A FIVE-YEAR FOLLOW-UP STUDY OF SCHIZOPHRENIA IN SINGAPORE

W F Tsoi

L P Kok

S K Chew

Department of Psychological Medicine
Faculty of Medicine
National University of Singapore
College Road
Singapore 0316

W F Tsoi, MBBS, DPM, MRCPsych, FRCPG,
Assoc Prof and Head   FRANZCP

L P Kok, MBBS, DPM, MRCPsych, FRANZCP
Assoc Professor

Woodbridge Hospital
Singapore 1954

S K Chew, MBBS, DPM
Senior Consultant Psychiatrist

SYNOPSIS

A total of 424 out of an original number of 637 cases of schizophrenia were reassessed 5 years later. The results were as follows: good outcome (63%), poor outcome (30%), died (7.6%) — suicide (3.8%), natural death (3.8%). A good outcome was related to being of the female sex, in the age group 40-49, of Chinese or Malay race, of having a better education (for the younger patients), and with a shorter duration of illness.

INTRODUCTION

This is a study to find out the 5 year outcome of all patients diagnosed as schizophrenia and admitted for the first time in 1975 to a mental hospital in Singapore. Follow-up studies on schizophrenia tend to show that in non-industrialized, non-urbanized communities, the outcome is better than in urbanized, industrialized ones. Murphy and Raman (1) reported that schizophrenic patients on the island of Mauritius had a better outcome than a group of British patients used for comparison. Rin and Lin (2) found that in Taiwan, oboriginal patients had a better recovery than the Chinese. An international follow-up study of schizophrenia in seven centres by WHO in 1979 (3) showed that at the end of 2 years, the patients in the developing countries, particularly Nigeria did better than those in the developed countries. Waxler (4) also found that schizophrenic patients in Sri Lanka, a developing country did very well at the end of 5 years. Kulhara (5) reported that if patients were from an urbanized region, but in a developing country, their outcome was not much different from those patients in developed countries. Contrary to these studies, Lo and Lo (6) found that among the Chinese in Hong Kong, a highly urbanized city, the outcome for schizophrenia was good for 65% of the patients.

The problem with follow-up studies, as has been pointed out by many authors is the diagnosis of schizophrenia and the different criteria used for outcome. Murphy and Raman (1971) (1) commented that it was difficult to find typical cases of schizophrenia in tropical people. Instead, transient psychotic episodes which were indistinguishable from schizophrenia in their presentation were often seen. If such cases of "schizophreniform psychoses" were excluded from the category of schizophrenia, then true schizophrenia would be a rare disorder. The second major problem was the type of criteria used in the assessment of outcome of schizophrenic patients. Some studies used only a global assessment while others focussed on social outcome or relationships with others or work outcome. In the WHO international follow-up study (3) three variables were used in evaluating an overall outcome grouping viz: the frequency and duration of the psychotic episodes, social impairment and remission.

In this study, the diagnosis of schizophrenia was based on the guidelines set by Slater and Roth (7) which was adapted from Bleuler (8) ie. there had to be "specific psychological symptoms, that interfered with the patient's thinking, emotions, conation and motor behaviour". The disturbance of thinking was characterized by an abnormality of the thought process which showed loosening of associations. Thought blocking, thought withdrawal, thought insertion and thoughts spoken aloud, when present were also included as part of the disturbance of thought processes. The disturbance of emotions was characterized by emotional blunting, and incongruity of affect. The volitional disturbance was shown by a blunting of will power, reduced activity and inefficiency. A disturbance of self as characterized by the passivity phenomena was part of the schizophrenic picture, as were catatonic symptoms, primary delusions and hallucinations.

The outcome was based on a global score derived from the patient's severity of symptoms at follow-up, personality deterioration, daily amount of medication prescribed and the work status (Appendix I). The latter was given more weight, as the ability of a person to work is very important in Singapore, which has full employment and where jobs were easy to come by. As Singapore is a multi-ethnic society comprising Chinese, Malays and Indians, the outcome for the three different ethnic groups was also compared.

