Health Research Symposium 2014

衞生醫護研討會2014

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精神健康政策及服務的委託研究

研究成果報告

Health Research Symposium 2014: Translating Health Research into Policy for Health of the Population

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The Health Research Symposium 2014 was held on 15 November 2014 at the Hong Kong Academy of Medicine Jockey Club Building. The symposium was organised by the Food and Health Bureau (FHB) and aimed to (1) disseminate significant findings of research projects supported by the funds to the local research community; (2) facilitate the exchange of ideas between invited overseas experts and local researchers; and (3) acknowledge outstanding local researchers.

The FHB supports health-related research via the *Health and Medical Research Fund* (HMRF), which was created in late 2011 by consolidating its two former research funds (*Health and Health Services Research Fund* [HHSRF] and *Research Fund for the Control of Infectious Diseases* [RFCID]), by expanding the scope of the new fund to include advanced medical research, and by injecting HK$1 billion. The number of research projects supported by the HMRF has grown from slightly more than 100 in 2011-12 to almost 250 in 2012-13. The total funding commitments have increased from HK$90 million to $211 million over the same period.

The HMRF aims to build research capacity and to encourage, facilitate, and support health and medical research to inform health policies, improve population health, strengthen the health system, enhance healthcare practices, advance the standard and quality of care, and promote clinical excellence, through the generation and application of evidence-based scientific knowledge in health and medicine. The principal research areas supported by HMRF are health and health services (the scope of the former HHSRF), infectious diseases (the scope of the former RFCID) and advanced medical research. The HMRF supports commissioned as well as investigator-initiated research. Commissioned research fills knowledge gaps and addresses public health needs and threats identified by the FHB.

In the past 2 years, the HMRF has attracted a large number of research proposals from local universities and medical experts on a wide range of topics, including communicable diseases (such as influenza, viral hepatitis, and HIV), non-communicable diseases (such as diabetes, hypertension, and stroke), diseases of ageing (such as Alzheimer's and Parkinson's disease), mental health, Chinese medicine, and advanced medical research (such as stem cell and regenerative medicine). The Fund has also made substantial investments in research infrastructure, such as the commissioning of Phase 1 Clinical Trials Centres at the two local medical schools, as well as commissioned research studies to facilitate policy decisions on control of infectious diseases, healthcare for the ageing, cancer screening programmes, and manpower supply and professional development for our medical and healthcare professions.

Four parallel sessions were held: (1) population health and policy, (2) emerging/infectious diseases, (3) delivery of health services, and (4) advanced medical research.

The Symposium commenced with a welcome speech from Dr Ko Wing-man, the Secretary for Food and Health. He welcomed the more than 300 delegates who attended and presented souvenirs to the keynote speakers. The morning keynote session was moderated by Dr Constance Chan Hon-yee, Director of Health. The first keynote presentation was by Prof Sir Richard Peto (University of Oxford, UK). His presentation was titled "*Population Health: Halving Premature Death*". Prof Peto noted that worldwide, over the past 35 years, the probability of death before age 70 years has decreased from about one-half at 1980 death rates to one-third at current death rates. By 2050, the probability of death before age 70 years may decrease to only about one sixth, if we continue to pay attention to the remaining major preventable causes of premature death. These include communicable diseases (which predominate before middle age), non-communicable diseases (which predominate in middle age), and neonatal, maternal, and external causes of death. Since 1990, there have been only 5 major causes of death that have increased substantially in some large populations: tobacco (eg China), obesity/inactivity (eg Mexico), alcohol (eg Russia), HIV (eg South Africa), and war (eg Congo). Prof Peto discussed the prospects for effective action with particular emphasis on the UK and China.

The second keynote speaker was Prof Gabriel Leung (University of Hong Kong). His presentation was titled "*Does Hong Kong Still Aspire to Lead in*

Medical and Health Research?" Prof Leung compared the research environment in Hong Kong with that in other developed economies around the world. Sizeable investment in health and medical research and the implementation of new technologies mean that the discovery and translational enterprises in the life sciences are rapidly developing and becoming ever intertwined. Prof Leung proposed that a cross-sector, Hong Kong-wide, easily accessible information platform is a prerequisite to our discovery and translational enterprise. Human capital, financial resources, and space remain the 'holy grail' input trinity. Dr Chan moderated the question-and-answer session after the presentations.

After the morning keynote session, the delegates attended the morning parallel sessions 1 and 2.

Parallel Session 1: Population Health and Policy

Prof Lam Tai-hing

A Proactive Family Smoking Cessation Intervention for Parents of Children 0-18 Months: A Randomised Controlled Trial

Prof Lam noted that the evidence from various interventions to help fathers of a newborn quit smoking and reduce household second hand smoke exposure is conflicting. The present trial examined the effectiveness of an intensive family intervention to help fathers quit smoking at home. This intervention provided by nurse counsellors was effective on fathers, although it had an insignificant effect on mothers to maintain a smoke-free home policy. Promoting quitting and a smoke-free home is important to reduce secondhand smoke exposure among infants and young children. More effective family interventions and more stringent tobacco control measures are also needed.

Dr Daniel Ho Sai-yin

A School-based Survey on Adolescent Alcohol Drinking in Hong Kong

Dr Ho observed that the effective control of underage drinking requires a thorough understanding of its risk factors and effects, but that little is known about the drinking pattern of Hong Kong adolescents. A territory-wide survey of drinking behaviour found that the prevalence of current and binge drinking was 21.5% and 7.5% respectively in Hong Kong Secondary 1-6 students. Socioeconomic, environmental and personal risk factors for current drinking were identified. Parental alcohol-related attitudes and pro-drinking practices, and adolescent expectations of alcohol drinking were modifiable risk factors that could be targeted by alcohol prevention programmes. Adolescent drinking was associated with depressive symptoms, poor academic performance, and sleep

problems. Dr Ho concluded that prospective studies should be conducted to confirm the identified risk factors and potential effects.

Dr Irene Wong Oi-ling

Breast Cancer Incidence and Mortality in a Transitioning Chinese Population: Current and Future Trends

Dr Wong noted that projections of future trends in cancer incidence and mortality are important for public health planning. Moreover, as the most economically developed city in China, Hong Kong may provide a sentinel for a substantial proportion of the global population. Modelling recent breast cancer incidence and mortality trends, Dr Wong found that in the developed Chinese population, breast cancer mortality has remained relatively stable over the past decades despite a certain degree of increased projections in older women, while the incidence has slowly risen. These patterns are likely to continue in the short to medium term. Increased disease risk may call for more resources for better cancer care and service delivery.

Dr Chang Wing-chung

The Hong Kong Mental Morbidity Survey 2010

Mental disorders are highly prevalent conditions that constitute a substantial global disease burden. In particular, common mental disorders (CMDs) including anxiety and depressive disorders pose a significant challenge to primary health care. Dr Chang and colleagues conducted a territory-wide mental morbidity survey that found that depressive and anxiety disorders are highly prevalent conditions that affect the adult population. A significant relationship of CMDs with poorer functioning and physical health indicates that enhanced social and occupational support as well as optimisation of physical state may facilitate improved mental health. Prevalence estimates of psychotic disorders highlight substantial unmet treatment needs for people with psychosis who have not yet received any psychiatric care (estimated as 1.5% of the population with psychosis). The survey provided valuable data to guide future development of mental health services in Hong Kong.

Parallel Session 2: Emerging / Infectious Diseases

Dr Ho Pak-leung

Epidemiology and Clonality of Multidrug-resistant *Acinetobacter baumannii* from a Healthcare Region in Hong Kong

Dr Ho observed that multidrug-resistant *Acinetobacter baumannii* (MDR-AB) is a rapidly

emerging nosocomial pathogen. About 10–30% of all *A baumannii* isolates in large hospitals are now resistant to three or more antibiotic classes with clinical utility. Dr Ho assessed the epidemiology of MDR-AB isolated from selected hospitals in Hong Kong and conducted genomic and molecular studies to define the risk factors for their isolation. Clonal expansion is playing a major role in the increase in MDR-AB in these hospitals in Hong Kong. The findings highlight the need to enhance infection control measures.

Dr Joseph Wu Tsz-kei

Estimating the Case Fatality Risk of Human Infections with Avian Influenza A (H7N9)

Characterisation of the severity profile of human infection with influenza viruses of animal origin is a part of pandemic risk assessment, and an important part of the assessment of disease epidemiology. Dr Wu and colleagues assessed the clinical severity of human infection with avian influenza A (H7N9) virus that emerged in China in early 2013. Human infections with avian influenza A (H7N9) virus seem to be less serious than has been previously reported. Many mild cases may already have occurred. Continued vigilance and sustained intensive control efforts are needed to minimise the risk of human infection.

Prof JSM Peiris

Protective Efficacy of Poultry Vaccines against Recently Circulating Highly Pathogenic Avian Influenza (HPAI) H5N1 Virus Isolates from Markets and Farms in Hong Kong 2008

Highly pathogenic avian influenza (HPAI) H5N1 remains a major threat to animal and public health. Since 2003, Hong Kong has successfully used poultry vaccination as part of its strategy to minimise this threat within Hong Kong. In mid-2008, an HPAI H5N1 outbreak occurred in a vaccinated poultry farm in Hong Kong. Prof Peiris compared the protective efficacy of different poultry vaccines against the 2008 farm outbreak strain, and assessed whether there is a need to alter the poultry vaccine used in Hong Kong. The results indicated that some clade 2.3.4 HPAI H5N1 viruses have undergone antigenic changes that allow them to evade immunity from poultry vaccines. The vaccine then in use in Hong Kong did not provide adequate protection against some circulating H5N1 virus strains and was subsequently updated to provide enhanced protection. The findings highlight the need for ongoing surveillance and monitoring of vaccine-induced immunity against currently circulating virus strains by serological tests, supplemented where necessary with experimental vaccine challenge studies in chicken.

Prof Margaret Ip

Modulatory Effects of Antimicrobials on the Pathogenicity of Community-Acquired Methicillin-Resistant Staphylococcus Aureus (CA-MRSA) in Hong Kong

Expression of virulence determinants, eg Panton-Valentine leukocidin, phenol-soluble modulins and alpha-haemolysin, plays an important role in CA-MRSA infections and can be triggered by cell-wall targeting antibiotics to alter infection outcome. Prof Ip determined the in-vitro effects of selected antibiotics on the expression of bacterial virulence factors and investigated the in-vivo effects of these antibiotics on the treatment outcome of CA-MRSA infection in a mouse model. Expression of virulence factors was modulated by sub-inhibitory concentrations of antibiotic. Selection of antibiotics that modulate or minimise the release of toxins is a promising approach to improve treatment outcome. The findings will shed further light on the choice of antimicrobials in the treatment of CA-MRSA infections.

Prof David Hui Shu-cheong

An Infection Control Study for Prevention of Exhaled Air Dispersion during Active Resuscitation and Application of Aerosol-generating Procedures

Tracheal intubation, non-invasive ventilation (NIV), tracheotomy and manual ventilation before intubation are aerosol-generating procedures that increase the risk of nosocomial transmission of SARS to healthcare workers. Prof Hui investigated the exhaled air dispersion during NIV via helmets or a total face mask and the effects of coughing on endotracheal suction and intubation using a human-patient simulator. A helmet with a good seal around the neck may prevent nosocomial infection during NIV. Constant endotracheal suction can reduce exhaled air leakage when a patient coughs with an endotracheal tube in place.

After lunch, delegates reconvened to hear the third keynote presentation. The session was moderated by Prof Francis Chan Ka-leung (Dean, Faculty of Medicine, The Chinese University of Hong Kong). Dr Nancy Edwards (Canadian Institutes of Health Research, Canada) gave a presentation titled "*Promoting Excellence in Health Research: Setting and Mobilizing a Research Agenda that Aims to Influence Policy and Improve Population Health*". Dr Edwards described considerations in setting a research agenda and harnessing research findings for the public good, from the perspective of a research funding council. Approaches for assessing research capacity, describing the shifting state of science and related caveats, and identifying emerging priorities were highlighted. Dr Edwards

also described strategies to engage researchers in mobilising knowledge for evidence-informed policy and population health improvements. Illustrative examples from the Canadian Institutes of Health Research were used throughout the presentation.

After the keynote presentation, delegates attended the afternoon parallel sessions 3 and 4.

Parallel Session 3: Delivery of Health Services

Dr Colman Fung Siu-cheng

In-depth Cost-effectiveness Study of the Multidisciplinary Risk Factor Assessment and Management Programme (RAMP) of the Hospital Authority

The multi-disciplinary Risk Factor Assessment and Management Programme-Diabetes Mellitus (RAMP-DM) of the Hospital Authority is designed to enhance management of diabetic patients in the primary care setting. Dr Fung and colleagues aimed to evaluate the cost-effectiveness of RAMP-DM compared with routine care in the primary care setting. Patients under RAMP-DM had lower risks of having various diabetes-related complications and all-cause deaths over the three-year period. RAMP-DM was also a cost-effective strategy to manage diabetic patients in both the short and long term.

Prof Martin Wong Chi-sang

Evaluation of the Introduction of the Reference Framework for Diabetes among Primary Care Physicians in Primary Care Settings

Prof Wong presented details of a study that evaluated the adoption of a diabetes mellitus (DM) reference framework in Hong Kong and explored the factors associated with its adoption. This study used a mixed-methods design with both qualitative and quantitative research methods. Focus groups reflected that the reference framework included practical and sufficient recommendations that were supported by adequate and high quality evidence. Overall, Prof Wong found that the DM reference framework is practical with sufficient recommendations. Several enhancing and hindering factors were identified. Efforts should be made to enhance eye examination and provide resources for better adoption among primary care physicians.

Dr Chin Weng-yee

Evaluation of Quality of Care of Chronic Disease Management Programmes and Public-private Partnership Programmes of the Hospital Authority

To improve the quality of care of patients with chronic diseases in primary care, the Hong Kong Hospital Authority introduced a series of chronic disease management and public-private partnership programmes: Risk Factor Assessment and Management Programme and Patient Empowerment Programme for patients with diabetes mellitus and hypertension, Nurse and Allied Health Clinics programme, and Haemodialysis – Public Private Partnership Programme. Dr Chin and colleagues aimed to evaluate and enhance the quality of care of these programmes to assure that best practices and outcomes can be achieved. Dr Chin found that all programmes had been successfully implemented, with the standards of most structure and process of care criteria reaching target standards in the first two evaluation cycles. Significant improvements in clinical outcomes have been achieved. The study results provide evidence for the quality of care and effectiveness of the programmes in enhancing the health of patients with chronic diseases in primary care. Empirical standards of good practice have been established that can be used as quality benchmarks. Dr Chin concluded that ongoing evaluations should be conducted to assure the long-term sustainability and effectiveness of these programmes and to inform health policy and resource allocation.

Dr Marie Tarrant

Changes in Hospital Practices and Breastfeeding Outcomes after the Cessation of Complimentary Infant Formula in Public Hospitals

Infant formula supplementation in breastfeeding babies is one of the main contributors to early weaning. The provision of free infant formula to health-care institutions by formula manufacturers is a marketing strategy used by manufacturers to promote infant formula to new mothers. To promote and improve breastfeeding rates, the World Health Organization has recommended that health-care institutions refuse free infant formula products and pay the market price. In April 2010, all public hospitals in Hong Kong stopped accepting free infant formula from manufacturers. Dr Tarrant investigated the effect of public hospitals in Hong Kong not accepting free infant formula from manufacturers on in-hospital formula supplementation rates, baby-friendly hospital practices and breastfeeding duration and exclusivity. She found that stopping the acceptance of free infant formula in maternity-care settings reduces unnecessary supplementation and thus should be implemented in all health-care settings that provide obstetric and newborn care. Continued efforts by public hospitals to become more baby-friendly will benefit Hong Kong mothers and babies by enabling them to breastfeed for longer.

Parallel Session 4: Advanced Medical Research

Prof Leung Ting-fan

Spirometric Reference Standards in Chinese Preschool Children: Methodology, Challenges and Outcome

Advances in spirometry measurement techniques have made it possible to obtain measurements in preschool children. Validated reference standards are available for young Caucasian children but data in Chinese children are limited. Prof Leung led this study to establish spirometric reference standards for Chinese children aged 2-7 years. Data were collected from nearly 900 local children allowing spirometry normograms and reference equations to be calculated. Forced expiratory volume of these preschoolers is determined by gender, age, weight and standing height. The study results support the need for ethnic-specific spirometric references.

Mr Ellis Law Yuk-hung

Investigation of the Effectiveness of Two Different Therapeutic Exercise Programmes in Patients with Chronic Mechanical Neck Pain: A Randomised Controlled Trial

Mr Law and colleagues identified a need to conduct a randomised control trial to review the effectiveness of two different neck exercise programmes (McKenzie exercises and Upper Quarter Stabilisation exercises) that are commonly used in clinical settings. After a 5-week trial and 6-month follow up, the study results demonstrated that both types of exercise were effective in improving cervical active range of motion and numerical global rating of change scale up to 6 months interval.

Prof Kwan Hoi-shan

First-stage Development of a Comprehensive Genome Sequence Database for the Identification of Foodborne Pathogens in Hong Kong

Foodborne diseases such as salmonellosis and vibriosis are common public health issues around the world. In Hong Kong, *Salmonella enterica* serovars Enteritidis and Typhimurium accounted for almost 50% of salmonellosis whereas *Vibrio parahaemolyticus* commonly causes vibriosis. Prof Kwan and colleagues aimed to construct the first genome sequence database for local foodborne pathogens including *S Typhimurium* and *V parahaemolyticus* and to investigate the genotypes and phylogenetic relationships of the local isolates and compare them with strains worldwide. The investigators sequenced 10 clinical isolates of *S Typhimurium* and *V parahaemolyticus* and developed the genome sequence databases that provided a user-friendly platform to access and analyse their genome sequences and annotations. The platform facilitates the monitoring of trends of foodborne outbreaks and serves as a model for the use of genome sequences in clinical investigations.

Prof Simon Ng Siu-man

Electroacupuncture Analgesia for Colonoscopy: A Prospective, Randomised, Sham-controlled Study

Colonoscopy is often regarded as a painful and unpleasant procedure. Electroacupuncture (EA) has been used successfully to treat pain of various origins, but few good-quality studies have evaluated its role in treating pain and anxiety during colonoscopy. Prof Ng conducted a prospective randomised study to investigate the efficacy of EA in reducing procedure-related pain and the consumption of sedatives / analgesics during colonoscopy. His study suggests that EA is more effective than sham acupuncture in reducing procedure-related pain and the consumption of sedatives / analgesics during colonoscopy. The use of EA is an independent predictor of less consumption of patient-controlled sedatives/analgesics during colonoscopy.

After the afternoon parallel sessions, the delegates reassembled for the final plenary session moderated by Dr SV Lo (Director, Strategy & Planning, Hospital Authority). The final keynote speaker of the day was Prof Eng-kiong Yeoh (The Chinese University of Hong Kong), whose presentation was titled "*Delivery of Health Services: Systems for Health: The Emerging Sciences*". Prof Yeoh noted that the two critical challenges in improving the health of populations are the ability to understand: (1) the multiple and complex factors of the determinants of health, and (2) the nature of health systems as complex adaptive systems. Interventions to improve population health are implemented in complex human ecosystems that are dynamic and adaptive and influenced by individuals, the communities in which they reside, social processes and the wider social, political and economic environment. Prof Yeoh described scenarios in which systems thinking enables us to better understand the inter-relations and inter-actions of the different components of health systems. Prof Yeoh emphasised that system science has been increasingly applied in health systems research using mixed methodologies from different academic disciplines, fostering the development of new sciences.

