support the often repeated claim that psychotropics like the benzodiazapines are 'over prescribed' in Britain lies in the extent to which repeat prescriptions for these medicines are issued for conditions like depression. This is a fairly strong indicator that they sometimes continue to be prescribed for some time after stronger alternative therapies are clearly called for.[8]

A point to be added here in the context of depression is that a recent British study by Brown and his colleagues (Brown *et al* 1975) suggests in apparent conflict to Cartwright and Dunnell's findings that amongst females with young children working class women are much more liable to experience a depressive

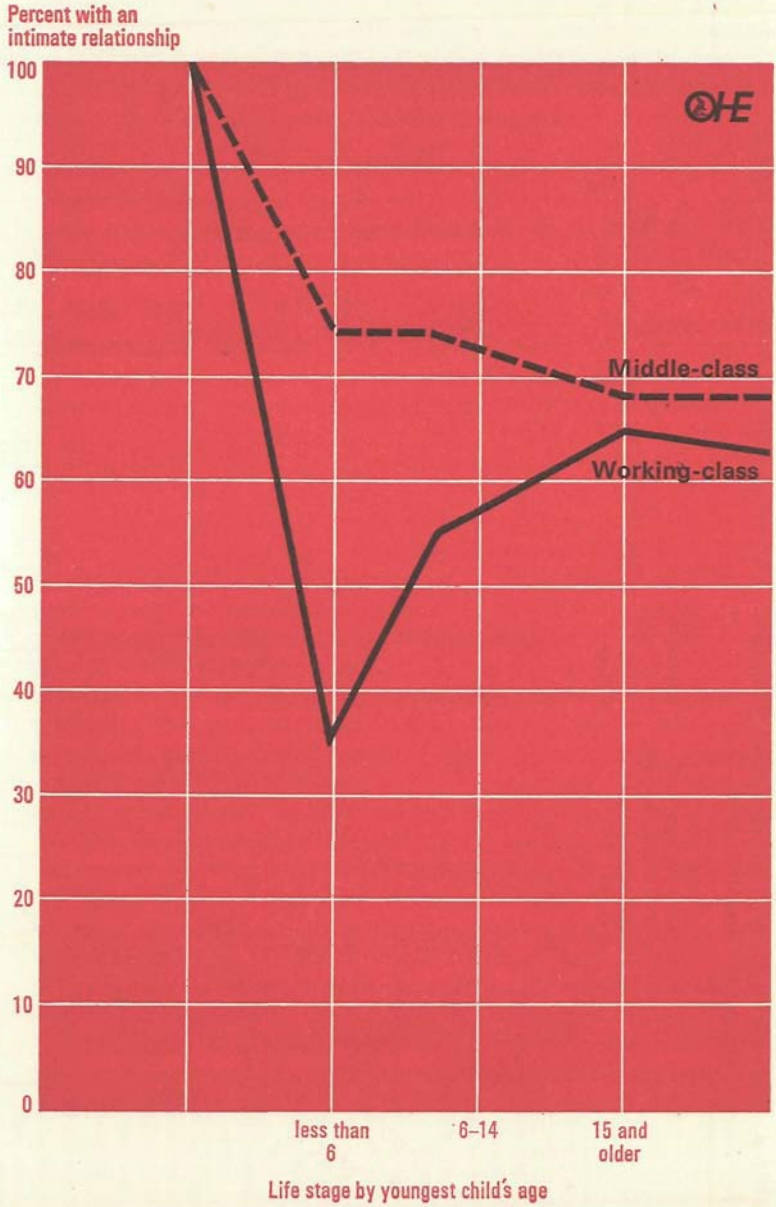
8 Not only does a tranquilliser as opposed to antidepressant use suggest that chemotherapy involving the latter frequently tends towards excessive caution. Even when antidepressants are employed it appears that they are quite often prescribed in doses too low to have a significant therapeutic effect.

