CURRENT SURVEY

Recent progress in epidemiological psychiatry

BRIAN COOPER
M.D., D.P.M.

Senior Lecturer, Institute of Psychiatry, London S.E.5

Epidemiological psychiatry may be defined as that branch of the specialty which is concerned with the incidence, prevalence and distribution of mental disorders in populations. The value of this approach is now widely recognized, and since a number of comprehensive reviews of earlier work are available (Reid, 1960; Lin & Standley, 1962; Shepherd & Cooper, 1964), the present short paper will deal only with studies reported in the past 5 years.

Two main types of epidemiological enquiry can be distinguished. The first seeks for aetiological clues by examining variations in illness-rates within a population, and their relation to environmental factors. The second is concerned with disease prevalence, and with assessment of the community's need for medical services. Although in practice there is a good deal of overlap, it will be convenient to look at each of these broad categories in turn.

1. Aetiological studies

Since the classic studies of Goldberger on pellagra (Terris, 1964), the search for unitary causes of mental disorder has proved almost entirely disappointing. In the field of mental subnormality, however, progress in cytogenetics has aroused new hopes of a major advance. The discovery of characteristic chromosomal abnormalities in Down's syndrome acted as a stimulus to epidemiological research (Cohen, Lilienfeld & Sigler, 1963), and a challenging hypothesis has been put forward by two Australian workers (Stoller & Collmann, 1965). By compiling a register of all cases born in Victoria, 1942-57, they found what appeared to be periodic fluctuations in incidence, more marked in urban areas, with peaks every 5-7 years. The pattern of incidence was thought to exhibit spatial as well as temporal clustering. Furthermore, a peak incidence predicted for 1962-63 was subsequently confirmed.

These findings suggested that Down's syndrome might be of infective origin. The circumstances pointed to a viral agent, probably with a long incubation period, which is capable of affecting the germ-cells before or at about the time of conception, either directly or through an immune reaction. Analysis of the statistics for all notifiable infectious diseases in Melbourne, 1952-64, yielded only one positive finding: a highly significant correlation between the rates for Down's syndrome and those for acute infective hepatitis 9 months previously.

Ecological correlates can only suggest hypotheses, which then require confirmation by more direct methods. In the present instance, it is disappointing that workers in the United States and Great Britain have failed to verify the Australian findings (Stark and Fraumeni, 1966; Leck, 1966). On the other hand, Mella (1967) has reported finding a transferable factor in the serum of patients with infective hepatitis which suppressed mitotic activity and produced multiple aberrations in the E, F and G groups of chromosomes in cultured cells. To this extent, the virus of infective hepatitis is still incriminated.

Over most of the field of mental illness, theories calling for a single aetiological agent have given ground steadily to multifactorial models. In recent reviews of schizophrenia, for example, it is significant to find the more thoughtful students both of genetic and of environmental influences sounding a note of caution (Shields, 1967; Brown, 1967).

Epidemiological and genetic research in psychiatry have a long and honourable association (Stromgren, 1950). In Britain and the United States, the focus of modern genetic research has long remained on twin studies, but here the findings have proved seriously discrepant (Gottesman & Shields, 1966), and latterly attention has begun to turn to other methods. Heston
(1966) set out to test the genetic contribution to schizophrenia by separating hereditary effects from those of a childhood environment made noxious by the presence of a psychotic parent. From the records of the Oregon state mental hospital he was able to trace all children born to schizophrenic mothers over a 30-year period. By a state law, all such children had to be discharged from the hospital within 3 days of birth, and most had been brought up in orphanages or foster-homes. Those reared by maternal relatives were excluded from the series.

Control subjects were selected from the records of the same foundling homes, and matched with the propositi for sex, type of placement and length of time spent in institutions. Any with a positive parental psychiatric history were rejected.

By means of a very thorough and detailed enquiry, the medical, social and personal histories of all but five of the propositi were ascertained. The dossier compiled on each subject was then evaluated by two psychiatrists, whose ratings agreed closely. The results are summarized in Table 1.

<table>
<thead>
<tr>
<th>Psychiatric disorder</th>
<th>Propositi (schizophrenic mothers)</th>
<th>Controls (normal parents)</th>
<th>Exact probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Schizophrenia</td>
<td>5</td>
<td>0</td>
<td>0.024</td>
</tr>
<tr>
<td>Mental subnormality</td>
<td>4</td>
<td>0</td>
<td>0.052</td>
</tr>
<tr>
<td>Sociopathic personality</td>
<td>9</td>
<td>2</td>
<td>0.017</td>
</tr>
<tr>
<td>Neurotic personality disorder</td>
<td>13</td>
<td>7</td>
<td>0.052</td>
</tr>
<tr>
<td>Number of cases</td>
<td>47</td>
<td>50</td>
<td></td>
</tr>
<tr>
<td>Mean age at follow-up</td>
<td>35.8</td>
<td>36.3</td>
<td></td>
</tr>
</tbody>
</table>

*After Heston (1966).