Award ceremony

After a question-and-answer session moderated by Dr Lo, the symposium ended with an award ceremony to acknowledge outstanding research whose outcome has influenced health policy and practice in Hong Kong. The award recipients were as follows:

Excellent Research Awards
Prof Henry CHAN Lik-yuen

Department of Medicine and Therapeutics, The Chinese University of Hong Kong

Awarded Project: Use of serum hepatitis B surface antigen quantitation to monitor treatment response in chronic hepatitis B (08070242)
Project Team: Henry LY Chan, Vincent WS Wong

Dr CHEN Honglin

Department of Microbiology, The University of Hong Kong
Awarded Project: Antiviral drug resistance in H5N1 virus (06060582)
Project Team: H Chen, Y Guan

Prof GUAN Yi

School of Public Health, The University of Hong Kong
Awarded Project: Genomic characterisation, population ecology and genetics of H9N2 influenza viruses in southern China (06060722)
Project Team: Y Guan, Gavin JD Smith

Prof Anthony Johnson HEDLEY

School of Public Health, The University of Hong Kong
Awarded Project: Risks from passive smoking by workers in the catering industry (05060661)
Project Team: AJ Hedley, SM McGhee, R Fielding, JL Repace, CM Wong, Sandy Q Lu, Ada LY Ho, HK Lai, LC Wong, J Chen

The Most Promising Young Researcher Awards

Prof Alfred CHENG Sze-lok

School of Biomedical Sciences, The Chinese University of Hong Kong
Awarded Project: Elucidating gene regulatory networks of HBx isolated from novel HBV subgenotype / mutants associated with increased risk of hepatocellular carcinoma (08070332)
Project Team: Alfred SL Cheng, Henry LY Chan, Joseph JY Sung

Dr Suki LEE Man-yan

School of Public Health, The University of Hong Kong
Awarded Project: Role of cyclooxygenase-2 (COX-2)

in influenza A (subtype H5N1) viral pathogenesis and the potential use of its inhibitors for the therapy of H5N1 disease (06060562)
Project Team: Suki MY Lee, CY Cheung, JSM Peiris

Best Poster Awards

Prof David HUI Shu-cheong

The Jockey Club School of Public Health and Primary Care, Prince of Wales Hospital
Poster title: Aerosol dispersion during common respiratory therapies: a risk assessment model of nosocomial infection to healthcare workers (06060202)

Prof Cindy LAM Lo-kuen

Department of Family Medicine and Primary Care, The University of Hong Kong
Poster title: A study on health-related quality of life of patients with colorectal neoplasm and cost-effectiveness analysis of colorectal cancer screening in Hong Kong (08090851)

Dr Sherry CHAN Kit-wa

Department of Psychiatry, The University of Hong Kong
Poster title: 10-year outcome study of an early intervention program for psychosis compared with standard care service in Hong Kong (SMH-28)

Closing remarks

Prof Sophia Chan Siu-chee, Under-Secretary for Food and Health, made some closing remarks. She reflected on the excellent keynote presentations and how we must all strive to translate positive research findings into improvements in public health. She thanked all the delegates for attending and looked forward to meeting them again at the next Health Research Symposium.

The Food and Health Bureau remains committed to supporting high quality local research to provide evidence-based information for health policy formulation and to enhance public health through continuous improvement in health care practices.

Stigma towards people with psychiatric disorders

WWS Mak *, FMC Cheung, SYS Wong, WK Tang, JTF Lau, J Woo, DTF Lee

KEY MESSAGES

1. Doctors had the greatest and social workers had the lowest social distance from five disorder groups. Social work students had significantly greater social distance from people with bipolar disorder and schizophrenia than nursing students. People with more severe psychiatric disorders (schizophrenia, bipolar disorder, comorbid psychiatric disorders) had greater self-stigma towards themselves, compared with people having depression or alcohol dependence.

2. Based on the common sense model, professionals' perception of psychiatric disorders contributed to the formation of negative attitude that affected their prognostic predictions and reduced their endorsement of recovery-oriented practice for specific psychiatric disorders.

3. People with psychiatric disorders (schizophrenia, bipolar disorder, depression, alcohol and drug dependence) were adversely affected by public and professional discrimination. Their experienced discrimination and negative perceptions of mental health services reduced their engagement with therapeutic services, intensified their self-stigma, and led to poorer recovery.

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Introduction

Psychiatric disorders (such as schizophrenia, bipolar disorder and depression, alcohol and drug dependence) increase years of life with disability. People with psychiatric disorder often are reluctant to seek help, as they experience stigma while visiting medical or human services. Stigma refers to the endorsement of prejudicial attitudes, negative emotional responses, discriminatory behaviour, and biased social structures towards a subgroup.[1] Stigma not only delays or reduces adherence to treatment and increases dropouts, it also contributes to increased self-stigma and poorer psychosocial outcome.[2]

Nursing and medical students, nurses, and doctors were found to have greater levels of stigma and less optimistic prognoses towards people with psychiatric disorders than the general public. Nurses in Beijing and nursing students in Hong Kong also reported greater social distance from people with psychiatric disorders. In Hong Kong, most studies were confined to schizophrenia and depression; no study examined underlying mechanisms of stigma from professionals.

The common sense model (CSM) was used to demonstrate how individual perception of psychiatric disorders impacts the way such illness is appraised.[3] Development of stigma is related to prognostic decisions of the professionals and students, and service engagement and recovery outcomes of people with psychiatric disorders.

This study aimed to (1) examine the illness perceptions and extent of stigma among students and professionals towards five types of psychiatric disorder; (2) apply the CSM to professionals and students by testing the effects of their illness perceptions on their attitudes, prognostic predictions, and management decisions towards people with psychiatric disorders, accounting for their recovery knowledge; (3) examine the extent of self-stigma[4] among people with psychiatric disorders and to test how their experienced discrimination by professionals and the public and their perceived service orientation of the professionals may impact their self-stigma, service engagement, and recovery, controlling for their symptom severity; and (4) apply the CSM to people with psychiatric disorders by testing the effects of their own illness perceptions on their self-stigma and recovery. This study enabled development of a conceptual model of stigma to explain stigma formation and the impact of stigma on treatment decisions and patient recovery.

Methods

This study was conducted from August 2010 to July 2012. Informed consent was obtained from each participant. A total of 1143 students (mean±standard deviation [SD] age, 22±4 years) of various social work, nursing, and medical programmes were recruited through mass e-mails (78%, 78%, and 53% were females respectively) and randomised to two of the five vignettes describing schizophrenia (n=440),

bipolar disorder (n=434), depression (n=470), alcohol dependence (n=478), or drug dependence (n=464). In addition, 3064 registered professionals (mean±SD age, 38±10 years) from the respective programmes (73%, 88%, 41% were females respectively) were recruited from three waves of invitation mails and randomised to one of the five vignettes in the numbers of 607, 641, 556, 634, and 626, respectively. A HK$50 coupon was given upon receipt of a completed questionnaire. The overall response rate for professionals was 16%, compatible with other surveys.[5] Upon reading the vignette, respondents were asked to rate their perceived causes, timeline, consequence, personal and treatment control, illness coherence, and emotional representations of the depicted character's disorder based on the CSM and to complete a set of questionnaires.

A total of 376 patients (mean±SD age, 43±13 years) with schizophrenia (n=73), bipolar disorder (n=60), depression (n=75), alcohol dependence (n=60), drug dependence (n=60), or comorbid diagnoses (n=48) for a mean±SD of 7±8 years were recruited from public specialist out-patient clinics and substance abuse assessment clinics and asked to complete a self-report questionnaire. Upon completion, a HK$100 coupon was given.

For professionals and students, the questionnaires included Brief Illness Perception Questionnaire, Perceived Devaluation and Discrimination Scale, Social Distance Scale, Psychosocial Outcome scale, a self-developed recovery-oriented case management scale, and the Recovery Knowledge Inventory. For people with psychiatric disorders, the questionnaires included Brief Illness Perception Questionnaire, Perceived Devaluation and Discrimination Scale, Social Distance Scale, Self-Stigma Scale, Service Engagement Scale, Behaviour and Symptom Identification Scale, Life Satisfaction Scale, and the Recovery Markers Questionnaire.

Results

Social distance of professionals from disorder groups

Multivariate analysis of variance was used to examine the social distance of professionals from the five disorder groups. Doctors consistently showed the greatest and social workers the least social distance from the five disorder groups. Social work students exhibited significantly greater social distance from people with bipolar disorder or schizophrenia than nursing students (Table 1).

Student and professional perceptions and devaluation model for people with psychiatric disorders

Structural equation modelling was used to evaluate the association of students' and professionals' perception of psychiatric disorders with their attitude, prognostic prediction, and service orientation. The model was a satisfactory fit for students (χ^2(896)=2116.90, P<0.001, CFI=0.92, TLI=0.91, RMSEA=0.06, Fig 1) and an excellent fit for professionals (χ^2(528)=747.61, P<0.001, CFI=0.96, TLI=0.95, RMSEA=0.05, Fig 1). Students' perception of psychiatric disorders negatively affected the prognostic prediction for people with psychiatric disorders through devaluation. Professionals' perception of schizophrenia influenced their attitude towards people diagnosed with schizophrenia and further affected their service direction and prognostic prediction for these individuals.

Self-stigma of people with psychiatric disorders and their social distance from health care professionals

For people with psychiatric disorders, self-stigma and perceived devaluation and social distance from professionals were evaluated using multivariate analysis of variance. Compared with patients with alcohol dependence, patients with depression or bipolar disorder perceived significantly less social distance from health care professionals. Regarding self-stigma, people with more severe psychiatric disorders (schizophrenia, bipolar disorder, or more than one psychiatric disorder) experienced a greater level of self-stigma towards themselves, compared with people with depression or alcohol dependence (Table 1).

Stigma model on service engagement and recovery

Structural equation modelling was used to examine the pathways through which discrimination by general public and professionals impedes patient service engagement and recovery (χ^2(243)=651.14, P<0.001, CFI=0.92, TLI=0.91, RMSEA=0.07, Fig 2). The model demonstrated the adverse impact of discrimination by the public and professionals. In particular, negative perception of recovery orientation of mental health services and discrimination reduced service engagement, intensified self-stigma, and hampered recovery of patients.

Common sense model on self-stigma and recovery

Structural equation modelling was used to investigate how illness perception of people with psychiatric disorders can affect their self-stigma and recovery. The model was a satisfactory fit (χ^2(61)=173.15, P<0.001, CFI=0.94, TLI=0.92, RMSEA=0.07, Fig 3). Specifically, people who viewed their psychiatric disorders as having long-term negative consequences and experienced negative emotional response to their psychiatric disorders were more likely to report self-stigma that hampered recovery.

TABLE 1. (a) Professionals' and students' social distance from patients with psychiatric disorders, and (b) perceived stigma and self-stigma among people with psychiatric disorders

(a)

Diagnosis in vignette	Professionals			Students		
	No.	Mean±SD Social Distance Scale score	Significant difference between groups (P<0.001)	No.	Mean±SD Social Distance Scale score	Significant difference between groups (P<0.001)
Bipolar disorder			Medical, nursing > social work			-
Nursing	228	2.56±0.05		176	1.98±0.06	
Social work	144	2.10±0.06		191	2.20±0.05	
Medical	208	2.70±0.05		67	2.22±0.09	
Depression			Medical, nursing > social work			-
Nursing	209	2.33±0.05		203	1.83±0.05	
Social work	150	1.89±0.05		207	1.98±0.05	
Medical	149	2.41±0.06		60	1.90±0.09	
Alcohol dependence			Medical > nursing > social work			-
Nursing	253	2.71±0.05		204	2.48±0.05	
Social work	148	2.36±0.06		208	2.58±0.05	
Medical	168	3.01±0.05		65	2.62±0.10	
Drug dependence			Medical, nursing > social work			-
Nursing	231	2.97±0.05		184	2.79±0.06	
Social work	160	2.38±0.05		217	2.95±0.05	
Medical	186	3.11±0.05		62	2.95±0.10	
Schizophrenia			Medical > nursing > social work			Social work > nursing
Nursing	186	2.65±0.05		203	2.31±0.05	
Social work	154	2.23±0.05		185	2.57±0.06	
Medical	201	2.82±0.05		52	2.39±0.11	

(b)

| Perceived stigma and self-stigma	People with psychiatric disorders		
	No.	Mean±SD score	Significant difference between groups (P<0.001)
Perceived discrimination and devaluation		Strongly disagree=1 to strongly agree=6	
Schizophrenia and other psychotic disorders	73	3.32±0.11	-
Depression	75	3.02±0.12	-
Bipolar disorder	60	3.00±0.13	-
Drug dependence/abuse	60	3.15±0.13	-
Alcohol dependence/abuse	60	3.05±0.13	-
Co-morbidity	48	3.31±0.14	-
Social distance with health professionals		Strongly disagree=1 to strongly agree=4	
Schizophrenia and other psychotic disorders	73	2.62±0.09	-
Depression	75	2.45±0.09	Alcohol dependence/abuse > depression
Bipolar disorder	60	2.41±0.10	Alcohol dependence/abuse > bipolar disorder
Drug dependence/abuse	60	2.62±0.10	-
Alcohol dependence/abuse	60	2.73±0.10	Alcohol dependence/abuse > Depression, bipolar disorder
Co-morbidity	48	2.54±0.11	-
Self-stigma		Strongly disagree=1 to strongly agree=4	
Schizophrenia and other psychotic disorders	73	2.68±0.08	Schizophrenia > depression, alcohol dependence/abuse
Depression	75	2.43±0.08	-
Bipolar disorder	60	2.56±0.09	Bipolar disorder > alcohol dependence/abuse
Drug dependence/abuse	60	2.49±0.09	-
Alcohol dependence/abuse	60	2.30±0.09	-
Co-morbidity	48	2.55±0.10	Co-morbidity > alcohol dependence/abuse
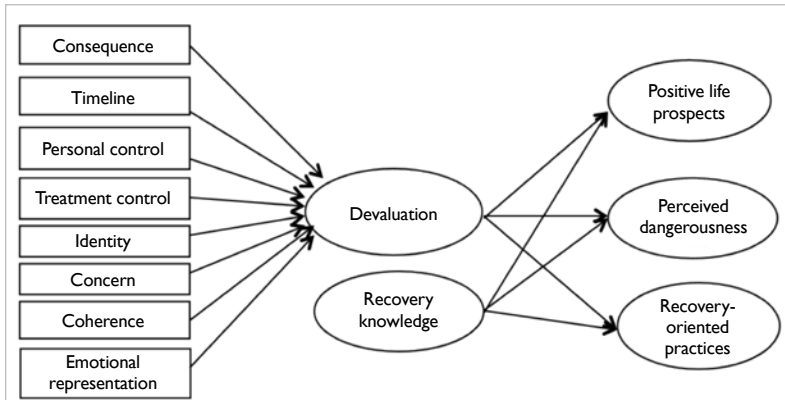
FIG 1. Professionals' and students' perception and devaluation model for people with psychiatric disorders
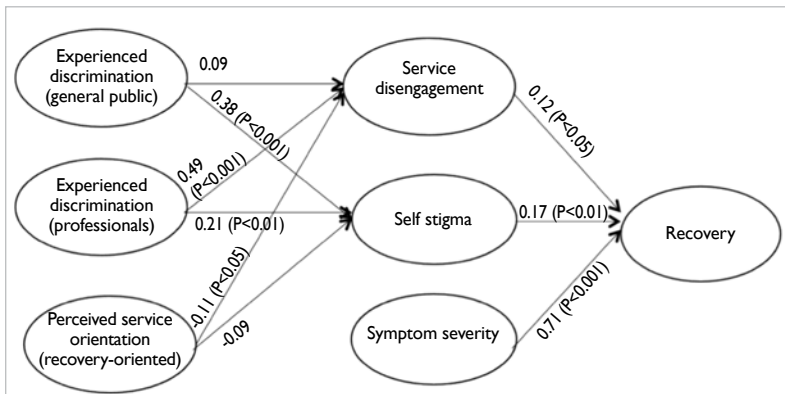

FIG 2. Model of experienced discrimination on self-stigma, service engagement, and recovery among people with psychiatric disorders
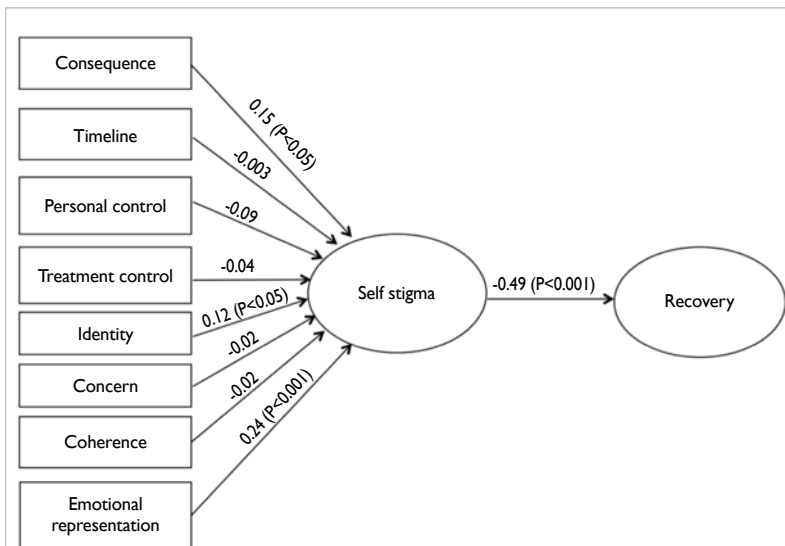

FIG 3. Common sense model of self-stigma and recovery for people with psychiatric disorders

Discussion

The CSM was an effective framework to understand the possible formation of negative attitudes among professionals, students, and people with psychiatric disorders. This study provided evidence of the need for anti-stigma campaigns in Hong Kong. Self-stigma reduction programmes are recommended to mitigate the effects that public stigma and experienced discrimination have on patient service engagement and recovery.

Having contact with people with psychiatric disorders has been the most successful means of stigma reduction. Nonetheless, for professionals and students, repeated exposure to people with chronic and recurrent psychiatric disorders may foster a negative attitude. The Department of Health and Human Services of the United States promotes the concept of consumer-defined recovery; people with psychiatric disorders demonstrate their achievement, strengths, and humanity through the pursuit of personally meaningful lives despite the limitations imposed by the illness. Unlike the traditional disease-oriented recovery framework that focuses on symptom reduction and functional capacity restoration, consumer-defined recovery emphasises the recovery process in which people with psychiatric disorders redefine themselves and strive to positively adapt to their illness. Continuing education and teaching of a more holistic and positive view of people with psychiatric disorders can better prepare professionals and students to serve people with varying psychiatric needs.

Acknowledgements

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Epidemiology and natural history of depressive disorders in primary care

WY Chin *

KEY MESSAGES

1. In Hong Kong's primary care setting, the estimated prevalence of screen-positive depression is 10.7%, the 12-month incidence is 5.3%, and 12-month remission rate is 60.3%.

2. One in four patients with positive screening scores are identified as having depression by the primary care doctor. Patients with a history of depression or other mental health problems or who are non-Chinese are more likely to be identified by a doctor. Fortunately, most cases of depression are mild and self-limiting, and doctor identification does not appear to have any significant effect on resolution of symptoms or health-related quality of life at 1 year. Improvement in mental health–related quality of life is significantly greater in those who are identified by a doctor.

3. 12-month service utilisation rates for primary care doctors, psychiatrists, and psycho-social services are raised in patients who screen positive for depression and over the period of 12 months, at least one in five patients consulted a psychiatrist or psychiatric clinic.

4. Around 50% of patients identified as having depression by a doctor are treated with psychotropic medications. Over 1 year, one third of patients with positive screening scores for depression took psychotropic medications.

5. Counsellors appear to play an important adjunctive role in depression care. Improved access to psycho-social counselling services may help facilitate doctors to better manage depression, reduce the burden on specialist services, and potentially reduce medication use.

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Introduction

The prevalence of depressive disorders in primary care has been estimated to be 10 to 20% worldwide, of which only half are diagnosed by doctors, and only one third are documented in patient records. The primary care setting is a key entry point into the health care system, and primary care physicians are well placed to be the central service provider for patients with depressive disorders. This study aimed to examine the prevalence, incidence, and natural history of depressive disorders in adult patients attending primary care clinics in Hong Kong, and factors that may influence diagnosis, management, and outcomes.