Table 4 *High level of use of prescription minor tranquillisers and sedatives among women by employment status and by index of social position and educational level*

	% of group using any minor tranquilliser/ sedative drug in past year/ (based on all women in group)	*% whose level of use is high (based on all women in group)*	*No of women in group*	*% whose level of use is high (based on women users only)*	*No of women users in group*
Employed full-time or part-time:	18	5	661	27	133
Index of Social Position					
Highest	16	3	161	17	26
Second quartile	21	5	191	25	48
Third quartile	18	6	158	36	33
Lowest	18	5	150	30	27
Housewife, not employed	20	6	597	31	123
Index of Social Position					
Highest	27	5	128	18	34
Second quartile	15	2	156	17	22
Third quartile	18	6	183	34	34
Lowest	24	13	123	54	30
Employed full-time or part-time	18	5	661	27	133
Educational level					
Some college	16	4	214	27	38
High School graduate	18	5	223	25	47
Less than High School graduate	21	6	223	28	48
Housewife, not employed	20	6	597	31	123
Educational level					
Some college	24	4	119	18	28
High School graduate	17	3	203	17	35
Less than High School graduate	21	10	274	47	60

Source Parry *et al* 1973

Figure 5 *Percentage of married women judged as having an intimate relationship with husband by life-stage and social class*



Source Brown *et al* 1975

episode in response to social or personal stresses than are their middle class contemporaries. They related this in particular to the quality of personal relationship between marital partners during this time of life, the more intimate communication that they judged to exist in middle class families during the presence of young children (see Figure 5) appearing to protect the women involved from severe breakdowns.

Research on this level should be viewed carefully. Experience with a population of 300 or so people in one London borough may not necessarily be typical of that of people in other areas. And the different experiences of life in terms of exposure to stressful factors may make comparisons between social sub-groups very difficult to interpret. Nevertheless, the firm indication of raised risk rates given by the survey in question provide good reason to believe that class variations in the social experiences related to mental illness like depression and its treatment should be regarded as important factors in its aetiology.

However, the surveys quoted above do not suggest that the use of psychoactive medicines in itself is either widespread enough or sufficiently biased between different sections of the population to have a significant direct influence on relations between the social classes in this country. The marked differentials in the consumption of social psychotropics like nicotine and alcohol are probably rather more significant in this regard although even here it is possible to draw rash conclusions. The availability of alcohol, for example, has not identifiably slowed social changes in Europe in the last few centuries and may have facilitated them in some ways. Where deprived sub-groups (as opposed to unfortunate individuals) have appeared to resort to alcoholism *en masse* this has in the main been a reaction to their condition, not the author of it as is often supposed. From a sociological viewpoint it would appear that major economic factors such as the technology production in any given society are much more important determinants of social structure.

Influences on prescribing patterns

The most important criticisms of psychotropic drug use therefore appear to centre on the indirect manner in which the availability of psychotropics has influenced the development of mental health care and on doubts as to the therapeutic efficacy of their use with regard to much of the mental disturbance encountered by the health services. In this context it has been argued by Parish (1973) that pharmaceutical companies may have fostered inappropriate prescribing habits, particularly amongst family

doctors whom some authorities believe may be highly susceptible to promotional activities such as advertising in the medical journals.

Stimson (1975) has suggested that such advertising may have the unnoticed effect of creating stereotyped images of people suffering mental distress thus promoting unthinking prescribing on the part of doctors. In particular, he believes, advertisements for antidepressants and tranquillisers show a consistently limited view of women, especially those in lower social classes. Similarly Prather and Fiddell (1975) have argued that advertisements for psychotropic medicines in America may over emphasise the emotive and domestic aspects of mild mental distress amongst females whilst ignoring similar aspects of such conditions amongst males.

