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# An evaluation of the implementation of case management in the community psychiatric nursing service

## Key Messages

1. Case management had a positive impact on patients with schizophrenia in relation to their mental status and functional level.
2. The core functions of case managers included assessment, planning, coordinating, monitoring, and evaluating.
3. Community psychiatric nursing services can effectively deliver case management services to patients and their carers. Further study on a larger sample with a longer follow-up period is needed to confirm the benefits of case management on patients with a long-term diagnosis of schizophrenia in the community.

## Introduction

About 80% of patients who are cared for by the community psychiatric nursing service (CPNS) have a diagnosis of schizophrenia. Most patients have a long duration of illness, poor social support, and difficulties with daily functioning. Improving care outcomes for chronic schizophrenic patients is a priority of the CPNS team. Case management has been implemented as a care model in the United Kingdom and North America with considerable success. However, little evidence exists to indicate whether case management is an appropriate care model for mentally ill patients in Hong Kong. The aim of this study was to evaluate the outcome and process of a case management service for patients with a long-term diagnosis of schizophrenia in the community.

## Methods

This study was conducted from November 1997 to July 1999. A pre-post, case-control group design was used to compare case management with conventional CPNS. The case management model was developed as the model of care with reference to the practice model in Carondelet Saint Mary's Hospital and Health Centre in Tucson.<sup>1</sup> Application of the case management model or conventional CPNS for each patient was for at least 5 months. Patients were assessed before the intervention and 5 months after the intervention. They were then followed up for 6 months to monitor their readmission rate. A qualitative descriptive approach was adopted to examine the process of case management.

Patients aged from 18 to 65 years with a diagnosis of schizophrenia for at least 2 years, who were new to the CPNS, were recruited from a mental hospital. Any patient who had a secondary diagnosis such as substance abuse was excluded. Patients who agreed to participate were randomly assigned to the experimental (case management) or control (conventional CPNS) group. Written consent was obtained from the patients. The experimental group was taken care of by case managers after discharge from the hospital, while the control group received conventional CPNS.

Ten community psychiatric nurses (CPNs) who worked in the research site were chosen as case managers. They received 3 days of intensive training in case management. Another 10 CPNs were selected randomly at the site to take care of the control group according to conventional practice. The years of post-registration experience were 7 to 14 for the case managers and 5 to 12 for the conventional CPNs; the years of working in the CPNS were 5 to 10 years and 3 to 10 years, respectively.

Outcome measures included clinical and functional status, Brief Psychiatric Rating Scale (BPRS),<sup>2</sup> Specific Level of Functioning Scale (SLOF),<sup>3</sup> patient's satisfaction according to Patient Satisfaction Instrument<sup>4</sup> (Chinese version), and readmission rate.

All case managers and CPNs were required to record their care activities weekly using a structured activity sheet during the intervention period. They also kept a monthly reflective diary. One field observation was carried out by

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**Table 1. Age and gender of the patients**

Patient group	No. of patients						
	Age-group (years)					Gender	
	21-30	31-40	41-50	51-60	61-65	Female	Male
Experimental	5	10	9	4	3	22	9
Control	5	10	9	4	3	22	9

non-participant observation for each case manager and CPN during home visits. Two group interviews were conducted with case managers and CPNs at the end of the study period.

## Results

Results were analysed on an intention-to-treat basis. There was no drop out in this study. Demographic variables of the patients are shown in Table 1. There were no statistically significant baseline differences between the groups.

### *Mental status and functional status*

In the BPRS, the patients in the experimental group had significantly lower values (better outcomes) in the overall BPRS score and in the items of conceptual disorganisation, tension, suspiciousness, hallucinatory behaviour, and thought disturbance. Table 2 shows the items that had significant differences between groups. In the SLOF, the experimental group had significantly higher values, indicating better improvement in their overall level of functioning, particularly in personal care skills, interpersonal relationships, work skills, and the overall score (Table 3).

### *Patient's satisfaction*

The experimental group was more satisfied with their care in terms of giving sufficient, clear, and constructive guidance, the availability of the case manager, time to talk to the case manager, and their trusting relationship with the case manager (Table 4).

### *Readmission rate*

There was no significant difference between the experimental and control groups in the readmission rate.

