Psychosis and Schizophrenia in Hong Kong

Navigating Clinical and Cultural Crossroads

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Introduction

Psychotic disorders are conditions in which some of the most profound mechanisms of the human mind are disrupted. They impair a person's ability to process and interpret information from the environment in order to constitute a continuous experience of reality and the self, resulting in spurious perceptions and aberrant representations of the outside world. These psychotic disturbances are clinically described as hallucinations, delusions, and disordered thinking (1). Psychotic disorders are often also associated with motivational and cognitive impairment with a long-term impact on the person's ability to function in their occupational and social roles (2). Despite treatment with antipsychotic medication, individuals with psychosis are prone to relapse. The psychotic state may become persistent or non-remitting over the course of the illness for some patients (3, 4). Psychotic disorders impact not only the individual but also their family and social relationships (5, 6). They carry a high global disease burden with devastating experiential and functional consequences (7).

Because of their putative impact on some of the most fundamental functions of the human mind, psychotic disorders have been studied intensely from multiple perspectives since their nosological recognition emerged at the turn of the twentieth century (1, 2, 8, 9, 10, 11, 12, 13, 14). The resulting research data have mostly been reported as individual studies. It has been challenging to integrate these data more systematically due to differences in populations, variable definitions, divergent outcome measures, high loss to follow-up and other factors. However, more recently international efforts have been made to agree on standardised definitions of clinically relevant concepts such as remission and it is hoped that these efforts will provide more coherent insights into the nature of this devastating illness (15).

Population Diversity in Psychotic Disorders

Recent data have revealed significant diversity of the disorder in different populations in terms of incidence rates, genetics, presentation, and outcome. However, most studies of psychotic disorders have been carried out in European and North

American populations (16, 17, 18). Studies on psychosis in non-Western populations are few and isolated (16). Although a variety of factors such as differences in study design and case ascertainment will affect incidence rates in different countries, it is likely that other factors, such as urbanicity, gender, migratory status, substance use rates and genetic risks, impact observed rates (16, 18). For example, it has been shown that common genetic variants that confer the risk of schizophrenia share similar effects in European and East Asian populations; but variants specific to Chinese Han ancestry have also been discovered, suggesting at least some genetic heterogeneity (19, 20).

Hong Kong has one of the highest population densities in the world and is highly urbanised; however, substance use rates are significantly lower in our clinic population compared to their Western counterparts (21, 22, 23). In addition, due to severe housing shortages, the majority of our patients reside with their families. Social isolation has been identified as an important factor in the recovery of psychosis sufferers (24). Although objectively, our patients are less isolated when compared to Western patient groups, outcomes are very similar to European and US samples. Findings indicate that the quality of relationships has a greater effect on the maintenance of recovery than the quantity of social interactions and that the concept of high-expressed emotions similarly applies in the Asian context (25). To ameliorate the potentially devastating effects of family discord on recovery, our service has increasingly focused on carer engagement and the use of a dialogical approach to support patients and their relatives in managing the complexities of having a psychotic disorder. Also, a wide range of health beliefs in Asian culture differ from those in the West, most notably the stigma associated with psychotic illness and mental disorders per se, not only affecting individuals but also whole families (26, 27). In Chinese culture, mental disorders are considered to bring shame and embarrassment to the family, potentially impacting carers' resilience and increasing familial stigma (28).

Accessing a coherent set of data on different aspects of psychotic disorders studied in the same population using similar approaches will be instrumental in helping gauge the extent of population diversity in aetiology, pathophysiology, clinical presentation, and treatment response. In addition, this will also aid the development of culturally sensitive treatment strategies (16).

Population and Mental Health Service Contexts in Hong Kong

The studies and observations in this book were undertaken in a context highly relevant to the future development of mental health services and research programmes in Asia, as well as metropolitan populations in which Asian communities may constitute a significant proportion of service users. Like many city populations in Asia, the communities in Hong Kong are largely affluent. However, income inequalities are

vast, and mental health services are often disproportionately inadequate compared to other medical services. In the 1990s, Hong Kong had two to five psychiatrists per 100,000 people, a fraction of those in Organisation for Economic Cooperation and Development (OECD) countries. This relative shortage of medical professionals also extended to mental health nursing, clinical psychology, occupational therapy, and social services.

