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Review**Outcome of schizophrenia: some transcultural observations with particular reference to developing countries**

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Abstract The present paper provides a description of data based and methodologically sound studies of outcome of schizophrenia from developing and non-Western countries and compares the results. Major studies reviewed include the 2- and 5-year follow-up of the cohort of the International Pilot Study of Schizophrenia, the patients of the World Health Organization Collaborative Study on the Determinants of Outcome of Severe Mental Disorders, a few Indian studies including the study sponsored by the Indian Council of Medical Research and some studies from Colombia and South-East Asia. The studies are compared in terms of the quality of methodology and the rate of attrition. Although the outcome criteria of these studies are not similar, it is obvious that the outcome of schizophrenia in developing countries is generally more favourable. The reasons for this are far from clear. Research concerning the issues pertaining to better outcome of schizophrenia in developing countries in the context of socio-cultural differences is woefully lacking. This is an area that deserves research attention.

Key words Schizophrenia · Outcome · Course · Follow-up

Introduction

Until 1971, there was a singular lack of documentation of well-planned and methodologically sound follow-up studies regarding course, outcome and prognosis of schizophrenia from Latin America (Leon 1972), Africa (German 1972) and South-East Asia (Neki 1973). The possibility that the course and outcome of schizophrenia in non-white non-European populations could be different was not explored. Therefore, the claim of Murphy and Raman (1971) that non-white populations of patients with schizophrenia from Mauritius had better outcomes than white

European population aroused a great deal of interest in research and academic circles.

Early studies

Murphy and Raman (1971) followed a group of 90 patients with schizophrenia comprising Mauritian and European subjects and compared their results with the study of Brown et al. (1966) conducted in London. Nearly 64% of the Mauritian patients were independent and without any symptoms compared with 49% of the British patients who were placed in this category. Murphy and Raman concluded that the percentage of patients found to be symptom-free and functioning normally at follow-up was higher than the comparable British sample. They also observed that the Mauritian patients had fewer relapses in the period between discharge from inpatient care and follow-up. The course of the disorder in Mauritius was also found to be better than that in London.

The observation that non-white non-European schizophrenic patients have better outcomes aroused a great deal of interest and certain other studies in such populations were carried out namely in Hong Kong (Lo and Lo 1977), India (Kulhara and Wig 1978) and Sri Lanka (Waxler 1979) with conflicting results.

In an attempt to answer some of the questions raised by the Mauritian study Kulhara and Wig (1978) reported the results of a 5-year follow-up study of patients with schizophrenia availing services of a psychiatric unit in the setting of a general hospital. These authors found that the proportion of their patients with chronic, episodic or improving course was similar to that of Brown et al. (1966). Thus, the study of Kulhara and Wig (1978) could not substantiate the view that the chronicity of schizophrenia in non-white non-European populations at least in the context of India was different. Differences in methodology, methods of assessments of the subjects, diagnostic criteria, treatment and aftercare programmes were cited as some of the reasons for the disparity in results. A high rate of attrition in the study sample was also thought to be a possi-

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ble reason leading to differences in the results. It should be pointed out that Murphy and Raman had relied on nurses for follow-up assessments and data, whereas Kulhara and Wig personally assessed the patients at follow-up, and therefore the focus of investigation could have been different, leading to discordant results.

Studies conducted by the World Health Organization (WHO)

The WHO has been pioneer in carrying out studies in which the focus of attention has been the outcome of schizophrenia in various countries of the world. These studies are very well known as the International Pilot Study of Schizophrenia (IPSS) and its follow-up study and the Determinants of Outcome of Severe Mental Disorders and its follow-up reports.

The IPSS was a monumental transcultural psychiatric research investigation of 1202 patients in nine different countries/regions including Colombia, Czechoslovakia, Denmark, India, Nigeria, Taiwan, USSR, UK and the United States; Field Research Centres (FRC) were at Cali, Prague, Aarhus, Agra, Ibadan, Taipei, Moscow, London and Washington. To determine if the course and outcome of patients in the same diagnostic group are similar or different within and between cultures, and to determine whether it is possible to identify various symptomatic, past history and socio-cultural characteristics of patients upon initial evaluation, which predict particular types of symptomatic, diagnostic and social outcomes were the major aims of this investigation.

