Efficacy of the Community Re-Entry Module for patients with schizophrenia in Beijing, China: outcome at 2-year follow-up

YU-TAO XIANG, YONG-ZHEN WENG, WEN-YONG LI, LIANG GAO, GUO-LAN CHEN, LING XIE, YAN-LI CHANG, WAI-KWONG TANG and GABOR SANDOR UNGVARI

Background Few psychosocial interventions have been developed in China that are suitable for use in the community.

Aims To evaluate the effectiveness of the Chinese version of the Community Re-Entry Module (CRM; a module of a standardised, structured social skills training programme devised at the University of California, Los Angeles) for patients with schizophrenia compared with standard group psychoeducation.

Method Patients with schizophrenia (n=103) were randomly allocated to CRM or psychoeducation groups and followed up for 24 months. Outcome measures included social functioning, psychiatric symptoms, insight, re-employment, relapse and re-hospitalisation rates.

Results The CRM group significantly improved in terms of social functioning, insight and psychiatric symptoms compared with the psychoeducation group; the re-employment rate was significantly higher and relapse and re-hospitalisation rates were significantly lower in the CRM group.

Conclusions The findings support the feasibility and effectiveness of CRM as a psychosocial intervention for Chinese patients with schizophrenia in the community.

Declaration of interest None. Funding detailed in Acknowledgements.

The numbers of psychiatric beds and psychiatrists per 10 000 population in China in 2004 were 1.06 and 1.29 respectively, whereas the corresponding figures were 7.7 and 13.7 in the USA (World Health Organization, 2005). It is estimated that over 90% of Chinese patients with severe psychiatric disorder live with their family members owing to a lack of residential services in the community (Phillips, 1993). Consequently, community-based psychiatric rehabilitation is currently gaining increasing attention in China and it has become the focus of mental healthcare delivery (Xiang, 2002). Over the past decade, a few psychosocial interventions developed in the West have been introduced and validated in China. However, all of them were used mainly in municipal psychiatric hospitals located in big cities such as Beijing (Li & Arthur, 2005; Weng *et al*, 2002). It is still unclear if these treatment methods could be adapted to primary mental healthcare, which has a key role in the Chinese mental healthcare system throughout the country. A growing body of evidence suggests that the Community Re-Entry Module (CRM; Liberman *et al*, 1993), one of the University of California at Los Angeles (UCLA) Social and Independent Living Skills Modules, is an effective method for the rehabilitation of patients with schizophrenia (Smith *et al*, 1996; Anzai *et al*, 2002; Naoki *et al*, 2003; Rossotto *et al*, 2004).

The objective of the study was to examine the effectiveness of CRM with respect to social functioning, psychiatric symptoms and rates of re-employment, relapse and re-admission to hospital in Chinese patients with schizophrenia; in other words, to determine if the CRM could be adapted to mental healthcare in China.

The primary hypothesis of our study was that patients in the CRM group would show significant improvement in terms of social functioning and re-employment compared with those receiving routine psychoeducation delivered as group therapy. The secondary hypothesis was that CRM could significantly improve psychotic symptoms and insight and decrease the rates of relapse and re-hospitalisation in comparison with group psychoeducation.

METHOD

Sample and setting

Since the early 1990s an integrated mental healthcare system has been gradually developed throughout most of China (Qiu & Lu, 1994). This is a three-tier system centred on provincial capitals and a few major cities such as Beijing and Shanghai. Mental health institutes in the province or major city constitute the top level of the system and are responsible for enacting policy and management guidelines, and providing technical support for all the mental health services in the province (or city). The medium level (district or town level) consists of either mental health institutes in large and medium-sized cities (with populations of several millions) or psychiatric hospitals or centres in towns and rural areas (with populations of hundreds of thousands). The lowest (community office and village) level employs mental health field workers whose roles approximately correspond to those of community psychiatric nurses in Western psychiatric care. Mental health workers are directly responsible for patients living in their communities or villages comprising several thousand people. The district or town-level hospitals provide in-patient and out-patient services as well as training and supervision for mental health workers in the community-level part of the system. Mental health workers have regular contact with patients, delivering various rehabilitation services based on locally available resources. Overall, the district and town-level psychiatric hospitals have a key role in the whole mental healthcare delivery system.

We undertook a randomised controlled trial of the effectiveness of CRM compared with group psychoeducation in the rehabilitation of patients with schizophrenia treated from August 2000 to July 2004 in the Chaoyang Mental Health Care Institute, which has a catchment area comprising around 2 290 000 persons. As a district psychiatric hospital it has in-patient and out-patient services for about 4500 patients with schizophrenia living in Chaoyang District, Beijing. Routine clinical care also

includes regular psychoeducational workshops on psychiatric illnesses.

Patients were approached if they fulfilled the following inclusion criteria:

(a) they were in-patients with a diagnosis of schizophrenia according to DSM–IV (American Psychiatric Association, 1994) based on case records;

(b) they were aged 18–60 years;

(c) they had been clinically stable for at least 1 month before recruitment and were about to begin their pre-discharge home leave (in Chaoyang District, 1-month home leave is a routine practice before discharge);

(d) their admission was voluntary;

(e) at least one family member would be cohabiting with the patient after discharge;

(f) they had no employment immediately after discharge.