Hong Kong adopted a specialist training programme closely modelled on the UK system. Medical graduates who wish to practise psychiatry enter into a rotational training scheme lasting six years. Training positions were exclusively located in public hospitals with a cap on trainee numbers determined by the hospital authority. The public healthcare system was heavily focused on hospital inpatient units based upon regional clusters of hospitals giving rise to underfunded and crowded outpatient services with consultation times for psychosis patients averaging five to six minutes.

The emphasis on psychiatric inpatient care was partly historical. Mental health care in Hong Kong had pivoted on Castle Peak Hospital, a large psychiatric hospital, which opened its doors in the 1960s, catering to 3,000 to 4,000 patients, with many being long-stay patients. A second big psychiatric hospital was built in the 1980s. Subsequent developments saw the establishment of smaller psychiatric units in general hospitals. However, not all general hospitals have psychiatric departments, and some of the largest general hospitals in Hong Kong, including one major teaching hospital, still do not host psychiatric units. Apart from hospitals and their affiliated outpatient clinics, there is a substantial private sector consisting mainly of clinics. Around one-third of psychiatrists in Hong Kong work in private practice.

At the time of the initiation of the early intervention for psychosis programme, community services were almost non-existent, case management was not systematically adopted, and collaboration with non-governmental organisations funded by social services was minimal. Partly as a result of the high service load, mental health care was impoverished, with patient needs largely unmet apart from the assessment and medical treatment of core symptoms. Most patients with first-episode psychosis presented in crisis via accident and emergency and were admitted to inpatient units. After discharge, few community services were available other than brief outpatient reviews. Mental health service development was rarely based on data, and its evaluation was only taking place sporadically. The introduction of the early intervention for psychosis service provided a catalyst for the transformation of psychiatric care in general. The improvements were not only restricted to psychosis services but benefitted all mental health services. Nonetheless, there are still undeniable tensions between manpower and service quality.

The stigma around mental illness is severe in Asian communities. This is particularly the case for psychotic disorders. Patients with psychosis usually cannot

demands on mental health increase, the possibility of developing services that share a vision to support individuals with psychiatric difficulties to reach their full potential becomes a common goal for service providers. In this context, psychotic disorders pose a distinct challenge that requires taking into consideration their scientific understanding, available clinical evidence, and service provision. How professionals, service users, and other stakeholders contribute to a way forward based on the best possible data and the background of inadequate resources is a taxing problem that requires local solutions. This book would serve its purpose if it can contribute towards providing some insights and information for colleagues involved in similar developments, whether in China, Asia, or other parts of the world.

The Boundary of Psychotic Disorders

Ever since the evolution of a more explicit conceptualisation in the late nineteenth century, the diagnostic concepts of psychotic disorders have been under discussion and have been evolving (35). The latest position suggests that the category boundaries of psychotic disorders involve multiple dimensions, some of which may have fuzzy rather than discrete boundaries (36). Thus the matter of deciding on the scope of psychotic disorders is likely to be driven by historical as well as pragmatic clinical factors (37). In the studies we are reviewing, a consistent two-level pragmatic approach has been adopted, namely a broader category of psychotic disorders involving non-organic, non-affective psychotic disorders; and a narrower approach involving the schizophrenia prototype according to conventional diagnostic criteria. These boundaries have remained largely stable over the period of our studies.

Over the last 25 years, we have witnessed several developments in the management of psychotic disorders globally. First of all, there have been more public awareness and anti-stigma programmes in society (38). Secondly, early intervention services, comprising specialised teams providing case management for patients with psychosis, became available in many locations over the last two to three decades (39). Thirdly, pharmacological interventions have witnessed the advent of second-generation antipsychotics (40). Finally, recovery-focused service models in the rehabilitation of psychosis patients have been widely adopted (41). The significance of these changes for Hong Kong psychosis patients will be reviewed in our book.

Background: Key Questions Concerning Psychotic Disorders

Research themes on various aspects of psychotic disorders have been evolving over the past two decades. Appreciating the driving forces behind these developments and integrating the various research strands into a coherent account is instrumental to advancing our understanding of psychotic disorders.

stress-vulnerability model (54). Importantly, this research suggests that the underlying profile of contributing disease mechanisms may vary in different populations.