Criticisms of the possible stereotyping effects of promotional activities deserve serious consideration, although those wishing to defend existing practices point out that the images suggested by advertisements in the main conform with current epidemiological information[9] and that they reflect rather than create the medical profession's approach to medicine usage. Despite the value of promotion in catalysing changes in patterns of therapy where radically new products are concerned (as with, say, chlorpromazine in the 1950s) in established fields it may often determine not the overall consumption of medicines but simply the types or brands of medicine used, and even here only to a limited degree.

For instance, in the case of hypnotics, the total combined volume of barbiturate and non-barbiturate preparations appears, as already described, to have remained constant during the past decade or more despite the advertisement of the advantageous properties of the latter which some commentators feared would increase overall usage in an undesirable manner.[10]

A broad view of the information available suggests that

9 And certain biochemical findings. For example, it is believed that the enzyme monoamine oxidase occurs in higher concentrations in the brains of females as opposed to males and also in greater concentrations with increasing age.

10 This is not to argue that sleep inducing medicines are necessarily used desirably at present. In recent years there has been a growing awareness of the degree to which inappropriate expectations of sleep, especially amongst older people, cause experienced insomnia amongst people who are actually sleeping normally as compared with contemporaries. Also insomnia is usually only a symptom of psychiatric illness even where it is genuine and thus to treat it directly rather than the underlying complaint may be ill advised. On the other hand, experienced sleeplessness can itself be highly unpleasant and may if untreated cause considerable psychiatric distress amongst some subjects.

Table 5 *International use of anti-anxiety sedative medicines in 1971*

Age	*Belgium*	*Denmark*	*France*	*Germany*	*Italy*	*Netherlands*	*Spain*	*Sweden*	*UK*	*USA*
				Percentage in each sex/age group using medicines						
Males										
15–24	7·0	5·8	8·1	5·8	13·5*	4·0	7·7	6·5	4·5*	–
25–34	11·8	6·2	9·1	4·3	10·9	13·2	5·8	8·3	3·1	–
35–44	9·3	8·7	11·1	7·3	9·2	6·0	6·9	9·5	9·2	–
45–54	14·3	16·7	18·6	9·8	10·7	8·8	7·6	12·6	9·6	–
55+	15·7	12·9	13·2	13·7	7·1	11·1	6·7	12·0	13·9	–
All males	12·0	10·2	11·9	8·4	9·8	8·5	7·0	9·9	8·9	8
Females										
15–24	15·8	14·4	13·4	5·3	8·1*	10·8	10·8	8·9	17·2*	–
25–34	21·0	8·0	21·0	19·2	14·4	13·3	10·3	14·5	20·1	–
35–44	20·7	29·3	20·3	25·7	15·1	18·3	13·8	24·4	15·6	–
45–54	18·6	23·7	20·3	23·7	14·2	21·7	15·3	23·0	23·6	–
55+	24·5	23·4	27·6	20·4	10·8	20·4	13·5	30·9	18·6	–
All females	20·9	19·9	21·4	19·2	12·6	16·3	12·5	21·5	19·1	20
All persons	16·8	15·1	16·7	14·2	11·2	12·7	9·7	15·8	14·2	15

*Age interval 16–24

Source Balter *et al* 1974

prescribing patterns in any area are subject to a wide variety of conflicting influences. As with other fields of socio-technical change the effects of any one factor are extremely difficult to identify. It may be, for example, that the debate and questions which the advertising of medicines generates produces an overall environment which is far more critical of their use than would otherwise be the case.[11]

In the specific context of minor tranquilliser usage the information in Table 5 suggests that broad social factors, such as the dominant religion within particular areas, may play some considerable role in determining the level of their consumption. The similarity of overall anxiolytic usage in northern European countries and America exists despite marked differences in medical attitudes and the organisation of health care services whilst the lower figures for countries like Italy are not matched by a significantly increased level of control over factors such as the advertisement of this form of psychotropic medicine.