Clinical stability was defined as the sum of the four psychotic symptoms assessed by means of the Positive and Negative Syndrome Scale (PANSS; Kay et al, 1987) (including conceptual disorganisation (P2), hallucinatory behaviour (P3), grandiosity (P5) and unusual thought content (G9)) being 10 or below with none of the items scoring 4 or above (moderate).

Exclusion criteria were the presence of ongoing acute medical or neurological conditions, and current or a history of misuse of drugs and substances other than nicotine.

Assuming a medium effect size of 0.50 between the primary outcome measure (i.e. the scores of Social Disability Screening Schedule of the two groups at 24-month follow-up), power of 0.8 and $\alpha=0.025$ (0.05/2), the sample size in each group should be at least 64 according to Cohen's sample size tables (Cohen, 1988).

The study protocol was approved by the Human Research and Ethics Committee of both Beijing Anding Hospital and Chaoyang Mental Health Care Institute. Written consent was obtained from all participants. The study design conformed to the Consolidated Standards of Reporting Trials (CONSORT) guidelines (Altman et al, 2001).

Therapists

Two experienced psychiatric nurses were responsible for the delivery of both interventions. They received a week's training to familiarise themselves with the interventions. One nurse delivered only the CRM intervention and the other administered only the group psychoeducation. They were instructed to avoid any communication with regard to the nature of their respective interventions, which were delivered according to the instructions described in the trainer's manual. Therefore, it was unlikely that significant contamination of the assessment occurred.

Interventions

The two interventions commenced during the patients' 1-month pre-discharge home leave. The CRM was primarily designed for in-patients, to foster seamless care in the transition between hospital and community. It consisted of 16 training sessions, each lasting 1 h (the content of the individual sessions is listed in the Appendix). Documents for the module include a trainer's manual, videotapes and a workbook for patients. Each of the sessions was taught using the seven learning activities described in the trainer's manual:

(a) introduction;

(b) videotape and questions/answers;

(c) role-play;

(d) resource management;

(e) outcome problems;

(f) in vivo exercises;

(g) homework assignments (Liberman et al, 2002).

Each CRM group comprised six to eight patients and the group sessions took place four times a week.

The other participants received an equally intensive programme of group psychoeducation, a standard psychosocial intervention in many parts of China, which served as a control for the CRM intervention.

A comprehensive review of the treatment of psychiatric disorders has identified two characteristics of successful psychosocial interventions: regular supervision of health professionals and continuing education for participants involved in psychosocial interventions (Cohen, 2001). In line with this conclusion, the opportunity to attend quarterly, community-based workshops following discharge was offered to participants in both study groups as part of a routine intervention to reinforce the use in the community of skills acquired during admission. In addition, family members of patients in both study groups were encouraged to participate in these regular workshops. The 4 h long workshops were delivered by mental health workers from the community office services, who received a 1-day training prior to each quarterly workshop and were supervised by the research coordinator (W.L.).

Assessments

Two raters independently assessed all participants before and immediately after the interventions, and at 6-month intervals for 2 years. The raters were not involved in the interventions and were also masked to the study protocol. Prior to the study the two raters held joint training sessions, followed by the establishment of interrater reliability by testing 30 randomly selected patients on all scales and relapse criteria used in the study, with kappa values ranging from 0.76 to 1.0. Before commencing the study, participants were instructed by the research coordinator not to disclose their group membership to the raters at any stage of study. In order to assess the effectiveness of the raters' masking, we designed a five-point Likert scale in which −2 represented complete certainty that the treatment was group psychoeducation, 0 represented complete uncertainty about the type of treatment and 2 represented complete certainty that the treatment was CRM. At pre-intervention, 12-month follow-up and 24-month follow-up assessments the mean scores were −0.12, −0.50 and 0.45 respectively; these results show that the raters were not sure about the patients' group membership, suggesting that masking was maintained relatively successfully throughout the study period.

If participants failed to attend for any of the assessments they were visited at home by one of the raters. Case notes were checked monthly for re-employment, relapse and readmission. Family members and mental health workers were also interviewed monthly about re-employment and readmissions. In case of relapse or re-hospitalisation no further follow-up was offered. Decisions regarding medication and readmission were made independently by clinicians who were not involved in the study and were not familiar with the study design.

Data collection

A questionnaire was designed to collect socio-demographic data including age, gender, education level, marital status, medical insurance, age at onset, duration of illness and number of psychiatric admissions.

Outcome measures

Primary measures: social functioning

Social functioning was measured by the Chinese version of the Social Disability Screening Schedule (SDSS), which has acceptable psychometric properties in Chinese populations (Shen & Wang, 1985; Cooper & Sartorius, 1996). Re-employment was defined as at least 3 consecutive months of salaried employment during the study period.

Secondary measures

Psychiatric symptoms. The severity of psychiatric symptoms was measured using the 30-item PANSS. The Chinese version of this scale has been validated and widely used in China (Kay et al, 1988; He & Zhang, 2000).