How these aetiological factors lead to the expression of clinical psychosis has been intensely studied using two main approaches. The first focuses on identifying the intermediate expression of the inherited genetic profile of the disorder. This has led to the recognition of the schizotypal spectrum, a diluted form of the schizophrenia phenotype. Also, efforts have been made to link neurocognitive markers to heritable entities in the endophenotype approach (55, 56). The second approach concentrates on identifying mechanistic pathways towards the expression of psychotic states by elucidating additional processes involved in converting stable heritable traits into florid psychotic states (57).

Researchers have also redirected their efforts from early attempts to identify the 'holy grail' of a single underlying neurocognitive mechanism that could explain all the psychotic symptoms, to investigating different permutations of networks with interacting sub-domains at the levels of brain networks and neurocognitive processes (58, 59).

The Multiple Dimensions of Psychosis

The current state of affairs compels the researcher to reflect on the different dimensions of psychosis and the old question of the boundary of 'the psychotic disorder'. In addition to the classic dopamine hypothesis, neuroanatomical and neurophysiological findings have revealed histological evidence for the involvement of oligodendrocytes and hippocampal dentate granule cells, as well as parvalbumin-positive γ-aminobutyric acid (GABA) inhibitory neurons in the cortex (60, 61, 62). Myelination defects have also been shown to be associated with psychotic disorders (63). Processes in the brain related to these findings are generic and widespread, such as perceptual binding, i.e., the process of merging individual pieces of sensory information into coherent representations, and neural synchronisation, excitatory and inhibitory control, contrast enhancement of representations, and memory processes (64, 65, 66). In terms of gross anatomical brain structure, there is a generalised reduction in cortical grey matter, with a specific reduction in the hippocampus, possibly being more prominent on the left side. In contrast to the neurodevelopmental thesis, brain volume reduction has been shown to be not static, but progressive with age. These progressive changes are possibly more rapid than age-related changes seen in a healthy control population (61, 67, 68).

Neurotransmitter changes involve dopaminergic transmission and it appears that presynaptic dopamine synthesis rather than post-synaptic receptor function is impaired. These findings have encouraged research into upstream cortical systems controlling dopaminergic pathways. Several functional cerebral systems and networks seem to be involved, such as the salient network, theta synchronisation, the

supplementary motor cortex, and default mode network, in addition to the classic task-based deficits in executive, attentional, and memory functions (69, 70, 71, 72, 73, 74). Coherent with neuroanatomical findings, there appears to be widespread cognitive impairment that can be traced back to basic information processing in early sensory signals, such as the P100 event-related potential. However, more complex processes such as the integration of contextual information or social cognition are also likely to be affected by dysfunction in the aforementioned networks (2, 74, 75).

The presentation of the clinical high-risk state has received much attention, with data suggesting that there is a 10–20% risk of conversion to frank psychosis (76, 77). The risk appears to be dependent on the context of screening and case identification, with most patients developing mood or anxiety disorders rather than a psychotic illness in the longer term. The transdiagnostic nature of the clinical high-risk state and its emergence during adolescence has highlighted the importance of youth mental health. Transient psychotic experiences are not uncommon in adolescence and are also reported by patients with borderline personality traits and other non-psychotic conditions. Transient psychotic phenomena not only present a clinical dilemma for accurate assessment and treatment but also complicate the boundary of the psychosis state (78). Although it is conceivable that psychotic-like states in non-psychotic disorders may arise on the background of rather different aetiological pathways, they are clinically often very similar in form and content to psychotic states when isolated symptoms are considered.

Cognitive Dysfunction

Longitudinal studies involving individuals at genetic high-risk of psychosis have suggested that cognitive decline may precede the development of psychotic symptoms in schizophrenia by one to two years and that it is an inherent feature of the illness (79, 80). In addition, a significant proportion of patients experience an insidious onset resulting in a delay in help-seeking. Measurements of the duration of untreated psychosis (DUP) have confirmed that treatment is often delayed and that the delay leads to poorer outcomes (9, 81, 82). In addition, outcomes are negatively affected by comorbid substance use. This is a difficulty encountered in many Western populations, whereas psychosis is less commonly precipitated by substance use in East Asia (23, 77).

Early Intervention in Psychosis

Intervention studies have evolved with the emergence of new service models. Early intervention for psychosis has been a major theme, with studies confirming its efficacy during the first few years of the illness. Varying evidence has suggested a sustained improvement over the time course of a decade or more, thus supporting the

critical period hypothesis (83, 84, 85, 86). Improvements in functional outcomes and reduced suicide rates have been convincingly demonstrated in patients receiving early intervention when compared to standard care (87).