These findings provide strong support for the belief that there is an important genetic factor in schizophrenia. The preliminary reports of a more ambitious and elaborate study of adopted children in Denmark (Schulsinger, 1967; Rosenthal, Kety & Wender, 1967) appear to show further confirmatory evidence.

The mode of inheritance in schizophrenia remains a matter for conjecture, and so far the contributions of biochemistry and of medical ecology have done little to elucidate the problem (Shields & Slater, 1967). The present confusion in biochemical research underlines the need to secure representative population samples whenever there is any doubt about the specificity of a possible aetiological factor. Early reports of a close association between schizophrenia and the 'pink spot' (Bourdillon et al., 1965) have not been confirmed, and it now seems clear that the clinical significance of this phenomenon can be evaluated only by means of a carefully planned survey, such as that on diabetes in a general practice population (College of General Practitioners, 1963).

The major ecological finding of recent years is none the less valuable for being negative. Goldberg & Morrison (1963) set out to test the 'breeder' and 'drift' hypotheses of the social class gradient in schizophrenia. Their approach was ingenious. Having drawn a random sample of male schizophrenic patients first admitted to English mental hospitals in 1956, they examined the patients' birth records at the General Register Office. In this way they were able to compare the patients' occupations prior to admission with those of their fathers at corresponding ages. The results showed that while the patient sample had a skewed social class distribution, their fathers had been representative of the general population (Table 2).

<table>
<thead>
<tr>
<th>Social class</th>
<th>Patients at admission</th>
<th>Fathers at patients' birth</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Observed</td>
<td>Expected*</td>
</tr>
<tr>
<td>I</td>
<td>12</td>
<td>12</td>
</tr>
<tr>
<td>II</td>
<td>21</td>
<td>44</td>
</tr>
<tr>
<td>III</td>
<td>178</td>
<td>203</td>
</tr>
<tr>
<td>IV</td>
<td>52</td>
<td>55</td>
</tr>
<tr>
<td>V</td>
<td>90</td>
<td>39</td>
</tr>
<tr>
<td>Total</td>
<td>353</td>
<td>353</td>
</tr>
</tbody>
</table>

*From 1951 Census distribution of men aged 25–34.
†From 1931 Census distribution of men aged 20–44.

More recently, comparable findings have been reported from a study in Detroit (Dunham, 1965). It seems probable, therefore, that the observed social class gradient can be explained chiefly in terms of a downward drift during the patients' own lifetime: a conclusion of some importance.

Perhaps because of the largely negative findings of ecological studies, there is now an increasing polarization of research into investigation of the predisposing and precipitating factors of illness, respectively. Much attention has been
paid in the last few years to the role of early life stresses in increasing morbidity risk, and evidence is accumulating of an association of childhood bereavement with later depression (Munro, 1966; Dennehey, 1966; Hill & Price, 1967) and with attempted suicide (Greer, 1966). The weight of available evidence is against any link between early parental deprivation and schizophrenia (Olzman & Friedman, 1965); on the other hand, there is some indication that the expectancy of this disease may be related to birth order (Granville-Grossman, 1966; Barry & Barry, 1967).

Remarkably few controlled studies of precipitating events have been reported in the psychiatric literature. Most of the work in this field has been related to psychosomatic disorders (e.g. Rahe et al., 1964, 1967), since the temporal relationship of their onset to environmental stress factors has been claimed as an important distinguishing feature of these conditions. Latterly, however, some workers have applied a similar technique to the functional psychoses and neuroses.

Bereavement is one of the more readily identifiable point events, and Parkes (1964), investigating over 3000 patients who had been admitted to the Bethlem Royal and Maudsley Hospitals in 1949–51, was able to show that the number whose mental illness had followed within 6 months of the death of a spouse was six times the expected figure. Among the bereaved group, there was a significant excess of female patients, suggesting that women may be more inclined than men to develop psychiatric illness following bereavement. The incidence of affective disorders, and particularly of neurotic depressive reactions, was particularly high in the bereaved group.

Greater difficulties must be expected in studies which attempt to net all types of relevant life-stresses. The differing exposure to such stresses of various sub-groups of the population gives crucial importance to matching procedures in which variables such as age, sex, race, religion, marital status, socio-economic status and family size must be taken into account. Paying careful attention to all these factors, one group of workers (Hudgens, Morrison & Barchha, 1967) was unable to demonstrate any connection between objective life stresses and the onset of illness in a series of hospital in-patients with severe affective disorders. The weakness of this study lay in the failure to date precisely the appearance of symptoms. Brown & Birley (1968) have succeeded in overcoming this difficulty, and have found a sharp increase in putatively stressful events in the 3 weeks preceding the onset of acute schizophrenic episodes. This work, if substantiated, opens a most promising line of enquiry.