Rational discussion of questions such as influences on prescribing practices in psychiatric medicine and their desirability or otherwise would therefore seem to hinge on two points. First there must be some accepted method of rigorously evaluating the social and individual outcomes of various alternative approaches to therapy. And, second, there must be a willingness to look at all the possible variables involved in the formation of such alternative practices, even if this involves politically sensitive areas. For example, there is little doubt that a marked extension of group practice based on health centres and of the use of peer review procedures such as the medical audit scheme pioneered by the Royal College of General Practitioners could have an influence on the future use of psychotropic medicines which is likely to far outweigh that of peripheral issues such as the content or number of advertisements in medical journals.

Social psychotropics

The distinction between social and medical psychotropics is based on the fact that the former are autonomously consumed with the deliberate intent of inducing wellbeing amongst, or changing the mood of, people who are generally thought to be

11 Compare, for instance, the level of public concern regarding possibly hazardous medicines and that relating to similar surgical techniques.

in a 'normal' state of mind whilst the latter are taken on the direction of a physician, their consumption carrying with it a presumption of mental abnormality or illness on the part of the user. Thus the division hinges on the social circumstances of the use of psychoactive drugs rather more than it does on any readily identifiable pharmacological criteria.

The use of social psychotropics raises a variety of interesting issues, some of which have important implications regarding the health of the population. In this country about £3,500 million was spent by the public on alcoholic beverages in 1973. Over £1,900 million was spent on tobacco. In total this represents about 13 per cent of total consumer expenditure for the year, a fact which clearly indicates the value placed on such goods by the community despite the fact that much of this outlay was simply returned to the government in the form of indirect taxation. But in the same year about 50,000 people died from smoking-related conditions as did more than 2,000 from cirrhosis of the liver or alcohol poisoning, not to mention associated mortality in areas like road accidents and suicide. Approaching half a million people in this country suffer the problems of alcoholism to some degree (including the linked morbidity risks) whilst diseases like bronchitis, which are often exacerbated by smoking, remain major causes of sickness absence from work.

Alcohol is of course a powerful central nervous system depressant which can cause both psychological and physiological dependence. The nicotine in tobacco can either stimulate or depress parts of the nervous system, depending on the doses taken. For smokers nicotine generally increases the level of arousal although it may also have certain effects on specific areas of the brain such as the limbic reward system as well as simply relieving the symptoms of previous nicotine withdrawal. The fact that it is normally taken into the body via the lung means that it is carried to the brain in seconds so that the rewards gained from nicotine are very closely associated with the deliberate act of inhalation. These properties all help to make cigarette smoking probably the most addictive and dependence producing form of self-administered, drug-induced gratification known to man (Russell 1974). This is so even when cigarette smoking is considered in the context of heroin addiction or the use of methadone, amphetamines, barbiturates, LSD, cannabis, alcohol or tea and coffee.

Furthermore there are strong cultural traditions surrounding alcohol and tobacco which legitimise their use despite known dangers and also contribute to their effects. (All psychotropic drugs may owe their specific actions on individuals to some extent to the consumers' socially induced expectations. Cannabis,

for example, was said to have been used by the Assassins in thirteenth century Persia as a means of removing inhibitions on violent behaviour and is still used in the West Indies as an apparent stimulant whereas in modern Britain it is often experienced as making people more peaceful and passive.)

Because of the very considerable dangers associated with the consumption of traditional social psychotropics a significant minority of the population would probably be in favour of the banning or severe restriction of activities like cigarette smoking. But historical experience, as with prohibition in America, suggests that many members of the public would not accept such a policy, preferring to brave the hazards of such activities for the pleasures that they produce even if it meant purchasing alcohol or tobacco illegally. In the past punishments for smoking ranging from excommunication to torture to execution have proved unsuccessful in restricting the habit. And in today's context there is also the point that governments may be unwilling to face the revenue loss and unemployment problems caused by sudden legislative action, not to mention the political risks involved.