### *Cost-effectiveness analysis*

A cost-consequence analysis<sup>5</sup> was performed. Based on the cost of the services, the mean ( $\pm$ standard deviation) cost for the experimental group was HK\$12 377 $\pm$ HK\$1449 and for the conventional group was HK\$10 193 $\pm$ HK\$8022. The difference in costs between the two groups is largely due to the number of home visits: patients in the experimental group received 9.26 $\pm$ 1.72 visits by case managers, while those in the control group received 4.94 $\pm$ 1.89 visits by conventional CPNs. Patients in the experimental group also made more out-patient visits (4.48 $\pm$ 0.84 vs 4.19 $\pm$ 0.87) and used more telephone consultations (14.58 $\pm$ 5.57 vs

**Table 2. Items that showed significant differences between groups in the Brief Psychiatric Rating Scale (BPRS)**

BPRS item	Experimental group (mean score)		Control group (mean score)		F	P value
	Pre	Post	Pre	Post		
	Conceptual disorganisation	1.10	0.71	1.20		
Tension	1.55	0.77	1.21	1.04	3.13	0.00
Suspiciousness	1.32	0.71	0.87	0.73	2.88	0.00
Hallucinatory behaviour	1.61	0.87	1.23	1.07	2.61	0.00
Unusual thought content	1.52	0.90	1.60	1.53	2.63	0.01
Total score	17.52	10.10	15.16	14.7	2.94	0.00

6.00 $\pm$ 1.86) than the control group. In both arms of the trial there was one in-patient hospitalisation. The large variation in cost in the control group was due to a small number of very costly patients who spent considerable amounts of time in day hospital care and sheltered workshops; these costs were not experienced in the experimental group. The cost-consequence analysis of the two interventions indicated that case management cost slightly more, by HK\$2184 per person. However, the difference was not statistically significant ( $P=0.15$ ,  $t=1.5$ ). Over a 5-month period, case management was associated with greater improvements in psychological status and level of functioning, and in patient satisfaction.

### *Weekly activity sheet*

Table 5 illustrates the items displaying significant differences between case managers and CPNs in the weekly activity sheet. Case managers gave more training and education to patients, and spent more time on service coordination, teaching, and monitoring than conventional CPNs did.

### *Field observations, reflective diaries, and group interviews*

Content analysis resulted in three major categories and various sub-categories (Table 6). Case managers provided more intense care to patients and had more involvement with patients and their families. They performed more liaison and coordinating functions and more counselling and practical living skills teaching. The perceived roles and functions of case managers derived from the qualitative data augmented the data from the activity sheets. The case management model was regarded as beneficial to patients and carers. Case managers obtained immense satisfaction from their new role. However, the heavy caseload, the low recognition by other members of the health care team, and the resistance from some patients to the case management service were problems that needed to be overcome.