MATERIAL AND METHODS

1   Case records of all patients aged below 60, admitted to Woodbridge Hospital for the first time in 1975 and diagnosed previously by the first author as schizophrenia (9) were traced and rescrutinized by the same author.

2   Those cases who were readmitted to the hospital in 1980 were re-examined by the authors using a simple proforma (see Appendix I). Those cases receiving outptient treatment were similarly examined by doctors at the psychiatric outpatient clinics.

3   For the rest, letters were sent to their last known addresses requesting them to come to the hospital to be examined by the authors. If the letter was returned undelivered, the patient's address was traced through the National Registration Office (which would also indicate if the patient had died) and further letter(s) sent to the new address.

4   All patients who were not staying at their current official addresses were omitted from the study as their whereabouts were unknown. All non residents and foreigners (who had left the country) were also omitted. For the remainder, home visits were made by the Medical Social Worker and their status assessed according to the proforma.

RESULTS AND DISCUSSION

Out of the original 637 cases, only 424 (66.6%) were traced and reassessed. The breakdown is shown in Table 1 below.

Table 1
BREAKDOWN OF ALL ADMISSIONS TO WOODBRIDGE HOSPITAL IN 1975

Total 1975 Admissions	1,068
Schizophrenia	660
Patients aged 60 and above (omitted)	23
Total populaiton for study	637
Reclassified	
Non Singapore residents	35
Not traceable	133
Total number omitted from study	213
Total number reassessed	424

Reclassification. A total of 45 cases were excluded because they were wrongly diagnosed. Of these, there were 18 cases of transient psychosis, 10 "not first admission", 7 organic psychosis, 6 personality disorders, 3 neurosis and 1 mental retardation. There were 35 non-Singapore residents who came from Malaysia (20), other Asian countries (10) and Europe-Australia (5).

Readmission. Subsequent admissions over the next 5 years are shown in Table 2 below.

The number of readmissions after 1975 were about the same, except for a slight dip in 1977 and a tendency for the length of stay to be slightly longer in 1976 and 1980. The results did not indicate any definite trend and further observation over a longer period would be needed to come to a more definite conclusion. It appeared that the group as a whole did not continue to deteriorate progressively over the 5 years from 1975 to 1980. The subsequent annual readmissions

after the first year were about 25% of the total number of first admissions.

Final Outcome. For the final outcome, the cases were divided into 6 categories: recovered, minimal illness, moderate illness, severe illness, died (natural causes) and suicides (see Table 3).

The patients were rated as being in the recovered, minimal, moderate and severe categories according to scores on their work status, personality deterioration, severity of symptoms and their daily dosage of neuroleptics as shown in the proforma (in Appendix I).

The points were totalled and the grades are as follows:

recovered	0 to 1 point
minimal illness	2 to 3 points
moderate illness	4 to 6 points
severe illness	7 to more points

TABLE 2
FIRST AND SUBSEQUENT READMISSIONS

	1975	1976	1977	1978	1979	1980
Patient-days in hospital	11,742	3,900	2,301	2,597	3,101	3,961
Total number of admissions	481	124	93	111	130	123
Mean length of hospitalization (Days)	24.4	31.5	24.7	23.4	23.9	32.2

TABLE 3
FINAL OUTCOME

Clinical Status	Male	Female	Total	%
Recovered	95	54	149	35.1
Minimal Illness	48	69	117	27.6
Moderate	51	35	86	20.3
Severe	28	12	40	9.4
Died (natural cause)	10	6	16	3.8
Died (suicide)	7	9	16	3.8
Total	239	185	424	100.0