The IPSS follow-up study was done in three phases: 1-, 2- and 5-year follow-up. Assessment tools were standardized and had proven inter-rater reliability. The total sample had 1202 subjects, of which 909 were re-interviewed at the end of the 2nd year. Thus, the overall rate of follow-up was nearly 76%, although it ranged from a low of nearly 21% (London) to a high of nearly 98% (Aarhus).

The outcome variables were symptomatic outcome, length of episode of inclusion, percentage time spent in psychotic episode, pattern of course, type of subsequent episodes, degree of subsequent episodes and the length of time spent out of the hospital. It is apparent that many of these outcome variables are inter-related and not mutually exclusive.

At the end of 2 years, centres at Ibadan and Agra had the highest number of asymptomatic subjects (nearly 48 and 45% respectively) and centres at Aarhus and Prague had the least number of asymptomatic subjects (8 and 26% respectively). The length of episode of inclusion at Ibadan and Agra was relatively short in comparison to FRCs in developed countries. Similarly, patients from Ibadan and Agra had spent less time in psychotic episodes during the follow-up period compared to patients from Aarhus, Prague, Washington or London. The pattern of course of the disorder was also found to be better in Ibadan and Agra, with the majority of patients showing full remission. With regard to social impairment, patients in developing countries were considered to be better off than their counterparts in developed countries. Overall outcome was described in five categories: "best" outcome meant that the

patients had spent less than 15% of the follow-up period in psychotic episodes, had no severe social impairment and also had full remissions between episodes, "worst" outcome denoted that the patients had spent 75% or more of the follow-up period in psychotic states or episodes, had severe social impairment and did not have full remissions between episodes. It was noted that FRC at Ibadan, Agra and Cali had the maximum number of patients displaying "best" outcome, whereas FRCs at Aarhus, Washington and London had the maximum number of patients with "worst" outcome. Thus, overall outcome and the course were found to be more favourable in developing countries.

The cohort of patients recruited for the IPSS was taken up for long term follow-up, but a detailed report of the results has become available only recently. Sartorius et al. (1987) and Leff et al. (1992) have published results of the 5-year follow-up. A total of 531 patients were available for some outcome assessment, but the data from Taipei were not reported. Outcome trends seen at 2-year follow-up continued to be visible. It was noted that as at the 2-year follow-up, at the 5-year also the number of patients who had spent up to 15% of the follow-up period in psychotic episode was definitely less in developing countries compared to developed countries. Nearly 65% of the patients in developed countries had continuous or episodic illness without full remission, whereas only approximately 39% of the patients in developing countries had this pattern of the course of the illness. Impairment in social functioning was also considerably less in developing countries (65% of the patients had mild or no social impairment) compared to the subject from developed countries where the comparable number was 43%.

Overall outcome continued to be more favourable in developing countries, although some interesting variability emerged. In developing countries nearly 81% of the patients had "best" outcome. The percentage of such subjects from developed countries was nearly 52%. Nearly 14% of the patients in developing countries had "worst" outcome, and the comparable figure for developed countries was nearly 24%. At Aarhus the number of patients with "best" outcome had declined by approximately 5%, and the number of patients who had "worst" outcome showed a rise by nearly 7%. In other centres, i.e. at London, Moscow, Washington and Prague, the number of patients with "best" outcome had increased and was not less than 52% for any of these centres. Similarly, except for Ibadan, a fall in the number of patients displaying "worst" outcome was seen at centres in developing countries. At Ibadan there was a decline in the number of patients with "best" outcome and an increase in the number of patients with "worst" outcome. At Agra and Cali the reverse of the trend seen at Ibadan was visible to the extent that there was a steady increase in the number of patients with "best" outcome. It was again obvious that even at the end of 5 years patients in developing countries still had a more favourable course and better outcome, although the situation in developed countries had started to improve in that there were more patients in "best" outcome compared to the number at 2-year follow-up.