Methods

This cross-sectional and longitudinal cohort study was conducted from October 2010 to January 2013. The sample size for prevalence of depressive disorders was estimated to ensure an error of <2% for an anticipated prevalence of 20%. The sample size for 12-month incidence of depressive disorders was calculated to ensure an error within 1% for a conservatively estimated incidence of 3%. The sample size for 12-month resolution rate was calculated to ensure an error within 5% for a resolution rate of 30%. Taking into account the design effect secondary to cluster sampling, a response rate of 50% for the cohort study, and an attrition rate of 30% over 12 months, a minimum of 7500 subjects at baseline were required.

The 9-item Patient Health Questionnaire (PHQ-9) was used for screening, diagnosing, monitoring, and measuring severity of depression. Scores ranged from 0 to 27; a score of >9 was used to define a positive screen for depression. The 20-item Center for Epidemiologic Studies Depression Scale (CES-D 20) was used to measure the existing level of depressive symptomatology. A PHQ-9 score of <5 together with a CES-D score of <16 was used to define remission from a depressive episode. The 12-item Short-Form Health Survey Version 2.0 (SF-12v2) was used to assess health-related quality of life. The mental component score (MCS) and the physical component score (PCS) each averages at 50 for the general population; higher scores indicate better health. Self-reported items on socio-demography, history of depression or other psychological problems, co-morbidity, service use, and help-seeking behaviour were also assessed.

Results

A total of 10 179 patients were recruited from the waiting rooms of 59 primary care physicians to the cross-sectional study (response rate, 81%). Of these, 4358 entered the longitudinal study (response rate, 43%) and were followed up at 12, 26, and 52 weeks by telephone interview (Fig).

The cross-sectional prevalence of depression was 10.7% (95% confidence interval [CI], 9.7%-11.7%). Patients who had a self-reported history of depression, were unemployed, had visited a western doctor more than twice in the previous 4 weeks, or had two or more co-morbidities had the highest likelihood of screening positive for depression (Table 1). 23.1% of patients with positive screening scores were identified as having depression by doctors, whereas 58.6% of patients identified as having depression had negative screening scores. Patients with a self-reported history of depression or other mental illness, or who were non-Chinese were the most likely to be identified by doctors as having depression. The 12-month incidence of depression in patients with no history of depression was 5.3% (95% CI, 3.9%-6.6%), and the 12-month remission rate was 60.3% (95% CI, 54.1%-66.5%).

In subjects who screened positive at baseline, mean PHQ-9 and mean SF-12v2 scores returned to near normal over 12 months, and SF-12v2 PCS and MCS improved by over 10% and 30% respectively, with more significant improvements occurring in patients who had been detected by the doctor. Doctor detection had no effect on remission of depressive symptoms.
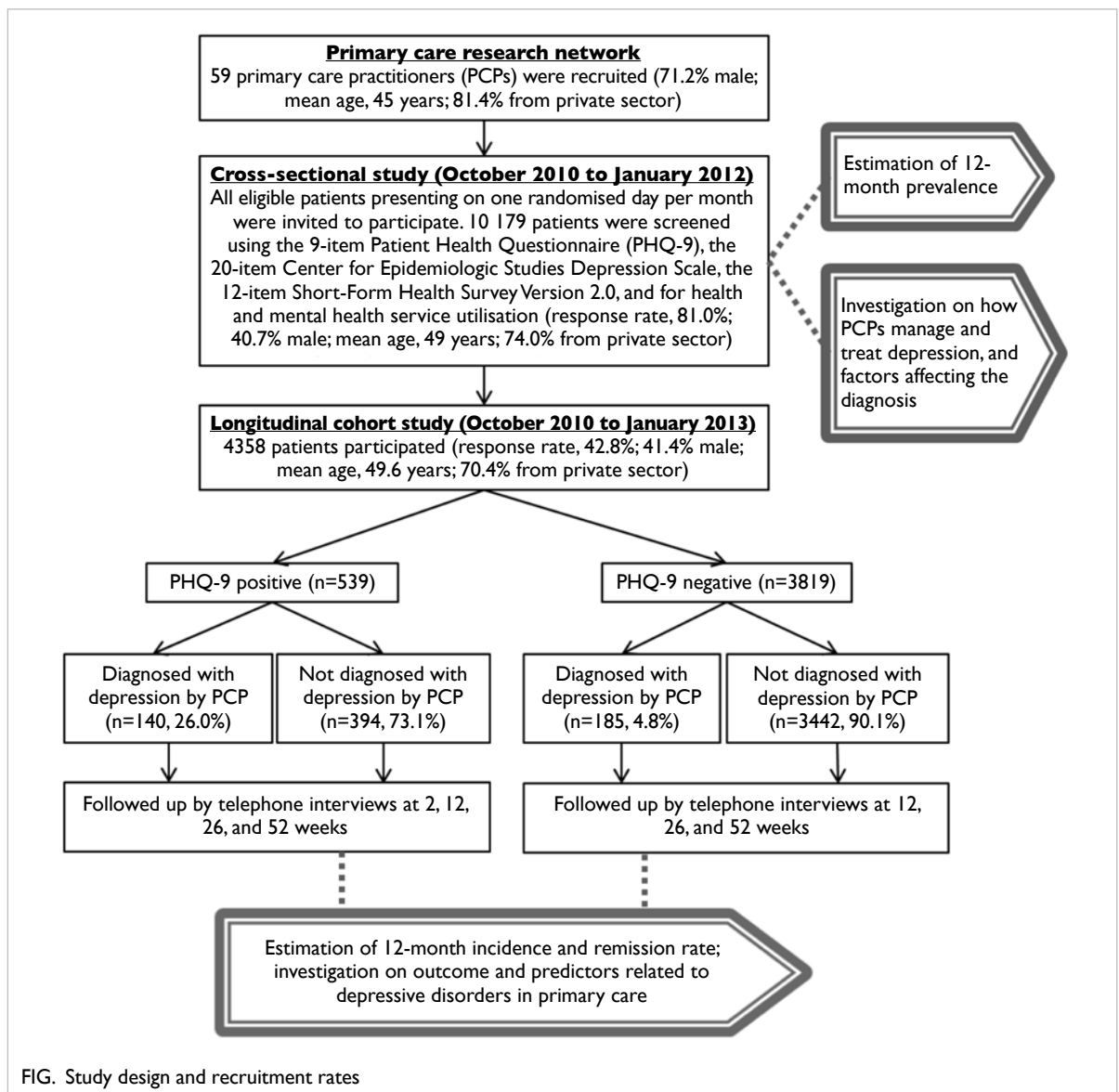

FIG. Study design and recruitment rates

Management of depression was documented for 618 subjects: 50.6% (31.8% in public sector and 58.3% in private sector) received psychotropic medication; 41.9% received counselling; and 8.6% were referred to another health professional (34.0% to counsellor, 22.6% to Hospital Authority psychiatric services, 13.2% to psychologist, and 7.5% to private psychiatrist). Patients with a history of depression or living on Hong Kong Island (relative to Kowloon) were more likely to be prescribed psychotropic medications. Doctors practising in the private sector were also more likely to prescribe psychotropic medications.

Over 12 months of observation, subjects who had positive depression screening scores at baseline reported consistently elevated levels of psychotropic medication and health service use including from primary care doctors, psychiatrists, social workers, psychologists and counsellors (Table 2). At 12 months, 19.7% had consulted a specialist psychiatrist in the past 3 months; 8.9% had received other professional psychological services in the past 3 months; and 37.5% had taken psychometric medications in the past 12 months.

When asked who they would seek help for depression, subjects reported a preference for friends and family (49.1%) over a psychiatrist (26.1%) or a primary care physician (20.1%). Overall men and older patients were less likely to seek any professional or non-professional help. In screened positive subjects, 9.5% reported receiving mental health services from a primary care physician, 7.4% from a psychiatrist and 4.1% from a psychologist.

Discussion

In this study, the participating doctors had an interest in mental health and were aware that their patterns of diagnosis and management were being studied. Nonetheless, detection rates were still lower than international standards suggesting that factors aside from clinician skill may contribute to the low identification of depression. Excessively low sensitivity for accurate detection of depression may result in inadequate provision of care.

Diagnosing depression in the primary care setting is challenging, particularly in Chinese patients who have low uptake of mental health services. Chinese patients with depression often conceal or deny their mood-related symptoms or express the symptoms more somatically. Many elderly Chinese perceive having low mood to be part of normal ageing, and do not report depressive symptoms to their doctor. Studies in Europe and America have reported lower detection rates in patients of Chinese descent.[1] This is consistent with our findings that Chinese patients were half as likely to be identified with depression by the doctor than non-Chinese patients.

TABLE 1. Patient and doctor factors associated with predictive outcome

Associated with positive screening of the Patient Health Questionnaire-9 (PHQ-9) at baseline
Patient factors
Female
Younger age
Not married (single, divorced, widowed, or separated)
Household income ≤HKD$30 000 per month
Unemployed (versus employed)
Smoker
No exercise habit
≥2 co-morbidities
Family history of mental illness
History of depression or other psychological problems
Seen a western doctor in the previous month
Seen a traditional Chinese medicine practitioner in the previous month
Doctor factors
Younger doctor
Associated with developing depression over 1 year among PHQ-9 negative cohort (12-month incidence)
Patient factors
Not married (single, divorced, widowed, or separated)
Smoker
≥2 co-morbidities
Family history of mental illness
≥2 western doctor visits in the previous month
Received a diagnosis of depression by the study doctor
Doctor factors
Public sector
Not trained in either family medicine or psychological medicine
Associated with receiving a clinical detection of depression
Patient factors
Female
Older age
Non-Chinese
Homemaker (versus employed)
No exercise habit
Family history of mental illness
History of depression or other psychological problems
Seen a western doctor in the previous month
Higher baseline PHQ-9 score
Lower baseline Short-Form Health Survey Version 2.0 (SF-12v2) mental component score (MCS)
Doctor factors
Working on Hong Kong Island (instead of Kowloon)
Older doctor
Associated with remission at 12 months among PHQ-9 positive cohort
Patient factors
Higher chance of remission
Retired (versus employed)
Lower chance of remission
≥2 co-morbidities
Seen a traditional Chinese medicine practitioner in the previous month
Associated with quality of life at 12 months among PHQ-9 positive cohort
Patient factors
Lower 12-month SF-12v2 physical component scores (PCS)
No exercise habit
Co-morbidity
≥2 western doctor visits in the previous month
Seen a traditional Chinese medicine practitioner in the previous month
Lower 12-month SF-12v2 MCS
≥2 co-morbidities
≥2 western doctor visits in the previous month
Taken psychotropic medication in the past year
Higher 12-month SF-12v2 MCS
Retired (versus employed)
Doctor factors
Higher 12-month PCS scores
Trained in family medicine
Trained in both family medicine and psychological medicine
Private sector

TABLE 2. Primary care service utilisation rates stratified by baseline Patient Health Questionnaire-9 (PHQ-9) screening outcome

Primary care service utilisation	No. (%) of participants		
	Baseline		
	PHQ-9 positive	PHQ-9 negative	P value
Taken antidepressants, psychotropic drugs, sleeping pills, or tranquilisers in the past year	198 (37.7)	396 (10.5)	<0.01
Consulted a psychiatrist or psychiatric clinic in past 3 months	92 (17.4)	144 (3.8)	<0.01
Received professional psychological treatment or counselling in past 3 months			
From doctor	86 (16.3)	124 (3.3)	<0.01
From psychologist	34 (6.5)	29 (0.8)	<0.01
From social worker	33 (6.3)	34 (0.9)	<0.01
From other people	20 (3.9)	31 (0.8)	<0.01
Seen a doctor in the past 4 weeks	365 (67.7)	1907 (50.0)	<0.01
Seen a traditional Chinese medicine practitioner in the past 4 weeks	167 (31.0)	646 (16.9)	<0.01

The incidence of depression enables estimation of new cases for future service and resource planning. Usually, incidence rates are derived using retrospective or prospective general practitioners' case record reviews, and in previous studies have ranged from 6 to 25/1000 in Europe and UK.[2] In this study, the higher 12-month incidence of 5.25% was likely to be because symptom scale survey instruments were used for case detection rather than relying on doctor detection to define a case.

In this study, primary care physicians were able to exclude depression in most people who were not depressed, but 58.6% of patients identified as having depression had negative screening scores. Many of these patients subsequently became PHQ-9 positive indicating the added value of a primary care physician consultation over screening questionnaires in identifying patients who may require therapeutic intervention.[3] Previous studies have shown that patients experiencing a major depressive episode are more likely to be identified and treated than those with minor depression or dysthymia. Similarly, those with greater functional impairment are more likely to be identified and treated.[3] Consistent with this, baseline MCS scores and baseline to 6 months PHQ-9 scores were significantly worse in patients who had been identified as having depression by doctors.

Over the 1-year follow-up, most patients who had screened positive for depression at baseline had a reduction in the severity of depressive symptoms and a return to normal in health-related quality of life. Diagnosis by doctors did not have any effect on remission rates, 12-month PHQ-9 scores, change in PHQ-9 scores from baseline to 12 months, or the mean SF-12v2 scores at 12 months. Improvement in mental health-related quality of life from baseline to all time points was significantly better in patients

who had been identified as having depression by the doctor. Poor 12-month prognosis was associated with higher rates of health service use and more co-morbidity. Retirement was the only protective factor associated with higher remission rates and better quality of life at 12 months which may be a reflection of the stressful nature of the Hong Kong working environment. A meta-analysis of remission rates from untreated major depression in adult primary care patients estimated 23% of cases of untreated depression will remit within 3 months, 32% within 6 months, and 53% within 12 months.[4] This was consistent with our estimates for 12-month remission rate of 60.3%, which included both treated and untreated cases. PHQ-9 levels remained >9 at 12 months in the remaining 39.7%.

In this study, over 50% of patients diagnosed with depression received psychotropic medications. Examination of doctors' management patterns found over 50% of patients diagnosed with depression were prescribed psychotropic medications. Doctors in the private sector had a 6.7-fold increased likelihood of prescribing psychotropic medications than doctors in the public sector. According to World Health Organization guidelines, antidepressants can be a very effective form of treatment for moderate-to-severe depression but are not recommended as first-line treatment for mild or sub-threshold depression. In Hong Kong, drugs are dispensed by the doctor rather than through a pharmacy, which in association with a lack of access to psychosocial services, are likely to be key reasons for the high rates of prescribing. Another reason may be the doctor's perception of patient expectations for medication. In a telephone survey of Hong Kong Chinese community members, although only 40% of respondents believed they always needed drugs to treat an illness, 76% expected to receive a prescription

	No. (%) of participants							
12-week follow-up			26-week follow-up			52-week follow-up		
Baseline PHQ-9 positive	Baseline PHQ-9 negative	P value	Baseline PHQ-9 positive	Baseline PHQ-9 negative	P value	Baseline PHQ-9 positive	Baseline PHQ-9 negative	P value
112 (36.8)	249 (9.0)	<0.01	97 (35.8)	307 (10.0)	<0.01	147 (37.5)	289 (9.3)	<0.01
40 (13.3)	77 (2.8)	<0.01	44 (16.2)	99 (3.2)	<0.01	77 (19.7)	124 (4.0)	<0.01
31 (10.3)	36 (1.3)	<0.01	17 (6.3)	21 (0.7)	<0.01	13 (3.3)	17 (0.5)	<0.01
5 (1.7)	12 (0.4)	0.022	6 (2.2)	12 (0.4)	<0.01	10 (2.6)	15 (0.5)	<0.01
11 (3.6)	11 (0.4)	<0.01	8 (3.0)	14 (0.5)	<0.01	6 (1.5)	13 (0.4)	0.014
4 (1.3)	9 (0.3)	0.033	1 (0.4)	11 (0.4)	1.00	6 (1.5)	5 (0.2)	<0.01
101 (62.7)	1504 (52.2)	<0.01	113 (70.2)	1582 (49.6)	<0.01	119 (69.6)	1700 (51.3)	<0.01
52 (16.9)	434 (15.7)	0.557	49 (17.8)	455 (14.7)	0.177	68 (17.3)	460 (14.8)	0.179

every time they saw a doctor. In almost 100% of cases, during their most recent doctor visit, at least one medication had been prescribed. It is possible that doctors in Hong Kong over-estimate patients' expectation for medications, and their prescribing habits may have produced a high expectation for medications by patients.[5] At 12 months, over one third of patients who screened positive at baseline reported to have taken psychotropic medications in the previous year, but it is not known how these medications were obtained. A more focused study is needed to closely examine doctor's prescribing practices and their perception of what constitutes best practice for managing primary care patients with depression, as well as to study patients' drug-seeking behaviours.

In this study, fewer than 10% of patients were referred to other mental health care services, most commonly to counsellors. Despite this, at 12 months, 19.7% of those positive at baseline reported consultation with a psychiatrist or psychiatric clinic in the past 3 months, and 8.9% had received other forms of professional psychological services. In Hong Kong, access to psychosocial services is very limited and specialist psychiatrists are few. In 2005, the population-to-specialist ratio was 1:44 202, far higher than that of 1:16 836 in the UK.[6] In addition, patients can directly consult specialists in the private sector without referral. Patients may bypass the gate-keeping function of the primary care doctor and contribute to excessive demands on already stretched specialist services.[6]

Although doctor factors did not seem to have any significant effect on outcomes, there were some interesting findings noted. Firstly, patients who screened positive for depression were more likely to have consulted a younger doctor; however, doctors who were older were more likely to diagnose a patient as being depressed. Secondly, screened-negative patients who attended doctors in the private sector or doctors who had training in both family medicine and psychological medicine had a lower risk of incidence of depression. Similarly, the health-related quality of life of screened-positive patients was better at 12 months in those who had attended a doctor in the private sector or who had training in family medicine. It is difficult to prove a causal effect, but it appears attending a doctor with training in family medicine or psychological medicine has positive benefits on wellbeing.

One limitation of our sampling strategy was the lack of a comprehensive registry of primary care providers in Hong Kong. Doctors who provide primary care but are not members of the Hong Kong College of Family Physicians were not sampled. Doctors' participation in this study was voluntary, and there was a bias towards doctors with a mental health interest. Our results may reflect a 'best-case scenario' indicating better detection rates and more optimal treatment. The low referral rates may be a result of sampling bias, as a high proportion of the doctors had post-graduate training in psychological medicine and may have felt more capable of providing adequate care than doctors without such training.

The patient sample was self-selected which incurs a risk of self-selection bias. In terms of demographics they were only marginally older (49.6 vs 49 years) than the baseline cohort; marginally more educated (75% vs 73.2% with secondary or tertiary education); and there was a slightly larger proportion of Chinese patients (96.7% vs 95.7%). Screening for depression was based on a subjective, self-reported instrument and was not confirmed by a clinical diagnostic interview, which is the gold standard for diagnosis of depression.

Conclusions

Diagnosing depression in the primary care setting is challenging, particularly in Chinese patients. Remission at 12 months from depressive symptoms does not appear to be affected by doctor identification, but recovery of health-related quality of life occurs more rapidly in patients who receive a diagnosis of depression from the doctor. Patients who consulted a doctor trained in family or psychological medicine appear to be better protected from developing depressive symptoms. Health service use is persistently increased over a 12-month period in patients with depressive symptoms. Patient-reported utilisation rates for specialist psychiatric services are higher than doctor referral rates, indicating that patients may refer themselves to psychiatrists in the private sector directly. Enhanced access to counselling services may help facilitate doctors to better manage depression in primary care, reduce the burden on specialist services, and possibly reduce medication use.

Follow-up studies are needed to examine doctor's prescribing practices and their perception of what constitutes best practice for managing primary care patients with depression. Further exploration of the health behaviours of primary care patients with depressive symptoms, particularly in relation to medication use and seeking help from specialists. Long-term studies are needed to study relapse and chronicity of depressive disorders.