Insight. Insight was measured using the Insight and Treatment Attitude Questionnaire (ITAQ; McEvoy et al, 1989), which has acceptable psychometric properties and is also widely used in China (Hu, 1992). It is an 11-item scale consisting of 5 items reflecting recognition of psychiatric illness and 6 items exploring attitudes towards antipsychotic drugs, hospitalisation and follow-up. Each item is rated from 0 (no insight) to 2 (good insight) and the total score is used as an insight measure.

Relapse and re-hospitalisation. Relapse was defined if the patient was admitted to hospital, attempted suicide, or deteriorated, with one or more of the four psychotic symptoms on the PANSS (items P2, P3, P5, G9) rated as 6 (severe) or 7 (very severe), or two or more of the psychotic symptoms rated as 5 (moderately severe). Re-hospitalisation was defined as a stay of at least 36 h in hospital as a result of the exacerbation of psychiatric symptoms (Buchkremer et al, 1997).

Types and dosages of antipsychotic drugs were recorded from out-patient case notes. Dosages were converted to chlorpromazine equivalents (Kane & Marder, 1996; Sim et al, 2004).

Statistical analysis

Data were analysed using the Statistical Package for the Social Sciences (SPSS) version 10.0 for Windows, on an intent-to-treat basis. The comparison of groups with regard to their pre-intervention demographic characteristics was performed by independent samples t-test or chi-squared test. The effects of interventions on social functioning, insight and psychiatric symptoms were measured with analysis of variance (ANOVA). If effects of interventions were significant, then comparisons between pre-intervention and subsequent follow-up points were conducted using simple contrast and adjustment of P values for multiple comparisons (Bonferroni method).

To evaluate the differential effects of CRM and group psychoeducation on social functioning, insight and psychiatric symptoms, analysis of covariance (ANCOVA) was carried out using pre-intervention scores as covariates. Effects of CRM and group psychoeducation on rates of re-employment, relapse and re-hospitalisation were evaluated by chi-squared test. Missing post-intervention and follow-up data were calculated by using the 'replace missing values' option of the SPSS. Assumption of parametric test was checked in advance and corresponding non-parametric tests were employed if the assumption was violated. Two-tailed tests of significance were used and the significance level was set at 0.05 unless specified otherwise. Effect size (d) was calculated on the basis of the change in score on the SDSS, the primary outcome measure at 24-month follow-up, using Cohen's criteria (Cohen, 1988).

Translation of the CRM

The CRM was translated by the senior author and then back-translated by another experienced bilingual psychiatrist (Y.W.), following which the ambiguities in language were discussed and corrected.

RESULTS

Patients who refused to participate in the study did not differ from the participants with respect to basic socio-demographic data and length of illness. Altogether 103 patients with schizophrenia were involved in the study (Fig. 1). Four patients withdrew from the CRM group and five withdrew from the psychoeducation group. One patient (in the CRM group) moved away from the area; the remaining patients claimed to have lost interest in participation.

Demographic characteristics

Participants' socio-demographic characteristics are shown in Table 1. There was no significant difference between the two groups with regard to any of these variables.

Social functioning and insight

There was no significant difference between the mean scores for social functioning and insight of the two groups at the pre-intervention assessment (Table 2a). In comparison with those in the psychoeducation group, participants in the CRM group fared significantly better in social functioning at the 6-month, 12-month, 18-month and 24-month follow-up assessments and showed better insight at 6-month, 18-month and 24-month follow-up. In the psychoeducation group, social functioning had markedly deteriorated by the 24-month follow-up.

Having controlled the pre-intervention scores by ANCOVA, there were still significant differences between the two groups in social functioning at 12-month, 18-month and 24-month follow-up, and in insight into illness at 6-month, 12-month, 18-month and 24-month follow-up.

Table 2b shows comparison of social functioning and insight for the CRM group before intervention and during follow-up. Social function alone is compared for the psychoeducation group since this intervention had no significant effect on insight.

Psychiatric symptoms

There was no significant difference between the two groups on the PANSS sub-scales pre-intervention (Table 3a). In the psychoeducation group positive symptoms had markedly worsened by the 24-month follow-up. However, there were significant differences between the two groups with respect to positive symptoms at both 18-month and 24-month follow-up assessments and negative symptoms and general psychopathology at the 24-month follow-up, after controlling for the pre-intervention scores by ANCOVA.

Table 3b shows comparison of psychiatric symptoms according to PANSS positive score before and after intervention for the CRM group.