Post-IPSS Studies

Follow-up studies at 2 and 5 years were conducted by WHO demonstrated that a significant proportion of patients in whom a schizophrenic illness had been diagnosed recovered well, and that the outcome was more favourable in developing than developed countries. Because of their significance, these findings needed independent confirmation, and few studies have been conducted in this regard. The following are the significant works in this area: Sartorius et al. (1986), Jablensky et al. (1992), Indian Council of Medical Research (1988), Verghese et al. (1989), Kulhara and Chandiramani (1988), Dube et al. (1984), Leon (1989), Lee et al. (1991) and Tsoi and Wong (1991).

WHO collaborative study on the determinants of outcome of severe mental disorders (DOSMED)

The DOSMED of the WHO (Sartorius et al. 1986; Jablensky et al. 1992) was launched with the aim of determining the course and outcome of schizophrenia in different parts of the world. Twelve centres in ten countries, were involved in this study, of which 8 centres (Aarhus, Dublin, Honolulu, Rochester, Nagasaki, Nottingham, Moscow and Prague) were in developed countries and the rest (Agra, Chandigarh, Cali and Ibadan) were in developing countries. Geographically defined catchment area populations were monitored over a period of 2 years to identify individuals making their first contact with any helping agency because of psychotic symptoms. Operationalized inclusion and exclusion criteria were used, and the patients so identified were followed-up for a period of 2 years to assess outcome. The CATEGO diagnoses were used and assessment tools identical to those used in the IPSS were employed.

Initial screening yielded a group of 1535 patients, and from these 156 were excluded mostly for diagnostic reasons, leaving a study cohort of 1379 patients who met the study criteria. Nearly 78 of the patients could be followed-up and assessed 2 years after the initial examination. The drop-out rate showed significant variability across various study centres and the rate of drop-out was definitely higher in urban areas and was as high as 57.4% in Honolulu. The outcome and course of the patients were assessed as follows:

1. pattern of course.
2. proportion of follow-up period spent in psychotic episode.
3. proportion of time of the follow-up period during which the patient had remained totally asymptomatic.
4. proportion of follow-up period during which the patient was on anti-psychotic medication.
5. proportion of follow-up period spent in a psychiatric hospital.
6. proportion of follow-up period during which the social functioning of the patient had remained unimpaired.

The results of the study showed that at the end of 2 years the majority of patients (nearly 50%) had a single psychotic episode with or without complete remission. Approximately 33% of the total sample had two or more episodes with or without complete remission, and nearly 15% of the patients had a chronic unremitting type of illness. Patients in developing countries who had more favourable outcomes and remitting course were the most significant findings of the study. When patients with acute and insidious modes of onset were considered separately, even then patients in developing countries had better outcomes. These findings supported the observations of the 2-year follow-up of the IPSS (WHO 1979). It was also reported that patients in developed countries had spent proportionately more follow-up time in psychotic episodes. Conversely, patients in developing countries had spent proportionately more follow-up time in complete remission and outside psychiatric hospitals.

Social factors in the course and outcome of schizophrenia

To study the role of social factors in the course and outcome of schizophrenia the Indian Council of Medical Research (ICMR 1988; Verghese et al. 1989) sponsored a collaborative investigation that had three participating centres: Madras and Vellore in South India and Lucknow in North India. The diagnosis of schizophrenia was according to the criteria of Feighner et al. (1972) with two changes. Firstly, the duration-of-illness criterion was reduced to 3 months; secondly, the criterion of marriage was omitted for cultural reasons. Assessment tools were Psychiatric and Personal History Schedule (Sartorius et al. 1986), Present State Examination (PSE) of Wing et al. (1974) and an Interim Follow-up Schedule. Inter-rater reliability exercises for the assessment instruments were carried out. The period of follow-up was 2 years.