Acknowledgements

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Early intervention versus standard care for psychosis in Hong Kong: a 10-year study

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KEY MESSAGES

1. Psychotic patients who received early intervention had longer periods of employment, fewer hospitalisations, more time in symptomatic remission, fewer suicidal attempts and violent acts, and lower mortality over a 10-year period.

2. Early intervention improved the longitudinal outcomes of psychosis. Nonetheless, symptomatic remission and recovery rate did not differ significantly at 10 years between patients with early intervention and patients with standard care. Early intervention did not alter the symptomatic trajectory of schizophrenia-spectrum disorders.

3. Re-examination of the optimum duration of early intervention should be considered.

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Introduction

Psychotic disorders are a major burden to society and public health, affecting 3% of the population. Compared with standard care (SC), early intervention (EI) enables better outcomes in terms of symptom control and functioning.[1] In 2001, the Hong Kong Hospital Authority launched the 2-year Early Assessment Service for Young People with Early Psychosis (EASY) for those aged 15 to 25 years. Compared with SC patients, patients with EASY had fewer hospitalisations and better functional outcome at 3 years.[2]

Both Danish and British trials suggested that patients who received EI (vs SC) for 2 years did not differ in clinical and functional outcome 5 years later, although the former study suggested that patients with EI had fewer days of hospitalisation and less time living in supported housing.[3,4] In a study of a 2-year EI programme in Ontario, Canada, the clinical and functional benefits remained at 5 years.[5] Longer-term effects of EI are not well known. In another Danish study of the effect of early detection (shortening duration of untreated psychosis), more early-detection patients had recovered functionally at 10-year follow-up, compared with usual-detection patients.[6] In an Australian study, patients with EI achieved better symptomatic remission at 8-year follow-up.[7] These inconsistent findings have raised doubt about the longevity of the effects of EI. More longer-term studies are needed.[8]

The current study compared the 10-year outcome of psychotic patients (with a focus on the schizophrenia spectrum) who received 2-year EASY versus SC in terms of symptomatology, social and role functioning, employment rate, hospitalisation, risk behaviour (including suicide), and service utilisation, using both face-to-face semi-structured interview and 10-year medical record review.

Methods

This study was conducted from June 2010 to September 2012. A historical control group was used because the EASY was implemented in 2001 in Hong Kong. The current study was based on a previous study that compared the 3-year outcome of patients (with a diagnosis of schizophrenia, schizoaffective disorders, acute and transient psychotic disorder, or psychosis not otherwise specified) who received EASY versus SC. Patients had to be able to communicate adequately with the investigator and agree to undergo all the assessments required by the protocol. Each group comprised 148 patients. The two groups were matched for gender, age, diagnosis, years of education, duration of untreated psychosis, premorbid occupational functioning, and mode of onset of illness.

Face-to-face semi-structured interviews were conducted at 10 years. Baseline and longitudinal variables[9-20] were systematically retrieved from medical records and the clinical management system (Table).

TABLE. Main outcome variables

Variables	Rating tools
Current situation	
Marital status	Patients' report
Residential status	Patients' report
Current health	
Diagnosis	Structured clinical interview for Diagnostic and Statistical Manual of Mental Disorders-IV (DSM-IV)[9]
Diagnosed physical illness	Clinical management system
Comorbidity	Structured clinical interview for DSM-IV[9]
Treatment	
Antipsychotic medications	Medical records/clinical management system
Concomitant medications	Medical records/clinical management system
Use of clozapine	Medical records/clinical management system
Side effects	
Metabolic (weight, body mass index, waist-circumference)	Measured by researcher
Extrapyramidal side effects	Extrapyramidal symptom rating scale[10], and Udvalg for kliniske undersøgelser[11]
Functioning	
Employment status in the past 1 year	Patients' report
Social functioning	Social and occupational functioning assessment scale[12]
Role functioning	Role Functioning Scale[13]
Recovery	
A composite rating of symptom remission and functioning	Positive and negative syndrome scale for schizophrenia,[14] Strauss and Carpenter Scale[15]
Symptomatology	Positive and negative syndrome scale for schizophrenia, Scale for the assessment of positive symptoms,[16] Scale for the assessment of negative symptoms,[17] Calgary Depression Scale,[18] Clinical Global Impression-Schizophrenia Scale[19]
Quality of life	36-Item Short-Form Health Survey[20]
Hospitalisation	
No of hospitalisation from years 4 to 10	Patient's report, medical records/clinical management system
Nature and duration of each hospitalisation	Medical records/clinical management system
Risk	
Suicide attempt from years 4 to 10	Medical records/clinical management system
Mortality	
Time	Medical records/clinical management system
Cause	Medical records/clinical management system
Duration of disengagement	Medical records/clinical management system

Results

Longitudinal outcome

Over 10 years, EI patients had more time in symptomatic remission than SC patients (70.7% vs 64.2%). Controlling for the effect of medication, gender, age, and duration of untreated psychosis, group effect was significant (F(1.292)=6.281, P=0.013), with small effect (partial η^2=0.021). In addition, more EI than SC patients were able to achieve remission for 2 years consecutively (91.6% vs 79.1%, χ^2=9.620, df=1, P=0.003). The mean number of admissions was significantly higher in SC than EI patients (2.00±2.71 vs 1.34±1.8, Z=-2.41, P=0.016), excluding the admission at onset. The group effect remained significant (F(1.292)=5.011, P=0.026), with small effect (partial η^2=0.017) after controlling for the effect of medication. The mean duration of admission was also longer in SC patients (146.6±251.9 days vs 112.4±257.4 days, Z=-2.295, P=0.022), but the group effect was not significant after controlling for the effect of medication duration (F(1.293)=0.682, P=0.410).

Over 10 years, more SC patients attempted

suicide or committed violent acts after controlling for the effects of age, gender, duration of untreated psychosis, and medication, with a small effect on the total number of suicidal attempts ($F_{(1.290)}=8.818$, P=0.003, partial $\eta^2=0.030$) and violent acts ($F_{(1.290)}=6.569$, P=0.011, partial $\eta^2=0.022$), suggesting a benefit of EI. In addition, more SC than EI patients died over the period (16 vs 7), with suicide being the main cause. Survival analysis Mantel-Cox Log Rank tests showed that SC patients died earlier than EI patients ($X^2(1)=4.016$, P=0.045).

Over 10 years, duration of full-time employment was significantly longer in EI than SC patients (45.5 vs 36.6 months, Z=-2.618, P=0.009), as was part-time employment (61.9 vs 49.1 months, Z=-2.954, P=0.003). Controlling for the effect of medication, years of education, and mode of onset, the group effect remained significant ($F_{(1.292)}=9.446$, P=0.002), with small effect size (partial $\eta^2=0.032$). From a longitudinal perspective, EI patients sustained better functioning (Fig).

The two groups did not differ significantly in the number of relapses and time to first relapse, although more SC patients relapsed and were hospitalised than EI patients (1.45 vs 1.05 times, Z=-2.495, P=0.013). The SC patients also had more presentations to accident and emergency departments (Z=-2.162, P=0.031) and more contacts with the community psychiatric nurse (Z=-2.154, P=0.031), but EI patients had more outpatient attendances (Z=-4.171, P<0.0001) and contacts with the clinical psychologist (Z=-2.116, P=0.034).

Cross-sectional outcome

The success interview rate was 70.3% (104/148) for the SC group and 74.3% (110/148) for the EI group. At 10-year follow-up, the two groups did not differ significantly in psychotic symptom dimensions (measured with the positive and negative syndrome scale for schizophrenia, the scale for the assessment of positive symptoms, and the scale for the assessment of negative symptoms) and clinical remission rate (56.5% vs 55%). However, EI patients had significantly fewer depressive symptoms (measured with the Calgary Depression Scale). Controlling for the effect of medication, the group effect remained significant ($F_{(1.207)}=6.872$, P=0.009), with small effect ($\eta^2=0.032$).

At 10 years, more EI patients engaged in full-time employment and more SC patients were unemployed. Using logistic regression to control for the effect of medication, years of education, and mode of onset, the group effect was significant (odds ratio=2.036, 95% confidence interval, 1.083-3.830; P=0.027). The two groups did not differ significantly in social and role functioning (measured with the social and occupational functioning assessment scale, the Role Functioning Scale, and the Strauss and Carpenter Scale), the functional recovery rate (25.5% vs 33.7%), quality of life, or side effects.

Discussion

Patients with EI had a longer period of employment, better vocational functioning, fewer hospitalisations, more time in symptomatic remission, less depression, fewer suicidal attempts and violent acts over 10 years. The beneficial effect of EI on mortality and suicidal rate has public health implications. The lack of a significant difference in symptomatic remission and recovery rate between groups at 10 years suggests that EI may not change the trajectory of psychotic symptom dimensions in patients with schizophrenia-spectrum disorders. Together with the evidence that suggests the critical period of
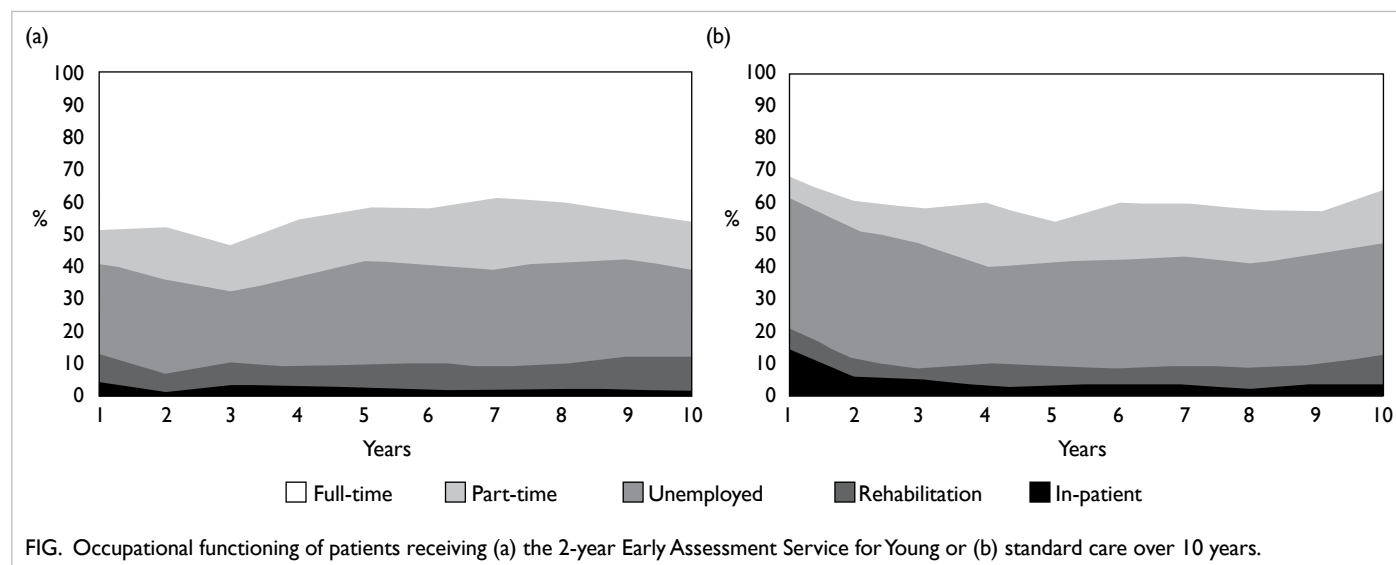

FIG. Occupational functioning of patients receiving (a) the 2-year Early Assessment Service for Young or (b) standard care over 10 years.

psychosis can be up to 5 years following initial onset, the optimum duration of intensive early intervention should be re-examined. More detailed investigation of the effective components of EI is needed to enable better service configuration. A full-scale health economic study would inform future policy development.

There were some limitations to this study. The longitudinal results relied on medical record review. Despite efforts to ensure reliability and validity, the quality of data was limited by the quality of the medical records. The time of transfer from EI to SC was assumed to be 3 years following initiation. Individual differences were not routinely documented. Although the attrition rate of this study was comparable with that of other long-term studies, the non-response rates may limit the reliability and generalisation of the cross-sectional outcome. Demographics of the responded and non-responded patients did not differ significantly. Blinding of group status during interview was not possible. Therefore, the possibility of interviewer bias cannot be eliminated. The territory-wide provision of EI precluded other forms of study design, and the historical controlled design was limited by the potential cohort effect. This was minimised by choosing samples in close temporal proximity.

Acknowledgements

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Three-year community case management for early psychosis: a randomised controlled study

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KEY MESSAGES

1. Extension of community case management for a third year after onset of psychosis improved functioning.

2. Extending community case management from 2 to 3 years enabled further benefits to negative symptoms, general psychopathology, and depression.

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Introduction

Psychotic disorders are among the 10 highest overall burden diseases. The first few years following illness onset are the critical period for intervention,[1] particularly if carried out by specialised teams with protocol-based, phase-specific case management.

In Hong Kong, the Early Assessment Service for Young People with Early Psychosis (EASY) provides specialised care to first-episode patients for the first 2 years and achieves better outcome.[2,3] Nonetheless, the optimal intervention duration remains unknown.[4] The third year following illness onset is often eventful and within the critical period. This study investigated the effectiveness of an additional year of community-based case management for improving functioning outcome.

Methods

This randomised controlled trial was conducted from July 2010 to June 2012. A total of 160 Cantonese-speaking Chinese patients aged 18 to 35 years with a diagnosis of schizophrenia, non-affective psychosis, affective disorders with psychotic features, or delusional disorder who had received EASY for 2 years were randomised to receive further case management or standard care for 1 year. Both groups continued to receive general psychiatric care with all auxiliary care options unchanged. Patients with organic brain disorder, a history of moderate-to-severe intellectual disability, or drug-induced psychosis were excluded.

Assessments were carried out by trained assessors blinded to the patient's study group. Functioning was measured using the Social and Occupational Functioning Assessment Scale (SOFAS) and Role Functioning Scale (RFS); clinical symptoms were measured using the Positive and Negative Syndrome Scale; and depression was measured using the Calgary Depression Scale for Schizophrenia.

Results

Of the 160 patients recruited, 156 (97.5%) completed the study (79 in case management and 77 in standard care). The two groups were well matched at baseline (Table 1).

By the end of study, the case management group had better functioning, fewer negative symptoms, general psychopathology, and depressive symptoms, and a trend of fewer defaults from psychiatric consultations (Tables 1 and 2).

Using repeated-measures ANOVA, a significant group x time interaction was observed in the SOFAS score, with post-hoc contrast test revealing a significant change from baseline to 6 months ($F(1,154)=4.0$, $P<0.05$) as well as from 6 to 12 months ($F(1,154)=13.8$, $P<0.0001$) (Table 3, Fig). Paired-sample t-tests further demonstrated that the SOFAS and RFS scores in the case management group improved significantly from baseline to 6 months, and from 6 to 12 months (Table 3). Patients in the case management group attained significant functional improvement, whereas those in the standard care group did not.

Discussion

An additional year of community case management provided further benefits in functioning and symptoms for young patients with psychosis. After 2 years of early intervention, both groups of patients still had moderate difficulties in functioning despite clinical remission. Adding a further year of case

TABLE 1. Sociodemographics and outcomes of the two groups*

Variables	Case management (n=79)	Standard care (n=77)	t/χ²	P value
Age at entry (years)	22.9±3.1	22.8±3.4	-0.3	>0.05
Age at onset (years)	20.0±3.1	20.0±4.1	-0.02	>0.05
Median duration of untreated psychosis (days)	71	112.5	0.5	>0.05†
Male sex	41 (52)	40 (52)	<0.001	>0.05
Single marital status	75 (95)	75 (97)	0.2	>0.05
Education			0.002	>0.05
Secondary	58 (73)	56 (73)		
Tertiary	20 (25)	21 (27)		
Employed	48 (61)	50 (65)	0.2	>0.05
Past psychiatric admission	17 (21.5)	13 (61.9)	0.5	>0.05
Psychiatric diagnosis			6.0	>0.05
Schizophrenia-spectrum disorders	66 (84)	62 (81)		
Other non-affective psychosis	5 (6)	8 (10)		
Affective psychosis	8 (10)	7 (9)		
Positive and Negative Syndrome Scale				
Positive symptom score				
Baseline	9.4±3.3	9.1±2.9	-0.6	>0.05
1 year	8.3±2.5	8.6±2.9	0.7	>0.05
Negative symptom score				
Baseline	11.6±5.1	12.3±5.6	0.8	>0.05
1 year	8.5±2.5	9.9±3.9	2.7	0.009
General psychopathology score				
Baseline	24.5±7.5	24.7±6.2	0.06	>0.05
1 year	19.2±3.7	21.1±5.1	2.6	0.01
Calgary Depression Scale for Schizophrenia				
Baseline	2.8±3.5	2.9±3.5	0.1	>0.05
1 year	0.9±1.6	1.9±2.8	2.8	0.005
Chlorpromazine equivalent dose				
Baseline	179.7±158.7	197.4±160.4	-0.7	>0.05
1 year	162.3±155.8	187.7±158.4	-1.0	>0.05
Use of second-generation antipsychotics				
Baseline	65 (84.4)	64 (83.1)	0.3	>0.05
1 year	63 (81.8)	61 (77.2)	3.1	>0.05
Psychiatric admission	12 (15.2)	8 (10.4)	0.8	>0.05
Default psychiatric follow-up	14 (17.7)	25 (32.5)	3.8	0.05
Relapse	12 (15.2)	15 (19.5)	0.5	>0.05
Suicidal attempt	0 (0)	0 (0)		

* Data are presented as mean±SD or no. (%)
† Mann-Whitney U test

TABLE 2. Functioning scores across 1 year between two groups

	Baseline	6 months	12 months
Social and occupational functioning assessment scale			
Case management	57.6±14.4	61.1±13.3	64.8±13.1†
Standard care	57.9±13.7	58.8±11.2	58.0±12.7
Role functioning scale			
Total			
Case management	19.3±4.2	21.0±3.7	22.1±3.2†
Standard care	19.8±4.0	20.7±3.3	20.3±3.7
Work productivity			
Case management	4.1±1.8	4.8±1.6	5.1±1.4*
Standard care	4.6±1.5	4.7±1.4	4.7±1.5
Independent living			
Case management	6.1±1.1	6.3±0.8	6.5±0.6*
Standard care	6.2±0.8	6.5±0.6	6.2±1.0
Immediate social network			
Case management	5.0±1.2	5.3±0.9	5.5±0.9†
Standard care	5.0±1.3	5.0±1.0	5.1±0.9
Extended social network			
Case management	4.1±1.4	4.6±1.2	4.9±1.1†
Standard care	4.0±1.5	4.5±1.3	4.3±1.3

* $P<0.05$
† $P<0.01$

TABLE 3. Repeated-measures ANOVA for group x time interactions in functional outcome

Variable	Group x time interactions		
	F	P value	Post-hoc contrast tests*
Social and occupational functioning assessment scale	12.3	<0.0001	T_0–T_6 (P<0.05), T_6–T_{12} (P<0.001)
Role functioning scale			
Total	9.8	<0.0001	T_6–T_{12} (P<0.001)
Work productivity	10.2	<0.0001	T_0–T_6 (P<0.01), T_6–T_{12} (P<0.05)
Independent living	6.5	0.003	T_6–T_{12} (P<0.01)
Immediate social network	5.9	0.007	T_0–T_6 (P<0.05), T_6–T_{12} (P<0.05)
Extended social network	2.7	0.075	

* T_0 denotes baseline, T_6 6-month follow-up, T_{12} 12-month follow-up
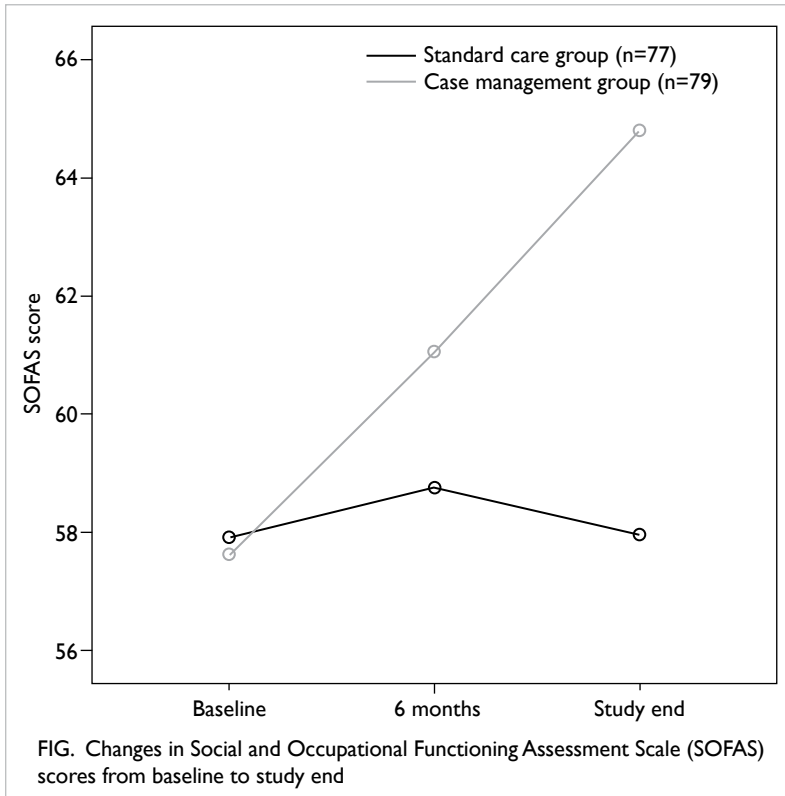
management improved functioning to a higher level (general functioning, some meaningful relationships, and employment). Further benefits to negative symptoms, general psychopathology, and depression were also evident, and there was a trend of a lower default rate. Non-compliance with clinic attendance is common in psychiatric patients and a major barrier to the provision of proper care. Patients were better engaged by having a case manager, probably owing to the extra rapport.

