

## Chapter 2 Sociodemographic, clinical and diagnostic description of the study population

A unique feature of the present study is its having collected a large cross-cultural sample of patients in the early stages of their illnesses and with minimal previous exposure to treatment and the social effects of being under psychiatric care. For these reasons, the descriptive characteristics of the study population, assessed at the initial examination, are of particular epidemiological and clinical interest.

### GATEWAYS OF ENTRY INTO THE STUDY

As stated in chapter 1, the aim of the case finding procedure was to identify individuals aged 15–54 who in the past 12 months had either experienced one or more clearly psychotic symptoms<sup>1</sup> or shown at least two specified behavioural abnormalities<sup>2</sup> suggestive of a psychotic illness. To be eligible for the study, such individuals had to be residents of the catchment area and to be making for the first time in their lives a contact with a 'helping agency' because of psychiatric disturbance. By definition, the first contact was the first visit to a help-giver of any kind which could be followed by other referrals related to the same problem within the three months preceding the 'detection' of the case by the study team.

In other words, the first contact with a helping agency must be distinguished from the first contact with the study. The latter is referred to as 'inclusion', 'intake' or 'screening', and the interval between the first contact and the inclusion into the study ought to be three months or less. If it were established that the person had had earlier contacts of a 'helping agency' (i.e. prior to the three-month period referred to above) because of a psychiatric

disorder similar to, or continuous with, the current disorder, he or she was not eligible for the study.

### INTERVAL BETWEEN FIRST CONTACT WITH SERVICES AND INCLUSION

Fig. 2.1 shows the percentages of the study population falling within different intervals between a first contact and intake (the date of screening). Altogether 93% of all screened and included patients for whom the first contacts could be accurately dated, met the criterion of having had no contacts with 'helping agencies' prior to the last three months. In the remaining 7% a history of earlier contacts was ascertained upon initial examination but it was decided to retain such patients in the analysis, if at the time of the first contact the disorder had only manifested prodromal signs, had not been

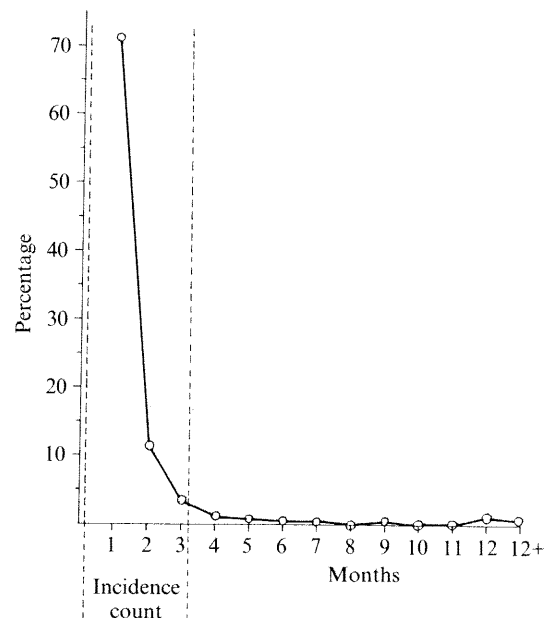


FIG. 2.1. Time between first contact and initial examination (N = 1288).

<sup>1</sup> Hallucinations or pseudohallucinations; delusions; qualitative thought disorder; qualitative psychomotor disorder.

<sup>2</sup> Reduction or loss of interests, initiative and drive; deterioration of performance; conspicuous social withdrawal; excitement, destructiveness or aggression; persisting states of pervasive fear; gross self-neglect.

diagnosed as psychotic, and no appropriate treatment had been initiated.

Most of the included cases (68%) entered the study within a month of their first contact (38% within a week). Only 12% and 7% were included during the second and the third month, respectively, after a first contact. Therefore, the study population can be described, by and large, as having had no previous exposure to psychiatric institutions and services.

The distribution of intervals between first contact and intake was similar in all centres. There was a tendency for patients in developing countries to enter the study after slightly longer intervals between the first contact and screening (66% of the cases in the developing countries were included within the first month, compared to 70% in the developed countries), but the difference is not significant.

### Reasons for making the first contact

There was a remarkable similarity in the events and social reactions leading to help-seeking and eventually to a formal ascertainment and initiation of treatment of a psychotic illness in the different cultures. The reasons for seeking help in the form of advice, admission or referral, as stated by the 'key informants',<sup>3</sup> were analysed to establish their rank order and frequency. Onset or recent exacerbation of odd behaviour, appearance or talk, was the most frequently given reason for seeking psychiatric treatment in all the centres (in 90% of the cases), followed by reports of actual or feared violent behaviour towards self or others. Acts or threats of violence to others, or to property, were more frequently reported as motives for seeking psychiatric help in the developing countries (in 27%) than in developed countries (11%). Attempted suicide or self-injury were reported with similar frequency in the developed countries (10%) and in the developing countries (6%).

### Types of contacts prior to intake

The actually occurring sequences of different contacts leading to the inclusion of patients in

<sup>3</sup> A 'key informant' was interviewed with the PPHS in 69% of the cases; for 31% of the patients no such person was available and the main source of PPHS information was the patient himself and/or previous case notes. Where a 'key informant' was involved, the person was patient's mother in 41% of all the instances, spouse in 24%, and father in 15%. In 11% of the cases more than one 'key informant' was interviewed for the same patient.

Table 2.1. Pathways into the study: first contacts and patterns of contacts (percentages of patients)

|   | Aar<br>N = 88 | Agr<br>N = 81 | Cal<br>N = 154 | Cha/R<br>N = 54 | Cha/U<br>N = 155 | Dub<br>N = 65 | Hon<br>N = 43 | Iba<br>N = 142 | Mos<br>N = 197 | Nag<br>N = 108 | Not<br>N = 92 | Pra<br>N = 107 | Roc<br>N = 55 | All<br>N = 1321 |
|---|---------------|---------------|----------------|-----------------|------------------|---------------|---------------|----------------|----------------|----------------|---------------|----------------|---------------|-----------------|
| Psychiatrist or other mental health professional        | 15.9          | 17.3          | 55.8           | 24.1            | 34.1             | 20.0          | 30.2          | 57.0           | 53.8           | 53.7           | 4.4           | 39.3           | 38.2          | 38.7            |
| General practitioner or other physician                 | 58.0          | 8.6           | 22.7           | 22.2            | 27.4             | 72.3          | 16.3          | 6.3            | 35.5           | 24.1           | 60.9          | 52.3           | 29.1          | 32.5            |
| Nurse or social worker                                  | —             | 1.2           | 0.7            | —               | —                | 1.5           | 4.7           | —              | —              | —              | 1.1           | —              | 1.8           | 0.5             |
| Traditional healer/faith healer                         | —             | 28.4          | 2.6            | 9.3             | 15.6             | —             | —             | 27.5           | —              | 3.7            | —             | —              | —             | 7.3             |
| Priest or other religious person                        | 1.1           | —             | —              | —               | —                | —             | 7.0           | —              | —              | 2.8            | —             | —              | 1.8           | 0.6             |
| Police  | 6.8           | —             | —              | —               | —                | 3.1           | 2.3           | —              | 7.6            | 6.5            | —             | 1.9            | 3.6           | 2.7             |
| Complex patterns (involving more than one of the above) | 13.6          | 44.4          | 16.2           | 42.6            | 23.0             | 1.5           | 30.2          | 7.8            | 0.5            | 6.5            | 29.3          | 5.6            | 14.5          | 15.2            |
| Other or not specified                                  | 4.6           | —             | 2.0            | 1.8             | —                | 1.5           | 9.3           | 1.4            | 2.5            | 2.8            | 3.3           | 0.9            | 10.9          | 2.5             |
| Total   | 100           | 100           | 100            | 100             | 100              | 100           | 100           | 100            | 100            | 100            | 100           | 100            | 100           | 100             |

the study are shown in Table 2.1. The top six rows give the frequencies of simple pathways of entry, consisting either of one step only (a psychiatrist or another mental health professional being the first and only contact prior to inclusion) or of two steps (other agent in the community being the first contact, and the psychiatrist the second). In addition there were more complex sequences (next to last row in the table), involving three or more (up to six) steps before reaching the mental health professional collaborating with the project team.

It is clear that the different types of organization of health care (including formal and informal systems) existing in the catchment areas leave their imprint on the pattern of contacts leading to the inclusion of a subject into the study. However, it is worth noting that the largest proportion (39%) of the study patients made their first contact with a psychiatrist. The percentage of patients contacting a psychiatrist directly, without a referral by any primary care agency, was particularly high in Cali, Ibadan, Moscow, and Nagasaki, but low in Nottingham, Aarhus, and Agra. The second most frequent source of referral across the centres was the general practitioner or other physician in a non-psychiatric service. Other community agents, such as nurses, social workers, or police, did not appear to play a significant role in the first contacts and referrals of psychotic patients in any centre.

A great variety of traditional and religious healers (e.g. herbalists, homeopaths, practitioners of Ayurvedic or Unani medicine, or yoga teachers in India; *babalawo* and *aladura* healers in Nigeria, priests and other religious persons) exist in many centres and are known to play an important role in the management of mental health problems in developing countries. Table 2.1 shows that such practitioners were the primary source of referral for 28% of the cases in Agra, 28% in Ibadan, and for lower percentages in several of the remaining centres. In addition to the simple patterns of contacts, traditional or religious healers were involved in more than one half of all the complex patterns of referral. If the complex patterns of contacts are also considered, the percentage of patients who had seen traditional or religious practitioners prior to inclusion would increase from 7 to 16 in the total study population. In Agra, 73% had

had such contacts before being detected by the project team; the corresponding percentage for Ibadan is 35, and for Chandigarh 36. This underscores the observation that in many developing countries it is a common practice for people with mental health problems to seek help from, and utilize simultaneously, the two systems of care, the 'Western' and the traditional one. It also highlights the importance of ensuring the cooperation of informal and traditional systems of care for psychiatric patients in any epidemiological research involving communities where such practitioners may be a preferred or parallel resource. Although in this study the attempts to involve traditional and religious healers in case finding were not entirely successful, a total of 200 eligible cases of psychotic illness would have been missed, had such attempts not been undertaken.

Varying proportions of patients in the different centres had been prescribed some kind of treatment by the 'helping agencies' visited by them before their inclusion into the study. Considerable numbers (between 22 and 46%) of patients in Agra, Chandigarh and Ibadan had used traditional remedies or unspecified 'drugs'. Neuroleptics had been prescribed to more than 10% of the patients in all centres except Ibadan, Moscow, Nottingham and Rochester. In Agra, 17% had had one or more electroconvulsive treatments in the psychiatric hospital prior to inclusion, and in Honolulu, 65% of the patients reported about having had some form of psychotherapy.

### SOCIODEMOGRAPHIC CHARACTERISTICS

As no resources were available in the present study for a systematic statistical comparison between the study population and the general population in the different catchment areas, the data reported below are no more than a descriptive summary of the main sociodemographic features of the study samples.

#### Age and sex

The size and the age distribution of the study population in each centre is given in Table 2.2, and the male/female ratio for each age group in Table 2.3. Within the total study population of 1379 subjects (745 men and 634 women), males

Table 2.2. Study population by age (percentage)

| Age   | Aar<br>N = 99 | Agr<br>N = 81 | Cal<br>N = 154 | Cha/R<br>N = 54 | Cha/U<br>N = 155 | Dub<br>N = 67 | Hon<br>N = 68 | Iba<br>N = 142 | Mos<br>N = 197 | Nag<br>N = 108 | Not<br>N = 92 | Pra<br>N = 107 | Roc<br>N = 55 | All<br>N = 1379 |
|-------|---------------|---------------|----------------|-----------------|------------------|---------------|---------------|----------------|----------------|----------------|---------------|----------------|---------------|-----------------|
| 15-24 | 45.4          | 56.8          | 70.8           | 53.7            | 49.0             | 41.8          | 52.9          | 47.2           | 21.8*          | 55.6           | 39.1          | 34.6           | 63.6          | 46.9            |
| 25-34 | 25.3          | 25.9          | 21.4           | 24.1            | 33.6             | 29.8          | 38.2          | 42.3           | 35.0           | 31.5           | 29.4          | 40.2           | 25.5          | 31.7            |
| 35-44 | 19.2          | 16.1          | 6.5            | 9.3             | 12.9             | 19.4          | 7.4           | 8.4            | 22.3           | 11.1           | 17.4          | 17.7           | 3.6           | 13.8            |
| 45-54 | 10.1          | 1.2           | 1.3            | 12.9            | 4.5              | 9.0           | 1.5           | 2.1            | 20.8           | 1.8            | 14.1          | 7.5            | 7.3           | 7.6             |
| Total | 100           | 100           | 100            | 100             | 100              | 100           | 100           | 100            | 100            | 100            | 100           | 100            | 100           | 100             |

\*Age 18-24.

predominate in the younger age groups and constitute 58% of the patients aged less than 35.<sup>4</sup> Women predominate in the age groups 35-54, representing 62% of this population. In Moscow, Nottingham, and Aarhus, particularly high proportions (50, 42, and 39% respectively) of all female patients are in age groups 35-54.