The total number of patients included in the study was 386 (Madras 96, Vellore 83 and Lucknow 207), of which 323 (i.e. nearly 84%) were followed-up (86% at Madras, 77% at Vellore and 85% at Lucknow). A total of 63 patients could not be followed-up, of which 17 were reported to be dead.

The majority of patients (62%) had spent 15% or less of the follow-up period in psychotic states, and approximately only 4% of patients had spent more than 75% of the follow-up period in psychotic states. A total of 45% of patients were rated to have "best" pattern of course, and "worst" pattern of course was found in only 10% of patients; the rest had an intermediate type of pattern of course of illness. Occupational outcome was also more favourable in that 40% of patients had no impairment, and severe occupational impairment was present in approximately only 18% of patients. A similar trend was also evident with regard to social outcome, where only 12% of patients were rated to have severe social impairment at the end of 2 years, and 34% of patients had no social impairment. Overall outcome was judged to be favourable in

66% of cases, unfavourable in 4% of cases and the rest had intermediate overall outcome. There were no significant differences in outcome parameters among various study centres. This independent Indian study thus confirmed earlier findings of WHO investigation in this area.

Other independent studies

From a psychiatric unit in the setting of a general hospital, Kulhara and Chandiramani (1988) followed-up a group of 112 schizophrenic patients diagnosed according to ICD-9 (WHO 1978) criteria. The period of follow-up ranged

from 18 to 30 months. Kulhara et al. (1986) had initially recruited this cohort of schizophrenic patients to study the concordance of five definitions of schizophrenia, viz. Research Diagnostic Criteria (RDC) of Spitzer et al. (1978), DSM-III of the American Psychiatric Association (1980), criteria of Feighner et al. (1972), CATEGO of Wing et al. (1974) and First Rank Symptoms of Schneider (1959).

Outcome parameters were (1) global clinical outcome, (2) course of the disorder, (3) work outcome and (4) severity of illness at follow-up. Complete information at follow-up was available for nearly 82% of the patients, and the comparison between the follow-up and the drop-out groups on sociodemographical variables did not reveal

Table 1 Overview of studies dealing with outcome in non-white non-European populations. IPSS International Pilot Study of Schizophrenia; ICMR Indian Council of Medical Research

Author(s) and year	Location	Sample size	Duration of follow-up (years)	Follow-up rate (%)
Murphy and Raman (1971)	Mauritius	100	12	98
Lo and Lo (1977)	Hong Kong	133	10	62
Kulhara and Wig (1978)	Chandigarh, India	174	5	58
IPSS follow-up study (1979)	Multi-centred study with centres at: Aarhus, Denmark Agra, India Cali, Colombia Ibadan, Nigeria London Moscow Prague Taipei Washington	1202	2	76
Sartorius et al. (1987) and Leff et al. (1992)	All of the above centres except Taipei	1065	5	74
Sartorius et al. (1986)	12 centres in 10 countries as follows: Aarhus, Denmark Agra, India Cali, Colombia Chandigarh, India Dublin Honolulu Ibadan, Nigeria Moscow Nagasaki, Japan Nottingham, UK Prague Rochester, USA	1379	2	78
Waxler (1979)	Sri Lanka	44	5	96
ICMR (1988) and Verghese et al. (1989)	Multicentred study from India with centres at Madras, Vellore and Lucknow	386	2	84
Dube et al. (1984)	Agra, India	140	13-14	43 (by interviews) 60 (by correspondence)
Kulhara and Chandiramani (1988)	Chandigarh, India	112	1.5-2.5	82
Leon (1989)	Cali, Colombia	101	10	76
Lec et al. (1991)	Hong Kong	153	1	64
Tsoi and Wong (1991)	Singapore	330	5 10 15	84 75 74

any significant differences. The percentage of patients displaying favourable outcome ranged from a high of 69% for RDC and CATEGO definitions to a low of nearly 50% for the DSM-III definition. No statistically significant difference in outcome among various definitions of schizophrenia studied was noted. Kulhara and Chandiramani concluded that outcome and course of schizophrenia regardless of its diagnostic definition was more favourable in Indian patients, and that outcome did not distinguish different diagnostic systems for schizophrenia.