$X^2 = 18.36$ df = 5 $0.01 > P > 0.001$

Because of the shortage of workers in Singapore, the ability to work was given additional weight. If a patient was able to work regularly at a full time job, he would not be rated as having a poor outcome (ie. in moderately or severally ill group). If he were not working regularly, his rating would follow the scale above. Of the 424 cases followed up, 63% were considered to have made a substantial recovery, most of whom were working, and 30% were still suffering from the illness in varying degrees of severity. For the purpose of relating their final outcome to other variables, the patients were divided into two broad categories:

good outcome — recovered and minimal illness

poor outcome — moderate and severe illness

Sex and Final Outcome. There were 1.29 males to 1 female. The proportion of males was lower than that of the original group which had 1.48 males to 1 female. More males defaulted because, firstly, all the non residents (foreigners who had left the country) were males and, secondly, males were generally more mobile and hence more difficult to locate. Unlike some reports from western countries which showed a higher proportion of female patients (10, 11) reports from Asian countries generally showed a higher male to female ratio. (6, 12, 13, 14)

This study did not deviate from the normal trend and there was a higher male to female ratio, as expected.

This could be due to the fact that abnormal behaviour was better tolerated among females who were deemed to be less threatening, as suggested by Buhrich et al (12), or that relatives were more inclined to hospitalize males earlier as they were the main wage earners, and were often unable to carry on working. The final outcome for females was better than males as 72% of the females had good outcome as compared with 65% of the males. This was similar to most of the follow-up studies on schizophrenia which showed better prognosis for females than males. (6, 15, 16) Watt and Szulecka (17) found that significantly more men were readmitted than women.

Shepherd (18) and Brooke (19) found that women did better than men in terms of readmission, and Brown et al (15) found that men relapsed more often than women. The international follow-up study by WHO (3) also showed that there were more males with a poorer outcome.

Age and Final Outcome. The age groups (according to the patient's age in 1975) are shown in Table 4 below.

The bulk of the patients (86%) were in the age range 10 to 39 years while the rest (14%) were above 40 years of age. Their outcome is shown in Table 5 below.

TABLE 4
AGE DISTRIBUTION IN 1975

Age	Male	Female	Total	
10 — 19	63	43	106	25
20 — 29	113	73	186	44
30 — 39	35	37	72	17
40 — 49	13	17	30	7
50 — 59	15	15	30	7
Total	239	185	424	100

$X^2 = 7.239$ df $= 4$ NS

TABLE 5
AGE GROUPS AND FINAL OUTCOME

Age in 1975	Good Outcome	Poor Outcome	Total
10 — 19	71 (72%)	27 (28%)	98 (100%)
20 — 29	109 (61%)	69 (39%)	178 (100%)
30 — 39	47 (71%)	19 (29%)	66 (100%)
40 — 49	45 (88%)	6 (12%)	51 (100%)
Total	272 (69%)	121 (31%)	393*(100%)

*Died $= 31$
$X^2 = 14.39$ df $= 3$ $0.001 > P > 0.000$

The patients in the age group 20 to 29 appeared to show the worst outcome, while those in the older age groups 40 to 59 had a better prognosis. Those in their teens (10-19) did as well as those aged 30-39 years. Bland and Parker (20) and Holmboe and Astrup (21) found that an earlier age of onset gave a better prognosis. However, Watt and Szulecka (17) in their study of 282 schizophrenics, followed-up for 2 years found that a higher proportion of those below 29 years were readmitted. The WHO follow-up study of schizophrenia (3) also seemed to support to a certain extent, the view that an early age of onset was not favourable, as more males below 20 had a poorer outcome.

Other variables showed that the younger patients had a better educational status and a shorter history. The percentages of patients having received secondary education were 64% in the age group 10-19, 52% in the age group 20-29, 19% in the age group 30-39 (X^2 = 29.61, 0.001 > P > 0.000). The shorter history rather than the educational status probably accounted for the better outcome in those whose illness started in their teens.