The male/female ratios shown in Table 2.3 must not be interpreted epidemiologically (age- and sex-specific rates are discussed in chapter 3). Nevertheless, they suggest a pattern. If Prague is excluded because of an over-selection of female patients (due to a sampling bias), then an excess of males in the age group 15-24 is found in all centres except one. In the age group 25-34 a similar excess of males is observed in 9 out of the 12 centres. In the age group 35-44 there is an excess of males in two, equal numbers in another three, and an excess of females in the remaining centres. In the age group 45-54 the pattern is reversed, and in 10 out of the 12 centres the percentage of females exceed that of males. This pattern, and also the excess of females in the older age groups, tallies well with the curves and the age- and sex-specific incidence rates, discussed in chapter 3.

#### Urban/rural residence

The majority of the study patients are urban residents. If urban areas are defined so as to include suburbs and periurban conurbations, the percentage of patients living in urban communities would be between 68 in Agra and 100 in Moscow. In Honolulu, 57% of the patients were living in residential areas outside the city; the same was the case in somewhat lower proportions (43, 20, 18 and 15%) of the patients in Nagasaki, Rochester, Dublin, and Aarhus. In Ibadan, 59% of the patients were described as residents of the poor periurban areas which had mushroomed around the old town in recent years and contained mostly slum dwellings. Slum conditions are also the main feature of the *barrios* in Cali, which accommodate a large proportion of the study patients.

The rural catchment area of Chandigarh was the only traditional village area specially selected

<sup>4</sup> In Moscow 33% of all male patients were in the age group 35-54. This relatively high proportion is probably due to the truncated distribution of the younger age groups: the lowest age set for case finding in that centre was 18.

Table 2.3. Male to female ratio, total study population, by centre

| Age   | Aar | Agr    | Cal    | Cha/R | Cha/U | Dub | Hon    | Iba  | Mos    | Nag    | Not | Pra    | Roc    | All |
|-------|-----|--------|--------|-------|-------|-----|--------|------|--------|--------|-----|--------|--------|-----|
| 15-24 | 1.8 | 1.7    | 2.0    | 1.4   | 1.8   | 0.9 | 1.9    | 1.7  | 1.2*   | 1.1    | 2.6 | 0.9    | 1.2    | 1.6 |
| 25-34 | 1.8 | 3.3    | 1.4    | 0.4   | 1.6   | 1.9 | 1.0    | 1.5  | 0.9    | 1.4    | 2.4 | 0.4    | 1.3    | 1.2 |
| 35-44 | 0.9 | 0.9    | 1.0    | 0.5   | 0.5   | 1.6 | 0.3    | 0.7  | 0.6    | 1.0    | 1.0 | 0.3    | < 1.0+ | 0.7 |
| 45-54 | 0.7 | < 1.0+ | < 1.0+ | 0.8   | 0.8   | 0.5 | > 1.0+ | 1.0+ | < 1.0+ | < 1.0+ | 1.6 | < 1.0+ | 0.3    | 0.5 |
| Total | 1.4 | 1.7    | 1.7    | 1.0   | 1.4   | 1.2 | 1.3    | 1.4  | 0.7    | 1.1    | 2.0 | 0.5    | 1.0    | 1.2 |

\*18-24.

+ There were 0 male and 1 or 2 females (Ibadan 3), except Prague with 8 females.

++ One male and 0 female.

for study. With 98% of the patients there being classified as rural residents, it provided a contrasting environment to the Chandigarh urban study area. The only other centre with a sizeable rural population was Agra where 32% of the cases came from the villages of the rural district surrounding the town.

The socioeconomic level of the patients' neighbourhoods was rated by the investigators on a simple scale as 'average', 'higher than average', or 'lower than average', in comparison with the catchment area as a whole. With the exception of Ibadan, Cali, Nottingham, and Chandigarh (rural area), in all the centres a majority of the patients (51-97%) were rated as living in 'average' neighbourhoods. In Ibadan, Cali, and Chandigarh (rural area), the field investigators reported that more than 50% of the patients were living in socioeconomically deprived localities. 'Below average' socioeconomic level of the neighbourhood was also rated for 46% of the patients in Nottingham, 33% of the patients in Rochester, 28% in Agra, and 26% in Chandigarh (urban area). Honolulu was the only centre in which a considerable proportion (19%) of the patients were residents of affluent, above-average residential communities.

#### Marital status

The marital status of the patients is shown in Table 2.4. There are marked differences among the centres. A much higher proportion (68%) of the males, than of the females (39%), are single. The only centres with relatively low proportions of never-married men are Chandigarh (rural area) (42%), Agra (45%), and Moscow (50%). In the latter centre, this is partly due to the absence of subjects aged less than 18. The proportion of the married among the female patients (46% in the total sample), ranges from 22% in Nagasaki to 76% in Ibadan. In most of the centres in developed countries, between 15 and 24% of the female patients are divorced or separated.

#### Type of household

In all the centres except Chandigarh (rural area) and Ibadan, the nuclear family (containing at most two generations with conjugal, parent-child, and/or sibling relationships among its members) was the predominant type of family unit (49 to 87% in the different

Table 2.4. Marital status: males (percentages)

| Status                         | Aar<br>N = 58 | Agr<br>N = 51 | Cal<br>N = 97 | Cha/R<br>N = 27 | Cha/U<br>N = 91 | Dub<br>N = 36 | Hon<br>N = 39 | Iba<br>N = 83 | Mos<br>N = 82 | Nag<br>N = 57 | Not<br>N = 61 | Pra<br>N = 35 | Roc<br>N = 28 | All<br>N = 745 |
|--------------------------------|---------------|---------------|---------------|-----------------|-----------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|----------------|
| Single                         | 67            | 45            | 88            | 44              | 63              | 61            | 85            | 66            | 50            | 81            | 74            | 83            | 79            | 68             |
| Married, cohabiting            | 17            | 51            | 8             | 48              | 35              | 39            | 5             | 29            | 36            | 14            | 19            | 14            | 14            | 25             |
| Divorced, separated or widowed | 14            | 4             | 2             | 4               | —               | —             | 10            | 5             | 13            | 5             | 5             | —             | 4             | 5              |
| Other or not known             | 2             | —             | 2             | 4               | 2               | —             | —             | —             | 1             | —             | 2             | 3             | 3             | 2              |
| Total                          | 100           | 100           | 100           | 100             | 100             | 100           | 100           | 100           | 100           | 100           | 100           | 100           | 100           | 100            |

Marital status: females (percentages)

| Status                         | Aar<br>N = 41 | Agr<br>N = 30 | Cal<br>N = 57 | Cha/R<br>N = 27 | Cha/U<br>N = 64 | Dub<br>N = 31 | Hon<br>N = 29 | Iba<br>N = 59 | Mos<br>N = 115 | Nag<br>N = 51 | Not<br>N = 31 | Pra<br>N = 72 | Roc<br>N = 27 | All<br>N = 634 |
|--------------------------------|---------------|---------------|---------------|-----------------|-----------------|---------------|---------------|---------------|----------------|---------------|---------------|---------------|---------------|----------------|
| Single                         | 41            | 23            | 58            | 26              | 44              | 58            | 38            | 14            | 28             | 72            | 32            | 35            | 48            | 39             |
| Married, cohabiting            | 37            | 70            | 30            | 70              | 52              | 36            | 38            | 76            | 48             | 22            | 48            | 41            | 37            | 46             |
| Divorced, separated or widowed | 22            | 7             | 9             | 4               | 4               | 3             | 21            | 7             | 23             | 6             | 16            | 26            | 15            | 14             |
| Other or not known             | —             | —             | 3             | —               | —               | 3             | 3             | 3             | 1              | —             | 4             | —             | —             | 1              |
| Total                          | 100           | 100           | 100           | 100             | 100             | 100           | 100           | 100           | 100            | 100           | 100           | 100           | 100           | 100            |

centres). In Chandigarh (rural area) and in Ibadan, the extended family (including more than two generations and more distantly related kin) or the joint family (composed of two or more brothers with their wives and children living together), was a more frequent type of social unit than the nuclear family. The proportion of patients living alone varied from zero in Agra and Chandigarh (rural area) to 10-15% in Moscow, Nottingham and Prague, and to as high as 35% in Aarhus.

Overall, the proportions of patients living alone were considerably lower in the centres in developing countries (where they ranged from 0% in Agra and Chandigarh, rural area, to 6.5% in Chandigarh, urban area) than in the centres in developed countries (between 6.0% in Dublin and 35.4% in Aarhus). In contrast, household arrangements of the extended family type were much more common in the developing countries (frequency between 14.8% in Chandigarh, urban area, and 44.4% in Chandigarh, rural area) as compared with the developed countries (between 1.0% in Aarhus and 11.8% in Honolulu).

#### Education

The level of completed education varied considerably among the centres. Illiterate subjects (who never attended school) constitute 56, 40 and 30% of the patient samples in Chandigarh/rural, Agra, and Ibadan respectively. Women outnumber men in this category in every centre. At the other extreme, the study population in Moscow, Chandigarh (urban area), Prague, and Honolulu, includes 23, 15, 11 and 10% respectively, university graduates. In the study population as a whole, the majority (58%) had completed either primary or secondary education. Relatively large proportions, between 15 and 27%, of the subjects in Rochester, Aarhus, Prague, Chandigarh (urban area), and Nagasaki, were students at the point of entry into the study.

#### Employment

In the total study population, 25% of the patients had never had a gainful employment for various reasons (housewives, students, unpaid workers in family household, or general unemployment). The majority of the patients (74% of the total sample) had some work record, and

their proportion varied from 43% in Chandigarh (rural area) to 97% in Honolulu and Moscow.

### ONSET AND EARLY MANIFESTATIONS OF ILLNESS

In the design of the study, and throughout the data collection period, special attention was given to ensuring that accurate estimates were made of the beginning of the illness and its length up to the moment of screening and inclusion. During the interview with the key informant or the patient, the investigators explored the occurrence and dated each one of 25 specified early behavioural manifestations of the disorder, taking into account all of the informant's statements but using their own judgement in estimating the number of months since onset. The investigator's estimate had to be supported by a narrative summary of the early symptoms and signs, mode of onset, the progression of the symptoms, and any relevant circumstances. The mode and timing of onset were established through detailed questioning and cross-examining the informant or the patient. The following excerpts from the PPHS illustrate the content and wording of this part of the history interview.

'You have told me about the reason why X had to come to the hospital at this point in time, and about the kind of problems he has now. I should like now to ask you about things which happened in the past, mainly in the last year and maybe even earlier. What was it that made you aware for the first time ever that X was not behaving like his usual self? Did other people notice anything unusual about X's behaviour around that time, or maybe even earlier than you did? (Allow the informant to think and reply, then cross-examine): 'Was there nothing of the sort before that? Did that happen before or after... (use as a reference point a fact that the informant has already mentioned, or an event which should be known locally)'. (Write a narrative note using the informant's own words to describe the first abnormality that he recollects and its approximate timing.)

'You told me about some unusual things that X did or said, which made you think that he was not behaving like his former self... Did this change develop suddenly, say within days, or slowly, over a longer period of time, maybe in weeks or even months?'

Following the initial data collection period, all information on the mode of onset was re-

rated by the centre investigators, to achieve greater uniformity of the criteria applied. The considerable emphasis given to these variables in the study design led to much effort being put into their validation during data collection and data processing. The results, therefore, can be regarded with confidence as to their validity, in spite of the well-known difficulties associated with the retrospective dating and evaluation of the onset of psychotic illnesses.

#### Mode of onset

The onset of the disorder was defined as the beginning of the first psychotic episode, manifested in the emergence of the following signs and symptoms.