Re-employment, relapse and re-hospitalisation

Of the 94 participants who were assessed at 24-month follow-up, 29 (59%) of the CRM group and 15 (33%) of the psychoeducation group fulfilled the re-employment criteria during the study period (χ^2=6.29,
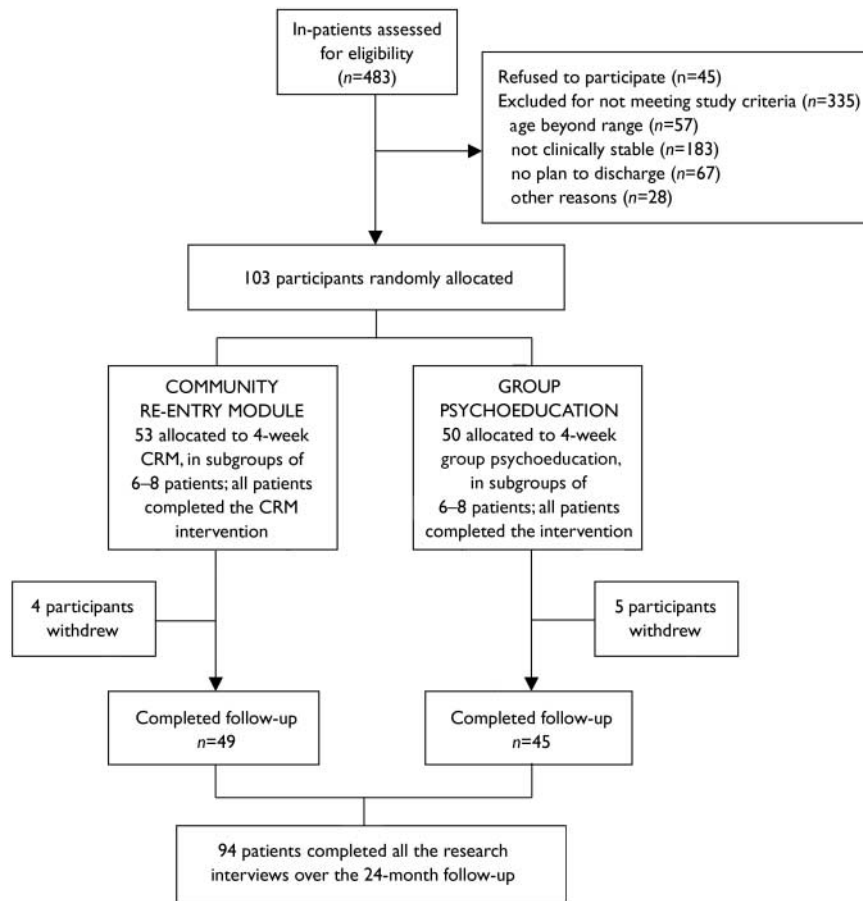
d.f.=1, P=0.012); 10 participants (20%) in the CRM group and 23 (51%) in the psychoeducation group relapsed (χ^2=9.70, d.f.=1, P=0.002); 5 patients (10%) in the CRM group and 18 (40%) in the psycho-education group were readmitted to hospital (χ^2=11.26, d.f.=1, P=0.001). Table 4 shows the time sequences of re-employment, relapse and re-hospitalisation over the follow-up period. Although the subsamples are too small for statistical analysis, the CRM group fared considerably better on all the above outcome measures during the first 6 months following discharge.

Effect size for SDSS and re-calculation of power

The effect size for SDSS score was d=1.29 at the 24-month follow-up. Based on the observed effect size, the sample size needed in each group to detect a significant difference between the two groups for SDSS score at 24-month follow-up is 11 (power 0.8; α=0.025 (0.05/2)). Using Cohen's method (Cohen, 1988) the power achieved was greater than 0.99 at α=0.05 (two-tailed) with the 103 participants involved.

DISCUSSION

To the best of our knowledge this is the first long-term randomised controlled trial to examine the effect of the CRM in comparison with a routine psychosocial intervention in Chinese patients following their discharge from hospital.

Psychosocial functioning and re-employment

The results support our primary hypothesis that patients in the CRM group would show a significant improvement in terms of social functioning and re-employment. The study demonstrated that social functioning in the CRM group significantly improved between the 6-month follow-up and the 24-month follow-up and was significantly better than in the psychoeducation group after controlling for pre-intervention scores. It seems that people in the CRM group could successfully use the social skills learnt in the programme in the community to restore impaired social functioning and could also use them for obtaining employment. This is consistent with earlier reports (Smith et al, 1996; Kopelowicz et al, 1998) and confirms the findings of other Chinese

Fig. 1 Course of the study. CRM, Community Re-Entry Module.

Table 1 Socio-demographic and clinical characteristics of the sample (n=103)

	CRM (n=53)		Group psychoeducation (n=50)		Statistics		
					Test	d.f.	P
Gender, n (%)							
Male	22	(42)	26	(52)	χ^2=1.13	1	0.327
Marital status, n (%)					χ^2=1.10	2	0.576
Never married	31	(58)	25	(50)			
Married	15	(28)	19	(38)			
Divorced	7	(13)	6	(12)			
Health insurance, n (%)					χ^2=0.95	1	0.328
Covered	30	(57)	33	(66)			
Not covered	23	(43)	17	(34)			
Age, years: mean (s.d.)	37.41	(9.98)	39.80	(9.75)	t=1.22	101	0.223
Duration of illness, years: mean (s.d.)	15.26	(9.13)	15.60	9.96	t=0.18	101	0.857
Age at onset, years: mean (s.d.)	22.09	(6.60)	24.16	(8.45)	t=1.38	101	0.169
Daily antipsychotic dose, chlorpromazine equivalents (mg): mean (s.d.)	435	(199)	446	(193)	t=0.26	101	0.794
Educational level: mean (s.d.)	10.94	(2.79)	10.46	(2.50)	t=0.92	101	0.359
Number of admissions: mean (s.d.)	2.18	(2.25)	1.86	(1.82)	t=0.81	101	0.420

CRM, Community Re-Entry Module.