Dube and his colleagues (1984) from India reported the long-term course and outcome of the Agra cases included in the IPSS. They charted the course and outcome at 13–14 years after the initial intake and compared the results obtained by two methods: (1) through a mailed questionnaire that assessed the key respondent's own perception of his/her state and (2) thorough clinical examination and assessment using standard instruments. The initial cohort comprised 140 cases of schizophrenia, and of these 61 (60%) were assessed through correspondence and 44 (43%) by clinical examination using the PSE of Wing et al. (1974). Of the patients 16 had died in the intervening period. Upon clinical examination nearly 60% of patients were assessed to be normal, and the comparable percentage by the correspondence method was 66%. Another interesting observation of the authors was that illness tends to lose its intensity over a period of years. Very high rate of the attrition is a severe limitation of this study.

Cali in Colombia was also a FRC of the IPSS, and Leon (1989) provided the findings obtained in the process of a 10 year extended follow-up of the IPSS cohort, which comprised 101 patients with schizophrenia. Assessment

instruments were the 9th version of the PSE, a special version of the Social and Personal History Schedule, the Disability Assessment Schedule and the Psychological Impairment Rating Schedule. At the time of 10-year follow-up adequate assessment data were obtained for 84 patients, of which 74 were interviewed personally. Two patients had died and three refused to be seen. In 51% of cases the outcome was described as good, i.e. these patients had either complete or partial recovery; 24% of patients were rated to have mediocre outcome, i.e. they had covert psychosis or residual state; and 25% had poor outcome, i.e. they continued to have overt psychosis or deterioration. The author also noted that nearly 63% of cases had spent less than 15% of the follow-up time in psychotic states, and only 11% of cases had been in psychotic states for more than 75% of the follow-up time. The various types of clinical course observed were episodic in 41% of cases, mixed in 24% and continuous in 35%. The author concluded that the findings of the study refuted the traditional view of schizophrenia as a continuous, deteriorating pathological process, and also felt that the obtained results portrayed an optimistic picture of the prognosis of the disorder.

Although Hong Kong and Singapore are considered as industrialized countries, because of their Asian location and cultural differences from the West, it may be worthwhile to consider the works of Lee et al. (1991) and Tsoi and Wong (1991).

From Hong Kong Lee et al. (1991) reported the results of a 1-year follow-up study involving 153 patients who satisfied DSM-III-R criteria (American Psychiatric Association 1987), inclusion criteria of the IPSS and the criteria of Flexible System of Diagnosis of Strauss and Gift (1977)

Table 2 Overview of outcome of various studies. DOSMED Determinants of Outcome of Severe Mental Disorders; PSE Present State Examination

Autor(s) and year	Method of assessment of outcome	Diagnostic criteria
Murphy and Raman (1971)	Interview by trained psychiatric nurse	Clinical
Kulhara and Wig (1978)	Interview by psychiatrist and operationalized criteria for outcome	Clinical
IPSS 2-year follow-up study (WHO 1979)	Standardized instruments and operationalized criteria	CATEGO
Waxler (1979)	Clinical interviews and a standardized instrument to assess psychiatric status	Clinical
IPSS 5-year follow-up studies (Sartorius et al 1987; Leff et al. 1992)	Same as for IPSS 2-year follow-up study	CATEGO
DOSMED (Sartorius et al. 1986; Jablensky et al. 1992)	Standardized instruments and operationalized criteria	ICD-9 and CATEGO
ICMR (1988) and Verghese et al. (1989)	Instruments structured and standardized by WHO and operationalized criteria	Modified version of criteria of Feighner et al. (1972)
Kulhara and Chandiramani (1988)	Clinical interviews and operationalized criteria	ICD-9 as index diagnosis and five other definitions of schizophrenia
Dube et al. (1984)	Correspondence and clinical examination using PSE	CATEGO
Leon (1989)	Standardized instruments and PSE	CATEGO
Lee et al. (1991)	Adaption of IPSS instruments	DSM-III-R inclusion criteria of IPSS and Flexible System of Strauss and Gift (1977)
Tsoi and Wong (1991)	Clinical interviews	ICD-9