A. At least one overt psychotic symptom or sign:

- (i) hallucinations or pseudohallucinations (in any modality);
- (ii) delusions;
- (iii) thought and speech disorder (incoherence, irrelevance, blocking, neologisms, incomprehensibility of speech);
- (iv) qualitative psychomotor disorder (negativism, mutism or stupor; catatonic excitement; constrained attitudes and postures);
- (v) bizarre or grossly inappropriate behaviour; or

B. the simultaneous presence of two or more 'suggestive' signs or symptoms:

- (vi) marked reduction of interests, initiative, and drive leading to a deterioration of performance;
- (vii) marked social withdrawal;
- (viii) severe excitement, purposeless destructiveness or aggression (frequent episodes or continuous);
- (ix) persistent, pervasive fear or anxiety;
- (x) gross self-neglect.

Any of the latter would be regarded as a prodromal phenomenon, if it appeared in isolation prior to the outbreak of overt psychotic symptoms.

The frequencies of the different types of onset by centre are given in Table 2.5. The definitions of the categories are as follows.

#### (a) Acute

A florid psychotic state developing within days (up to a week); mild ('suggestive', non-psy-

Table 2.5. Mode of onset of the first episode of illness (percentages)

| Mode  | Aar<br>N = 99 | Agr<br>N = 81 | Cal<br>N = 154 | Cha/R<br>N = 54 | Cha/U<br>N = 155 | Dub<br>N = 67 | Hon<br>N = 68 | Iba<br>N = 142 | Mos<br>N = 197 | Nag<br>N = 108 | Not<br>N = 92 | Pra<br>N = 107 | Roc<br>N = 55 | All<br>N = 1379 |
|---|---------------|---------------|----------------|-----------------|------------------|---------------|---------------|----------------|----------------|----------------|---------------|----------------|---------------|-----------------|
| Sudden/precipitous                                      | 29            | 71            | 41             | 70              | 45               | 12            | 19            | 43             | 31             | 26             | 21            | 38             | 20            | 36              |
| Acute   | 21            | 12            | 23             | 11              | 11               | 21            | 10            | 27             | 16             | 26             | 20            | 17             | 11            | 18              |
| Insidious or no clear demarcation from pre-morbid state | 50            | 15            | 36             | 19              | 30               | 55            | 32            | 30             | 53             | 34             | 54            | 43             | 67            | 40              |
| Not known   | —             | 2             | —              | —               | 14               | 10            | 35            | —              | —              | 14             | 5             | 2              | 2             | 6               |
| Total   | 100           | 100           | 100            | 100             | 100              | 100           | 100           | 100            | 100            | 100            | 100           | 100            | 100           | 100             |

Table 2.6. Mode of onset of the first episode of illness (numbers and percentages)

|                      | Sudden/precipitous | Acute      | Insidious/no demarcation | Total        |
|----------------------|--------------------|------------|--------------------------|--------------|
| Developing countries | 289 (51.4)         | 107 (19.0) | 166 (29.5)               | 562 (100.0)  |
| Developed countries  | 210 (28.4)         | 144 (19.5) | 385 (52.1)               | 739 (100.0)  |
| Total                | 499 (38.4)         | 251 (19.3) | 551 (42.4)               | 1301 (100.0) |

$\chi^2 = 82.450$ ;  $P = 0.000$ .

<sup>5</sup> Even if all cases with missing values were at one extreme of the distribution according to the mode of onset, this conclusion would remain valid because the number of missing cases in all centres (except for Honolulu) was small.

chotic) prodromal signs or symptoms may have been absent (sudden onset) or present (precipitous onset).

#### (b) Subacute

Symptoms appearing and developing into a clear-cut psychotic state over a period of up to one month.

#### (c) Gradual

Slow, incremental development of psychotic symptoms over a period exceeding one month; prodromal signs or symptoms (if any) cannot be clearly distinguished from overt psychotic symptoms as regards their timing because of a gradual transition from one to the other.

#### (d) Insidious

No clear demarcation can be made between premorbid personality and mental illness, and onset as such cannot be rated; included are also cases in which no overt psychotic symptoms were present at the time of examination but the investigator had a strong suspicion of an underlying psychotic illness.

In order to simplify the presentation of the data, the gradual and the insidious types of onset have been collapsed. For a total of 78 patients (most of them in Honolulu, Chandigarh/urban area, and Nagasaki) no reliable information was available on the mode of onset. Assuming that the cases with missing data were not significantly different from those on whom adequate assessment could be made, it can be concluded that, overall, the gradual/insidious type of onset was a more common type of beginning of psychotic illnesses<sup>5</sup> than either the acute or the subacute type. It should be noted, however, that the frequency of the acute type of onset was not much lower than that of the gradual onset. The frequency of subacute onset was less than one half of the frequencies of each of the two other types.

Table 2.6 shows that there are highly significant differences in the frequencies of different modes of onset in developing and developed countries. The proportions of the acute and the gradual/insidious types are inverted in the two

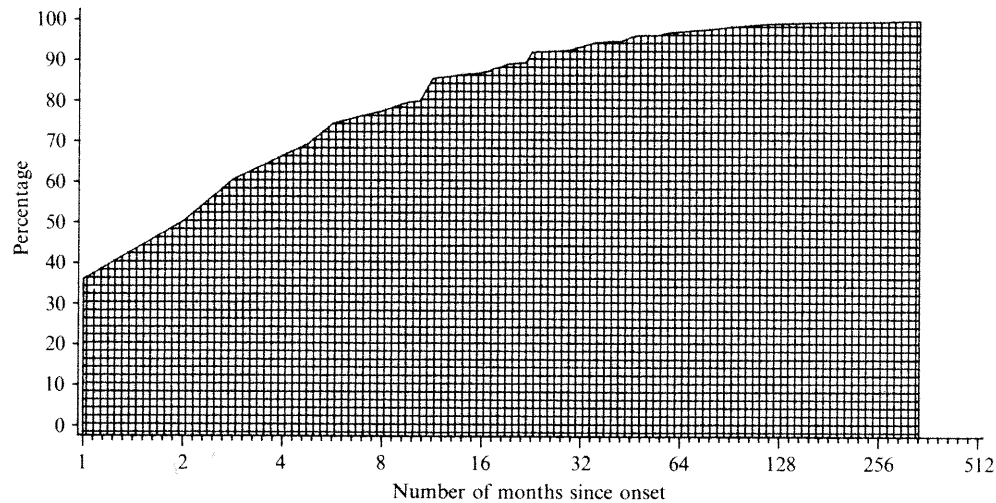


FIG. 2.2. Length of illness prior to inclusion in the study (cumulative percentage distribution based on data on 1218 patients).

Table 2.7. Length of illness prior to inclusion into the study (numbers and percentages)

|                      | Less than 6 months | 6 months and over | Total |
|----------------------|--------------------|-------------------|-------|
| Developing countries | 443 (80.4)         | 108 (19.6)        | 551   |
| Developed countries* | 374 (79.4)         | 97 (20.6)         | 471   |
| Total                | 817 (75.9)         | 205 (20.1)        | 1022  |

\*Excluding Moscow.

settings (the former predominates in developing countries and the latter in developed countries) while the frequencies of the subacute onset are almost identical.

#### Length of illness prior to intake

The intervals between the estimated onset and the point of inclusion into the study, i.e. the length of previous illness, and the percentages of cases falling into each interval, are shown in Fig. 2.2.

Patients on whom no adequate information was available have been excluded from this graph; this explains the reduction of the total to 1218 cases. The vast majority (86%) had entered the study within the first year after the onset of illness, and in 61% of the patients the inclusion into the study had occurred within three months of the onset of psychotic symptoms. This was the case in every centre, and in each of the two groups of centres, in developing and in developed countries respectively. If six months is arbitrarily chosen as a cut-off between short- and long-

duration of illness prior to inclusion, then as Table 2.7 shows, no differences can be found between the two groups: the proportions of patients with length of illness less than six months and with length of illness equal to, or over six months, are practically identical in developing and in developed countries.<sup>6</sup>

Even if we assume that all the cases without a clear demarcation of onset (i.e. with an insidious beginning), which were more common in the developed countries, would fall into the category of patients with more than six months of previous illness, their number would not be large enough to change significantly the distribution shown in Table 2.7. It can be concluded, therefore, that patients in developing and in developed countries were not significantly different from each other at the point of entry into the study with regard to the length of previous illness.

<sup>6</sup> Moscow was excluded from this tabulation because of a difference from the other centres in the manner in which onset was dated.

#### Early manifestations of illness

In order to identify and date the earliest manifestations of the disorder, the key informant was asked specific questions about 25 different behaviours that could occur as a result of an incipient mental illness. The questions were worded in lay terms, e.g. 'Did X, at any time in the past, say that he was being persecuted, harmed, or bewitched by other people?' The content of the items was chosen so as to cover a broad range of behavioural manifestations of psychotic disorders.

The 10 most common manifestations of the beginning of the illness are listed in Table 2.8 in the rank order of the frequency with which they were reported for the total study population, and the percentages of patients in whom such behaviour had occurred, are given for each centre. In spite of the cultural differences, there is a great similarity across the centres in the ways in which psychotic illnesses present themselves to local lay observers in the immediate social environment of the patients. It is noteworthy that 'negative' manifestations, such as neglect of usual activities and loss of appetite, sleep, or interest in sex, are even more conspicuous in the eyes of the community in most of the centres, than the more dramatic signs of psychotic disturbance, for example talk of persecution, harm or bewitchment, or behaving as if hearing voices. The key informants in the community who were approached for data appeared to be sensitive enough observers to serve as sources for case finding in epidemiological surveys of mental disorders in all the cultural settings in which the study was done.

#### DIAGNOSTIC CLASSIFICATION OF THE STUDY POPULATION

Issues concerning diagnosis and classification are given considerable attention in the present report because of the continuing debate on what constitutes a 'valid' diagnosis of schizophrenia, and where the boundaries of the diagnostic concept should be drawn.

In the present study diagnostic classification was carried out in two different and independent ways. First, the investigators in each centre assigned a clinical diagnosis to each included subject. This was done, in the large majority of

Table 2.8. Ten most frequent early manifestations of disorder (listed in rank order in total study population) and their frequency (percentage) in each centre

|   | Aar<br>N = 88 | Agr<br>N = 81 | Cal<br>N = 154 | Cha/R<br>N = 54 | Cha/U<br>N = 155 | Dub<br>N = 65 | Hon<br>N = 43 | Iba<br>N = 142 | Mos<br>N = 197 | Nag<br>N = 108 | Not<br>N = 92 | Pra<br>N = 107 | Roc<br>N = 55 | All |
|---|---------------|---------------|----------------|-----------------|------------------|---------------|---------------|----------------|----------------|----------------|---------------|----------------|---------------|-----|
| 1 Loss of appetite, sleep, or interest in sex | 40            | 94            | 84             | 91              | 82               | 52            | 61            | 86             | 35             | 56             | 55            | 62             | 60            | 65  |
| 2 Neglect of usual activities and interests   | 33            | 96            | 65             | 94              | 68               | 82            | 58            | 74             | 38             | 72             | 72            | 58             | 67            | 62  |
| 3 Persecuted, harmed or bewitched             | 64            | 28            | 62             | 52              | 59               | 72            | 61            | 68             | 65             | 32             | 67            | 66             | 62            | 59  |
| 4 Avoiding other people                       | 25            | 64            | 57             | 61              | 48               | 71            | 56            | 38             | 48             | 51             | 39            | 44             | 46            | 49  |
| 5 Frightened or anxious                       | 31            | 35            | 68             | 30              | 47               | 9             | 58            | 55             | 55             | 32             | 51            | 63             | 46            | 48  |
| 6 Behaves as if hearing voices                | 36            | 42            | 60             | 15              | 32               | 34            | 72            | 81             | 39             | 33             | 58            | 35             | 42            | 46  |
| 7 Claims impossible things                    | 52            | 3             | 46             | 26              | 38               | 68            | 70            | 35             | 37             | 39             | 60            | 38             | 58            | 42  |
| 8 Irritable and angry without reason          | 16            | 56            | 64             | 70              | 56               | 22            | 33            | 52             | 22             | 33             | 21            | 42             | 47            | 41  |
| 9 Looks sad, mournful or hopeless             | 35            | 36            | 57             | 20              | 31               | 22            | 56            | 26             | 50             | 31             | 48            | 34             | 26            | 38  |
| 10 Talks incomprehensibly                     | 32            | 43            | 51             | 37              | 27               | 17            | 37            | 54             | 15             | 43             | 36            | 26             | 27            | 34  |



cases, after a full assessment of the history and present mental state (using PPHS and PSE). In a minority of cases (80 in total, 33 of them in Chandigarh), a PSE interview could not be administered for various reasons; however, in most of these cases clinical notes from the centre were available and it was possible to make at least a tentative diagnosis.