Table 2a Comparison between the study groups with respect to insight and social functioning

Outcome measure	CRM Mean (s.d.)	Group psychoeducation Mean (s.d.)	ANCOVA[1]	
			t	P
SDSS[2]				
Pre-intervention	5.83 (2.37)	5.62 (3.05)	0.37	0.70
Post-intervention	5.11 (1.61)	5.39 (2.85)	1.34	0.24
6 months	4.75 (1.38)	5.00 (2.12)	1.59	0.21
12 months	4.78 (1.64)	5.72 (2.52)	6.74	0.01
18 months	4.37 (1.52)	6.38 (1.91)	42.01	<0.001
24 months	4.47 (1.77)	6.97 (2.07)	54.21	<0.001
ITAQ[3]				
Pre-intervention	15.42 (4.66)	15.11 (4.89)	0.32	0.74
Post-intervention	16.25 (2.88)	15.69 (4.50)	0.72	0.39
6 months	17.11 (2.11)	15.65 (3.44)	12.04	0.001
12 months	16.65 (2.07)	15.44 (3.50)	4.63	0.03
18 months	17.96 (2.30)	14.47 (3.74)	20.15	<0.001
24 months	17.56 (2.40)	14.22 (3.17)	41.41	<0.001

ANCOVA, analysis of covariance; CRM, Community Re-Entry Module; ITAQ, Insight and Treatment Attitude Questionnaire; SDSS, Social Disability Screening Schedule.
1. Analysis of covariance with the effect of pre-intervention score controlled for.
2. ANOVA $F=4.885$; $P<0.001$ $F=4.202$; $P=0.001$.
3. ANOVA $F=5.389$; $P<0.001$ $F=1.260$; $P=0.281$.

Table 2b Comparison of social functioning and insight before and after interventions in the two study groups

Outcome measure	CRM P[1]	Group psychoeducation P[1]
SDSS		
Pre-intervention v.		
post-intervention	0.037	0.637
6 months	0.002	0.203
12 months	0.002	0.848
18 months	<0.001	0.123
24 months	<0.001	0.007
ITAQ		
Pre-intervention v.		
post-intervention	0.137	
6 months	0.003	
12 months	0.029	
18 months	<0.001	
24 months	<0.001	

CRM, Community Re-Entry Module; SDSS, Social Disability Screening Schedule; ITAQ, Insight and Treatment Attitude Questionnaire.
1. P values were adjusted for multiple comparisons (Bonferroni method).

studies regarding social skills training (Xu *et al*, 1999; Xiang *et al*, 2001). Rates of re-employment were not reported in earlier studies.

Psychiatric symptoms and insight

Both CRM and psychoeducation were effective in maintaining the positive clinical effect achieved during in-patient treatment for the first 12 months after intervention. Psychiatric symptoms in the CRM group were significantly better than in the psychoeducation group after controlling for pre-intervention scores, suggesting that the impact of CRM on psychiatric symptoms is greater and more persistent than that of group psychoeducation. This is in accord

with two studies that examined the usefulness of CRM (Smith *et al*, 1996; Naoki *et al*, 2003). However, Anzai *et al* (2002) tested the effect of CRM in patients with treatment-resistant schizophrenia and found that at 1-year follow-up patients' positive and negative symptoms in the CRM group did not differ from those of the control group receiving a conventional occupational programme. The failure to show the full impact of CRM on psychopathology was possibly a result of the small sample size (32 patients were involved altogether), the presence of refractory symptoms and the relatively short follow-up.

Insight in the CRM group significantly improved following the intervention and was also significantly better than newly discharged in the psychoeducation group between the 6-month and 24-month follow-up assessments after controlling for pre-intervention scores. This is in line with the findings of a study by Granholm *et al* (2005) which tested the usefulness of cognitive–behavioral social skills training.

Relapse and re-hospitalisation

Participants in the CRM group experienced significantly less relapse and re-hospitalisation than those in the psychoeducation group during the 24-month follow-up period. This suggests that the improvement in psychotic symptoms and insight could be translated into persistent reduction in rates of relapse and re-hospitalisation. No data are available for these outcome measures in a study of similar design. A Chinese study using the Medication and Symptom Management Module, another set of the Social and Independent Living Skills Modules (Liberman *et al,* 1993), found that social skills training was effective in preventing relapse in patients with schizophrenia (Xiang *et al*, 2001). Findings of our study supported the secondary study hypotheses that CRM could significantly improve psychotic symptoms, insight and rates of relapse and re-hospitalisation for schizophrenia compared with a standard method of social rehabilitation.