Educational Status and Final Outcome. The educational status of this sample did not differ significantly from the original sample. Patients receiving less than 6 years of education (primary and lower) made up 54% of the grouip and they showed a poorer outcome than those having more than 6 years of education (secondary and higher) as shown in Table 6.

In a multi-racial society like Singapore or Malaysia, there were distinct patterns of mental hospital utilization in the 3 different races. Malays generally under utilized hospital facilities, while Indians were over-represented in the mental hospital population (15, 22) Chinese were over-represented but not to the extent of the Indians (12, 15, 22). The lower than expected admission rate to mental hospitals for Malays (12, 22) was probably due to the more tolerant attitude of Malays to mentally ill members of the family or group. This attitude could also have influenced positively the outcome for Malay patients, in that more understanding and tolerant members would exhibit less negative expressed emotion towards patients which had been shown to be an important factor influencing outcome for schizophrenic patients (23).

Indians, as compared to the 2 other racial groups had less social support, because a number of Indian men returned to India to marry, after which their wives stayed behind while they came back to Singapore. After a schizophrenic breakdown, the social support they received was not equivalent to that obtained by the Malay or Chinese patients. However, social support was not the only factor, as Kulhara and Wig (5) found in their follow-up study of schizophrenia in Chandigar, an urbanized part of India, the outcome was not better than in western countries. Only 29% of the original group recovered from the initial episode. The effects of being in an urbanized community could have influenced the outcome, for, as Waxler (4) argued so persuasively, societies did not cause mental

TABLE 6
EDUCATION AND FINAL OUTCOME

Education	Primary and Lower	Secondary and Higher	Total
Good Outcome	133 (62%)	134 (75%)	267 (68%)
Poor Outcome	81 (38%)	45 (258%)	126 (32%)
Total	214 (100%)	179 (100%)	393 (100%)
Died	22	9	31

X^2 = 7.230   df = 1   0.01   P   0.001

However, the educational status was probably influenced by other factors, as shown earlier in the outcome between the age groups, using the education and length of illness as variables. The latter appeared to be more important, as those in the higher age groups with lower levels of education and a shorter length of illness did as well as those in their teens. Perhaps a more important measure should have been the intelligence quotient rather than the educational level, as the older people in Singapore tended to have less educational opportunities. Huber et al (16) in a follow-up of 502 schizophrenics found that scholastic success was related to better remission rates. He felt that this indicated a positive relationship between intelligence and remission.

Ethnic Distribution and Final Outcome. The majority of the patients were Chinese (80.7%). The rest were Malays (9.4%), Indians (8.0%) and others (0.9%). The Chinese and Malays had a better outcome than the Indians and others. About 69% of Chinese and 70% of Malays were in the good prognosis group while only 57% of Indians were in this category (X^2 = 5.160, 0.05 > P > 0.02).

illness, but they responded differently to mental illness and this would probably influence the outcome. In a less urbanized community, beliefs of mental illness centred round superstitions and the patient himself did not feel responsible for his illness and he could readily shed the sick role. In Singapore the different ethnic groups did not have the same degree of belief in superstitions about mental illness. Chinese believed more in the supernatural causation of mental illness and they were over-represented among the mentally ill seeking native help before admission to a mental hospital (24). If as Waxler postulated, such a belief helped a person shed the sick role more readily, it could explain why the Chinese had a good outcome. The Indians were probably doubly handicapped with having a poor social support system, and of being in a sub-culture where the supernatural causes of mental illness were not so readily believed in.

Duration of Illness and Final Outcome. About 58% had a history of less than 6 months duration at the time of first admission which would not have qualified them as schizophrenia using the criteria of Feighner et at (25) or DSM II (26). Using the 6 months' duration of

illness as a cut off point, patients having less than a 6-month history of onset had a significantly better outcome than those having a history of more than 6 months as shown in Table 7, where it can be seen that 75% of those with less than a 6-month history had a good outcome, as compared with 58% of those whose onset was more than 6 months prior to initial admission. Sartorius et al (27) also found that a long duration prior to initial evaluation was associated with a poor outcome, as was an insidious onset.