The diagnostic assessment of each case in the field research centres was recorded in the Diagnostic and Prognostic Schedule (DPS) in terms of: (i) main diagnosis of the condition; (ii) alternative to the main diagnosis; and (iii) supplementary diagnosis of any associated problem - psychiatric physical, or neurological. The narrative recording of the diagnosis was done in the terminology normally used in the centre, but the investigators were requested to enter the 'best fitting' ICD-9 code for each diagnosis, in accordance with the ICD glossary (WHO, 1978). The correspondence between centre diagnosis and ICD code was checked at Headquarters, and any discrepancies or inaccuracies were removed. Special 5-digit codes were created for the diagnostic categories based on pattern of course which were specific to the classification used in Moscow and were not available in ICD-9.

The second method of arriving at a diagnostic classification involved the application of the CATEGO diagnostic program (Wing *et al.* 1974) to the PSE data on all the patients, once their records had been received and checked at Headquarters. The CATEGO system produces a reference classification based on standard inference rules. The last stage of the program applies hierarchical criteria in order to reach a 50-part classification which has been used in reporting most of the present study. Its main advantage is in providing a 'yardstick' for comparisons of psychopathology between different patient populations.

It should be noted that the authors of the PSE-CATEGO system do not recommend a straightforward application of diagnostic labels to CATEGO classes, particularly when history data have not been included. Other techniques for recording clinical information (e.g. the Aetiology Schedule) in the CATEGO system were not used in this project, so that the CATEGO classification of cases reported here is based solely on the symptoms or signs present

during the four weeks before examination. A list of the principal CATEGO classes, including the constituent syndromes and symptoms, is given in Tables 2.9, 2.10, 2.12 and 2.13.

A satisfactory classification for use in this study should be: (i) inclusive, in the sense of not leaving out cases that could be considered schizophrenic on grounds of any one of the different influential interpretations of the concept; and (ii) analytical, in the sense of allowing the identification and comparison of subtypes or subgroups of cases. For such purposes, a combination of the two methods of classification, i.e. ICD-9 clinical diagnosis and CATEGO computer classification was thought to be a suitable approach. Generally, the 'inclusiveness' of the clinical diagnosis was expected to be wider than that of the CATEGO classes designed to represent schizophrenic and paranoid disorders. However, as it was known that some centres adhered to a very restrictive concept of schizophrenia and would apply non-schizophrenic diagnostic categories to a proportion of the patients with 'schizophrenic' CATEGO classes, the minimum diagnostic criteria adopted for the inclusion of patients into the clinical study were as follows.

#### Criterion I

Main clinical diagnosis of the patient made at the centre being one of the following:

- (1) Schizophrenia (ICD 295);
- (2) Paranoid state (ICD 297);
- (3) Acute paranoid reaction (ICD 298.3) or psychogenic paranoid psychosis (ICD 298.4), or other and unspecified reactive psychosis (298.8);
- (4) Alcoholic hallucinosis (ICD 291.3) or alcoholic jealousy (ICD 291.5);
- (5) Paranoid and/or hallucinatory states induced by drugs (ICD 292.1);
- (6) Paranoid (ICD 301.0) and schizoid (ICD 301.2) personality disorder;
- (7) Unspecified psychosis (298.9).

#### Criterion II

In the absence of any one of the above, the patient might still be included, if his mental state is assigned by the CATEGO program to one of the following classes:

- (1) Schizophrenic psychosis (S+ or S?);
- (2) Paranoid psychosis (P+ or P?);

Table 2.9. Diagnostic distribution of the study population according to ICD-9 clinical diagnosis of the field research centre and according to CATEGO class assigned at headquarters

|   | Aar    | Agr | Cal | Cha/R | Cha/U | Dub | Hon | Iba | Mos | Nag | Not | Pra | Roc | All  |
|---|--------|-----|-----|-------|-------|-----|-----|-----|-----|-----|-----|-----|-----|------|
| Schizophrenia (295)   | N = 37 | 76  | 143 | 40    | 118   | 63  | 54  | 129 | 197 | 101 | 68  | 79  | 46  | 1151 |
| 1 = S+  | 22     | 36  | 98  | 13    | 35    | 26  | 28  | 111 | 84  | 54  | 48  | 55  | 24  | 634  |
| 2 = S?, P, O+   | 7      | 23  | 26  | 7     | 28    | 8   | 4   | 10  | 55  | 15  | 9   | 13  | 9   | 214  |
| 3 = O?  | 3      | 11  | 10  | 13    | 18    | 6   | 1   | 2   | 17  | 13  | 3   | 5   | 5   | 107  |
| 4 = Other   | 2      | 4   | 9   | 4     | 12    | 12  | 1   | 5   | 40  | 13  | 7   | 6   | 7   | 122  |
| 5 = No CATEGO   | 1      | —   | —   | —     | 2     | 3   | —   | 1   | 1   | 1   | 1   | —   | —   | 10   |
| 6 = No PSE  | 2      | 2   | —   | 3     | 23    | 8   | 20  | —   | —   | 5   | —   | —   | 1   | 64   |
| Paranoid states (297)   | N = 3  | 0   | 4   | 0     | 1     | 0   | 2   | 3   | 0   | 2   | 1   | 16  | 0   | 32   |
| 1 = S+  | —      | —   | 4   | —     | 1     | —   | 1   | 3   | —   | 2   | 1   | 12  | —   | 21   |
| 2 = S?, P, O+   | 1      | —   | —   | —     | —     | —   | —   | —   | —   | —   | —   | 2   | —   | 7    |
| 4 = Other   | 1      | —   | —   | —     | —     | —   | —   | —   | —   | —   | —   | 2   | —   | 3    |
| 6 = No PSE  | 1      | —   | —   | —     | —     | —   | —   | —   | —   | —   | —   | —   | —   | 1    |
| Psychogenic psychosis and unspecified psychosis (298.3-298.9) | N = 35 | 2   | 1   | 2     | 4     | 0   | 1   | 0   | 0   | 4   | 4   | 11  | 5   | 69   |
| 1 = S+  | 11     | —   | 1   | —     | —     | —   | —   | —   | —   | —   | —   | 8   | 4   | 25   |
| 2 = S?, P, O+   | 4      | 2   | —   | —     | 3     | —   | —   | —   | —   | 1   | 2   | 1   | 1   | 13   |
| 3 = O?  | 3      | —   | —   | —     | —     | —   | —   | —   | —   | 1   | —   | 1   | —   | 6    |
| 4 = Other   | 7      | —   | —   | —     | 1     | —   | —   | —   | —   | 2   | 2   | 1   | —   | 14   |
| 6 = No PSE  | 10     | —   | —   | —     | —     | —   | 1   | —   | —   | —   | —   | —   | —   | 11   |
| Alcohol/drug psychosis (291.3, 291.5, 292.1)                  | N = 9  | 0   | 0   | 0     | 0     | 0   | 2   | 1   | 0   | 0   | 0   | 0   | 0   | 12   |
| 1 = S+  | 5      | —   | —   | —     | —     | —   | —   | 1   | —   | —   | —   | —   | —   | 6    |
| 2 = S?, P, O+   | 1      | —   | —   | —     | —     | —   | —   | —   | —   | —   | —   | —   | —   | 1    |
| 4 = Other   | 2      | —   | —   | —     | —     | —   | —   | —   | —   | —   | —   | —   | —   | 2    |
| 6 = No PSE  | 1      | —   | —   | —     | —     | —   | 2   | —   | —   | —   | —   | —   | —   | 3    |
| Personality disorder (301.0, 301.2)                           | N = 0  | 0   | 0   | 0     | 0     | 0   | 1   | 0   | 0   | 0   | 1   | 0   | 0   | 2    |
| 1 = S+  | —      | —   | —   | —     | —     | —   | —   | —   | —   | —   | —   | —   | —   | 1    |
| 2 = S?, P, O+   | —      | —   | —   | —     | —     | —   | —   | —   | —   | —   | —   | —   | —   | 1    |
| Other ICD diagnosis   | N = 15 | 3   | 6   | 12    | 32    | 4   | 8   | 9   | 0   | 1   | 18  | 1   | 4   | 113  |
| 1 = S+  | 8      | 1   | 2   | —     | 2     | 1   | 7   | 7   | —   | —   | 10  | —   | 2   | 40   |
| 2 = S?, P, O+   | 1      | 2   | —   | 5     | 11    | —   | —   | 1   | —   | —   | 3   | 1   | —   | 24   |
| 3 = O?  | 1      | —   | 1   | —     | 6     | 2   | —   | —   | —   | —   | 1   | —   | —   | 16   |
| 4 = Other   | 2      | —   | 3   | 2     | 6     | —   | —   | 1   | —   | —   | 4   | —   | 2   | 21   |
| 6 = No PSE  | 3      | —   | —   | —     | 7     | 1   | 1   | —   | —   | —   | —   | —   | —   | 12   |
| Total   | 99     | 81  | 154 | 54    | 155   | 67  | 68  | 142 | 197 | 108 | 92  | 107 | 55  | 1379 |

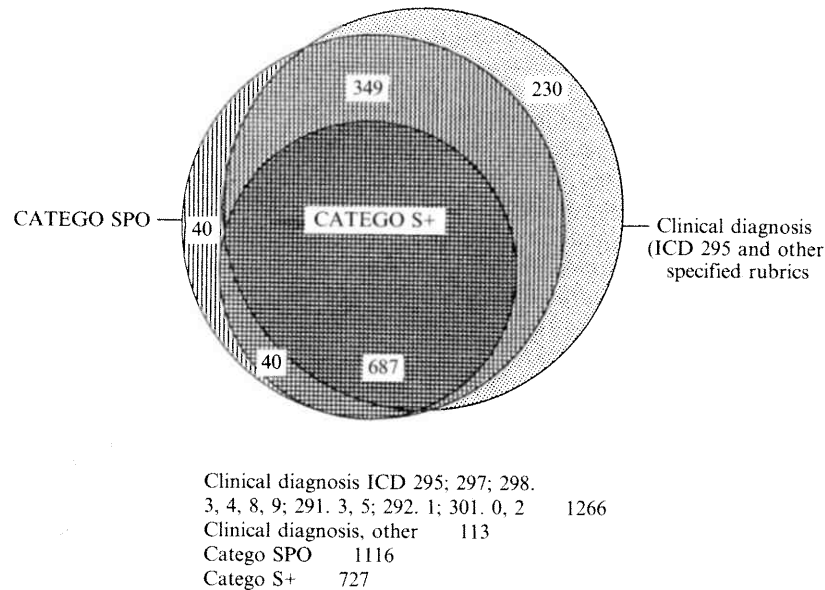


FIG. 2.3. Interrelations between clinical diagnosis and CATEGO classification in the total study population ( $N = 1379$ ). □, Clinical diagnosis; ▨, CATEGO SPO; ▩, CATEGO S+. Thirty-three patients with clinical diagnosis 'Other' did not have CATEGO S+ or S/P, O and therefore do not appear in the diagram, although they were included in the total study population of 1379 patients.

### (3) Borderline and doubtful psychoses (O+ or O?).

A total of 1379 patients from the 13 catchment areas were included in the clinical study. Of them, 1266 had one of the clinical diagnoses shown above as a main diagnosis and could have been included on the strength of Criterion I only. It should be noted, however, that 1036 (82%) of these patients also met Criterion II. A total of 113 patients failed to meet Criterion I but were included either because of meeting Criterion II (80 cases), or because of other reasons for considering them eligible after all the data available had been reviewed at Headquarters (33 cases, including 12 without a PSE, who all showed features suggesting a schizophrenic illness, and had one of the Criterion I rubrics as an alternative clinical diagnosis).

The distribution of the included cases from the different centres according to the two diagnostic systems is shown in Tables 2.9 and 2.10. The relationship of the ICD-9 and the CATEGO classifications of the cases is illustrated in Fig. 2.3, where the sum of the numbers in the different area of the Venn diagram equals the total study population of 1379.

### Concordance between the two diagnostic approaches

It should be noted that while in 10 centres (Aarhus, Agra, Cali, Chandigarh/urban, Dublin, Honolulu, Moscow, Nagasaki, Prague and Rochester) the diagnostic group defined by the ICD rubrics listed under Criterion I was numerically larger than the CATEGO group consisting of classes S, P, and O, in the other 3 centres (Chandigarh/rural, Ibadan and Nottingham) the CATEGO S, P, O group was larger in scope than the ICD group. However, in all centres high proportions of the patients (between 60 and 95%) who fell into one of the ICD rubrics of Criterion I were also classified as CATEGO S, P, or O (Fig. 2.4).