Health education may be seen as a long-term approach to reducing the morbidity and mortality associated with social psychotropics, although it is of doubtful efficacy and may well affect the behaviour only of the more advantaged sections of the population. Recent figures, for example, already show a two to one ratio when the prevalence of cigarette smoking amongst people in low as opposed to high status socio-economic groups is compared. This variation exists primarily because of the greater number of people in higher social classes who have never smoked (General Household Survey 1972).

It would thus seem that a policy aimed at replacing traditional social drugs with modern 'purpose built' psychopharmacologicals would have much to recommend it. A close look at current scientific knowledge makes it appear likely that viable substitutes capable of saving much morbidity and mortality will be available within the next one or two decades. These could possibly be prepared in such a way as to be drunk or inhaled in the same way as nicotine and alcohol are used at present.[12] Clearly one of the advantages of such an approach is that people would not be asked to renounce the pleasures of existing social psychotropics but merely to use an alternative. Thus individual choice and conventional commercial forces would still play a strong part

12 Currently the use of synthetic smoking materials centres on their employment in conjunction with tobacco as the psychoactive ingredient.

in the decision to consume whereas a policy of encouraging total abstinence may lead people to feel that their autonomy is being threatened and may even add to the attractions of the traditional drugs.

Such advances are, however, likely to meet opposition not only from existing interest groups but also because of emotional objections on the part of sections of the public based on a dislike or fear of 'drugs' in general. Thus progress towards the replacement of currently used social psychotropics with more desirable, or at least less dangerous, alternatives is likely to depend on a full understanding of the sociological factors surrounding the acceptability of drugs or medicines.

In balance it should also be pointed out that, with alcohol in particular, mankind has spent several thousands of years both in learning how to prepare it in pleasant forms and to detect and avoid its dangers. Any new substance to be introduced as a competitor will have to stand the test of being used in large quantities throughout the major part of many human lifetimes before its relative safety can be properly measured. Attempts to introduce a substitute for either tobacco or alcohol could create unexpected hazards which may well serve further to complicate an already difficult situation. Although the consumption of traditionally social psychotropics is the largest single cause of readily avoidable morbidity and mortality in the Western world great caution must therefore be exercised with regard to the introduction of modern alternatives.

Self medication

To an extent the effects generated by the consumption of medicines such as minor tranquillisers are similar to those associated with current social psychotropic use. However, the latter have the advantage of being free from an immediate association with sickness and so of possible ill effects such as the labelling of consumers as mentally ill or the extension of arbitrary professional authority into the lives of the population.

In view of these and other considerations it may be suggested that currently available tranquillisers such as the benzodiazapines should be regarded as suitable for use in the area of self medication, at least in as far as this would place them in an intermediate position between 'medical' and 'social' drugs and so tend to preserve the independence of the user and protect him or her from the social side effects of 'medicalisation'.

Current evidence indicates that they may in the final analysis prove to be significantly safer and less addictive than the social

drugs or some medicines currently on free sale. Furthermore the fact that they are currently available only on prescription represents little genuine barrier to their access for would-be consumers and may actually stimulate inappropriate demand. This is because the public could possibly tend to over-value prescription-only medicines as opposed to those available 'over the counter' and also because sometimes doctors, faced with essentially social problems but anxious nevertheless to 'help' patients in whatever way seems possible, prescribe minor tranquillisers unnecessarily in situations where people would not buy independently at the market price.

However, a number of objections could be raised to a policy of freeing public access to even the safest of today's minor tranquillisers, although they stand on weaker medical grounds than is sometimes believed. This issue is raised in this paper not to advocate such a change but to demonstrate the complexity of the problems surrounding the regulation of drug consumption and the extent to which the social circumstances of medicine use should be an important factor in deciding the pattern of control.