Table 3 Outcome of schizophrenia

Author(s) and year	Clinical outcome (%)	
	Best	Worst
Murphy and Raman (1971)	64	24
Lo and Lo (1977)	21	32
Kulhara and Wig (1978)	29	32
IPSS 2-year follow-up (WHO 1979)		
Aarhus	35	48
Agra	66	21
Cali	53	28
Ibadan	86	7
London	36	41
Moscow	48	20
Prague	34	39
Taipei	38	35
Washington	39	45
All centres	51	29
Waxler (1979)	45	31
IPSS 5-year follow-up (Leff et al. 1992)		
Aarhus	6	40
Agra	42	10
Cali	11	21
Ibadan	33	10
London	5	14
Moscow	6	21
Prague	9	23
Taipei	(excluded)	
Washington	17	23
DOSMED (Jablensky et al. 1992)		
Centres in developed countries	36.8	60.9
Centres in developing countries (excluding Ibadan)	62.7	35.7
Dube et. al. (1984)	65	34
ICMR (1988) and Verghese et al. (1989)	66.3	4
Kulhara and Chandiramani (1988)	65	34
Leon (1989)	51	25
Lee et al. (1991)	71	29
Tsoi and Wong (1991)	32	17

for the diagnosis of schizophrenia. Different schedules adapted from the IPSS instruments were used to assess the status of the patients at follow-up. A total of 71% of patients were rated to have satisfactory symptomatic outcome, and the rest poor or very poor symptomatic outcome. A total of 46% were fully and continuously employed during the 1-year follow-up period, and 16% of patients were not employed at all. A total of 66% of patients had very superficial social relationships, and a similar percentage of patients had a poor quality of life as well. The authors concluded that symptomatic outcome was favourable, but less consistent over time, and psychosocial deficits were more enduring and present in a significant proportion of cases.

Tsoi and Wong (1991) studied a cohort of 330 first-admission patients of Chinese origin with schizophrenia. The study was conducted in Singapore and the follow-up interviews were conducted at 5, 10 and 15 years after intake. At the time of intake the patients were less than 40 years old and the diagnosis was according to ICD-9 of the WHO (1978). At follow-up it was found that 34% of patients had no re-admission, and the rest had one or more re-admissions. A total of 15% of patients had died during the period of follow-up, and of these, 34% of the deaths were due to suicide. A total of 48% of patients were meaningfully employed at the time of follow-up, and 55% of patients were not receiving treatment. The percentage of patients regarded as fully recovered (working and receiving treatment) was 32%. The study is, however, silent on the instruments of assessments.

Discussion

The studies carried out by the WHO and other researchers clearly portray that the outcome of schizophrenia in developing and non-Western countries is definitely better than that seen in developed countries. The course taken by schizophrenic disorder in developing countries is also more benign compared to that seen in developed countries.

By way of criticism there is not much that one can say about the lacunae in the methodology of WHO-sponsored work such as the 2- and 5-year follow-up studies of the IPSS and the DOSMED (WHO 1979; Sartorius et al. 1986, 1987; Jablensky et al. 1992; Leff et al. 1987, 1992). These studies were carried out with a sound methodology, had used standardized instruments of assessment, had operationally defined outcome parameters and had checks on inter-rater reliability.

The study of the ICMR (1988) and Verghese et al. (1989) had methodology similar to the WHO-sponsored IPSS study. The instruments used were also more or less alike. Another advantage of this particular study is that it covered different geographical areas of India with subtle differences in socio-cultural structure and values.