The proportions of patients with a clinical diagnosis of schizophrenia (ICD 295) who were classified as CATEGO S+ ('nuclear' schizophrenia) are somewhat lower – between 33% in Chandigarh (rural area) and 86% in Ibadan (Fig. 2.4). There were no obvious differences in that respect between centres in developing countries and centres in developed countries; in fact, both the highest and the lowest concordance

Table 2.10. Percentage of CATEGO classes in the different centres

|                  | Aar.<br>N = 82 | Agr.<br>N = 79 | Cal.<br>N = 154 | Cha/R.<br>N = 51 | Cha/U.<br>N = 125 | Dub.<br>N = 58 | Hon.<br>N = 44 | Iba.<br>N = 142 | Mos.<br>N = 197 | Nag.<br>N = 103 | Not.<br>N = 92 | Pra.<br>N = 107 | Roc.<br>N = 54 | All<br>N = 1288 |
|------------------|----------------|----------------|-----------------|------------------|-------------------|----------------|----------------|-----------------|-----------------|-----------------|----------------|-----------------|----------------|-----------------|
| CATEGO S+        | 56             | 47             | 68              | 27               | 30                | 46             | 84             | 85              | 42              | 52              | 63             | 70              | 56             | 56              |
| CATEGO S?, P, O+ | 17             | 34             | 17              | 24               | 34                | 14             | 12             | 8               | 28              | 18              | 17             | 16              | 17             | 20              |
| CATEGO O?        | 9              | 14             | 7               | 35               | 19                | 14             | 2              | 1               | 9               | 14              | 4              | 6               | 11             | 10              |
| Other            | 17             | 5              | 8               | 14               | 15                | 21             | 2              | 5               | 20              | 15              | 14             | 8               | 16             | 13              |
| No class         | 1              | 0              | 0               | 0                | 2                 | 5              | 0              | 1               | 1               | 1               | 1              | 0               | 0              | 1               |
| Total            | 100            | 100            | 100             | 100              | 100               | 100            | 100            | 100             | 100             | 100             | 100            | 100             | 100            | 100             |

Table 2.11. Subtypes of ICD 295

|                      | ICD Schizophrenia (295) |           |           |            |            |          |          |          |            |          | Total        |
|----------------------|-------------------------|-----------|-----------|------------|------------|----------|----------|----------|------------|----------|--------------|
|                      | 295-0                   | 295-1     | 295-2     | 295-3      | 295-4      | 295-5    | 295-6    | 295-7    | 295-8      | 295-9    |              |
| Developing countries | 8 (1.6)                 | 22 (4.3)  | 52 (10.3) | 116 (22.9) | 204 (40.3) | 9 (1.8)  | 20 (4.0) | 16 (3.2) | 22 (4.3)   | 37 (7.3) | 506 (100.0)  |
| Developed countries  | 19 (2.9)                | 84 (13.0) | 8 (1.2)   | 216 (33.5) | 70 (10.9)  | 34 (5.3) | 6 (0.9)  | 52 (8.1) | 142 (22.0) | 14 (2.2) | 645 (100.0)  |
| Total                | 27 (2.3)                | 106 (9.2) | 60 (5.2)  | 332 (28.8) | 274 (23.8) | 43 (3.7) | 26 (2.3) | 68 (5.9) | 164 (14.2) | 51 (4.4) | 1151 (100.0) |

rates between a clinical diagnosis of schizophrenia and CATEGO classification as S+ were observed in developing countries.

The analysis of the 221 discrepant cases, i.e. those in which there was a disagreement between Criterion I and Criterion II, showed that: (a) in 80 patients the ICD main diagnosis was other than one of the rubrics qualifying for automatic inclusion, but the CATEGO class was S, P, or O; and (b) in 141 patients the ICD diagnosis corresponded to the agreed rubrics but the CATEGO class was not S, P, or O. A total of 101 cases could not be assessed for concordance between the two diagnostic approaches, either because of lack of PSE data, or because of too few positive PSE items to allow a CATEGO classification. There were also 21 cases in which the ICD main diagnosis did not qualify for inclusion and the CATEGO class was other than S, P, or O. As mentioned above these cases were included with the others on grounds of clinicians' 'strong suspicion' of schizophrenic illness.

The majority of the ICD diagnoses in cases which did not meet Criterion I but were included because of eligible CATEGO class or other reason, were of affective disorders (66 of the 113 patients). Aarhus, Nottingham and Chandigarh, which contributed 46 of these discrepant cases, were the centres where a number of patients with a centre diagnosis of affective psychosis (ICD 296) were classified by CATEGO as S, P, or O. On the other hand, in 151 of the cases where the ICD diagnosis corresponded to Criterion I but the computer diagnosis was discrepant, the CATEGO class was D, M, N, or R – i.e. one of the classes describing affective symptomatology. Of these patients, 71 were in Moscow, Chandigarh and Nagasaki. Most of the discrepancies were thus related to the diagnostic boundary between the broadly defined group of schizophrenic illnesses and the affective disorders.

### ICD subtypes of schizophrenia

Within the subset of patients who had a clinical diagnosis of schizophrenia (ICD 295), the distribution of the diagnostic subtypes showed great variation from centre to centre. For all centres combined, each of the ten ICD subtype rubrics had been assigned to no less than 25 patients, but the frequency of the use of

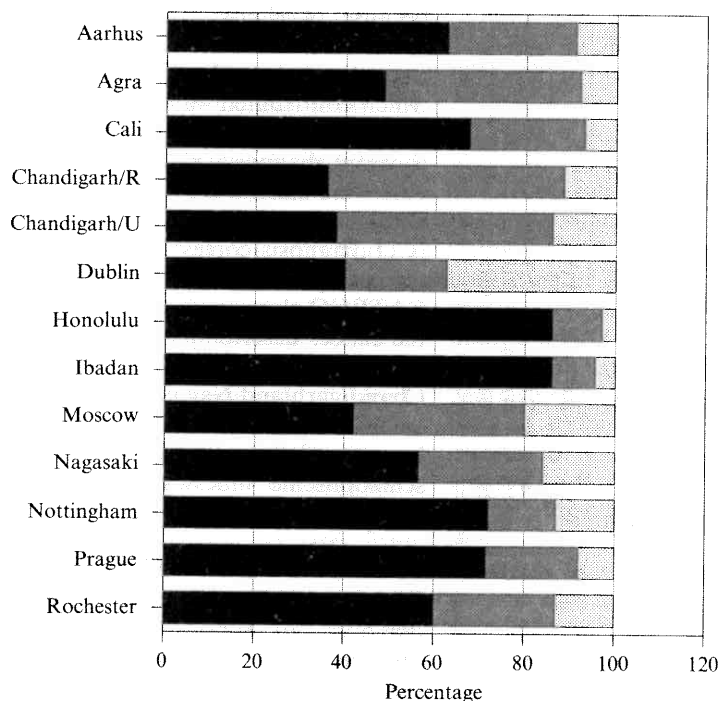
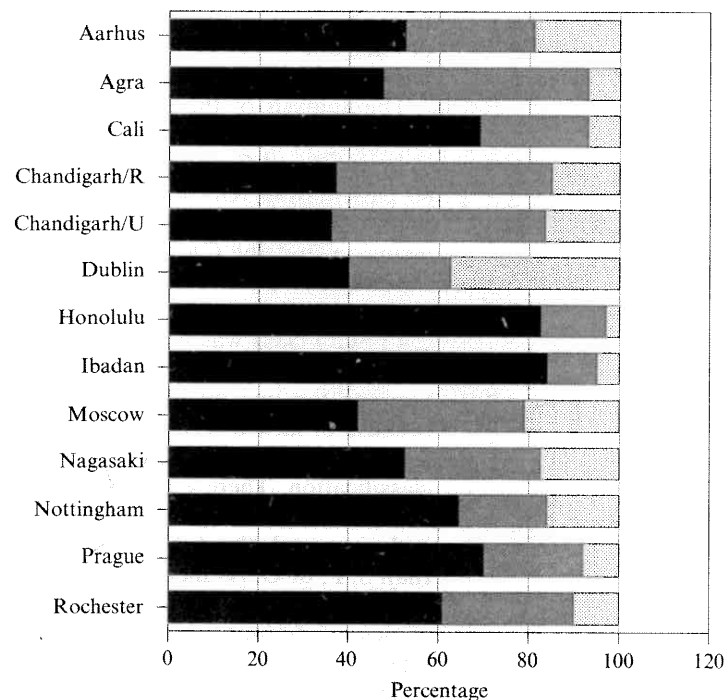


FIG. 2.4. (a) ICD/CATEGO diagnostic concordance. All patients meeting ICD inclusion criteria and who were administered a PSE. (b) ICD/CATEGO diagnostic concordance. All patients with ICD diagnosis of schizophrenia (295) and who were administered a PSE. ■, S+ patients; ■, SPO not S+; □, other CATEGO.

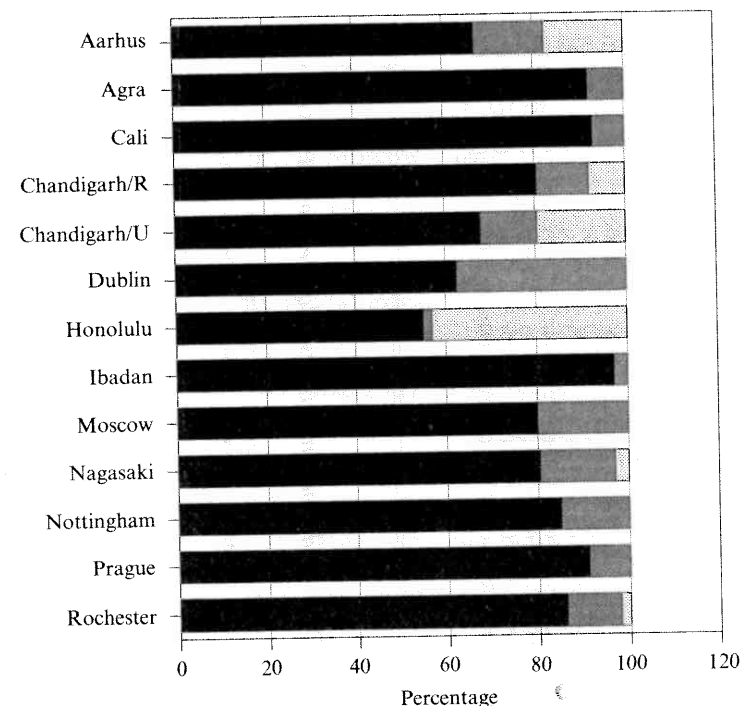


FIG. 2.4. (c) ICD/CATEGO diagnostic concordance. All patients meeting ICD inclusion criteria. ■, SPO patients; ■, other CATEGO; □, no PSE.

individual subtype rubrics varied from 0 to 65% of the cases in the different centres (Table 2.11). In the study population as a whole, the largest subgroup ( $N = 322$ ) was that of paranoid schizophrenia (295.3), followed ( $N = 273$ ) by that of acute schizophrenic episode (295.4). In the developing countries, however, the latter subtype was diagnosed almost twice as often (in 40% of the cases) as paranoid schizophrenia (in 23% of the cases). Catatonic schizophrenia (295.2) was diagnosed in 52 cases (10%) of the study population in the developing countries, but only in a negligible number of cases in the developed countries. In contrast, the hebephrenic subtype (295.1) was diagnosed in 13% of the patients in developed countries and in only 4% of the patients in developing countries. Simple schizophrenia (295.0), latent schizophrenia (295.5), and residual schizophrenia (295.6) were rarely diagnosed in either developing or developed countries. More surprising and difficult to explain, however, is the rare use, in either developing (3%) or developed (8%) countries, of the rubric of the schizoaffective subtype.

### SYMPTOMATOLOGY AND BEHAVIOURAL MANIFESTATIONS

The symptomatology of the cases included in the study was analysed, first in terms of CATEGO subclasses (there are 50 such subclasses, each composed of one or more syndromes (see Tables 2.9, 2.10, 2.12 and 2.13) and, secondly, in terms of individual PSE symptoms.