65% had lasting remissions or showed only mild deterioration. The results were comparable as both Singapore and Hong Kong were amongst the world's most densely populated, urbanized and rapidly developing city states with a predominantly Chinese population. Moreover, the psychiatrists in both these places were trained mainly in Britain and tended to be orientated to the British school of psychiatry. Favourable outcomes in this cohort of patients were related to the female sex, the age group 40-59, higher

TABLE 7
DURATION OF ILLNESS AND OUTCOME

Assessment 5 years later	History less than 6 months	History more than 6 months
Recovered	112 (49%)	38 (23%)
Minimal illness	59 (26%)	58 (35%)
Moderate illness	35 (15 %)	49 (30%)
Severe illness	22 (10%)	20 (12%)
Total	228 (100%)	$65 (100%)
Died	18	13

$X^2 = 29.61$ $\quad$ df $= 5$ $\quad$ $0.001 > P > 0.000$

Death and Suicide. Out of the 424 cases, 16 (3.8%) died of natural causes and 16 (3.8%) died of suicide — giving a death rate of 15.1 per 1000 per year. This was about 7 times higher than the death rate of the general population aged 10-59 over the same period for Singapore which was 2.21 per 1000 per year. The higher mortality rate for schizophrenics was also observed in Hawaii among the schizophrenic patients of Caucacian, Philippine or Chinese descent (28), in Edinburgh (29) and London (30). The percentage of schizophrenics committing suicide was similar to that reported in Helsinki, where Neskanen (10) showed that 4% died of suicide during the first 5 years, 5% during the second 5 years, and 6% during the third 5 years. Roder (31) also reported that 4% of a group of schizophrenic women committed suicide and Wilkinson (30) reported that 3 out of 39 (8%) of first admission schizophrenics committed suicide during the 10 to 15-year follow up period. In Singapore, suicide was associated with schizophrenia in 16% of all the suicide deaths during the period 1969-74 (32). This could have happened during brief depressive episodes as suggested by Lehmann (33) who commented on unpredictable suicidal impulses in chronic schizophrenics during brief spells of dejection.

SUMMARY AND CONCLUSION

A total of 424 out of the original 637 cases of schizophrenia were reassessed 5 years later. Of these, 63% had a favourable outcome, with complete recovery in 35%, and minimal illness in 28%, in spite of the fact that hospital admissions were generally reserved for the more severe schizophrenics. Only 37% had poor outcome and 7.6% died (3.8% from suicide and 3.8% from natural causes). The larger proportion having a favourable outcome was similar to the follow-up report on 133 Hong Kong patients diagnosed as suffering from schizophrenia in which

level of education (for younger patients), the Malay or Chinese ethnic groups and a shorter duration of illness. The suicide rate was about the same as that reported in other studies.

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FOLLOW-UP ASSESSMENT

Work Status

0 unemployed
1 working (part-time, not regular)
2 working (full-time, regular)

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Personality Deterioration

0 nil — not detectable
1 minimal — just detectable
2 moderate
3 severe — obviously abnormal

☐

Symptoms

0 no symptom elicited
1 minimal — mainly neurotic symptoms
2 moderate — at least one psychotic symptom
  like delusion, hallucination, thought disorder
3 severe — two or more psychotic symptoms

☐

Treatment

0 not on Neuroleptics
1 Neuroleptics equivalent to chlorpromazine
  25 — 100 mg daily
2 chlorpromazine 125 — 200 mg daily
3 chlorpromazine 225 mg & above daily

☐

Final Outcome

	Score
Complete recovery	0 — 1
Minimal impairment	2 — 3
Moderate impairment	4 — 6
Severe	7 & over (or hospitalized more than 3 months in the fifth year)