With regard to this area an interesting comparison exists between current pressure from some sections of the medical profession and consumer groups for easier access to oral contraceptives and arguments in favour of relaxing controls on minor tranquillisers. Even if it is not ultimately felt that medicines like the benzodiazapines should be put on free sale it may be that professionals or paramedicals other than doctors, such as health visitors or social workers, should be given the authority to prescribe them in the same way that it has been suggested that appropriately trained nurses and health visitors should authorise the use of oral contraceptives (which in medical terms may be more hazardous than tranquillisers).

Future developments in psychopharmacology

As suggested earlier in this paper it is probable that progress in the understanding of neurotransmitters and their effects on receptors in the nervous system is the most likely area of immediate future advance. In the longer term there is the prospect of therapeutically significant increases in knowledge of the endocrine regulation of nervous system activity and in less often

considered areas like the postulated role of allergic responses in the genesis of some forms of mental disturbance.

It is also possible that more effective means of administering or formulating medicines will be evolved. This relates not only to improvements such as the existing long acting forms of anti-psychotic medicine which reduce the risks of non-compliance in drug taking but also the 'targetting' of drugs to specific parts of the body. This reduces the risk of generalised systematic side effects. Brain implants have already been suggested as a means of transporting L-dopa or dopamine itself to key sights affected in Parkinsonism. Although in this case 'targetting' is now achieved biochemically (through inhibiting peripheral decarboxylisation) and hazards would in themselves accrue from heroic activities like introducing brain implants some technological advances in this field may well occur with regard to psychotropics.

At present the highest hopes of a new treatment of major importance exist in relation to schizophrenia. Whilst schizophrenia may have many forms and models of simple unicausality are to be treated with caution this crippling disease, which affects about one person in every 100 at some time in their lifetime, is thought to be related to an excess of dopamine in the brain perhaps coupled with abnormalities in noradrenalin metabolism. Although work such as that of Laing in the 1960s has indicated that social factors may be partly causal in some cases, studies on twins now strongly suggest that a genetic factor is often involved (Eisenberg 1974).

It is believed by some authorities, although not confirmed, that the enzyme responsible for converting dopamine to noradrenalin (dopa-beta-hydroxylase) is lacking in the brains of at least some schizophrenics. If such an aetiological hypothesis could be verified the day in which improved treatments may be expected would be brought considerably closer. However, it should be stressed that this is merely one tentative explanation of the biochemistry of schizophrenia. Others pursued in the recent past, which include the possibility that psychotogenic substances similar to hallucogens like LSD or harmine are created in the brain due to an abnormal break down of biogenic amines, have not as yet contributed significantly to the treatment of the affliction.

Another interesting area of investigation relates to the recent isolation of a substance which appears to behave as an endogenous opiate. It may thus act as a neurotransmitter which stimulates receptors in the brain known to be affected by substances like morphine, or it may serve to regulate the affects of other chemical transmitters on the morphine receptors. Further knowledge

about the role of this substance, which is known as enkaphaline and is currently being researched in several countries, including Britain, could be important in developing new techniques to control pain. But it could also be of value in other areas including possibly the treatment of some forms of mental illness.

A third possible line of advance could stem from studies aimed at understanding the factors governing protein synthesis in the brain, especially as it relates to long-term memory. It is already believed that some existing psychoactive medicines affect the rate of such synthesis and hence it may be that ways of precisely influencing this area of brain function could be found. Such techniques might have considerable medical importance but their broad social significance could perhaps be even greater in that it may prove possible to increase the learning or memory related mental capabilities of either the population as a whole or of selected individuals within it.