#### CATEGO subclasses

The most frequent CATEGO subclasses and their rank order in the total population and in each centre are listed in Table 2.12. In the different centres, the mental state of 81–100% of the patients (90% for the total sample) could be classified under one of the 13 most frequent CATEGO subclasses. In all centres, except Chandigarh (rural area), the patients with the syndrome of 'nuclear' schizophrenia (subclasses NS+) represent the largest single subgroup, comprising between 22% (Chandigarh/urban area) and 82% (Ibadan) of the cases. In comparison, the remaining 12 CATEGO sub-



Table 2.12. Rank order and frequency (percentage, in brackets) of CATEGO syndromes in the total sample of patients meeting the inclusion criteria who had a PSE assessment at intake (N = 1288)

| CATEGO syndrome  | Aar<br>N = 82 | Agr<br>N = 79 | Cal<br>N = 154 | Cha/R<br>N = 51 | Cha/U<br>N = 125 | Dub<br>N = 58 | Hon<br>N = 44 | Iba<br>N = 142 | Mos<br>N = 197 | Nag<br>N = 103 | Not<br>N = 92 | Pra<br>N = 107 | Roc<br>N = 54 | All<br>N = 1288 |
|--|---------------|---------------|----------------|-----------------|------------------|---------------|---------------|----------------|----------------|----------------|---------------|----------------|---------------|-----------------|
| NS+  | 1 (46)        | 1 (41)        | 1 (54)         | 2 (16)          | 1 (22)           | 1 (36)        | 1 (75)        | 1 (82)         | 1 (35)         | 1 (47)         | 1 (46)        | 1 (53)         | 1 (43)        | 1 (46)          |
| DP?  | 7 (4)         | 4 (6)         | 6 (3)          | 5 (8)           | 2 (13)           | 4 (7)         | 4 (5)         | 2 (2)          | 4 (7)          | 2 (8)          | 2 (9)         | 2 (8)          | 0             | 2 (6)           |
| PD+  | 2 (7)         | (0)           | 6 (3)          | (0)             | 7 (4)            | 2 (10)        | (0)           | (0)            | 3 (13)         | 4 (5)          | 4 (7)         | 5 (6)          | 4 (6)         | 3 (5)           |
| UP?  | 13 (1)        | 3 (8)         | 4 (5)          | 1 (20)          | 4 (8)            | 2 (10)        | (0)           | 6 (1)          | 8 (3)          | 3 (7)          | 6 (4)         | 6 (4)          | 2 (7)         | 3 (5)           |
| DP+  | 3 (5)         | 12 (1)        | 6 (3)          | 6 (6)           | 6 (5)            | (0)           | (0)           | 6 (1)          | 2 (15)         | 5 (4)          | 8 (3)         | (0)            | 4 (6)         | 3 (5)           |
| DS+  | 7 (2)         | 12 (1)        | 3 (7)          | 4 (10)          | 9 (3)            | 4 (7)         | (0)           | 2 (2)          | 8 (3)          | 13 (1)         | 3 (8)         | 9 (2)          | 4 (6)         | 6 (4)           |
| DP?/AP?  | 3 (5)         | 3 (8)         | (0)            | 7 (4)           | 3 (10)           | 6 (4)         | (0)           | 2 (2)          | 11 (1)         | 13 (1)         | 10 (2)        | 6 (4)          | 7 (4)         | 7 (3)           |
| NSPD   | 7 (4)         | 7 (3)         | 4 (5)          | (0)             | 20 (1)           | 10 (2)        | 2 (9)         | (0)            | 11 (1)         | 7 (2)          | 5 (5)         | 2 (8)          | 7 (4)         | 7 (3)           |
| MN+  | 3 (5)         | 12 (1)        | 9 (2)          | 7 (4)           | 12 (2)           | 8 (3)         | 5 (2)         | 2 (2)          | 6 (5)          | 13 (1)         | 8 (3)         | (0)            | 2 (7)         | 7 (3)           |
| CS+  | 7 (4)         | 2 (16)        | (0)            | 7 (4)           | 9 (3)            | (0)           | (0)           | 6 (1)          | 10 (2)         | 7 (2)          | 12 (1)        | 8 (3)          | 7 (4)         | 7 (3)           |
| NS?  | 7 (2)         | 7 (3)         | 9 (2)          | (0)             | 7 (5)            | (0)           | (0)           | 6 (1)          | 7 (4)          | 13 (1)         | 6 (4)         | 4 (7)          | 7 (4)         | 7 (3)           |
| DS?  | (0)           | (0)           | 2 (11)         | 12 (2)          | 12 (2)           | 10 (2)        | 3 (7)         | 6 (1)          | 5 (5)          | 7 (2)          | (0)           | 10 (1)         | (0)           | 12 (2)          |
| SS   | 13 (1)        | 7 (3)         | (0)            | 3 (10)          | 5 (6)            | (0)           | 5 (2)         | (0)            | 5 (5)          | 7 (2)          | (0)           | (0)            | (0)           | 12 (2)          |
| Percentage cases<br>presenting with the<br>13 top ranking<br>syndromes | (86)          | (91)          | (95)           | (84)            | (84)             | (81)          | (100)         | (95)           | (94)           | (83)           | (92)          | (96)           | (91)          | (90)            |

Table 2.13. Rank order and frequency (percentage, in brackets) of CATEGO syndromes in patients allocated to CATEGO class S+ (N = 727)

| CATEGO syndrome | Aar<br>N = 82 | Agr<br>N = 79 | Cal<br>N = 154 | Cha/R<br>N = 51 | Cha/U<br>N = 125 | Dub<br>N = 58 | Hon<br>N = 44 | Iba<br>N = 142 | Mos<br>N = 197 | Nag<br>N = 103 | Not<br>N = 92 | Pra<br>N = 107 | Roc<br>N = 54 | All<br>N = 1288 |
|-----------------|---------------|---------------|----------------|-----------------|------------------|---------------|---------------|----------------|----------------|----------------|---------------|----------------|---------------|-----------------|
| NS+             | 1 (83)        | 1 (87)        | 1 (79)         | 1 (57)          | 1 (71)           | 1 (77)        | 1 (89)        | 1 (96)         | 1 (82)         | 1 (88)         | 1 (72)        | 1 (76)         | 1 (76)        | 1 (82)          |
| DS+             | 3 (4)         | 4 (3)         | 2 (19)         | 2 (36)          | 3 (10)           | 2 (15)        | (0)           | 2 (2)          | 3 (7)          | 4 (2)          | 2 (12)        | 4 (3)          | 2 (10)        | 2 (7)           |
| NSPD            | 2 (7)         | 2 (5)         | 4 (3)          | (0)             | 4 (3)            | 3 (4)         | 2 (11)        | (0)            | 4 (3)          | 2 (4)          | 3 (9)         | 3 (12)         | 3 (7)         | 3 (5)           |
| NS?             | 3 (4)         | 2 (5)         | 4 (3)          | (0)             | 2 (13)           | (0)           | (0)           | 3 (1)          | 2 (8)          | 2 (4)          | 4 (7)         | 3 (9)          | 3 (7)         | 4 (5)           |
| NSMN/DS         | 5 (2)         | (0)           | 5 (1)          | 3 (7)           | 4 (3)            | 3 (4)         | (0)           | 3 (1)          | (0)            | 4 (2)          | (0)           | (0)            | (0)           | 5 (1)           |
| Total           | (100)         | (100)         | (100)          | (100)           | (100)            | (100)         | (100)         | (100)          | (100)          | (100)          | (100)         | (100)          | (100)         | (100)           |

Legend: NS = nuclear schizophrenia; DS = schizophrenia without first rank symptoms; PD = psychotic depression; MN = mania or mixed affective psychosis. (In combinations of more than two letters, the first pair indicates which type of symptom was predominant. The symbols + and ? refer to different degrees of certainty in syndrome identification).

classes include relatively small numbers of patients, except for 'possible borderline psychosis' (UP?) in Chandigarh/rural area (20%); catatonic schizophrenia (CS+) in Agra (16%); paranoid psychosis (DP+ and DP?) in Moscow (22%) and in Chandigarh/urban area (18%); and psychotic depression (PD+) in Moscow (13%).

Among the 727 patients who were assigned CATEGO class S+, the majority (82%) exhibited the syndrome of nuclear schizophrenia (NS+), defined by the presence of one or more of Schneider's first-rank symptoms (Table 2.13).

### PSE symptoms

At the level of individual symptoms, those which ranked highest in frequency by being present in the majority of the patients, were primarily non-specific symptoms indicative of a generally disturbed mental state, e.g. restlessness, poor concentration, social withdrawal, or subjective feeling of nervous tension. In order to obtain a clearer description of the diagnostically significant aspects of the mental state of the study population, such non-specific symptoms were removed from the analysis and a total of 44 PSE symptoms (listed in Table 2.14) were selected to construct a psychopathology profile for each of the various subgroups of the study population, using the percentage of patients with positive rating (1 or 2) as a score on a given symptom. The 44 PSE symptoms were supplemented by a selection of 9 behavioural items taken from the PPHS, which give a concise description of the main abnormalities in the early stage of the disorder as perceived by key informants. Together, the 44 PSE symptoms and 9 PPHS items correspond to most of the descriptive items contained in recent lists of operational diagnostic criteria, including DSM-III (APA, 1980).

The symptomatological profiles of all included patients are shown on Fig. 2.5, separately for the centres in developing countries and the centres in developed countries. The two profiles are generally similar, but there are three aspects in which the differences should be noted.

First, the frequency of affective symptoms, and especially of depression, is higher among the patients in developed countries.

Secondly, Schneiderian first-rank symptoms also appear with somewhat greater frequency

Table 2.14. PSE symptoms (44) chosen to construct psychopathology profiles of subgroups of patients

| Affect                                | Delusions   |
|---------------------------------------|---|
| 23 Depressed mood                     | *71 Control                                       |
| 27 Morning depression (rating 2 only) | 72 Reference                                      |
|                                       | 73 Delusional misinterpretation                   |
| 37 Early waking                       | 74 Persecution                                    |
| 41 Expansive mood                     | 75 Assistance                                     |
| 42 Ideomotor pressure                 | 76 Grandiose abilities                            |
| 43 Grandiose ideas and actions        | 77 Grandiose identity                             |
|                                       | 78 Religious                                      |
|                                       | 79 Paranormal                                     |
| Subjective thought disorder           | 80 Physical forces                                |
| *55 Thought insertion                 | *81 Alien forces                                  |
| *56 Thought broadcast                 | *82 Primary delusions                             |
| *57 Thought echo                      | 83 Subcultural                                    |
| *58 Thought withdrawal                | 84 Morbid jealousy                                |
| 59 Thoughts being read                | 86 Sexual   |
| 49 Delusional mood                    | 87 Fantastic                                      |
|                                       | 88 Guilt  |
| Hallucinations                        | 89 Appearance                                     |
| *62 Voices in third person            | 90 Depersonalization                              |
| 63 Voices speaking to subject         | 91 Hypochondriacal                                |
| 64 Dissociative hallucinations        | 92 Catastrophe                                    |
| 66 Visual hallucinations              | 93 Systematization of delusions                   |
| 68 Olfactory hallucinations           | 94 Evasiveness                                    |
|                                       | 95 Preoccupation with delusions or hallucinations |
| 69 Delusion of smell                  | 96 Acting out of delusions                        |
| 70 Other hallucinations               |   |

\*Symptom automatically allocating the patient to CATEGO class S+. In the absence of any of these, the case may still be classified as S+ if symptom 70 is present together with any one of 72-81 or 84-92.

among patients in developed countries. This, however, is true only for symptoms representing subjectively experienced thought disorder (thought insertion or thought broadcast) or changed quality of the experience of reality (e.g. primary delusions), but not for symptoms such as characteristic hallucinations (voices discussing the subject in the third person) or delusions of control, which are either more common in patients in developing countries, or show the same frequency in the two settings. This finding should recall Schneider's (1959) view that first rank symptoms are a heterogeneous group as regards their causation. Although it is tempting to consider cultural variation (including language) as a possible explanation of such differences, no definitive interpretation could be given of this observation in the absence of knowledge concerning the pathophysiological basis of first-rank symptoms.