Methodological issues

Mueser *et al* (1997) stipulated a list of characteristics for successful psychiatric interventions: they needed to be direct and behavioural; to produce specific effects on related outcomes and not generalise to other domains; to be long-term interventions; to be delivered in the patients'

Table 3a Comparison between the study groups with respect to psychiatric symptoms

Outcome measures	CRM	Group psychoeducation	ANCOVA[1]	
			t	P
PANSS positive[2]				
Pre-intervention	8.58 (3.88)	8.86 (3.39)	−0.38	0.69
Post-intervention	8.70 (2.54)	8.30 (3.99)	0.95	0.33
6 months	8.65 (2.35)	8.24 (3.64)	1.20	0.27
12 months	8.76 (2.68)	8.83 (4.58)	0.008	0.92
18 months	8.81 (2.23)	10.47 (4.54)	5.80	0.01
24 months	8.94 (2.22)	11.42 (4.86)	12.18	0.001
PANSS negative[3]				
Pre-intervention	12.06 (4.85)	12.30 (5.19)	−0.24	0.80
Post-intervention	11.06 (4.16)	11.93 (4.77)	1.53	0.21
6 months	11.31 (3.13)	11.78 (4.41)	0.35	0.55
12 months	11.97 (2.91)	12.19 (3.98)	0.08	0.77
18 months	11.61 (3.17)	12.61 (4.04)	2.05	0.15
24 months	11.56 (3.12)	13.17 (3.96)	5.44	0.02
PANSS general [4]				
Pre-intervention	21.08 (5.16)	21.37 (5.55)	−0.27	0.78
Post-intervention	21.52 (4.22)	21.34 (4.83)	0.19	0.66
6 months	21.01 (2.67)	21.85 (3.43)	1.91	0.17
12 months	22.20 (4.12)	21.97 (3.96)	0.18	0.67
18 months	21.96 (2.64)	22.52 (3.73)	0.73	0.39
24 months	21.71 (3.12)	23.57 (3.25)	10.17	0.002

ANOVA, analysis of variance; CRM, Community Re-Entry Module; PANSS, Positive and Negative Syndrome Scale.
1. Analysis of covariance with the effect of pre-intervention score controlled for.
2. ANOVA $F=0.116$; $P=0.989$ $F=4.757$; $P<0.001$
3. ANOVA $F=0.577$; $P=0.717$ $F=0.626$; $P=0.680$
4. ANOVA $F=0.831$; $P=0.528$ $F=1.988$; $P=0.080$

Table 3b Comparison of psychiatric symptoms according to PANSS positive score before and after intervention in the CRM group

	P[1]
Pre-intervention v.	
post-intervention	0.507
6 months	0.464
12 months	0.974
18 months	0.056
24 months	0.002

CRM, Community Re-Entry Module; PANSS, Positive and Negative Syndrome Scale.
1. P values were adjusted for multiple comparisons (Bonferroni method).

environment; and to combine skills training and environmental support. Clearly, the CRM satisfies these criteria. Further strengths of the study included its randomised design; masked, independent raters; the similarity of all observed variables at pre-treatment and throughout the follow-up; and the involvement of participants' family members in the workshops. The results lent further support to the notion that the impact of social skills training would be even greater if the intervention were combined with well-structured and systematic programmes for family members in the patients' natural support systems (Glynn et al, 2002).

However, there are a number of limitations of the study. First, the CRM was delivered to newly discharged in-patients with schizophrenia because the module was originally designed to improve continuity of care following hospital discharge. Therefore the results could not be generalised to other patient populations or different clinical settings. Second, components of CRM responsible for the improvement were not identified as it would have required a lengthy and sophisticated study design to ascertain the active components of this intervention. To our knowledge, to date no study concerning social skills training could unequivocally identify the effective components. Third, patients who refused to participate in the study did not sign the consent form, therefore it was impossible to explore the potential selection bias. Fourth, although modules of the UCLA social skills training programme (Liberman et al, 1993) have been reported to improve patients' adherence to medication (Xiang et al, 2001), this was not measured in this study. Nor was length of current admission measured, mainly because no study has reported a significant relationship between this variable and effectiveness of social skills training.

Clinical implications

Despite the above-mentioned limitations, CRM appears to be a feasible and effective method for training Chinese in-patients in social skills before discharge. It could effectively maintain the improvement in clinical condition achieved during hospitalisation and could also improve insight, relapse rates and readmission to hospital. More importantly, it had a strong influence on social functioning and rates of re-employment. In China, traditional mental health service delivery addresses symptom reduction and maintenance rather than recovery and enhancement of social functioning (Pearson, 1995), which undoubtedly restricted the community re-entry for psychiatric patients. Another advantage of the CRM is that it can be effectively delivered by any trained mental health professional.

During the past few years, as one of the necessary components in the Chinese three-tier mental healthcare systems (Tian et al, 1994), district- and town-level mental healthcare institutes have been successfully set up in nearly all cities in China to provide rehabilitation services for psychiatric patients. Over the past decade the Chinese government has issued a series of statements emphasising that mental health is a top public health priority. Yet, for historical and economical reasons even

Table 4 Distribution of re-employment, relapse and re-hospitalisation

Outcome measure	6 months[1]		12 months[2]		18 months[3]		24 months[4]	
	n	(%)	*n*	(%)	*n*	(%)	*n*	(%)
Re-employment								
CRM	17	(35)	4	(8)	5	(10)	3	(6)
Group psychoeducation	9	(20)	4	(9)	0	(0)	2	(4)
Relapse								
CRM	1	(2)	2	(4)	4	(8)	3	(6)
Group psychoeducation	4	(9)	4	(9)	8	(18)	7	(16)
Re-hospitalisation								
CRM	0	(0)	1	(2.0)	2	(4)	2	(4)
Group psychoeducation	2	(4)	4	(9)	7	(16)	5	(11)