## Discussion

Compared with the control group, the experimental group

**Table 3. Items that showed significant differences between groups in the Specific Level of Functioning Scale (SLOF)**

SLOF item	Experimental group (mean score)		Control group (mean score)		F	P value
	Pre	Post	Pre	Post		
Personal care skills						
Self-dressing (self-dresses, selects appropriate garments)	4.29	4.65	4.52	4.47	3.84	0.02
Grooming (hair, make-up, general appearance)	4.29	4.65	4.52	4.47	3.07	0.00
Care of own possessions	4.13	4.52	4.61	4.67	2.64	0.01
Care of own living space	3.94	4.39	4.23	4.37	2.45	0.01
Interpersonal relationship						
Accepts contact with others (does not withdraw or turn away)	3.45	3.87	3.30	3.32	2.11	0.01
Initiates contact with others	2.71	3.48	2.77	2.93	4.04	0.00
Communicates effectively (speech and gestures are understandable and to the point)	3.32	3.87	3.71	3.73	3.27	0.00
Engages in activities without prompting	2.68	3.19	2.94	2.93	3.78	0.00
Participates in groups	2.19	2.84	2.58	2.57	4.10	0.00
Forms and maintains friendships	2.48	3.03	2.58	2.73	2.31	0.02
Social acceptability						
Destroys property	4.19	4.74	4.58	4.70	2.71	0.00
Physically self-harm	4.48	4.84	4.71	4.77	2.23	0.02
Performs repetitive behaviours (pacing, rocking, making noise)	4.39	4.61	4.40	4.44	3.82	0.02
Activities						
Shopping (selection of items, choice of stores, payment at register)	3.97	4.45	4.42	4.33	3.41	0.00
Use of leisure time (reading, visiting friends, listening to music)	3.52	4.10	3.84	3.97	3.08	0.00
Self-medication (understanding purpose, taking as prescribed, recognising side-effects)	3.00	3.58	3.00	3.03	2.27	0.00
Use of medical and other community services (knowing whom to contact, how, and when to use)	3.06	3.77	3.10	3.13	2.93	0.00
Work skills						
Has employable skills	2.65	3.13	3.00	2.93	4.24	0.00
Works with minimal supervision	2.74	3.23	3.13	3.07	3.92	0.00
Is able to sustain work effort (not easily distracted, can work under stress)	2.52	2.77	3.03	2.90	2.84	0.00
Appears at appointments on time	2.90	3.19	3.52	3.37	2.44	0.01
Follows verbal instructions accurately	2.97	3.29	3.81	3.70	2.70	0.00
Completes assigned tasks	2.87	3.13	3.48	3.30	3.21	0.00
<b>Total score</b>	<b>164.55</b>	<b>179.68</b>	<b>176.23</b>	<b>178.00</b>	<b>7.63</b>	<b>0.00</b>

**Table 4. Items that showed significant differences between groups in the Patient Satisfaction Instrument (PSI)**

PSI item	Groups	Mean score	t value	P value
The community psychiatric nurse/case manager (CPN/CM) gave me sufficient, clear, and constructive guidance and advices (eg in daily living skills, side-effects of medication, and interpersonal skills)	Experimental	4.17	2.60	0.01
	Control	3.87		
The CPN/CM listened to my problem with empathy	Experimental	4.00	5.63	0.02
	Control	3.74		
When I need someone to talk to, I would contact my CPN/CM	Experimental	3.79	7.99	0.01
	Control	3.58		
The CPN/CM understand my feelings	Experimental	3.55	2.37	0.02
	Control	3.09		
The CPN/CM could give me a feeling of security, because they are competent in taking care of the mentally ill patients	Experimental	4.00	4.42	0.04
	Control	3.83		
The CPN/CM spent enough time to talk to me during home visit	Experimental	3.90	6.33	0.02
	Control	3.68		

showed more improvement in their mental status and level of functioning as measured by BPRS and SLOF. The use of the case management model had a positive impact on patients' mental conditions and levels of functioning. The study's qualitative data also showed that the case managers perceived case management as beneficial to the patients.

Using frequent contact and home visits, case managers

were able to establish a close bond with their patients, to understand the unique needs of the patients, and to help patients to meet these needs. The human involvement and the intensity of care provided by the case managers may be a main reason for their patients' improvement. This intense care and supervision helped improve the patients' mental conditions. The qualitative data also supported the perception that important characteristics of the case manager's

**Table 5. Items that showed significant differences between case managers and community psychiatric nurses (CPNs) in the weekly activity sheet**

Weekly activity sheet items	Case managers (mean score)	CPNs (mean score)	t value	P value
Joint visits with health care team	37.66	13.23	21.63	0.00
Total time spent on joint visit (minute)	1610.88	436.51	26.49	0.00
Telephone contacts	739.19	677.25	7.65	0.01
Case record writing	1044.63	1007.94	16.98	0.00
Letter writing	33.47	7.94	28.10	0.00
Liaison with health team members	192.47	124.34	23.03	0.00
Liaison with nursing team (hospital, out-patient department)	80.89	44.97	2.03	0.00
Liaison with occupational therapist	19.53	2.65	21.58	0.00
Liaison with medical social worker	16.74	7.94	5.73	0.02
Liaison for coordination of service	93.44	13.23	88.52	0.00
Liaison for consultation	5.59	0.00	8.58	0.00
Liaison for case conference/discussion	85.08	37.04	22.38	0.00
Subsequent patient assessment	99.02	52.91	28.63	0.00
Documentation of care plan	40.45	10.58	31.84	0.00
Care plan discussion with patient and family	64.16	7.94	82.74	0.00
Care plan evaluation	8.37	0.00	12.95	0.00
Coping skill training	108.79	71.43	16.30	0.00
Assertive training	5.58	0.00	8.56	0.00
Budgeting skill training	71.13	26.46	40.35	0.00
Community orientation	29.29	13.23	11.25	0.00
Job hunting skill training	89.26	47.62	26.19	0.00
Teaching activities of daily living	32.08	13.23	14.50	0.00
Diet teaching	13.95	2.65	12.97	0.00
Home safety education	15.34	7.94	4.34	0.04
Child rearing training or education	58.58	31.75	15.72	0.00
Medication education	425.93	354.25	11.01	0.00