Thirdly, patients in developing countries score

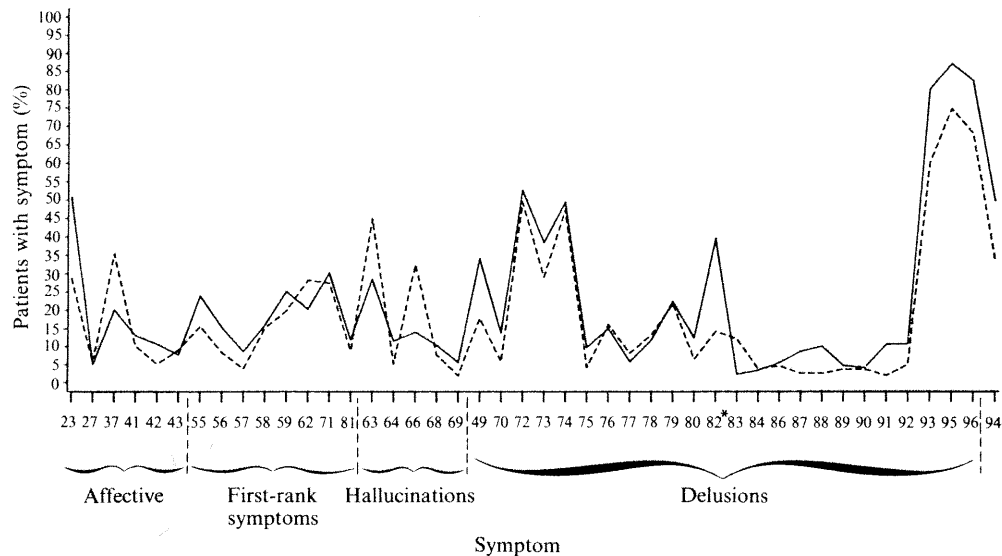


FIG. 2.5. Profiles on 44 selected PSE items of 551 patients in developing countries (---) and 737 patients in developed countries (—), all meeting 'broad' diagnostic criteria for schizophrenia and related disorders. \*, Primary delusion is a first-rank symptom but is included among delusions.

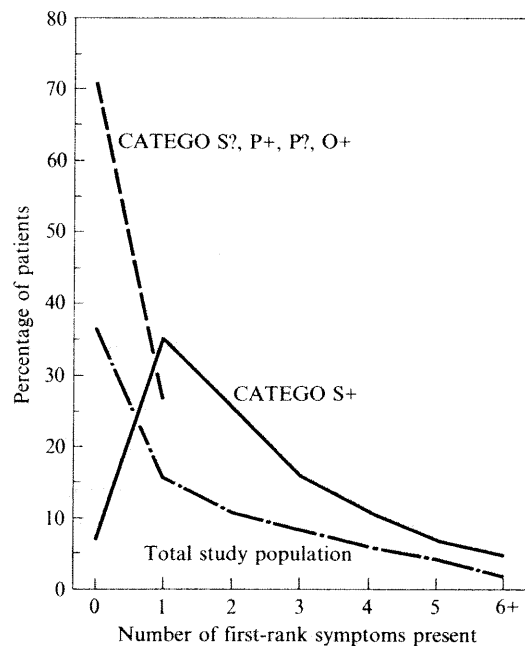


FIG. 2.6. Percentage of patients with different numbers of Schneiderian first-rank symptoms in three diagnostic groups.

higher than patients in developed countries on auditory hallucinations (other than the first-rank type) and, particularly, on visual hallucinations.

The two groups of patients differ very little with regard to the frequency of various kinds of delusions.

Schneiderian first-rank symptoms have often been in the centre of debate in recent years, in view of their potential value for the development of explicit diagnostic criteria for the schizophrenic disorders (e.g. Carpenter *et al.* 1973; Koehler, 1979; Hoening, 1984; Marneros, 1984). For this reason, the characteristics of the large subset of the study population (727 patients), assigned to CATEGO class S+, are of special interest. Class S+ is composed mainly, but not exclusively, of patients who manifest one or more out of eight specified PSE symptoms: thought insertion, thought broadcast, thought echo or commentary, thought block or withdrawal, voices discussing the patient in third person, delusions of control, delusions of alien forces penetrating and controlling the mind or body, and primary delusions.

The frequency of these symptoms in the total study population shows a J-shaped distribution (Fig. 2.6), with 36% of the cases manifesting no first-rank symptom, 15% having one, and diminishing proportions displaying increasing numbers of such Schneiderian symptoms. In the CATEGO S+ group of patients, the frequency of the first-rank symptoms shows a skewed bell-

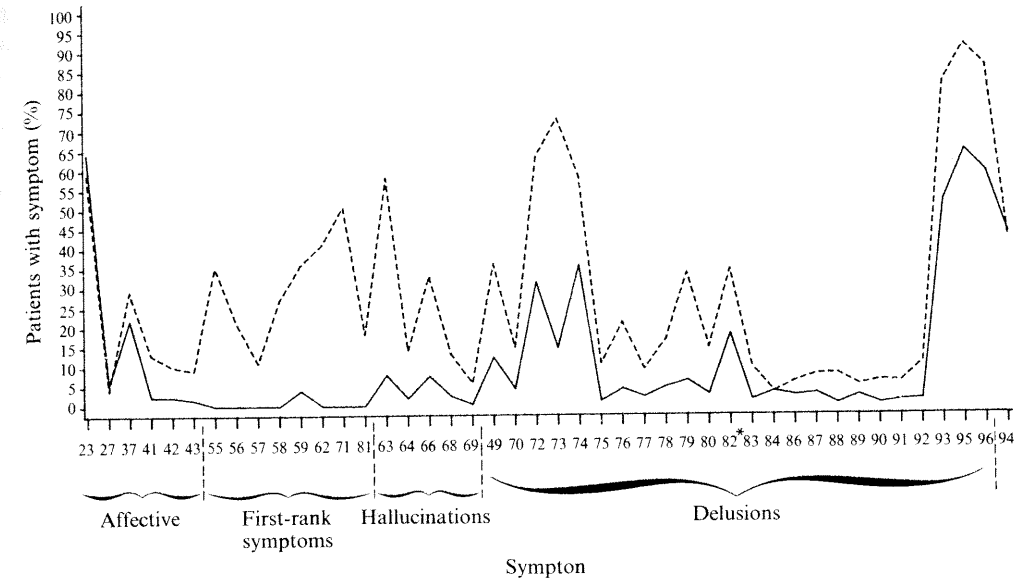


FIG. 2.7. Profiles of 727 CATEGO S+ patients (---) and of 389 CATEGO S?PO patients (—) on 44 selected PSE symptoms (all centres). \*, Primary delusion included among the delusions although a first-rank symptom.

shaped distribution, with 7% of the patients manifesting none, 51% having one or two; 27% having three or four; 8% having five; and 5% having six or more such symptoms.

A comparison of the 44-symptom profiles of the CATEGO S+ patients and the rest of the patients falling within the other classes representing schizophrenic disorders (i.e. S?, P, and O) demonstrates two important differences between these major subsets of the study population (Fig. 2.7).

The first difference is of a qualitative nature and stems from the definitions of the two subsets in the CATEGO program. Patients in the S?PO group score 0 on 7 of the 8 symptoms defining 'nuclear' schizophrenia (indicated by asterisk) simply because cases with positive scores are automatically allocated to S+.

The second difference, however, is a quantitative one and concerns the magnitude of the scores on the 44 selected PSE symptoms in the two groups. With the exception of the affective symptoms, which occur with the same frequency in S+ and non-S+ patients, the S+ patients score higher on almost every psychotic symptom. The two symptom profiles tend to be parallel in shape and, except in the area of affective disturbances, do not intersect. This suggests

that, rather than being a symptomatologically discrete group, the S+ patients are merely the more severely ill subjects (in the sense of having more psychotic symptoms) among the total patient population defined by the inclusion criteria. The presence of Schneiderian first-rank symptoms, therefore, appears to be an indication of a florid psychotic mental state characterized by multiple 'positive' disturbances in different areas of psychopathology.

The cross-cultural differences within the group of CATEGO S+ patients (presented in a simplified way as differences between patients in developing and in developed countries - Fig. 2.8) are of the same type as the differences between the total samples of included patients in the two settings: S+ patients in developed countries score higher on affective symptoms and on most of the first rank symptoms, while patients in developing countries have higher scores on auditory and visual hallucinations. The two groups are almost indistinguishable in the area of delusions.

#### Behaviour profiles

The above observation about the psychopathological differences between the CATEGO S+ and CATEGO S?, P, O subgroups of patients is

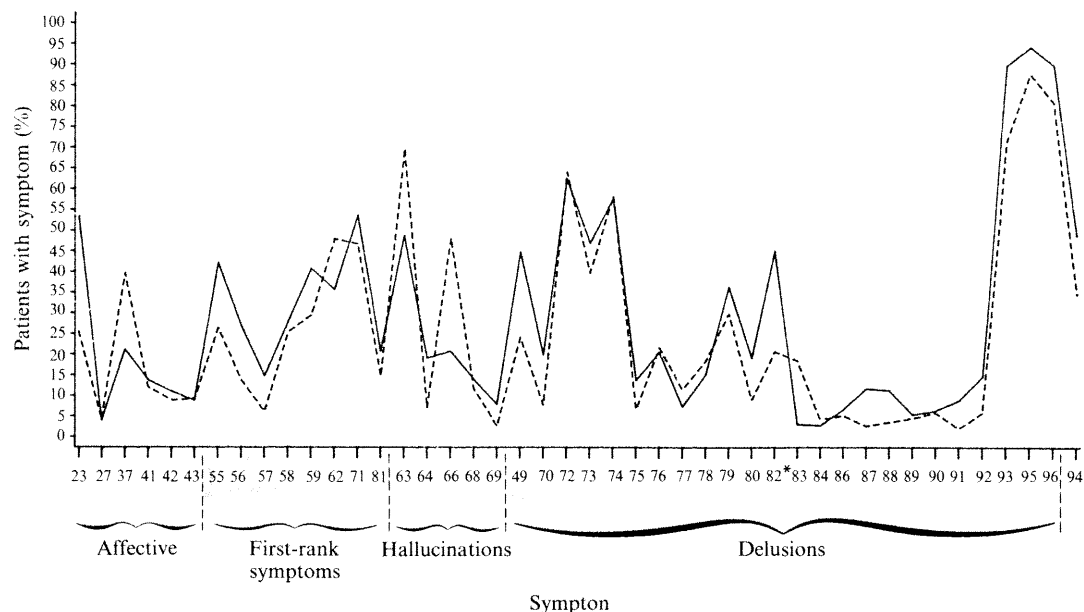


FIG. 2.8. Profiles of CATEGO S+ patients in developing (---) countries ( $N = 316$ ) and in developed (—) countries ( $N = 411$ ) on 44 selected PSE items. \*, Primary delusions included among delusions although a first-rank symptom.

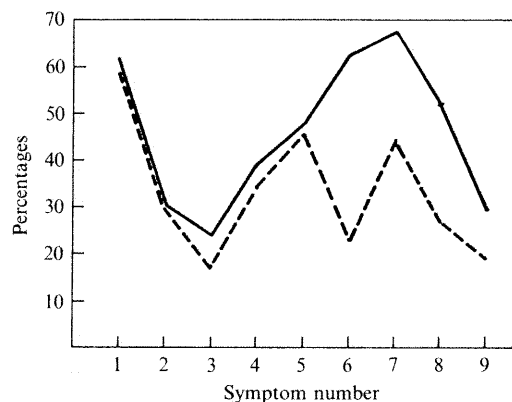


FIG. 2.9. Behaviour profiles (selected PPHS items) of patients during early stage of illness. (1, Neglect of usual activities; 2, loss of interest in own appearance and cleanliness; 3, excitement; 4, sad, hopeless look; 5, avoidance of other people; 6, behaves as if hearing voices; 7, feels persecuted, bewitched; 8, claims impossibilities; 9, complains of strange sensations; —, CATEGO S+; ---, remainder of patients.)

corroborated by the comparison of PPHS behaviour profiles of the CATEGO S+ patients and the rest of the included patients (Fig. 2.9). These profiles are constructed from 9 history items assessed in key informant interviews which were totally independent of the PSE assessment. The graph shows that while the two groups did not differ in respect of what could be construed

to be 'negative' manifestations (neglect of usual activities, loss of interest in own appearance and cleanliness, avoidance of other people), the S+ patients were considerably more often perceived by the key informants as showing behaviour recognized as psychotic in most cultures: hearing voices, feeling persecuted, bewitched, or otherwise harmed, claiming impossibilities, or persistently complaining of strange bodily sensations.

## BACKGROUND AND ANTECEDENT FACTORS

### Mental illness in the family

The collection of genetic data was not among the primary goals of the study. Nevertheless, the history interview with a key informant included a number of detailed questions about the occurrence of mental disorders in first-degree relatives, and every attempt was made to record the information elicited in terms of six categories: psychosis; neurosis or personality disorder; chronic alcohol or drug abuse; mental subnormality; other or unspecified mental disorder; and no mental disorder. Whenever positive data emerged, the investigator was required to make a narrative note, giving a

description of the symptoms, to the extent that was possible. There could be no certainty as to the completeness of ascertainment of secondary cases in all the centres and the results of this enquiry should be treated with caution.