CRM, Community Re-entry Module.
1. Between post-intervention and 6-month follow-up.
2. Between post-intervention and 12-month follow-up.
3. Between post-intervention and 18-month follow-up.
4. Between post-intervention and 24-month follow-up.

nowadays families remain the major provider of care for psychiatric patients in China. At the same time, neither patients nor their families have the option of living separately, partly because of the lack of community-based residential services, and partly because of the societal expectations and legal constraints that oblige family members to take care of their relatives (Zhang *et al*, 1994). For these reasons, psychosocial interventions have to be developed for severely ill patients and their families concurrently before discharge, utilising the current three-tier mental healthcare system in China. The highly structured, short format of the CRM minimises the staff numbers, cost and time needed for its implementation. These factors are important in community healthcare centres which have a shortage of personnel. Consequently, widespread use of CRM as a measure to improve continuity of care following discharge in community healthcare centres in urban regions of China is highly recommended. At present the lack of community mental health services in rural China – particularly in the north-west provinces – will preclude the use of CRM. In rural areas the development of other types of psychosocial interventions should be explored.

ACKNOWLEDGEMENTS

APPENDIX

Training sessions of the Community Re-Entry Module

1. Introduction to the Community Re-Entry Programme. 2. Symptoms of mental disorder. 3. Determining discharge readiness. 4. Community re-entry (discharge) planning. 5. Connecting with the community. 6. Coping with stress in the community. 7. Planning a daily schedule. 8. Making and keeping appointments. 9. How medications work to prevent relapse. 10. Evaluating the effects of medication. 11. Solving medication problems. 12. Solving medication side-effects. 13. Identifying warning signs of relapse. 14. Keeping track of warning signs. 15. Developing an emergency relapse prevention plan. 16. Bringing your emergency plan to the community.

REFERENCES

Altman, D. G., Schulz, K. F., Moher, D., et al (2001) The revised CONSORT statement for reporting randomized trials: explanation and elaboration. *Annals of Internal Medicine*, **134**, 663–694.

American Psychiatric Association (1994) *Diagnostic and Statistical Manual of Mental Disorders* (4th edn) (DSM–IV). APA.

Anzai, N., Yoneda, S., Kumagai, N., et al (2002) Training persons with schizophrenia in illness self-management: a randomized controlled trial in Japan. *Psychiatric Services*, **53**, 545–547.

Buchkremer, G., Klingberg, S., Holle, R., et al (1997) Psychoeducational psychotherapy for schizophrenic patients and their key relatives or care-givers: results of a 2-year follow-up. *Acta Psychiatrica Scandinavica*, **96**, 483–491.

Cohen, A. (2001) *The Effectiveness of Mental Health Services in Primary Care: The View from the Developing World.* Mental Health Policy and Service Department, World Health Organization.

Cohen, J. (1988) *Statistical Power Analysis for the Behavioral Sciences*, 2nd edn. Erlbaum.

Cooper, J. E. & Sartorius, N. (eds) (1996) *Mental Disorders in China.* Gaskell.

Glynn, S. M., Marder, S. R., Liberman, R. P., et al (2002) Supplementing clinic-based skills training with manual-based community support sessions: effects on social adjustment of patients with schizophrenia. *American Journal of Psychiatry*, **159**, 829–837.

Granholm, E., McQuaid, J. R., McClure, F. S., et al (2005) A randomized, controlled trial of cognitive behavioral social skills training for middle-aged and older outpatients with chronic schizophrenia. *American Journal of Psychiatry*, **162**, 520–529.

He, Y. L. & Zhang, M. Z. (2000) The Chinese norm and factor analysis of PANSS (in Chinese). *Chinese Journal of Clinical Psychology*, **8**, 65–69.

Hu, C. Z. (1992) Insight: the definition and progress in clinical practice (in Chinese). *Foreign Medical Sciences: Section of Psychiatry*, **19**, 128–141.

Kane, J. M. & Marder, S. R. (1996) Psychopharmacologic treatment of schizophrenia. *Schizophrenia Bulletin*, **19**, 287–302.

Kay, S. R., Fiszbein, A. & Opler, L. A. (1987) The positive and negative syndrome scale (PANSS) for schizophrenia. *Schizophrenia Bulletin*, **13**, 261–276.

Kay, S. R., Opler, L. A. & Lindenmayer, J. P. (1988) Reliability and validity of the positive and negative syndrome scale for schizophrenics. *Psychiatry Research*, **23**, 99–110.

Kopelowicz, A., Wallace, C. J. & Zarate, R. (1998) Teaching psychiatric inpatients to re-enter the community: a brief method of improving the continuity of care. *Psychiatric Services*, **49**, 1313–1316.

Li, Z. & Arthur, D. (2005) Family education for people with schizophrenia in Beijing, China: randomised controlled trial. *British Journal of Psychiatry*, **187**, 339–345.