This study was limited by an open-label design and a relatively short period of follow-up. Given the nature of case management, double blinding was not feasible, and the current open-label randomised controlled trial design was the most scientifically rigorous method possible to evaluate the efficacy of the intervention. We minimised the potential bias by blinding assessors to the patient group. Longer-term studies are needed to determine whether the beneficial effects can be sustained.

Acknowledgements

FIG. Changes in Social and Occupational Functioning Assessment Scale (SOFAS) scores from baseline to study end

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Perceived stigmatisation of patients with mental illness and its psychosocial correlates: a prospective cohort study

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KEY MESSAGES

1. Perceived stigmatisation of patients with severe mental illness (SMI) was moderate and increased significantly over 1 year.

2. Patients' perceptions of stigmatisation and their re-hospitalisation, together with mediating factors (eg patients' functioning and self-esteem at recruitment, mental state, and family expressed emotion at 1-year follow-up) can predict illness relapse.

3. Development of community-based mental health care for SMI patients and their families is recommended.

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Introduction

People with mental illness have been stigmatised by the public as dangerous, violent, and unpredictable. Stigma is defined as social devaluation of people because of their personal attributes, leading to disgrace and social isolation.[1] This biased attribution of misbehaviour and disgrace to people with mental illness is over-generalised.

According to the attribution model and self-stigmatising hypothesis, the severity of the stigmatisation perceived by patients may lead to self-esteem decrement and at times predict illness relapse.[2] Nonetheless, systematic assessment of the experiences of people with severe mental illness (SMI) and studies of stigma from the perspective of families and health professionals are limited. This study assessed patients' perceived stigmatisation and its association with clinical, psychosocial, and psycho-pathological factors over 1 year.

According to the stigmatising self-hypothesis,[2] two hypotheses on the relationships between patients' perceived stigmatisation, re-hospitalisation rate, and other clinical and psychosocial factors were tested: (1) patients' perceived stigmatisation correlates with family and health professionals' attitudes toward SMI, their psychosocial health, and re-hospitalisation rate; (2) patients' perceived stigmatisation predicts their re-hospitalisation after 1 year, as mediated by their psychosocial and clinical variables and the families' and professionals' attitudes toward them.

Methods

This prospective cohort study was conducted from April 2010 to January 2012. Three groups of subjects: (1) randomly selected eligible adult patients, (2) the main family caregivers of the patients, and (3) mental health professionals of two public hospitals were invited to complete a questionnaire at the beginning and after 1 year.

Adult outpatients with SMI (schizophrenia, other psychotic disorders, and mood disorders for <5 years) were randomly selected, as were their main family caregivers. Assuming an attrition rate of 15%, a sample of 270 patients could achieve 90% power and an $\alpha=0.01$ to detect a moderate effect size (mean difference/standard deviation) of 0.34 and was adequate for multiple linear regression (104+ total number of covariates).[3] A total of 62 mental health professionals were recruited, including 18 nurses, eight psychiatrists, three occupational therapists, and two medical social workers.

Primary outcome measures included the 18-item Discrimination and Devaluation Scale (DDS), Specific Level of Functioning Scale, Chinese Rosenberg Self-Esteem Scale, Brief Psychiatric Rating Scale, and number and days of re-hospitalisations over the past 6 months. Secondary outcome measures consisted of the Chinese versions of Perceived Self-Efficacy Scale, Level of Expressed Emotion Scale, Family Burden Interview Schedule, Community Support Services Index, and professionals' Stereotype and Restriction Scale.[2,4] All scales demonstrated satisfactory internal consistency and construct validity.[2,4]

A qualitative, exploratory approach was used to elicit patients', family members' and health professionals' views on stigmatisation using focus group interviews. Six focus group interviews were

conducted with selected patients, family caregivers, and professionals independently (5-8 participants/ group) after the first assessment. Selection was made from those with the highest, median, and lowest DDS or Stereotype and Restriction Scale scores (2-3 from each level).

The correlations of the mean DDS scores of patients with other variables were examined. Chi-square/Fisher's exact test and independent T test were used to compare the mean DDS scores between categorical variables and changes in mean DDS scores and other continuous variables over 1 year, respectively. Multivariate regression and structural equation modelling technique were used to evaluate factors influencing the DDS scores and the hypothetical model predicting re-hospitalisations at the 1-year follow-up, respectively. Focus group interviews were transcribed and cross-checked for accuracy, followed by content analysis within and between groups by two independent assessors, contrasting the coding schemes and checking for inter-assessor agreement or reliability.

Results

Of 270 patients (and their family caregivers) who completed the questionnaire at the beginning (response rate, 84.4%), 238 completed the questionnaire at 1 year (attrition rate, 11.9%). Characteristics of patients and their caregivers were comparable between the 238 participants and the 32 dropouts and between the two recruitment sites (Table 1). Of 62 health professionals, 32 (51.6%) had undertaken at least one community psychiatric care course; 52 (83.3%) had a bachelor/master degree, with a mean±standard deviation (SD) community care experience of 6.57±4.54 years.

The mean DDS score was 55.03 (SD, 8.49; range 37-78; possible range, 18-90) at the beginning and 60.53 (SD, 9.17; range, 38-79) at 1 year, indicating a moderate level of stigmatisation perceived by patients and the level increased significantly after 1 year. Patients significantly deteriorated in terms of functioning (196.60±21.79 vs 169.56±22.97), self-esteem (25.98±6.17 vs 22.13±5.01), length of re-hospitalisation (22.13±5.01 vs 12.48±7.08 days/6 months), positive symptoms (2.90±2.17 vs 3.45±2.30), overall burden (0.88±0.39 vs 0.95±0.32), and need for support services (2.99±3.29 vs 3.49±2.51) [P=0.01-0.05]. Health professionals' attitudes toward patients were slightly negative at the beginning and increased non-significantly at 1 year (3.44±0.36 vs 3.52±0.57 for stereotype and 2.43±0.44 vs 2.56±0.62 for restriction).

The mean DDS scores at two time points correlated with most of the psychosocial variables, patient age, duration of illness, and number of psychiatric treatment received at the beginning (r/ rs=0.20-0.29, P=0.05-0.001). Similar levels of mean DDS scores were found among different types of SMI (P>0.1).

Multiple regression analyses indicated that patients' self-esteem, age, mental state, functioning, number of psychiatric treatments received (or length of re-hospitalisations at 1 year), and duration of illness (or expressed emotion at 1 year) accounted for 60.0% [F(10,235)=40.72, P<0.001; Cohen's effect size f^2=1.56] and 57.0% [F(10,235)=38.78 and P<0.002; Cohen's f^2=1.38] of the total variance in the perceived stigmatisation (large effect)[3], respectively (Table 2). Of these variables, patients' self-esteem, mental state, and age made the largest contributions. Different linear regression models were also tested. The best models indicated a large effect size (adjusted R^2=0.50-0.72; large effect sizes with Cohen's f^2=0.67-0.92).

Structural modelling using maximum likelihood estimation supported the study hypothesis that patients' DDS could predict the length of re-hospitalisations at 1 year, mediated by patients' age, functioning, self-esteem, and number of psychiatric treatments received at the beginning, and by their mental state and family expressed emotions at 1 year (Fig).

Content analyses of the six focus group interviews resulted in four themes, including common emotional and behavioural responses towards SMI patients, possible reasons for stigmatisation, negative feelings about stigmatised experiences, and effective coping methods. Important messages on stigmatisation included: (1) the patients believed that stigmatisation occurred anytime and anywhere with negative verbal and behavioural expressions; (2) the main reasons for stigmatisation perceived by patients and professionals were very similar, including inadequate knowledge of mental illness, ineffective communication, and misunderstanding about their illness mostly learnt from relatives and the mass media; and (3) most patients expressed inferior and stressful feelings regarding recent experiences of stigmatisation; and (4) their effective ways of coping, including compliance with medication and regular follow-up, ignoring negative thoughts, explaining more to people about their illness, establishing better social support, and managing their emotions.

Discussion

In this study, the total DDS and self-esteem scores were relatively higher than those reported in a 2-year study of 88 psychiatric patients in the US.[2] Nonetheless, our patients' secrecy and withdrawal were relatively lower and caused less harm secondary to further social isolation and reinforcement of internalised stigmatisation.[1,2,5] Hong Kong patients demonstrated greater efforts to cope with stigmatisation of mental illness such as positively seeking social support from people, openly

TABLE 1. Characteristics of patients and family caregivers at baseline*

Characteristics	Those who completed two assessments			Those who dropped out at 1-year follow-up		
	Site A (n=118)	Site B (n=120)	Total (n=238)	Site A (n=14)	Site B (n=18)	Total (n=32)
Patients						
Female	72 (61.0)	78 (65.0)	150 (63.0)	9 (64.3)	11 (61.1)	20 (62.5)
Male	46 (39.0)	42 (35.0)	88 (37.0)	5 (35.7)	7 (38.9)	12 (37.5)
Age (years)	38.12±9.81	37.31±9.32	37.72±9.81	37.23±10.32	36.81±9.62	36.90±9.32
Education level						
Primary school or below	16 (15.5)	15 (12.5)	31 (13.0)	2 (14.3)	3 (16.7)	5 (15.6)
Secondary school	88 (74.6)	89 (74.2)	177 (74.4)	10 (71.4)	13 (72.2)	23 (71.9)
Tertiary	14 (11.9)	16 (13.3)	30 (12.6)	2 (14.3)	2 (11.1)	4 (12.5)
Duration of mental illness (months)	33.2±14.23	31.83±12.02	32.31±12.82	31.84±12.02	32.31±13.52	31.81±14.02
Primary psychiatric diagnosis						
Bipolar affective disorders	13 (11.0)	12 (10.0)	25 (10.5)	1 (7.1)	2 (11.1)	3 (9.4)
Psychotic disorders	23 (19.5)	24 (20.0)	47 (19.7)	3 (21.4)	4 (22.2)	7 (21.9)
Schizophrenia	44 (37.3)	46 (38.3)	90 (37.8)	5 (35.7)	6 (33.3)	11 (34.4)
Unipolar affective disorders (eg major depression)	28 (23.7)	26 (21.7)	54 (22.7)	3 (21.4)	4 (22.2)	7 (21.9)
Others (eg dual diagnoses)	10 (8.5)	12 (10.0)	22 (9.2)	2 (14.3)	2 (11.1)	4 (12.5)
No. of medical diseases	0.52±0.60 (0-4)	0.63±0.70 (0-5)	0.60±0.78 (0-5)	0.61±0.79 (0-3)	0.68±0.80 (0-4)	0.64±0.87 (0-4)
No. of family members living with patient	2.32±0.93 (0-4)	2.13±0.98 (0-5)	2.24±0.97 (0-5)	2.62±1.29 (1-5)	2.12±1.74 (0-5)	2.45±0.89 (0-5)
Psychiatric medications						
Anti-depressants	36	40	76 (31.9)	3 (21.4)	5 (27.8)	8 (25.0)
Anti-convulsants	3	3	6 (2.5)	1 (7.1)	1 (5.6)	2 (6.3)
Atypical anti-psychotics	24	24	48 (20.2)	3 (21.4)	4 (22.2)	7 (21.9)
Conventional anti-psychotics	19	18	37 (15.5)	2 (14.3)	3 (16.7)	5 (15.6)
Lithium salts	3	3	6 (2.5)	1 (7.1)	1 (5.6)	2 (6.3)
Both anti-depressants and anti-psychotics	28	32	60 (25.2)	3 (21.4)	4 (22.2)	7 (21.9)
None	2	3	5 (2.1)	1 (7.1)	0 (0.0)	1 (3.1)
Re-hospitalisation in the past 6 months						
No.	0.49±0.41	0.51±0.37	0.50±0.48	0.50±0.42	0.54±0.37	0.52±0.45
Length (days)	9.12±4.18	10.08±5.33	9.82±6.88	8.51±5.78	9.48±3.77	8.90±3.15
No. of default follow-up in the past 6 months	0.20±0.24	0.28±0.27	0.22±0.25	0.22±0.29	0.29±0.36	0.25±0.31
No. of contact hours with caregivers per week	35.45±10.24	33.13±8.81	32.85±9.87	32.26±13.33	36.31±9.98	35.10±12.36
Psychiatric treatments						
CPN visits and education	60 (50.8)	63 (52.5)	123 (51.7)	8 (57.1)	10 (55.6)	18 (56.3)
Family therapy/education	4 (3.4)	5 (4.2)	9 (3.8)	1 (7.1)	1 (5.6)	2 (6.3)
Medication compliance management	70 (59.3)	72 (61.0)	142 (59.7)	8 (57.1)	11 (61.1)	19 (59.4)
Psycho-education	80 (67.8)	78 (65.0)	158 (66.4)	9 (64.3)	9 (64.3)	18 (56.3)
Social and work skills training	41 (34.7)	44 (36.7)	85 (35.7)	5 (35.7)	5 (35.7)	10 (31.3)
Others (relaxation and self-regulation)	25 (21.2)	28 (23.3)	53 (22.6)	4 (28.6)	4 (28.6)	8 (25.0)
Family caregivers						
Female	65 (55.6)	68 (57.1)	133 (56.4)	9 (60.0)	11 (57.9)	20 (58.8)
Male	52 (44.4)	51 (42.9)	103 (43.6)	6 (40.0)	8 (42.1)	14 (41.2)
Age (years)	45.21±10.02	47.45±9.77	46.78±12.23	40.53±10.55	48.05±11.56	46.90±10.96
Education level						
Primary school or below	25 (21.4)	20 (16.8)	45 (19.1)	2 (13.3)	4 (21.1)	6 (17.7)
Secondary school	70 (59.8)	73 (61.3)	143 (60.6)	10 (66.7)	12 (63.2)	22 (64.6)
Tertiary	22 (18.8)	26 (21.9)	46 (19.5)	3 (20.03)	3 (15.8)	6 (17.7)
Relationship with patient						
Child	25 (21.4)	23 (19.3)	48 (20.3)	3 (20.0)	4 (21.1)	7 (20.6)
Parent	38 (32.5)	39 (32.8)	77 (32.6)	5 (33.3)	5 (26.3)	10 (29.4)
Sibling	9 (7.7)	10 (8.4)	19 (8.1)	1 (6.7)	2 (10.5)	3 (8.8)
Spouse	41 (35.0)	43 (36.1)	84 (35.6)	5 (33.3)	7 (36.9)	12 (35.3)
Others	4 (3.4)	4 (3.4)	8 (3.4)	1 (6.7)	1 (5.3)	2 (5.9)
Monthly household income (HK$)						
≤5000	6 (5.1)	7 (5.9)	13 (5.5)	1 (6.7)	2 (10.5)	3 (8.8)
5001-10 000	26 (22.2)	25 (21.0)	51 (21.6)	3 (20.0)	4 (21.1)	7 (20.6)
10 001-20 000	45 (38.5)	48 (40.3)	93 (39.4)	6 (40.0)	7 (36.8)	13 (38.2)
20 001-30 000	28 (23.9)	26 (21.8)	54 (22.9)	3 (20.0)	4 (21.1)	7 (20.6)
>30 000	12 (10.3)	13 (10.9)	25 (10.6)	2 (13.3)	2 (10.5)	4 (11.8)

* Data are presented as mean±SD or No. (%)

TABLE 2. Multiple regression analyses using the Discrimination and Devaluation Scale as the dependent variable

| Variable	β	T	df	P value
Baseline				
Rosenberg Self-Esteem Scale	-0.17	-3.54	236	0.0008
Patient age	0.14	3.09	236	0.001
Brief Psychiatric Rating Scale	0.14	3.01	235	0.001
No. of psychiatric treatments received	0.13	2.49	235	0.005
Specific Level of Functioning Scale	-0.12	-2.38	236	0.008
Duration of illness	0.11	2.26	236	0.01
Model summary: R²=0.82, adjusted R²=0.81, F=40.72, P<0.001				
1 year				
Rosenberg Self-Esteem Scale	-0.18	-3.49	236	0.001
Brief Psychiatric Rating Scale	0.16	3.15	235	0.002
Length of re-hospitalisation	0.15	3.02	236	0.001
Specific Level of Functioning Scale	-0.15	-3.00	235	0.001
Patient age	0.14	2.69	236	0.004
Level of Expressed Emotion Scale	0.12	2.25	236	0.01
Model summary: R2=0.81, adjusted R2=0.80, F=38.78, P<0.001				
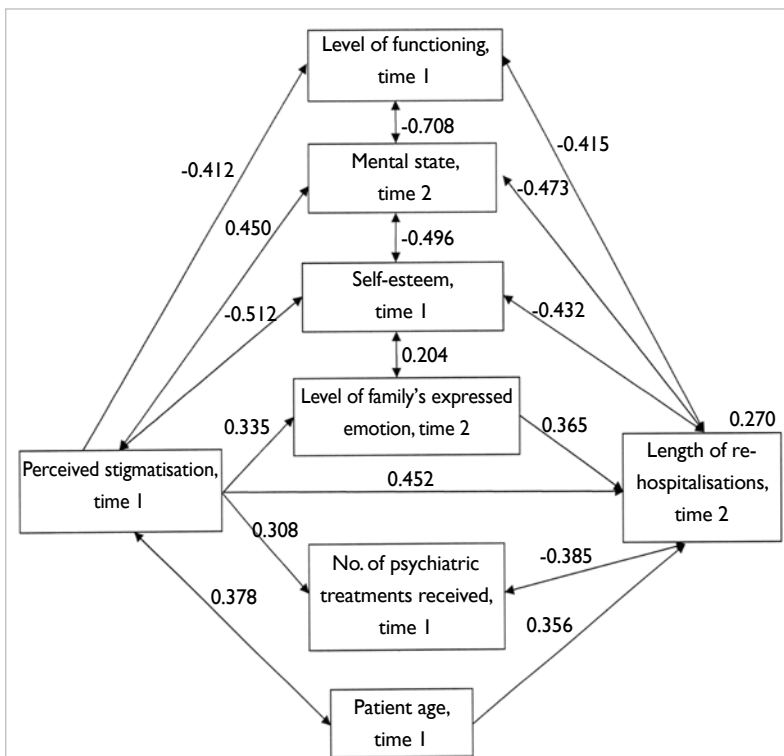
FIG. Path diagram of perceived stigmatisation of patients with severe mental illness in predicting the length of re-hospitalisation at 1 year and mediating factors*

* With maximum likelihood estimation, the Discrimination and Devaluation Scale predicts the length of re-hospitalisation at 1 year: goodness-of-fit index CMIN/df=1.529, df=412, P=0.0005, Tucker Lewis Index=0.916 (P>0.9), Comparative Fit Index=0.925 (P>0.9), Normed Fit Index=0.904 (P>0.9), and Root Mean Square Error of Approximation=0.047 (P<0.05) with 90% CI of 0.040-0.054

talking about the illness, and facing up to potentially stigmatising situations.