Conclusions

The over-simplified assumptions upon which extreme advocates or opponents of the use of psychotropic medicines most frequently base their views stem from differing theories about the aetiology of mental illness. Variations between these in part relate to clashes of economic and academic interest and in part to events which occurred up to a century ago but which still contribute to the continued existence of rigid and limited schools of thought within the field of psychiatric medicine. It is possible, for example, that Freud's early experiments with cocaine subsequently biased the founding father of psychoanalysis and his followers against recognising the possible biochemical aspects of mental illness and thus the potential role of chemotherapy in its treatment.[13]

Amongst those people who see most forms of psychiatric disturbance as stemming mainly from constitutional factors it is sometimes argued that only medicines can be of value in the long-term correction of brain function. Whilst in those schools where abnormalities in brain chemistry are believed to be of

13 Similarly the hopeful quest for findings similar to the discovery that general paralysis of the insane was caused by an infection (syphilis) and that pellagra was related to vitamin B deficiency eventually turned to disillusion after much fruitless research conducted at the turn of this century. This in turn may have retarded the investigation of the physical nature of mental illness for several subsequent decades.

secondary significance in relation to factors like adverse experiences early in a person's life or the stresses of a difficult current environment chemotherapy is often said to be inappropriate.

Yet in reality any distinction between biochemically as opposed to socially derived mental illness is very rarely clear cut. There is a constant cycle of feed-back between an individual's psychological status, his or her physiological condition and the broader social environment. Hence any therapeutic approach will only achieve its maximum returns to the individual receiving it if it is used in the full context of other complementary techniques of mental health care.

Thus although the neuroleptic and antidepressant medicines produced since the 1950s have directly improved the outlook for people suffering serious psychotic and neurotic complaints there can be little doubt that one of their most important effects has been to open the way to developments in other fields, such as increased community care for patients on long acting anti-psychotics. Similarly although minor tranquillisers cannot in themselves directly affect the social and economic problems underlying many less serious forms of mental distress they can, when properly used, support individuals through difficult periods and alleviate experienced suffering. It may be added that the increasing use of these medicines has acted as a strong motor within society for generating awareness of the potential demand for other forms of care and support in that it is now harder to ignore prescription statistics than it was in the past to ignore poorly defined and expressed distress.

The argument that concentration on the use of medicines may have led psychiatry since the last war to fail to look towards the social causes of mental distress or illness is therefore of very limited validity. In many ways medicines have had a catalytic effect in introducing a more sociological approach to mental health, one which incidentally implies a flexible interaction between men and their environment which is very much at variance with traditional psychotherapeutic approaches such as psychoanalysis.

The main costs of increased psychotropic medicine use in this country during the past two decades would thus seem to relate to an extension of the 'medicalisation' of everyday life and so of the essentially trivial (in strict medical terms) workload of the NHS. But this may be a relatively small price to pay for the gains in terms of reduced personal distress and for achievements like the markedly diminished use of traditional medicines such as the barbiturates which have considerable hazards as compared to their modern equivalents. And it might also be thought that

extension of the psychopharmacological approach to mental distress has helped to change society's understanding of psychiatric disorders in a constructive manner. The still found religious view, for instance, that 'madness' is 'possession by the Devil' which can be stopped by exorcism, in some ways represents a mystification of life which many people would feel to be far less desirable than its medicalisation.

Future research may well bring significantly improved treatments for serious conditions like the schizophrenias and depressive psychoses. As regards minor forms of psychiatric illness or discomfort pharmacological advances appear more difficult to predict, largely because many of the conditions receiving medical treatment are ill-defined and have a large social component. However, modern knowledge of psychoactive drugs may have something to contribute in the field of social psychotropic use, like smoking. As this is the largest cause of avoidable ill health in the developed world attempts to produce a safer substitute would undoubtedly have some merit.

But in the immediately foreseeable future progress in the application of mind affecting medicines will probably stem not from technical advances but from attempts to ensure that they are used as rationally as possible, both in conjunction with alternative social and psychotherapeutic approaches and in relation to other medicines which may be prescribed. This may well not result in any reduction in the overall use of psychotropics but it could increase the benefits that such medicines generate considerably. It would also, of course, reduce the number of instances where it is feared that psychoactive medicines are used wrongly or wastefully, although such an advance must rest on the development of an accepted means of measuring the efficacy of all the possible therapies involved. This in turn hinges on the emergence of a unified and comprehensive approach to psychiatric medicine.

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