Liberman, R. P., Wallace, C. J., Blackwell, C. A., et al (1993) Innovations in skills training for the seriously mentally ill: the UCLA Social and Independent Living Skills Module. *Innovation Research*, **2**, 43–59.

Liberman, R. P., Glynn, S., Blair, K. E., et al (2002) In vivo amplified skills training: promoting generalization of independent living skills for clients with schizophrenia. *Psychiatry*, **65**, 137–155.

McEvoy, J. P., Apperson, L. J., Appelbaum, P. S., et al (1989) Insight in schizophrenia. Its relationship to acute psychopathology. *Journal of Nervous and Mental Disease*, **177**, 43–47.

Mueser, K. T., Drake, R. E. & Bond, G. R. (1997) Recent advances in psychiatric rehabilitation for patients with severe mental illness. *Harvard Review of Psychiatry*, **5**, 123–137.

Naoki, K., Nobuo, A. & Emi, I. (2003) Randomized controlled trial on effectiveness of the community re-entry program to inpatients with schizophrenia spectrum disorder, centering around acquisition of illness self-management knowledge (in Japanese). *Seishin Shinkeigaku Zasshi*, **105**, 1514–1531.

Pearson, V. (1995) *Mental Health Care in China: State Policies, Professional Services and Family Responsibilities.* Gaskell.

Phillips, M. R. (1993) Strategies used by Chinese families coping with schizophrenia. In *Chinese Families in the Post-Mao Era* (eds D. Davis & S. Harrell), pp. 277–306. University of California Press.

Qiu, F. & Lu, S. (1994) Guardianship networks for rural psychiatric patients. A non-professional support system in Jinshan County, Shanghai. *British Journal of Psychiatry*, **165** (suppl. 24), 114–120.

Rossotto, E., Wirshing, D. A. & Liberman, R. P. (2004) Enhancing treatment adherence among persons with schizophrenia by teaching community reintegration skills. *Psychiatric Services*, **55**, 26–27.

Shen, Y. & Wang, C. (1985) *A Handbook of Epidemiological Investigation of Mental Illness.* Renmin Health Press.

Sim, K., Su, A., Leong, J. Y., et al (2004) High dose antipsychotic use in schizophrenia: findings of the REAP (research on East Asia psychotropic prescriptions) study. *Pharmacopsychiatry*, **37**, 175–179.

Smith, T. E., Hull, J. W., MacKain, S. J., et al (1996) Training hospitalized patients with schizophrenia in community reintegration skills. *Psychiatric Services*, **47**, 1099–1103.

Tian, W., Pearson, V., Wang, R. et al (1994) A brief history of the development of rehabilitative services in China. *British Journal of Psychiatry*, **165** (suppl. 24), 19–27.

Weng, Y. Z., Xiang, Y. Q., Chen, X. S. et al (2002) Efficacy of the rehabilitative strategy for inpatients with schizophrenia: one year follow-up study (in Chinese). *Chinese Journal of Psychiatry*, **35**, 32–35.

World Heath Organization (2005) *Mental Health Atlas. The Mental Health: Evidence and Research Team (MER).* WHO. http://www.who.int/mental_health/evidence/atlas

Xiang, Y. T. (2002) The influence of psychosocial intervention on patients with schizophrenia (in Chinese). *Foreign Medical Sciences: Section of Psychiatry*, **29**, 31–34.

Xiang, Y. Q., Weng, Y. Z., Hou, Y. Z., et al (2001) The medication management and symptom management skills training are effective in preventing relapse of schizophrenics and increasing their drug compliance (in Chinese). *Chinese Journal of Psychiatry*, **34**, 153–156.

Xu, Z. D., Weng, Y. Z., Hou, Y. Z., et al (1999) Efficacy and follow-up research of medication-management module training for schizophrenic patients (in Chinese). *Chinese Journal of Psychiatry*, **32**, 96–99.

Zhang, M., Wang, M., Li, J., et al (1994) Randomised-control trial of family intervention for 78 first-episode male schizophrenic patients. An 18-month study in Suzhou, Jiangsu. *British Journal of Psychiatry*, **165** (suppl. 24), 96–102.

YU-TAO XIANG, MD, MPhil, Department of Psychiatry, Chinese University of Hong Kong and Beijing Anding Hospital, Capital Medical University, Beijing; YONG-ZHEN WENG, MD, Beijing Anding Hospital, Capital Medical University, Beijing; WEN-YONG LI, BSc, LIANG GAO, BSc, GUO-LAN CHEN, BSc, LING XIE, BSc, YAN-LI CHANG, BSc, Department of Psychiatry, Beijing Chaoyang Mental Health Care Institute, Beijing; WAI-KWONG TANG, MD, MRCPsych, GABOR SANDOR UNGVARI, MD, PhD, FRCPsych, Department of Psychiatry, Chinese University of Hong Kong, China

Correspondence: Dr Xiang Yutao, Department of Psychiatry, Shatin Hospital, Shatin, N.T. Hong Kong SAR, China. Fax: +852-2647-5321; Phone: +852-2636-7570; email: xyutly@cuhk.edu.hk