Patients' functioning, mental state, and self-esteem were significantly worsened and their family's overall caregiving burden, needs for community support services, and length of re-hospitalisations were significantly increased over 1 year. Mental health care providers should be aware of the negative longer-term effects of this perceived stigmatisation on community-dwelling SMI patients. Fortunately, the local health professionals' stereotypes and restrictions toward these patients were lower than those in western studies and not correlated to the patients' perceived stigmatisation. The mental health professionals in Hong Kong reported a high rate of acceptance of those with SMI.[6] Perception of responsibility for a mental illness, together with myths of dangerousness and violence in people with SMI, may be culture-related and require further investigation.

Patients' symptom severity, psychosocial functioning, self-esteem, and duration of illness and family expressed emotions are associated with their own perceived stigmatisation.[1,2] As indicated by the focus group interviews, the behavioural consequences of stigma (eg rejection and avoidance by others) affected most patients with SMI. Perceived stigma produced negative changes in feelings, attitudes, and behaviours for both the patients and family members at 1 year. High expressed emotion was associated with reported effects of perceived stigma in both patients

and their families (such as lowered self-esteem and increased family burden), which is consistent with the perceived effect of stigma on schizophrenic patients and families in China.[7] Perceived stigma of patients strongly affected their levels of perceived expressed emotion by family members. Therefore, directly addressing the perceived stigma and the destructive internalisation of negative self-images can decrease family members' expressed emotion and in turn reduce patients' relapse rates. The more chronic the course of the illness, the higher the patients' perceived stigmatisation and thus the more they need treatments/services. Early educational intervention may minimise long-term undesirable effects in both patients and their families.

Patients' perceived stigmatisation was associated with the length of re-hospitalisation after 1 year, as mediated by patients' self-esteem and families' expressed emotion. This is consistent with the key assumption of the modified labelling theory, namely that the stigma induced by being diagnosed/labelled with a mental illness results in a spoiled identity,[2] which is linked to negative psychosocial outcomes in terms of employment, self-esteem, and psychosocial functioning. Such negative consequences affect patients' mental condition and contribute to their illness relapse.[1,2] In addition, the patients' mental state (or symptom severity) and self-esteem were associated with both the level of their perceived stigmatisation and re-hospitalisation at both time points. These two patient factors also affect the level of perceived stigmatisation and the course of illness.[1]

Stigmatised patients may be denied access to important social roles.[8] Nonetheless, in the focus group interviews, many patients were able to envisage stigma-coping strategies and avenues for positive change (such as good drug compliance and emotion management and establishing a better social support network). These strategies can help patients develop a sense of empowerment and enhance their self-esteem and ability to manage their daily lives.

A few limitations of this study are worth noting. First, the study samples were recruited from two outpatient settings only and might not be representative. Second, the sample consisted of a high proportion of females (63%) in the two major illness groups (58% in schizophrenia and other psychotic disorders and 35% in affective disorders) and psychiatric nurses (60%) and thus could not fully reflect the gender patterns of these mental

disorders[8,12] or the composition of community mental health care teams in Hong Kong. Third, only important patient, family, and staff factors were selected for model testing; many potential confounders (such as medication compliance and social support) should have been included. Lastly, the illness relapse could have been measured by changes in symptom severity and non-adherence to treatment, not just by number and length of psychiatric re-hospitalisations.

Patients' perceived stigmatisation and number of re-hospitalisations can predict illness relapse of SMI patients. Development of valid measurement and design of effective interventions is needed.

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Health outcomes, community resources for health, and support strategies 12 months after discharge in patients with severe mental illness

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KEY MESSAGES

1. Social functioning and general psychopathology were predictors of quality of life (QOL) 12 months after hospital discharge in patients with severe mental illness (SMI).

2. Patients rehospitalised for relapse were associated with non-compliance with prescribed treatment, poor physical health, and inadequate personal and community living skills.

3. A dynamic interplay of the empowering/disempowering experiences with regard to spark of hope to carry on with life, a desire to move from institutional to community living, redefining oneself, a willingness to volunteer, and engagement in treatment that enhance or hinder recovery resulted in improved/deteriorated QOL

in community living or readmission.

4. Clinical and personal recovery in patients with SMI is complementary.

5. Empowerment is the key to personal recovery.

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Introduction

In 2009, a recovery-oriented multidisciplinary case management model was developed for patients with severe mental illness (SMI). In 2010, the Hospital Authority launched the Personalised Care Programme (PCP) to provide a patient-centred service to enhance recovery in the community. Quality of life (QOL) is a main outcome measure. Based on the human functioning perspective, patients with SMI can live in the community with a self-perceived high QOL if they experience less severe symptoms, are able to perform adaptive functioning, receive appropriate help, and if their family caregivers do not perceive the burden of care to be too overwhelming. Personal recovery is defined as "a deeply personal, unique process of changing one's attitudes, values, feelings, goals, skills and/or roles … [in order to live] a satisfying, hopeful and contributing life even with the limitations caused by illness".[1] Thus, patients with SMI can live in the community with a self-perceived high QOL if they are engaged in a dynamic interplay of individual and environmental characteristics that enhance recovery. From an ecological perspective, individuals have innate potential that contribute to behavioural variability. In this study, environments refer to the inter-relationships between individuals with SMI and their family, neighbourhood, and the psychiatric, general health care, social welfare, and community support services.

Methods

This prospective cohort study was conducted from April 2010 to October 2012. Patients with SMI, their family caregivers, and various stakeholders (including service users and psychiatric and community-based service providers) were included. A total of 347 patients diagnosed with SMI admitted to Castle Peak Hospital were assessed at discharge (T1) [n=347], and 2 months (T2) [n=271], 6 months (T3) [n=180], and 12 months (T4) [n=180]. Only 103 patients completed assessments in all four time points. In addition, 126 caregivers were interviewed at T1 of whom 76 completed the interview at T2, 33 at T3, and 22 at T4. Only 13 completed all interviews in all four time points.

A total of 99 participants were interviewed: 40 patients with SMI, nine family caregivers, and 50 service providers from both the public sector and non-governmental organisations. Of those who completed interviews in a minimum of two time points, 11 had a positive change and 12 had a negative change in World Health Organization QOL scores. Fifteen were hospitalised within 6 months of discharge, of whom six were discharged a second time to a half-way house.

The QOL of patients with SMI was measured using the World Health Organization QOL – Brief Form; the mental health state was measured using the Positive and Negative Syndrome Scale; functional level was measured using the Specific Level of

Functioning Scale; care needs were measured using the Camberwell Assessment of Need; and Family caregivers' burden was measured using the Family Burden Interview Schedule. Consistency was ensured across assessors through inter-rater reliabilities and regular checks. Qualitative interview was used to elicit narratives about mental illness, treatment, community living, and barriers or facilitators to recovery. Interviews with service providers focused on the care challenges as well as their views on strategies and resources for mental health and interdisciplinary services.

Results

Predictors of quality of life

Physical illness significantly affected QOL in terms of physical health, general psychopathology symptoms, level of functioning, and care needs (Table 1). Patients with family caregivers had better QOL (P=0.029), fewer symptoms (P<0.001) and unmet needs (P=0.024), and better social functioning (P=0.014) and community living skills (P=0.001) than those without. Patients with repeated hospitalisation had a significantly poorer level of functioning in self-maintenance and community living skills than those without. Patients' perceived QOL was positively associated with their level of functioning and negatively associated with their negative symptoms, general psychopathology symptoms, unmet needs, and total number of needs.

From T1 to T4, patients experienced an increase in their symptoms and a decrease in their specific level of functioning. Change in their overall

TABLE 1. Correlations between quality of life, symptom severity, functioning level, care needs, and family burden

Outcome	World Health Organization Quality of Life-Brief version					
	Total score	Overall quality of life	Social relationship	Environment	Physical health	Psychological health
Positive and Negative Syndrome Scale						
Total score	-0.279†	-0.151†	-0.111*	-0.233†	-0.306†	-0.268†
Positive symptoms	-0.088	-0.026	-0.005	-0.113*	-0.088	-0.090
Negative symptoms	-0.174†	-0.101	-0.124*	-0.120*	-0.147†	-0.168†
General psychopathology symptoms	-0.322†	-0.178†	-0.115*	-0.265†	-0.375†	-0.307†
Specific Level of Functioning Scale						
Total score	0.230†	0.062	0.188†	0.145†	0.211†	0.192†
Self-maintenance	0.206†	0.085	0.158†	0.142†	0.248†	0.119*
Physical functioning	0.235†	0.189†	0.103	0.141†	0.348†	0.182†
Personal care skills	0.105	-0.033	0.145†	0.090	0.072	0.023
Social functioning	0.319†	0.161†	0.284†	0.181†	0.250†	0.300†
Interpersonal relationships	0.292†	0.132*	0.308†	0.137*	0.199†	0.278†
Social acceptability	0.213†	0.154†	0.051	0.207†	0.257†	0.194†
Community living skills	0.121*	-0.012	0.090	0.085	0.121*	0.095
Activities	0.089	-0.003	0.051	0.079	0.069	0.090
Work skills	0.116*	-0.016	0.097	0.069	0.132*	0.076
Camberwell Assessment of Need						
Total No. of met needs	-0.178†	-0.146†	-0.164†	-0.105	-0.130*	-0.169†
Total No. of unmet needs	-0.391†	-0.259†	-0.305†	-0.295†	-0.362†	-0.301†
Total No. of needs	-0.361†	-0.259†	-0.299†	-0.250†	-0.308†	-0.300†
Family Burden Interview Schedule						
Total score	-0.012	0.090	0.015	0.054	-0.119	0.006
Financial burden	-0.050	0.056	-0.017	-0.052	-0.111	0.012
Effect on family routine	0/019	0.085	0.015	0.069	-0.048	0.022
Effect on family leisure	0.015	0.132	0.055	0.085	-0.118	0.017
Effect on family interaction	-0.038	0.085	-0.007	0.049	-0.098	-0.066
Effect on family physical health	0.079	-0.050	0.028	0.081	0.032	0.107
Effect on family mental health	0.000	-0.003	0.042	0.149	-0.193*	-0.009

* P<0.05
† P<0.01

QOL was not significant, except for improvement in psychological health and environment. Between T1 and T2, negative symptoms (P<0.001) and general psychopathology symptoms (P=0.002) increased significantly, whereas self-maintenance (P=0.001), social functioning (P<0.001), and community living skills (P<0.001) decreased significantly. The total number of unmet needs remained similar over the 12-month period, and was mostly related to finances, psychological distress, looking after the home, sexual expression, child care, psychotic symptoms, and physical health.

Social functioning and general psychopathology were the two predictors of patients' QOL. General psychopathology had the most significant negative impact on QOL at T1 and T2, whereas social functioning had the most significant positive impact on QOL at T3 and T4. Of the 180 patients who completed the T4 assessment, 94 experienced an improvement in their perceived QOL from T1 and 86 had no improvement, with negative symptoms being the only predictor. Self-perceived QOL was positively associated with functioning but negatively associated with symptom severity and unmet care needs. This supports our hypothesis that patients with SMI can live in the community with self-perceived high QOL if they have less symptom severity, improved adaptive functioning, and support for their care needs.

TABLE 2. Empowering and disempowering experiences that enhance or hinder the recovery process of patients with severe mental illness

Components of the recovery process	Empowering experiences	Disempowering experiences
Spark of hope to carry on with life (existential encounters with life-affirming events resulting in cognitive efforts to renew one's will to live)	- Genuine kindness and empathetic caring in encounters with family, friends, service providers, and others, leading to an awakening of hope in life - Existential encounters with nature or spirituality inspiring a spark of hope in life	- Confronted with indignities that hurt one's sense of integrity and dignity, and provoke harmful thoughts or harmful behaviours towards oneself/others
Desire to move from institutional to community living (expression of a wish to reclaim control of one's life by recouping one's strength and ability to care for oneself and live independently)	- Desire to reclaim control of one's life by taking personal responsibility for one's own care - Family commitment to support individuals by focusing on their strengths and desire to engage in new roles in life	- Cognitive difficulty in recognising one's illness - Engaging in behaviour that outwardly demonstrates one's readiness for independent living with the aim of fulfilling the 'standard criteria' for discharge - Unfriendly and sceptical neighbours
Redefining oneself (self acceptance and self-adaptation through goal-directed thinking in living with the mental illness)	- Narrative of self-transformation to renegotiate the identity shattered by mental illness. The narrative illuminates goal-directed thinking to define needs and future plans - Narrative of self-acceptance and self-adaptation in living with the mental illness	- Narrative of the self as a victim of mental illness where one's recovery depends on others or where one perceives no relation between one's own behaviour and outcomes - Estranged from family and relatives, resulting in social isolation and a lack of confidence that one would be accepted by other people - Holding a stigmatised view of oneself, which diminishes one's self-esteem and causes one to doubt one's ability to find a job, earn a livelihood, and take care of one's family
Gaining a sense of normalcy in activities of daily living (knowing how to self-manage the resources and options that are available for independent living in the context of a supportive family relationship and a friendly community)	- Acquiring the resources to self-manage one's life. Such resources include finances, housing, healthcare, and employment opportunities - Experiencing love and belonging with family and friends, neighbourhood, and community - Developing capacities for achieving one's goals, such as occupational training, emotion and anger management, health self-management, arts and crafts work, and personal hobbies	- Difficulties achieving stability in housing and finances, suffering from physical health problems, having a difficult relationship with family and friends, and living in an unfriendly neighbourhood
Willingness to volunteer (meaningful community engagement by offering help to the needy or contributing to peer support services)	- Offering help and support to in-patients, thereby gaining recognition from others as well as enhanced self-esteem - Gaining a sense of belonging and meaningful community engagement by becoming actively involved in volunteer services and self-help group activities - Expressing a sense of contribution and value to society	- Service providers' rigid sense of role and boundaries negatively affect individuals who may wish to also play a helping role - Inadequate professional support for self-help groups
Engagement in treatment (being engaged in the recovery process by moving from being a passive recipient to an active participant in managing one's treatment)	- Moving from being a passive recipient to an active participant along the iterative treatment trajectory - Having a positive therapeutic alliance with service providers - Demonstrating capabilities in medication self-management - Enhanced self-efficacy by participating in psycho-education seminars and health self-management workshops - Experiencing shared power in mutual support groups	- Being disengaged in treatment planning - Being disengaged from the prescribed treatment regimen, resulting in a deterioration in one's level of functioning and mental alertness

Predictors of hospitalisation

Respectively at T2, T3, and T4, 9.1% (32/347), 11.8% (41/347), and 12.7% (44/347) of patients were hospitalised for relapse, and 22, 16, and 20 of them were interviewed. Reasons for hospitalisation included irregular drug compliance/refusal of medication and irregular/defaulted follow-ups. Non-hospitalised patients had significantly better community living skills (Z=-3.057, P=0.002) and personal care skills (Z=-2.498, P=0.012) at T2, skills in activities (Z=-2.538, P=0.011) and personal care skills (Z=-2.538, P=0.011) at T3, and QOL-environment (Z=-2.439, P=0.015) at T4 than hospitalised patients. Increase in non-compliance with medication and the number of unmet needs predicted hospitalisation of 16 participants at T3. Increase in frequency of hospitalisation and poorer physical health predicted hospitalisation of 20 participants at T4.

TABLE 3. Empowering strategies and community resources for mental health that support the recovery process

Recovery process	Empowering strategies	Community resources for mental health
Spark of hope to carry on with life (existential encounters with life-affirming events resulting in cognitive efforts to renew one's will to live)	- Capacity-building activities to enhance resilience and learn hopefulness. - The conscious use of patient-centred and strengths-focused communication by service providers to promote hopefulness and enhance empathetic interactions.	- Opportunities to engage in outdoor activities, enabling contact with refreshing surroundings and nature. - Opportunities to participate in social or religious groups that promote the social inclusion of individuals with mental illness and provide a sense of belonging.
Desire to move from institutional to community living (expression of a wish to reclaim control of one's life by recouping one's strength and ability to care for oneself and live independently)	- Respectful collaboration between individuals, family caregivers, and service providers in discharge planning, which supports and encourages functional as well as existential recovery. - Encouragement, tolerance of risk, and respect for the individual's choice shown by service providers, balanced with duty-of-care obligations. - Development and consolidation of skills for self-efficacy and management, such as behavioural skills in stress reduction, symptom identification, and medication management.	- Integrating in-patient and community psychiatric care to provide continuity of services, supporting individuals in their efforts to live independently. - Availability and access to a half-way house or long-stay home.
Redefining oneself (self-acceptance and self-adaptation through goal-directed thinking in living with the mental illness)	- Development of a positive therapeutic alliance in formulating individualised service plans. - Development of the individual's existing strengths, resources, and skills to promote and facilitate the process of redefinition. - Involving family members in their role as caregivers by providing support and facilitating the development of effective skills in coping and adapting to living with mental illness.	- Access to and availability of social and welfare resources to meet the needs of individuals in the areas of housing and financial security, health care, occupational opportunities, and personal needs. - Access to community resources for promoting mental health and well-being, including the development of meaningful social relationships, engagement in activities for personal growth, and enjoyment and achievement of goals. - Availability of appropriate and varied occupational training and employment opportunities.
Gaining a sense of normalcy in activities of daily living (knowing how to self-manage the resources and options that are available for independent living in the context of a supportive family and a friendly community)	- Building upon the capacity of individuals and caregivers to find everyday solutions to everyday problems through training in social and interpersonal skills, psycho-education, family/personal therapy, stress management, problem-solving skills, and occupational training. - Partnership and communication between different social sectors and services that adopt empowering options in crisis interventions.	- Access to social networks that provide support and a sense of community to individuals with SMI throughout their illness trajectory. - Public education for promoting understanding, awareness, and acceptance; removing stigma; and changing negative attitudes about mental illness
Willingness to volunteer (meaningful community engagement by offering help to the needy or contributing to peer support services)	- Engagement and training of peer specialists and volunteers as part of the mental health care system. - The belief, respect, and commitment of service providers to power sharing and flexible boundaries for the 'helper role'.	- Incorporation of a participatory practice approach to existing community-based mental health wellness services. - Embracing the philosophy of peers as experts in their illness to provide support to others in recovery and promote mutual helping relationships.
Treatment engagement (being engaged in the recovery process by moving from being a passive recipient to an active participant)	- Positive therapeutic alliance, active collaboration and shared decision making between individuals and service providers in designing service or treatment plans about medication, health behaviour for well-being, crisis plans, advance directives, enduring powers of attorney, recovery plans, and risk safety plans (WHO, 2010). - Case management using the model of flexible assertive community treatment including collaboration and communication between multidisciplinary teams, in line with individual needs of service users. - Use of balanced advance directives and community treatment orders that respect individual autonomy and preferences for treatment while carrying out safe and effective interventions in times of relapse.	- Availability of case-managers, providers, and effective services in the community to identify risks and carry out care plans for individuals. - Availability of and access to resources that promote self-efficacy in illness management through psycho-education and community-based programmes to consolidate and support treatment engagement. - Promoting and supporting peer support groups and shared power in partnership with psychiatric and community MH service providers as well as governmental MH policy makers.