Kulhara and Chandiramani (1988) had a sound, although slightly different, methodology than the IPSS and ICMR works, but the main instrument of assessment was the PSE, and because their study was conducted from a centre in North-West India, it adds to the socio-cultural diversity of the study populations from India.

Investigations reported by Dube et al. (1984) and Leon (1989) were part of the IPSS and the follow-up studies are their extensions. To this extent these studies enjoy the advantages offered by the superior methodology of the original work of the IPSS. However, the rate of attrition of Dube et al. (1984) is very high, and as many as 41% of patients recruited for the study were not available for evaluations on PSE at the time of follow-up. With regard to the postal-inquiry method of Dube et al. (1984), even there the rate of attrition is high, although less than the rate of clinical follow-up. Moreover, the contents of the ques-

tionnaire mailed to the key informant were not appended, which made it difficult to judge what really was asked of the key informants. Leon's (1989) rate of follow-up was better. He was able to contact 84% of the total sample after 10 years and was able to clinically examine 74% of them. Apart from the difference in the rate of attrition in these two studies, a striking difference in mortality rates between the Indian and Colombian sample is apparent. Leon reports the deaths of only 2 (2%) patients at 10 years; Dube et al. report 16 (nearly 17% of schizophrenic group) patients to be dead. There is no satisfactory explanation for this high mortality rate.

The studies by Lee et al. (1991) and Tsoi and Wong (1991) are also methodologically sound in that they have defined exclusion and inclusion criteria. However, Lee et al. (1991) have not operationally defined outcome or various parameters related with it. Similarly, Tsoi and Wong have also not given details of how the outcome was really rated.

Earlier studies by Murphy and Raman (1971) from Mauritius, Lo and Lo (1977) from Hong Kong, Kulhara and Wig (1978) from Chandigarh and Waxler (1979) from Sri Lanka produced somewhat contradictory results. The study from Sri Lanka tended to support the finding of better outcome of the Mauritian study; the studies from Chandigarh and Hong Kong portrayed a poorer outcome. The rate of attrition, which was high for Chandigarh and Hong Kong cohorts, could be cited as an explanation for the observed poor outcome, because it is possible that patients with persistent symptoms and illness remain in the follow-up net and those who recover slip out of the net. The 5-year follow-up data of the IPSS (Leff et al. 1992) does not support this contention. The follow-up rate for Cali in Colombia is very high (92%), but the proportion of patients with "best" outcome is relatively low in contrast to Ibadan in Nigeria, where the rate of drop-out is high, but the proportion of patients with "best" outcome is high. In Washington and London the 5-year follow-up rate is low (53% and 65%, respectively; Leff et al. 1992), but the proportion of patients with either "best" or "worst" outcome is low and the majority of patients were found to have an intermediate range of outcomes. Therefore, the rate of follow-up or attrition does not appear to be a satisfactory explanation.

Turning to more recent studies, the difference in outcome of schizophrenia in the developed and developing countries is so singular that it raises many questions. Could these differences be due to inclusion of different types of patients? Could the differences in outcome be due to the fact that in developing countries, because of the paucity of mental health facilities, only the more acutely disturbed and floridly psychotic patients are brought for treatment and thus may be influencing the outcome? This could possibly make the sample studied non-representative in relation to the population studied.

In relation to the IPSS Helzer et al. (1981) believe that the diagnostic definition used can obviously influence the outcome. They argue that because CATEGO diagnosis does not have a duration-of-illness criterion, and because

nearly 56% of the study population from developing countries had been ill for less than 3 months, by contemporary research criteria particularly the DSM-III (American Psychiatric Association 1980) the diagnosis of schizophrenia given to these patients remains dubious. Furthermore, these authors point out that a bias towards ascertainment could also influence the results. It may so happen that for acute psychotics because of the disruption caused, treatment is sought more rapidly and chronic insidious-onset patients are more likely to remain in the community and in low-level employment without seeking treatment.