Out of all the cases meeting the minimum of diagnostic criteria for inclusion, mental health problems in first-degree relatives were reported in 362 cases (27% of the 1321 patients who were assessed with the PPHS). Relatives with mental disorder were identified in a larger proportion of cases in the centres in developed countries (32%) than in developing countries (21%), a difference which is likely to be due to a lower probability of reporting secondary cases in the developing countries.

Of the 128 fathers with reported mental health problems, in 39% the problem was psychotic illness; in 28% alcohol or drug dependence; and in 20% neurosis or personality disorder. Of the 126 mothers affected, psychosis was recorded in 51% and neurosis or personality disorder in 25%. A total of 182 patients reported having siblings with a history of mental disorder, and 82 of them had one or more siblings suffering from psychotic disorder.

The comparison between CATEGO S+ patients and all the remaining patients meeting the diagnostic criteria of inclusion (the 'non-S+' cases) failed to demonstrate any difference in the strength of vertical transmission between the two groups. The only feature which distinguishes the S+ patients is that they tend more often to have a psychotic mother (in 52% of the cases where at least one parent was ill, compared to 36% in the 'non-S+' cases). This difference, however, did not reach statistical significance. The available data, therefore, do not show for CATEGO S+ patients a frequency of family history of psychiatric disorder different from that in the rest of the study population.

### Adjustment problems in childhood and adolescence

The history interview (PPHS) contained checklists of 17-items each, for rating specific behavioural and adjustment problems in childhood and adolescence. In addition, an 'overall impression' rating was made on the basis of all the information available. An exploratory analysis of this information was carried out with full acknowledgement of the limitations inherent in retrospective assessment of behaviour.

Table 2.15. Percentage of subjects with history of conduct or emotional problems in adolescence by diagnostic group: CATEGO + versus the rest of the study population

|  | Aar | Agr | Cal | Cha/R | Cha/U | Dub | Hon | Iba | Mos | Nag | Not | Pra | Roc | All |
|--|-----|-----|-----|-------|-------|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| CATEGO S+ cases ( $N = 725$ )                                | 26  | 11  | 72  | 29    | 38    | 22  | 58  | 6   | —   | 24  | 17  | 31  | 33  | 28  |
| All remaining cases meeting inclusion criteria ( $N = 596$ ) | 7   | 14  | 61  | 40    | 31    | 13  | 43  | 15  | —   | 11  | 32  | 38  | 12  | 22  |
| All patients ( $N = 1321$ )                                  | 17  | 12  | 69  | 37    | 33    | 17  | 56  | 7   | —   | 18  | 23  | 33  | 24  | 25  |

Table 2.16. Percentage of subjects with history of conduct or emotional problems in childhood by diagnostic group: CATEGO S+ versus the rest of the study population

|  | Aar | Agr | Cal | Cha/R | Cha/U | Dub | Hon | Iba | Mos | Nag | Not | Pra | Roc | All |
|--|-----|-----|-----|-------|-------|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| CATEGO S+ cases ( $N = 725$ )                                | 20  | 16  | 32  | 36    | 43    | 19  | 53  | 2   | —   | 15  | 16  | 28  | 20  | 19  |
| All remaining cases meeting inclusion criteria ( $N = 596$ ) | 10  | 7   | 33  | 20    | 29    | 8   | 43  | 10  | 2   | 6   | 24  | 22  | 24  | 16  |
| All patients ( $N = 1321$ )                                  | 15  | 11  | 32  | 24    | 32    | 12  | 51  | 3   | 1   | 10  | 18  | 26  | 22  | 18  |

In total, 18% of the patients were rated as having had conduct or emotional problems in childhood, and 25% were rated as having had such problems in adolescence. However, there were varying percentages of cases on whom no sufficient information was obtained and this precluded direct comparisons between the centres. Nevertheless there was a slight tendency for CATEGO S+ cases to have higher rates of such disturbances (Tables 2.15 and 2.16). For adjustment problems in childhood, the rate for S+ is higher in 8 out of the 13 patient samples; for problems in adolescence, it is higher in 7 out of 12 samples with complete data sets. In order to see whether such differences were related to any specific disturbances in childhood and adolescence, the rank order and percentage scores were determined for all the items included in the two checklists.

Traits such as 'extreme shyness', 'preference for playing alone' and being a 'model child' were the three most common items for childhood problems in the study population as a whole, appearing in 10-19% of the patients. CATEGO S+ patients had higher scores than 'non-S+' subjects on two items: 'marked fears' (11% compared to 4% in 'non-S+' cases) and 'unable to sit still, restless' (6% versus 2%). On all the other items the scores of the two diagnostic groups were very similar.

As regards adolescence, the most frequent items in the total study population were: 'very reserved and quiet' (30%); 'very sensitive' (22%); and 'suspiciousness' (10%). On the latter two items, the scores of S+ subjects were higher than the scores of 'non-S+' subjects: 31% v. 21%, and 13% v. 5%.

#### History of convulsions

A total of 36 cases had a definite history of convulsions in childhood; in 20 of them these were described as repeated febrile convulsions while in 14 seizures had occurred without any association with a febrile illness. It is noteworthy that 13 of the febrile convulsion cases, and 13 of the non-febrile seizure cases, were CATEGO S+. History of seizures after the age of 10 was reported in 26 cases; 18 of them were also CATEGO S+. Of the 4 patients in whom a history of seizures during the year preceding inclusion in the study was revealed, 3 turned out to be CATEGO S+. CATEGO S+ patients,

therefore, were 2 to 3 times more likely to have a history of convulsive disorder than the rest of the study patients ( $P < 0.01$ ). This unexpected finding is difficult to explain; no references to an association between convulsions in childhood and first-rank symptoms of schizophrenia were found in the literature.

#### Pre-morbid personality traits

A total of 32 traits were rated as either present or absent in the history interview (PPHS) on the basis of the informant's description. In order to investigate the possibility that these traits may represent an underlying structure involving a smaller number of personality types, factor analysis was performed on the 32 individual traits. The most satisfactory solution was obtained using a principal components analysis, retaining five factors which together accounted for 44% of total variation (Table 2.17). Every trait loaded on at least one factor, with factor loadings 0.3 and above. Six of the 32 variables loaded on more than one factor. The factors were clearly mutually independent and the rotated factor pattern seems to correspond to recognizable personality types. The first and fourth factors, F1 and F4, correspond to the conventional description of the paranoid and schizoid personality types. Factor 3 could be seen as describing a mildly eccentric and passive type of character while factors 2 and 5 refer to rather idealized versions of 'positive' pre-morbid personality traits frequently given by informants, an adult counterpart of the 'model child'.

In order to investigate the possible link between pre-morbid personality and diagnosis, five factor-based scales were constructed. The number of component traits which a subject manifested was the score on a given scale. The association between these scores and assignment to CATEGO S+ or to the non-S+ group was found to be significant for each of the individual factors except for factor 4 ('schizoid' type). This was in spite of the large numbers of patients who scored zero on one or more factors (for 23% of the patients no pre-morbid personality trait was rated at all, and 71% had no more than five traits recorded as present).

Patients who scored high on any of the factor scales were more likely to be included in the S+ than the non-S+ group. A logistic regression was conducted to see in which way member-

Table 2.17. Pre-morbid personality traits: results of factor analysis

|                           | Rotated factor pattern |       |       |       |       |
|---------------------------|------------------------|-------|-------|-------|-------|
|                           | F1                     | F2    | F3    | F4    | F5    |
| 2 = Picked on             | 0.45                   | 0.02  | -0.08 | 0.43  | 0.24  |
| 3 = Jealous               | 0.45                   | 0.03  | 0.17  | 0.11  | 0.26  |
| 4 = No self criticism     | 0.60                   | 0.18  | 0.01  | 0.22  | -0.15 |
| 5 = Pessimistic           | 0.38                   | 0.14  | 0.16  | 0.30  | 0.17  |
| 7 = Changeable moods      | 0.51                   | 0.11  | 0.10  | 0.12  | 0.06  |
| 11 = Loses temper         | 0.67                   | 0.04  | 0.03  | 0.11  | 0.02  |
| 12 = Shouts, argues       | 0.72                   | 0.06  | 0.03  | -0.04 | 0.09  |
| 13 = Anger with violence  | 0.59                   | 0.07  | 0.24  | 0.07  | 0.04  |
| 14 = Exaggerated feelings | 0.63                   | -0.01 | 0.14  | -0.03 | 0.24  |
| 16 = Likes audience       | 0.41                   | 0.03  | -0.04 | -0.15 | 0.33  |
| 20 = Hurt others          | 0.56                   | 0.04  | 0.00  | 0.11  | -0.12 |
| 22 = Violent, no anger    | 0.51                   | 0.07  | 0.12  | -0.02 | 0.16  |
| 28 = Confabulates         | 0.48                   | 0.01  | 0.28  | 0.04  | 0.22  |
| 10 = Shows feelings       | 0.15                   | 0.49  | 0.08  | 0.06  | 0.30  |
| 21 = Shows sympathy       | 0.05                   | 0.69  | 0.05  | 0.11  | 0.14  |
| 29 = Optimistic           | -0.01                  | 0.67  | 0.10  | -0.11 | 0.09  |
| 30 = Endures stress       | 0.09                   | 0.53  | 0.08  | 0.06  | 0.06  |
| 31 = Loyal, reliable      | 0.02                   | 0.80  | 0.07  | 0.09  | 0.09  |
| 32 = Autonomous decisions | 0.11                   | 0.76  | -0.07 | 0.04  | -0.03 |
| 15 = Clinging             | 0.14                   | 0.10  | 0.73  | 0.11  | 0.18  |
| 17 = Easily dominated     | -0.02                  | 0.13  | 0.69  | 0.06  | 0.13  |
| 18 = Needs pushing        | 0.18                   | 0.01  | 0.70  | 0.16  | -0.06 |
| 19 = Cannot cope          | 0.38                   | 0.02  | 0.47  | 0.30  | -0.03 |
| 26 = Eccentric            | 0.27                   | 0.10  | 0.37  | 0.15  | 0.04  |
| 1 = Suspicious            | 0.45                   | 0.09  | -0.03 | 0.50  | 0.11  |
| 8 = Prefers to be alone   | 0.00                   | -0.13 | 0.22  | 0.68  | 0.01  |
| 9 = Hard to find friends  | 0.04                   | 0.03  | 0.26  | 0.65  | 0.10  |
| 27 = Cool and withdrawn   | 0.15                   | 0.25  | 0.11  | 0.59  | 0.06  |
| 6 = Excitable, energetic  | 0.21                   | 0.35  | 0.11  | 0.18  | 0.41  |
| 23 = Too tidy             | 0.02                   | 0.21  | 0.09  | 0.13  | 0.64  |
| 24 = Too high standards   | 0.11                   | 0.20  | 0.14  | 0.07  | 0.60  |
| 25 = Fixed habits         | 0.13                   | 0.03  | -0.02 | 0.16  | 0.67  |

Principal components factor analysis, 5 factors retained, varimax rotation.  
Total variances explained: 44%.  
Final communality estimates: 0.33-0.50.

ship of the S+ or non-S+ group could be predicted on the basis of the five scales. This analysis showed that, when all factors were considered together, only the second factor was significant, i.e. the 'positive' personality type. This was backed by the results of a second logistic regression using all the 32 pre-morbid personality traits together to investigate the association between pre-morbid personality and membership of the S+ group. The conclusion from this analysis was that positive pre-morbid personality traits tend to be associated with the development of first-rank symptoms.

#### Medical problems in the past year

A total of 25% of the study patients were reported to have had somatic medical problems

in the year preceding intake into the study. The percentage was highest in Agra and Ibadan. The problems described were varied and lacked any specificity, ranging from unexplained fevers to parasitic and nutritional disease.

#### Alcohol and drug use

A history of alcohol use in the year preceding intake was given for a total of 57% of the male patients. A definite or suspected alcohol problem was reported on high proportions of the study subjects in Aarhus (26%), Dublin (24%), Nottingham (18%) and Rochester (18%). Drug abuse was described in a lower proportion of the total study population (14%) but the problem was heavily concentrated in a few centres: Honolulu (41%), Rochester (36%), and Aarhus

(24%). The extent to which abuse of street drugs (mostly marijuana and cocaine) may have contributed to the onset of psychotic illness, or, conversely, may have been a sequel of the disorder, could not be determined at this stage. An analysis of the follow-up of these cases (chapter 4) contributed further information on this problem.