The perceived care burden of family caregivers

The three major burdens of care on family caregivers were financial burden, effects on family routine, and effect on family interaction. The family caregivers of patients who were hospitalised for relapse reported a higher level of family burden.

The multi-faceted recovery process

The six iterative components of recovery were: a spark of hope to carry on with life, desire to move from institutional to community living, redefining oneself, gaining a sense of normalcy in activities of daily living, willingness to volunteer, and engagement in treatment (Table 2). Empowering process promoted progress and was a buffer for disempowering experiences, whereas disempowering process hindered progress or triggered a relapse.

Association between recovery process and health outcome

Interplay between empowering and disempowering experiences and patients' health outcome involved (1) community living and positive QOL change, (2) community living and negative QOL change, and (3) hospitalisation within 6 months of discharge. A positive QOL change involved patients' active engagement in treatment, positive alliance with community service providers, receiving occupational training and financial stability, reconciliation with family members, social support, friendly neighbourhood, and maintaining personal hobbies and religious practices. Negative QOL change involved challenges in adjusting life with mental illness, poor physical health, noisy or inconsiderate neighbours, sense of loneliness owing to estrangement from family, low self-esteem, and doubt about their ability to live independently.

Four patterns of events that led to hospitalisation within 6 months of discharge included (1) cognitive difficulty in recognising their illness, but a desire to move to community living resulted in outward behaviour masquerading as readiness to be discharged; (2) being confronted with indignities that hurt their sense of integrity and dignity and triggered harmful thoughts towards oneself or others; (3) disengagement from the prescribed treatment regimen that resulted in deterioration in level of functioning and mental alertness; and (4) the iterative trajectory of chronic mental illness that required self-acceptance and insight for triggers of symptoms and relapse that may require voluntary hospitalisation.

Empowering strategies and mental health resources

Based on the empowering and disempowering experiences of patients in relation to the recovery process, the views of family caregivers and service providers, including psychiatric and non-governmental organisation service providers, were elicited from the interviews (Table 3).

Discussion

Our study results are consistent with those of other longitudinal studies in other countries.[2,3] Non-compliance with medication regimen, deterioration in self-perceived QOL, physical health, and frequency of hospitalisation were predictors of readmission. This is consistent with findings in another study.[4] Personal recovery is a multi-faceted process that comprises six components. This concurs with the findings of other qualitative studies.[5] Empowerment is the key to personal recovery. Results of this study can be used to re-create environments and practices that promote and nurture the recovery process.

Limitations of study

Owing to the higher than expected attrition rate of both patients and family caregivers at T3 and T4, generalisation of results was compromised with the estimated power of 0.65, and attrition bias could not excluded. Further, patients with SMI who received psychiatric treatment and required no hospitalisation, or those with substance abuse were not represented in this cohort sample.

Acknowledgements

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Assertive community treatment for psychiatric patients with frequent hospitalisation

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KEY MESSAGE

Compared with usual treatment, assertive community treatment further reduces the readmission rate and psychiatric bed occupancy and improves contact time with professionals and some clinical parameters.

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Introduction

Modern psychiatric practice has shifted from institutional to community care, and state mental hospitals and psychiatric wards in many industrialised countries have closed.[1] De-institutionalisation reduces the costs of health care provision and enables discharged patients more freedom in the community. Patients have improved psychotic symptoms and increased life satisfaction. Nonetheless, under-funding in the de-institutionalisation process has produced a surge in homelessness, unemployment, and criminal offences, particularly in people with severe mental illness and/or other co-morbidities. Hospital readmission and non-compliance with treatment are also increased. Intensive case management and assertive community treatment (ACT) approaches support de-institutionalised mental patients in the community.[2,3] Nonetheless, such community care approaches do not always achieve the goals of decreasing the rate and duration of hospital admissions, impacting on accommodation and employment status, improving mental state and social functioning, and reducing the cost of psychiatric care. The practice, composition, and organisation of case management teams often vary. It is important to identify the effective factors in such interventions.[4]

In 1999, psychiatric in-patient services were shifted to the community and rehabilitation services were strengthened. The Hospital Authority decreased 19% of inpatient bed days and increased specialist psychiatric outpatient attendances and home visits. Kwai Chung Hospital was downsized from 1572 beds in 2000 to 1000 beds in 2007. Frequently readmitted psychiatric patients are refractory and account for significantly higher health care costs; the ACT is more cost-effective.[5] In 2008, the Hospital Authority funded the Intervention for Frequent Readmitters (IFR) project and established two community support teams. The Kwai Chung Hospital IFR team adopted ACT to provide round-the-clock, trans-disciplinary support to about 120 frequently readmitted patients. This study assessed the effectiveness of ACT and measured service utilisation of patients for 2 years.

Methods

This study was conducted from May 2010 to January 2012. A total of 70 patients aged 18 to 65 years with ≥3 admissions within the preceding year from 1 April 2007 to 31 December 2008 were included. Patients aged <18 or >65 years with mental handicap or dementia, or with substance use disorder but without a major co-morbid psychiatric diagnosis were excluded. Two historical groups of 70 and 59 patients with repeated hospitalisations who received usual treatment from 1 August 2005 to 31 August 2006 and from 1 May 2009 to 30 September 2010 were control groups 1 and 2, respectively.

The ACT was delivered by a multidisciplinary team led by a consultant psychiatrist. The case manager was either a psychiatric nurse or occupational therapist. The patient-to-staff ratio was around 1:15. The case managers provided home visits, family work, community orientation, budgeting advice, individual counselling, violence assessment, crisis intervention, liaison work services to patients, and emotional/logistic support to the families. The team met daily to discuss any clinical problems and met with supervisory staff weekly to update clinical progress and plan long-term rehabilitation. Patients could contact their case managers anytime. An alert was attached to the electronic clinical record of patients to indicate accident and emergency

TABLE 1. Baseline characteristics of the Assertive Community Treatment (ACT) and usual treatment (control) groups*

Parameter	ACT (n=70)	Control 1 (n=70)	Control 2 (n=59)	X²	P value
Gender				0.043	0.978
Male	39 (55.7)	38 (54.3)	33 (55.9)		
Female	31 (44.3)	32 (45.7)	26 (44.1)		
Priority follow-up				0.686	0.709
Yes	9 (12.9)	7 (10)	5 (8.5)		
No	61 (87.1)	63 (90)	54 (91.5)		
Principal diagnosis				0.239	0.888
Psychotic disorders	53 (75.7)	52 (74.3)	46 (78)		
Others	17 (24.3)	18 (25.7)	13 (22)		
Co-morbid diagnosis (substance abuse/ personality disorder)				3.035	0.219
Yes	13 (18.6)	12 (17.1)	17 (28.8)		
No	57 (81.4)	58 (82.9)	42 (71.2)		
				F	P value
Age of onset (years)	26.9±9.48	25.36±8.61	27.54±9.37	0.993	0.372
Age of recruitment (years)	40.34±11.74	38.96±11.55	41.90±11.62	1.023	0.362
No. of readmission	3.59±0.89	3.71±1.12	3.32±0.68	2.939	0.055
Length of hospital stay (days)	123.83±64.27	139.44±76.02	124.85±73.68	1.025	0.361
No. of accident and emergency department attendances	6.59±7.63	7.20±9.30	4.58±2.84	2.212	0.112
No. of loss to follow-ups	1.39±1.84	1.46±2.02	1.97±2.57	1.360	0.259
Cumulative days of loss to follow-up	28.21±43.06	43.90±73.37	50.46±64.28	2.284	0.105
No. of unplanned readmission	0.81±0.87	1.34±1.51	0.63±0.95	6.818	0.001

* Data are presented as No. (%) or mean±SD

TABLE 2. Repeated measure ANOVA of outcomes for the Assertive Community Treatment (ACT) and usual treatment (control) groups

Parameter	Baseline			6 months		
	ACT (n=70)	Control 1 (n=70)	Control 2 (n=59)	ACT (n=70)	Control 1 (n=70)	Control 2 (n=59)
No. of readmissions	1.79±0.45	1.86±0.56	1.66±0.34	0.27±0.56	0.64±0.89	0.31±0.56
Length of hospital stay (days)	61.91±32.14	69.72±38.01	62.42±36.84	14.93±30.52	48.67±58.46	48.25±59.86
No. of accident and emergency department attendances	3.29±3.82	3.60±4.65	2.29±1.42	1.84±3.90	2.49±4.75	1.58±2.53
No. of lost to follow-up	0.69±0.92	0.73±1.01	0.98±1.29	0.59±1.12	0.70±1.20	0.51±1.22
Cumulative days of lost to follow-up	14.11±21.53	21.95±36.68	25.7±32.01	11.76±29.39	34.77±56.29	23.31±47.55
No. of unplanned readmissions	0.41±0.44	0.67±0.76	0.31±0.41	0.04±0.20	0.21±0.48	0.051±0.29

* P<0.05
† P<0.01
‡ P<0.001

TABLE 3. Linear mixed model for clinical outcome after Assertive Community Treatment (ACT) or usual treatment (control 2)

Parameter	ACT			
	Baseline (n=70)	6 months (n=70)	12 months (n=69)	18 months (n=69)
Brief Psychiatric Rating Scale	5.66±4.84	3.71±3.28	2.94±2.83	2.72±2.91
Specific Level of Functioning Scale	185.79±12.40	188.81±11.99	192.07±11.07	191.87±11.56
Quality of life				
Physical	61.56±16.54	60.66±17.77	63.59±16.72	59.84±17.86
Psychological	54.33±22.89	56.02±19.68	58.89±18.52	56.13±20.29
Social relationships	56.07±16.36	58.41±16.91	57.75±20.75	56.89±17.01
Environment	59.39±17.91	60.25±16.01	60.80±16.47	58.48±17.51

* P<0.05
† P<0.01
‡ P<0.001

department staff the need to liaise with the case manager with regard to any psychiatric problems. The resident psychiatrists provided continuous care to patients. The ACT lasted for 36 months during which all patients were actively engaged and retained in the service.

The service utilisation of patients was retrieved from the Clinical Data Analysis and Reporting System. These included the number of readmissions, length of stay in psychiatric hospital, number of attendances to an accident and emergency department, number of unplanned readmissions, frequency and duration of defaulting, pattern of drug use, and number of home visits by health professionals. Clinical outcomes were measured using the Brief Psychiatric Rating Scale, Specific Level of Functioning Scale, and World Health Organization Quality of Life Brief Questionnaire-HK.

Results

Respectively in the ACT and two usual treatment groups, 39, 38, and 33 of patients were men; the mean ages at illness onset were 26.90, 25.36, and 27.54; and the mean ages at recruitment were 40.34, 38.96, and 41.90. The principal diagnosis was

schizophrenia/psychotic disorder in 53, 52, and 46 patients; a co-morbid diagnosis was present in 13, 12, and 17 patients; and 9, 7, and 5 patients had a history of violence and received priority follow-up. The three groups did not differ significantly in baseline parameters (Table 1).

Repeated measures ANOVA for the service utilisation parameters (Table 2) and linear mixed model analysis for clinical outcome parameters (Table 3) were used. Over time, all three groups had fewer readmissions, shorter length of hospital stay, fewer accident and emergency department attendances, fewer numbers and days lost to follow-up, and fewer unplanned readmissions; ACT generally achieved better outcome than usual treatment.

Patients recruited in later period used significantly more new drugs than patients recruited earlier. More home visits were made to patients in usual treatment group 2 at baseline, but those in the ACT group received significantly more home visits than either control group during the three follow-up periods. The ACT group scored significantly higher in the Brief Psychiatric Rating Scale and the Specific Level of Functioning Scale over time, but not for quality of life.

12 months			18 months			Time			Group			Time x group	
ACT (n=69)	Control 1 (n=70)	Control 2 (n=57)	ACT (n=69)	Control 1 (n=69)	Control 2 (n=56)	F	Partial η^2	Post-hoc	F	Partial η^2	Post-hoc	F	Partial η^2
0.16±0.40	0.44±0.90	0.41±0.61	0.11±0.30	0.38±0.72	0.48 ±0.91	290.63‡	0.597	0>6,12,18	7.396‡	0.070	ACT<control 1	3.298‡	0.033
12.80±34.74	30.89±55.52	23.64±44.14	6.44±18.19	25.64±46.71	29.23±52.00	66.492‡	0.253	0>6>12,18	7.983‡	0.075	ACT<control 1 and 2	3.074‡	0.030
1.49±3.95	2.31±4.04	1.18±1.89	1.65±3.18	1.15±2.56	1.34 ±2.23	28.897‡	0.128	0>6>12,18	1.088†	0.011	-	2.773*	0.028
0.44±0.84	0.51±1.07	0.39±0.87	0.38±1.04	0.45±0.94	0.65 ±0.99	7.143‡	0.035	0>12,18	0.357	0.004	-	1.382	0.014
0.63±1.82	30.70±58.64	9.73±21.43	0.58±2.00	26.68±53.63	17.12±34.23	5.660†	0.028	6>12,18	9.452‡	0.088	ACT<control 1 and 2	3.168†	0.031
0.00±0.01	0.09±0.33	0.05±0.22	0.00±0.01	0.10±0.35	0.12 ±0.49	53.493‡	0.214	0>6,12,18	9.961‡	0.092	ACT and control 2<control 1	3.248†	0.032

	Control 2			Time (F)	Group (F)	Time x group (F)
Baseline (n=59)	6 months (n=59)	12 months (n=57)	18 months (n=56)			
6.78±4.19	5.17±3.10	5.56±3.95	7.90±4.33	14.051‡	20.765‡	10.133‡
181.62±12.55	183.17±16.56	184.81±11.92	179.50±12.74	4.467†	14.751‡	5.438†
58.68±16.89	58.83±16.58	60.73±13.94	57.27±17.28	2.734*	0.448	0.356
55.10±20.82	56.73±20.850	57.04±17.17	58.33±20.18	3.067*	0.306	0.309
46.86±19.63	45.21±21.38	47.88±19.07	44.33±18.00	0.488	13.101‡	0.222
53.56±15.66	57.35±15.64	61.46±16.47	57.67±16.92	3.680*	0.516	2.318

Discussion

The ACT is a relatively high intensity intervention, similar to the Dartmouth ACT Fidelity Scale. It significantly reduced readmission, bed occupancy, and duration of lost to follow-up, and increased patient adherence to medical treatment, as case managers were alert to patients lost to follow-up and keen to trace them back for treatment. As our patients were generally psychosocially underprivileged rather than mentally unstable, it is difficult to explain the clinical significance of gaining a few scores in outcome.

Most of the service utilisation parameters improved over time; this was in line with the de-institutionalisation process. Many novice naturalistic treatments were introduced during the interim period: use of new antipsychotics and new community rehabilitation approaches such as a recovery support outreach team, personalised care programme, and other case management programmes.

The success of the ACT may be associated with a high staff-to-patient ratio, all-time availability of case managers, the intensive treatment protocols, and a team of highly motivated, experienced, and competent staff. In addition, the alert label in the electronic clinical record encouraged communication between accident and emergency department staff and case managers. Furthermore, all patients were cared for by the same resident psychiatrists throughout the intervention period.

Limitations

All patients were recruited from a single region and may not be representative of Hong Kong. The assessment on clinical scales was performed by a clinician who was not blinded to the treatment group. The reliability and validity of the clinical outcomes could have been improved using a double-blind methodology. The service pledge to reduce the readmission rate and length of hospital stay may have inadvertently encouraged case managers to achieve the desired results. Randomised control trials are needed to confirm the results.

Acknowledgements

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Pathway of psychiatric care in Hong Kong

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K E Y   M E S S A G E S

1. Hospital doctors and general practitioners are gatekeepers of the pathway of psychiatric care in Hong Kong.

2. The median duration from problem onset to contact with first carer was 11.0 weeks and to psychiatric service was 42.0 weeks.

3. Gender, level of social support, presenting symptoms, diagnosis, and type of pathway taken influenced the duration to psychiatric service.

4. Understanding these factors facilitates the development of strategies that may shorten the delay in receiving psychiatric service.

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Introduction

It is estimated that over 15% of the general population suffer from some form of mental disorder.[1] According to the World Health Organization World Mental Health Survey Initiative, up to 50.3% of persons with serious mental disorder in developed countries and 85.3% in less developed countries receive no psychiatric treatment.[2] Early intervention reduces the risk of relapse and suicide, inpatient treatment, medication use, disruption to family and employment/development, and cost of treatment.[2] It is important to understand the help-seeking behaviour of such persons and to identify the factors that delay acquisition of psychiatric care, including individual factors (severity of symptoms and concepts about mental disorders), social factors (social support, social disadvantage, cultural factors), and health system factors (organisation and accessibility of health services, referral system).

A pathway study chronologically records the care received before presenting to specialist psychiatric services, providing information of different levels of filters and association between delays and clinicodemographic factors of patients.[3] We conducted a territory-wide study to examine the help-seeking behaviour of people with mental health problems, and to elucidate the factors that delay or speed up this process.

Methods

This study was approved by the local institutional ethical review boards and complied with the Declaration of Helsinki. It was conducted from July 2010 to November 2011. A total of 245 men and 456 women (mean±standard deviation [SD] age, 49.6±17.5 years) who presented for the first time to outpatient (n=614) or inpatient (n=87) psychiatric services in five clusters (New Territories West, New Territories East, Kowloon West, Kowloon Central, and Hong Kong East) of public hospitals were recruited.

Two trained research assistants attended each of the units for one month. Participants were interviewed with the World Health Organization Encounter Form, which is a semi-structured interview for a multi-cultural pathway study.[3] It records the carers (organisations or individuals), types of problem presented, treatment offered, and the times of illness onset, journey to carer, and referral. The end point of the pathway is defined as contact with any mental health professional.

In addition, participants were assessed using the Health of the Nation Outcome Scale (a 12-item instrument to evaluate the degree of impairment in behavioural, emotional, and social domains), the Social Support Rating Scale (for perceived instrumental and emotional support), and the Cumulative Illness Rating Scale (for chronic medical illness burden). Sociodemographics and psychiatric diagnosis (based on the tenth revision of International Classification of Diseases) were also recorded.

Results

The most common initial presenting problem was somatic symptoms (33.2%), in particular sleep disturbance (18.5%), followed by depression-related symptoms (23.7%) and anxiety-related or other

neurotic symptoms (21.3%). The diagnoses were F40-F48: neurotic, stress-related and somatoform disorders (33.5%), F30-F39: mood [affective] disorders (32.4%), F00-09: organic, including symptomatic, mental disorders (10.0%), and F20-F29: schizophrenia, schizotypal and delusional disorders (7.8%). The mean±SD Health of the Nation Outcome Scale score was 8.05±5.53, and the mean±SD Cumulative Illness Rating Scale score was 17.99±3.60.

Before presenting to specialist psychiatric services, 428 (61.1%) participants consulted one, 193 (27.5%) two, 70 (10.0%) three, and 10 (1.4%) four carers, with a mean±SD of 1.5±0.7 carers. A sum of 1064 carers were involved, including hospital doctors (n=416, 39.1%), general practitioners (n=364, 34.2%), and consultation-liaison services (n=73, 6.9%).

The pathway diagram illustrates the pathway of psychiatric care of at least 10% of the participants (Fig). Hospital doctors and general practitioners constituted approximately 80% of the first carers and made 275 (39.2%) and 269 (38.4%) referrals to the specialist psychiatric service, respectively. Non-medical carers included social workers (n=49, 7.0%) and police and the legal system (n=23, 3.3%). Recursive pathways were seen most commonly in those who went to hospital doctors or general

practitioners.

The durations to first carer and to psychiatric care were not normally distributed. Outliers with a very long delay were present, and thus median rather than mean duration was used. The median duration from problem onset to contact with first carer was 11.0 weeks and to contact with psychiatric services was 42.0 weeks. About 25% of participants presented to psychiatric services within 8 weeks, but another 25% took ≥155 weeks.