Stevens (1987) and Stevens and Wyatt (1987) have been critical of both the IPSS and the DOSMED (WHO 1973, 1979; Sartorius et al. 1986). These workers argue that the majority of cases at Agra and Ibadan had short durations of illness and as such did not meet DSM-III (American Psychiatric Association, 1980) or the criteria of Feighner et al. (1972) for the diagnosis of schizophrenia. Therefore, most researchers in the West would not diagnose such cases as schizophrenia. It is also argued that inclusion of acute psychoses contaminates the samples and predisposes to better outcome. Fuller-Torrey (1987) also voiced similar doubts and criticism. These are very cogent arguments, but more recent works of Kulhara and Chandiramani (1988) and Kulhara et al. (1989) provide argument to negate some of the views expressed by Stevens and Wyatt and Fuller-Torrey. The outcome of schizophrenia in the context of various definitions of schizophrenia was investigated by these authors, and the results of these studies show that outcome does not distinguish diagnostic systems, and the conceptual framework of schizophrenia is not crucial in influencing outcome. It was shown by Kulhara and Chandiramani (1988) and Kulhara et al. (1989) that regardless of the diagnostic definition, outcome of schizophrenia is more favourable in Indian patients, and that the RDC of Spitzer et al. (1978), CATEGO of Wing et al. (1974) and FRS of Schneider (1959) are poor predictors of outcome, whereas DSM-III is the best predictor.

Leaving aside these considerations, What then is the explanation for the observed better outcome of schizophrenia in developing countries? The follow-up study of IPSS (1979) and the works of Kulhara et al. (1989) show that the variables that predict outcome explain at best approximately only 35% of the variance, leaving a large proportion of variance unexplained. Therefore, there may be as-yet-unidentified factors that may vary from culture to culture, but may be pertinent in influencing outcome. Social acceptance of the patients by his/her peer group, social support and social network available to the families of patients as well as the patients themselves, cohesive family ties, family typology and family interactions, perceived burden of care, coping strategies of the caregivers and patients, expressed emotions, and guilt and hostility may be some of these factors.

Literature examining the relationship of the previously mentioned factors with outcome of schizophrenia is sadly almost non-existent, and the only well researched area is that of expressed emotions (EE) and schizophrenia. In this

also the relationship between EE and outcome has been the focus of very few studies. Cross-cultural comparative studies of EE and relapse in schizophrenia were reported by Leff et al. 1987 and Wig et al. 1987, in which relatives of Danish schizophrenics from Aarhus, relatives of Indian schizophrenics from Chandigarh and relatives of British schizophrenics from London were rated on EE by using the Camberwell Family Interview Schedule. Danish relatives were similar to British relatives on EE ratings. Hostility and expression of warmth were similar at all centres. However, the British and the Danish relatives were more critical of the patients than the Indian relatives. Anglo-Danish relatives were more over-involved than the Indian relatives. There were more high EE relatives in the Danish sample. Over a follow-up period of 1 year it was recorded that the rate of relapse was significantly more in high EE families, and of the individual components of EE, hostility had significant correlation with relapse, but critical comments did not have any such significant relationship. Although the works of Leff et al. 1987 and Wig et al. 1987 are commendable for exploring this relationship, these studies have the limitation of small sample size, short duration of follow-up and fewer number of relapses, making comparisons difficult.

The paucity of research data in these areas forces one to speculate about the possible reasons for better outcome of schizophrenia in developing countries. Schizophrenia is probably a genetically and biologically determined disorder. It may be that similar manifestations and symptom profile may have dissimilar underlying pathological and biological base. This may partly explain the differential rates of recovery in various cultures. It is also possible that the meaning of being psychologically ill and seeking treatment for one's psychiatric condition may have different connotations and impact in various cultures, which in turn may influence the course of the disorder and outcome. Perhaps the real reasons lie somewhere else, and exploration of bio-socio-cultural factors may yield the variables that are responsible for better outcome of schizophrenia in developing countries.

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