2. Prevalence studies

Psychiatric prevalence rates are notoriously unreliable, and insofar as many functional disorders shade imperceptibly into the normal range, the notion of 'true' prevalence must be regarded as fallacious. Nevertheless, surveys of conspicuous morbidity fulfill a number of useful purposes. While they may not provide an accurate gauge of the community's need for services (Lapouse, 1967), they can expose major deficiencies; for example, in the provisions for children (Rutter & Graham, 1966), for the mentally sub-normal (Kushlick, 1966) and for old people (Kay, Beamish & Roth, 1964). By charting the distribution of cases in the population, they can serve to identify high-risk groups, and so to give valuable pointers for aetiological studies. Thus, a recent survey of general practice (Shepherd et al., 1966) emphasized the high prevalence of psychiatric morbidity among middle-aged women, its positive association with chronic physical illness, and its tendency to cluster in nuclear families. Studies of this kind may also be useful in correcting the bias inherent in hospital statistics (Cooper, 1966).

Prevalence surveys can be especially helpful in the delineation of newly recognized syndromes. This point is exemplified by the recent survey of early infantile autism in Middlesex (Wing, O'Connor & Lotter, 1967a), for although this condition was first described by Kanner (1943) over 20 years ago, it has so far received little attention as a public health problem. By screening 78,000 schoolchildren of 8–10 years, the investigators found thirty-two who were diagnosed clinically as autistics, a rate of 4·1 per 10,000 of the child population. They pointed out that this figure corresponds to a total of about 3000 cases in England and Wales, or approximately the number of blind and partially sighted children receiving special education. Only half the autistic children in the survey were receiving any form of education, although on intelligence tests a proportion scored in the normal range. The distribution of cases showed an excess among families in the upper social class groups; while the low rate of mental disorders among parents, uncles and aunts suggested no evidence of a genetic link between infantile autism and schizophrenia.

National and regional statistics for extramural psychiatry continue to be scanty, but a useful
adjunct has been provided by the development in a number of communities of on-going case registers (Miles et al., 1964; Wing et al., 1967b). The publication of a national census of psychiatric hospital in-patients (Brooke, 1967) will help likewise to reveal trends in administrative prevalence figures, and hence to predict future needs.

Finally, while the great bulk of psychiatric disorders are chronic conditions, endemic in the general population, it must not be forgotten that even in modern industrial society there remains a place for the clinical epidemiologist who can trace the spread of localized outbreaks. The elegant study by Moss & McEvedy (1966), for example, showed that an undiagnosed malady which had stricken nearly 200 Blackburn schoolgirls conformed to classical descriptions of what for want of a better name is commonly called ‘epidemic hysteria’. Clinical and laboratory investigations were all negative, and no source of pollution was uncovered. The outbreak began among the older age-groups and was then transmitted to the younger children, who were less severely affected. Peak incidences were found to have occurred during school breaks, when the children were clustered in peer groups. A specific trigger event had been a 3-hr church parade, producing a score of faints, on the day preceding the outbreak; while a recent epidemic of poliomyelitis was thought to have rendered the population emotionally vulnerable. A study of two other school epidemics (McEvedy, Griffith & Hall, 1966) suggested that the characteristics of an hysterical outbreak could be sharply distinguished from those of an acute infective spread, and thus pointed the way to more effective measures of control.

**Conclusion**

Advances in recent years have done much to consolidate the position of epidemiological psychiatry. The prospects for future development are bright, provided two obstacles can be surmounted. First, as Lewis (1967) has remarked, investigators ‘... are hampered and sometimes nonplussed by the fact that diagnostic procedure and the details of clinical examination are not safely comparable’. This problem is now being tackled by the W.H.O. Mental Health Unit, which has set up a large-scale comparative study in eight countries (Lin, 1967).

Secondly, epidemiology as a discipline must win the acceptance of research workers in other branches, so that it can fulfill the requirements stated by Terris (1964): ‘[It] must utilize both observational and experimental studies ... It needs to operate ... in close collaboration with clinical and laboratory personnel and facilities. Finally, it should not hesitate to use all scientific methods, whether derived from the natural or the social sciences, which can be helpful in determining and explaining the behaviour of specific diseases in the population’.

**References**


Recent progress in epidemiological psychiatry.

B. Cooper

*Postgrad Med J* 1968 44: 331-335
doi: 10.1136/pgmj.44.510.331

Updated information and services can be found at: [http://pmj.bmj.com/content/44/510/331.citation](http://pmj.bmj.com/content/44/510/331.citation)

**Email alerting service**
Receive free email alerts when new articles cite this article. Sign up in the box at the top right corner of the online article.

**Notes**

To request permissions go to: [http://group.bmj.com/group/rights-licensing/permissions](http://group.bmj.com/group/rights-licensing/permissions)

To order reprints go to: [http://journals.bmj.com/cgi/reprintform](http://journals.bmj.com/cgi/reprintform)

To subscribe to BMJ go to: [http://group.bmj.com/subscribe/](http://group.bmj.com/subscribe/)