**Table 6. Categories identified in interviews, diaries, and field observations**

Major categories	Sub-categories
Roles, functions, and work practices of case managers	Intensity of care Better documentation of work Involvement of patients and patients' family Liaison and coordination Supportive and family counselling Practical living skills teaching
Difficulties perceived by case managers	Heavy caseload Difficulties in working with other health team members Resistance from patients
Perception of case managers on case management	Beneficial to patients and carers Attitude change Satisfaction of case managers

role were the intensity of care and the supportive counselling role.

This finding was further supported by data from the patients' satisfaction survey. The experimental group felt the case managers had given them sufficient instruction, had time to listen to them, and understood their problems and feelings. They had a sense of security when with the case manager, thus reducing their anxiety and tension. The presence of a professional that the patient trusted and who was available to support the patient when needed could give courage and confidence to the patient during the process of rehabilitation. This may also explain the improvement of the patients' mental conditions.

Patients with schizophrenia usually have complex needs and problems. The core functions of the case managers included assessment, planning, coordinating, monitoring, and evaluating. Case managers also gave more intensive training and education to patients when compared with the conventional CPNs. These services helped to increase the patient's independence and reduced the fragmentation of care, contributing to the positive outcome seen in their patients after the 5-month intervention.

Though there was no difference in the readmission rate between the two groups, the improvement in mental condition and life skills should help to improve the patients' quality of life.

Case management is more costly than the conventional CPNS, but the difference was not statistically significant. As case management is a more intensive care model, the extra cost per patient over a 5-month period was HK\$2184 for which significant improvements in patient specific outcomes were attained. We posit that for a somewhat modest annual expenditure (about HK\$4368 per year per patient) a substantial improvement can be achieved in patients' well-being in terms of mental status, level of functioning, and satisfaction. These benefits are considered important for mentally ill patients with complex needs to enable them to live an independent life in the community.

Resistance from other health care team members was perceived as a difficulty with the implementation of case management. To gain acceptance and respect from other

health team members, the case managers need to acquire skills in inter-professional communication and collaboration.

As 34 of 96 patients refused to participate and only those willing to join were included, there may be a bias in selecting patients who had better insight and were willing to cooperate in the treatment process. This may account for the improvement in the experimental group. Furthermore, the sample size of this study was about 5% of the patient population with a diagnosis of schizophrenia served by the CPNS centre. Given this relatively small sample size, it may not be possible to generalise the results of this study to the total population of patients with chronic mental illness. One of the issues that needs further consideration is finding a way to help those patients who have no insight into their illness to make decisions and to accept the services of health care professionals. Without their participation, it is difficult to determine what effect the case management service really has.

About 70% of the patients who refused to participate were male. Many male patients did not want to have frequent visit from nurses. However, the literature has not noted a difference in compliance between male and female patients. Further study is needed to explore the reason for this non-compliance in our population.

One shortcoming of our study was the absence of economic data on caregivers. Case management can reduce costs directly incurred by caregivers if the patients do better and are easier to care for. On the other hand, if patients are hospitalised for longer, then the burden on caregivers may be relieved during the hospitalisation. Our

study did not directly address these issues.

To be able to deliver this intervention, CPNs required 3 days of intensive training combined with supervision. This is a cost that was not counted in the cost calculation.

Our study was conducted under experimental conditions. In particular, case managers were given explicit protocols of care and patients were closely monitored. This may have led to a greater number of visits and telephone contacts and higher costs in the experimental group; it may also be partly responsible for the better outcomes in the experimental group. We cannot predict whether such differences in resource use and outcomes would exist in a non-experimental situation.

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