Duration was compared among sociodemographic groups, diagnosis groups, main presenting problems, and pathways taken (Table 1). Better social support (higher Social Support Rating Scale score) was associated with a shorter (compared with medium) duration to first carer (U=51523.5, P=0.017). Men took a shorter duration to reach psychiatric services than women (U=46314, P=0.016). Other sociodemographics (age, marital status, literacy, living arrangement, and monthly income) did not significantly influence the duration.

The duration from onset of main problems to contact with first carer was significantly shorter (compared with medium duration) in those with diagnosis of F20-F29 (U=12225.5, P=0.003) and F40-F48 (U=43473, P=0.020) [Table 1]. The duration to specialist psychiatric service was also the shortest
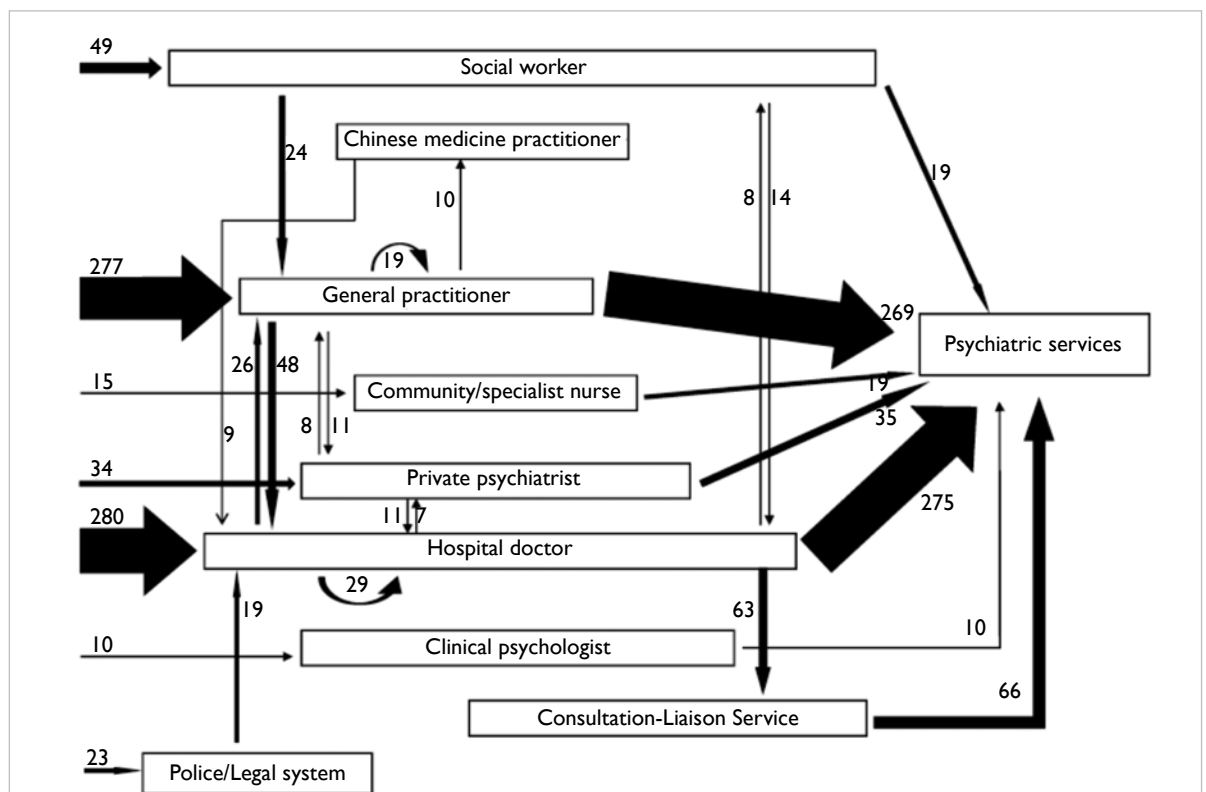

FIG. Pathway diagram: only pathways that were taken by at least 10% of participants are included. The number of participants at each step is indicated. Curved arrows represent recursive pathway.

for the diagnosis of F20-F29 (U=11864, P=0.001). In contrast, the duration to first carer was significantly delayed for the diagnosis of F30-F39 (U=41850.5, P=0.012) and F50-F59 (U=2555, P<0.001), and the duration to psychiatric care was significantly delayed for the diagnosis of F10-F19 (U=4864.5, P=0.017) and F50-F59 (U=2817, P<0.001). Participants who presented with a suicide attempt took the shortest time to reach first carer (U=7594.5, P=0.001) and psychiatric professional (U=5189, P<0.001), followed by those presenting with violence/aggression (U=8012, P=0.035). In addition, depression-related symptoms delayed presentation to first carer (U=35786.5, P=0.004) and psychiatric service (U=36352, P=0.032).

Participants who presented to hospital doctors took a shorter (than medium) time to consult the first carer (U=43058.5, P<0.001) and psychiatric service (U=40225.5, P<0.001). However, those who presented to general practitioners (U=43603.5, P<0.001) or other medical carers such as clinical psychologists and nurses (U=17481, P=0.028) experienced longer delays in reaching first carer and psychiatric care (P<0.001).

Variables that showed a trend of correlation at a level of significance of P<0.1 were entered into a logistic regression model. Consulting hospital doctors as the first carer, a higher Cumulative Illness Rating Scale score, and presenting with a suicidal attempt were predictors of reaching psychiatric service within 42 weeks (the median duration from onset of problems to meeting psychiatric professionals). In contrast, the odds of obtaining psychiatric services early were smaller for females, those who presented with organic symptoms, and with diagnosis of F10-19 and F50-59. When all predictors were considered together, whether a participant could reach psychiatric services within 42 weeks of problem onset could be predicted (X^2=76.29, P<0.001, Table 2).

Discussion

Better social support facilitates the help-seeking process. Family members and friends can encourage persons with psychiatric disorders to seek psychiatric services.[4] Programmes that educate family members about mental illness may speed up the initiation of help-seeking process.

After logistic regression analysis, organic symptoms and suicide attempts were predictors of the duration to contact with first carer or psychiatric care. Depression-related symptoms were often overlooked and did not trigger help-seeking pathways or mental health consultation. So too were organic symptoms, including symptoms of dementia. This may be due to a lack of public awareness of these symptoms and prevailing societal beliefs (eg old age is inevitably linked with cognitive

TABLE 1. Duration from problem onset to contact with first carer and psychiatric service

Parameter	No. of patients	Median duration (weeks)	
		From onset to first carer	From onset to psychiatric service
Age (years)			
<65	573	12.0	42.0
≥65	128	6.0	44.0
Gender			
Men	245	4.0	27.0*
Women	456	13.0	47.0*
Marital status			
Married	371	13.0	47.0
Others	330	9.0	33.0
Literacy			
Literate	652	11.0	44.5
Illiterate	49	13.0	36.0
Living arrangement			
Living alone	98	12.5	54.5
Living with others	603	11.0	38.5
Monthly income (HK$)			
<10000	349	8.0	38.5
≥10000	280	13.0	41.5
Social Support Rating Scale score			
<mean	336	17.0*	51.0
≥mean	365	5.0*	32.0
Diagnosis			
F00-F09	70	11.0	42.0
F10-F19	22	45.0	139.5*
F20-F29	55	0.5*	8.0*
F30-F39	227	18.5*	37.0
F40-F48	235	6.0*	41.0
F50-F59	19	182.5†	348.5†
Main problems			
Somatic symptoms	233	9.5	40.5
Depression related	166	18.0*	50.0*
Anxiety related	149	13.0	49.0
Organic symptoms	39	32.5	57.0
Suicidal attempt	35	0.0*	2.0†
Psychotic symptoms	33	2.0	14.0
Violence/aggression	32	2.0	6.5*
Alcohol/drug related	10	148.0	154.0
Interpersonal	4	0.0	14.5
First carer			
Hospital doctor	280	3.5†	24.0†
General practitioner	277	22.0†	70.5†
Other medical carer	71	18.5*	104.0†
Non-medical carer	73	1.0	26.0

* P<0.05, Mann-Whitney *U* test
† P<0.001, Mann-Whitney *U* test

TABLE 2. Logistic regression analysis for predictors of presentation to psychiatric service within 42 weeks of problem onset

Variable	B	SE	Odds ratio	P value
First carer: hospital doctor	0.90	0.18	2.46	<0.001
Cumulative Illness Rating Scale score	0.06	0.02	1.06	0.012
Main problem: suicidal attempt	1.50	0.50	4.49	0.003
Main problem: organic symptoms	-0.85	0.40	0.43	0.032
Diagnosis: F10-19	-1.59	0.54	0.21	0.003

decline). In addition, patients with mental and behavioural disorders due to psychoactive substance use (eg alcohol, opioids, cannabinoids) [F10-F19] or physiological disturbances and physical factors (eg eating disorders, non-organic sleep disorders, disorders associated with the puerperium) [F50-F59] had a longer duration to psychiatric services. These disorders were relatively less common and thus less awareness.

Programmes should aim to improve mental health literacy in the general public, particularly for symptoms/disorders that are associated with delays (eg depressive symptoms, symptoms of early dementia). In two national surveys of Australian adults in 1995 and 2003-04, the public showed better recognition of schizophrenia and depression and gave more positive ratings to interventions over 8 years following efforts to improve mental health literacy.[5]

General practitioners or other medical professionals as first carer was associated with significant delay in psychiatric consultation. It is challenging to detect and manage mental health problems in the primary care setting. The prevalence of anxiety and depression in the primary care setting was low; such an underestimation was due to somatisation of depressive symptoms, health beliefs, and short consultation time.[6] Knowledge of general practitioners about mental problems and treatment options should be enhanced through training courses. Depressed patients who present initially to the primary care service with somatic symptoms will eventually disclose their psychological symptoms following appropriate exploration.[7] Use of a brief self-administered screening questionnaire may help patients to identify their mild-to-moderate mental health problems and thus request help.[8]

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Use of the Historical, Clinical, Risk Management-20 to assess the risk of violence by discharged psychiatric patients

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K E Y   M E S S A G E S

1. The Historical, Clinical, Risk Management-20 (HCR-20) can be used reliably to assess the violence risk in discharged psychiatric patients.

2. Most violent outcomes can be predicted by the structured final risk judgement of the HCR-20 at 6 months but not at 12 months.

3. To improve violent risk assessment and management in Hong Kong, a structured evidence-based risk assessment instrument such as the HCR-20 is recommended for early detection of high-risk patients.

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Introduction

Priority follow-up (PFU) is provided to patients with poor mental health and a history of criminal violence or disposition to violence. The PFU status of a patient is categorised as non-PFU, PFU-target, and PFU-subtarget (most dangerous) and regularly reviewed by the treating team using unstructured clinical judgement, which may not be accurate or consistent. Structured professional judgement is more useful; it bridges the gap between the actuarial approach and clinical practice for risk assessment. The Historical, Clinical, Risk Management-20 (HCR-20)[1] is a guideline developed by forensic clinicians for mental health professionals to identify risk factors that are amendable to clinical intervention and to develop individualised risk management strategies. The HCR-20 has strong inter-rater reliability and significant predictive validity in post-release community violence, and moderate-to-large effect sizes.[2] This study used the HCR-20 to assess discharged psychiatric patients in Hong Kong.

Methods

This prospective cohort study was conducted from June 2010 to April 2012 at the Castle Peak Hospital. The PFU status was reviewed in a multidisciplinary meeting within 2 weeks of admission. Between 1 August 2010 and 30 November 2010, 82 male and 28 female consecutive patients discharged with a PFU-target or PFU-subtarget status were included. An equal number of patients with a non-PFU status matched for sex, age, and primary psychiatric diagnosis were controls (Table 1).

The HCR-20 includes a historical scale (10 static factors), a clinical scale (five items that evaluate current psychological functioning, state of symptoms, insight, and attitudes), and a risk management scale (assessing plan feasibility, social network support, and contextual factors). Ten items are dynamic and amendable to clinical intervention. Based on the assessment of risk factors and the estimated degree of intervention needed to prevent violence, patients were classified as low-, moderate-, and high-risk. Each item was rated 0 for absent, 1 for possibly or partially present, or 2 for definitely present. Total scores range from 0 to 40; higher scores indicate higher risk of violence. Each assessment took about 60 to 90 minutes to complete. There were seven raters from different psychiatric professions. Each rater assessed around 45 patients with an overlap of 50% to evaluate inter-rater reliability.

Violence was defined as actual, attempted, or threatened physical harm of another person. Acts of violence were divided into four categories. Violence that occurred at 6 and 12 months after discharge was recorded. All statistical analyses were conducted in R.[3] Inter-rater reliability of the HCR-20 was tested using intra-class correlations (ICCs). The predictive validity for the HCR-20 and PFU status was established using receiver operating characteristic (ROC) analysis that produces the area under the curve (AUC).[4]

Results

Of the 110 discharged patients with a PFU-target or PFU-subtarget status, 42 were at low risk, 50 at moderate risk, and 18 at high risk. No non-PFU patient was at high risk, but 25 were at moderate risk. Respectively at 6 and 12 months after discharge, 4.9%

TABLE 1. Characteristics of 220 discharged psychiatric patients

Postoperative day	No. (%) of patients	
	Priority follow-up (PFU) [n=110]	Non-PFU (n=110)
Male	82 (74.5)	83 (75.4)
Mean (range) age (years)	43.65 (19-78)	43.11 (18-65)
Marital status		
Single	56 (50.9)	57 (51.8)
Married	20 (18.1)	37 (33.6)
Divorced	25 (22.7)	11 (10)
Education		
Tertiary or above	8 (7.2)	9 (8.1)
Secondary	76 (69)	70 (63.6)
Primary	23 (20.9)	30 (27.2)
Unemployed	75 (68.1)	61 (55.4)
Primary diagnosis		
Schizophreniform disorders	70 (63.6)	70 (63.6)
Bipolar affective disorder	12 (10.9)	12 (10.9)
Personality disorder	6 (5.4)	6 (5.4)
Depressive disorders	4 (3.6)	4 (3.6)
Substance abuse disorder	12 (10.9)	12 (10.9)
Others	6 (5.4)	6 (5.4)
Presence of secondary diagnosis	31 (28.1)	23 (20.9)
Violent history	109 (99)	73 (66.3)
Past violent convictions	71 (65.5)	31 (28.1)
History of substance abuse	85 (77.2)	67 (60.9)
PFU status		
PFU-subtarget	11 (10)	0
PFU-target	99 (90)	0
Non-PFU	0	110 (100)

TABLE 2. Inter-rater reliability for items, subscales, total score, and final risk judgement of the Historical, Clinical, Risk Management-20

Scale and item	Intra-class correlation (95% CI)
Historical scale	
H1	0.56 (0.39-0.70)‡
H2	0.46 (0.27-0.62)‡
H3	0.36 (0.14-0.54)‡
H4	0.54 (0.36-0.68)‡
H5	0.92 (0.88-0.95)‡
H6	0.48 (0.29-0.64)‡
H7	0.64 (0.49-0.76)‡
H8	0.63 (0.47-0.75)‡
H9	0.79 (0.68-0.86)‡
H10	0.28 (0.06-0.47)†
Total	0.71 (0.57-0.80)‡
Clinical scale	
C1	0.43 (0.23-0.60)‡
C2	0.26 (0.03-0.45)†
C3	0.51 (0.32-0.66)‡
C4	0.40 (0.19-0.57)‡
C5	0.26 (0.04-0.46)†
Total	0.43 (0.22-0.59)‡
Risk management scale	
R1	0.38 (0.17-0.56)‡
R2	0.44 (0.24-0.60)‡
R3	0.63 (0.48-0.75)‡
R4	0.33 (0.12-0.52)‡
R5	0.23 (0.00-0.43)*
Total	0.37 (0.16-0.55)‡
Total score	0.57 (0.39-0.70)‡
Final risk judgement	0.73 (0.60-0.82)‡

* P<0.05
† P<0.01
‡ P<0.001

and 4% patients committed violence against property, 6.3% and 6.6% patients committed violence against people, 2% and 1% committed sexual violence, 13.2% and 11.1% committed verbal violence, and 4.4% and 0.5% were convicted of a violent offence. The PFU groups committed more violence than the non-PFU group at both time points.

The ICCs for HCR-20 items are shown in Table 2. The ROC analyses for the HCR-20 subscale, HCR total score, structured final risk judgement, and PFU status are shown in Table 3. The AUC values for HRC-20 structured final risk judgement were significant for violent conviction (AUC=0.68, P=0.02), violence against property (AUC=0.69, P=0.01), and violence against others (AUC=0.78, P<0.001) at 6 and 12 months. The structured final risk judgement for verbal violence (AUC=0.67, P=0.001) was only significant at 6 months, and was not significant for sexual violence at either time point. The PFU status predicted violent conviction, verbal violence, and violence against others at both time points (Table 3). The AUC of HCR-20 total score (AUC=0.63, P=0.002), structured final risk judgement (AUC=0.64, P<0.001), and PFU status (AUC=0.61, P=0.004) for any violence within the 12 months were all significant. The ROC curves for HCR total score, HCR judgement, and PFU were compared using the Delong test. The AUC of HCR total score (z=2.13, P=0.03) and structured final risk judgement (z=3.27, P=0.001) were higher than those of PFU for violence against property only.

Discussion

The inter-rater reliability for most HCR-20 items was fair to moderate. The ICC of the historical scale

TABLE 3. Area under the receiver operating characteristic curves for subscales, final risk judgement, and priority follow-up (PFU) status of the Historical, Clinical, Risk Management-20

Variable	Verbal violence	Violence against property	Violence against others	Sexual violence	Violent conviction
6 months					
Historical score	0.67†	0.61	0.70†	0.44	0.80‡
Clinical score	0.68‡	0.60	0.68*	0.34	0.72†
Risk management score	0.52	0.55	0.57	0.32	0.66*
Total score	0.67†	0.61	0.71†	0.37	0.79‡
Final risk judgement	0.67‡	0.69†	0.78‡	0.41	0.68*
PFU status	0.61*	0.44	0.69†	0.68	0.69*
12 months					
Historical score	0.57	0.54	0.64†	0.35	0.86
Clinical score	0.59	0.69*	0.72†	0.63	0.97*
Risk management score	0.46	0.41	0.59	0.61	0.98*
Total score	0.57	0.56	0.69†	0.52	0.96
Final risk judgement	0.59	0.67*	0.65*	0.52	0.96*
PFU status	0.62*	0.48	0.68†	0.48	0.98*

* $P<0.05$
† $P<0.01$
‡ $P<0.001$

was substantial, whereas the ICC of the clinical and risk management scales was moderate and fair, respectively. This may be because the HCR-20 was rated by case files only and dynamic factors may not have been fully reported. Nonetheless, the ICC for the structured final risk judgement was substantial.

The predictive validity of structured final risk judgement was significant for verbal violence, violence against property, violence against others, and violent conviction at 6 months with moderate-to-large effect size. These results are similar to those of another study.[2] The clinical scale had the best predictive validity, although the historical and risk management scales as well as total score had no significant predictability. Sexual violence was not predicted at either 6 or 12 months. This was likely due to its low incidence.

Comparison of the predictive validity of HCR-20 and PFU status revealed a significant difference in violence against property only. The predictability of HCR-20 final score and structured final risk judgement was better than that of PFU status. The lack of a large difference between the predictive validity of HCR-20 and PFU status may be because the PFU system has been in use in Hong Kong for over 30 years, and all decisions were made by a multidisciplinary team rather than an individual. In addition, the Hospital Authority also provide some basic guiding principles.

The main limitation of the study was that the rating for the HCR-20 was file-based only. This may be a reason for the minimal difference between the predictive validity of HCR-20 and PFU system.

The PFU status of patients was determined by a multidisciplinary team. The HCR-20 should have been rated by raters who have interviewed the participants, and the structured final risk judgement should have been decided following a multi-disciplinary meeting.

Acknowledgements

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