Longitudinal studies have also revealed that the clinical course of the disorder may not be static and that there are later recoveries as well as later deterioration from around year five to year ten of the disorder (83, 84). Much less is currently known about the processes involved in determining long-term outcomes in the later stages of the illness.

Future directions in key interventions will lie in the strengthening of relapse prevention and the management of treatment-refractory psychosis (88, 89). In addition, pharmacological interventions have been shown to be less effective for cognitive and functional outcomes (90, 91). In contrast, cognitive remediation, exercise interventions, and neurostimulation have been found to hold some promise in enhancing cognitive and functional outcomes (92, 93, 94). However, it will require additional adjustments to enable patients to overcome amotivational states in order to make full use of these interventions.

Informal family support is likely to be more prominent in Asian cultures. However, close attention needs to be paid to the quality of family relationships and individual family culture. Cultural factors likely influence attitudes towards mental illness and this should be borne in mind in order to harness effective carer involvement (95).

Themes in Hong Kong

Apart from focusing on the classic symptomatic presentations, the Psychosis Studies and Intervention (PSI) team at the University of Hong Kong has used cognitive dysfunction in psychosis as a connecting theme between the clinical disorder and its underlying brain system dysfunctions. The study of cognitive dysfunction in psychotic disorders has an interesting history over the last few decades. Broadly speaking, two main levels of cognitive involvement in psychosis have been identified, a generic component involving basic cognitive operations, and a more specific component of complex cognitive functions. The generic component is often used to relate to functional outcomes whereas the specific component can involve specific functions that may help to understand the generation of psychotic symptoms, as well as other traits in psychotic disorders. Among specific cognitive functions, our team has taken a special interest in language and related semantic functions as we appreciate that linguistic processes underlie much of the complex social representations that may be involved in the psychopathology of psychosis.

Much of the research studies in Hong Kong have been motivated by clinical questions. Our primary concern has been to improve the outcome of psychotic disorders. We have invested in some strategic directions such as early intervention

Epilogue

In this book, we have enjoyed a unique opportunity to present data and pose questions about psychotic disorders in an East Asian population, which has received far less attention in contemporary research than their Western counterparts. Our findings suggest that Chinese psychosis patients share similarities but also differ substantially in some aspects from Caucasian subjects. Our observations enable us to make suggestions regarding clinical care and the future direction of research efforts. Advancement of knowledge in a clinical condition as complex as psychosis is a challenging task. It has been suggested that progress in this area is like ascending a helical staircase rather than a ladder. While ascending, one sometimes returns to the same themes after some time. There has been definitive progress in the understanding of the condition, as our wide-ranging reflections have revealed about the work undertaken in Hong Kong and elsewhere over the past decades.

A number of the described themes will be revisited from different angles over the coming years. To enable further research endeavours, it is useful to reflect on and review broader paradigm issues alongside each individual study. There are often additional observations, which emerge during specific research efforts and which do not necessarily constitute typical empirical knowledge, that can help us gain important information about psychosis. These novel perspectives can stimulate the development of interesting hypotheses and influence the direction of clinical developments and research.

We hope that this book has served this purpose for our readers. In our collective endeavour to understand the intricacies of psychotic disorders, we are nowhere near having a complete picture of their aetiology, course, and effective treatment. Yet, we have come a long way from the initial stages of our quest for knowledge and several specific frameworks have emerged over the last three decades, which have been shown to coherently complement each other. From a broader perspective, it is important to note that there are a multitude of facts awaiting discovery, and as a result, several currently favoured paradigms may yet undergo significant revision. We would feel privileged if our book contributes to the debate by providing

a broader and more diverse cultural and ethnic perspective based on our research findings over the last 30 years.

For the clinician–researcher, providing interventions cannot be delayed until an illness is completely understood. Each new patient presents a pressing need to make the best possible sense of the currently available information and to pragmatically respond to clinical needs. Many reflections in this work are based on this spirit of responding in a pragmatic manner to emerging evidence. The alarmingly poor outcomes of psychotic disorders suggest that there are still many areas of necessary innovation. From our current reflections, we have identified gaps in knowledge of psychosis and the provision of care. New interventions, when they become available, may help improve outcomes and the quality of life of those suffering from the disorder.

Advancement in knowledge is always steeped within a specific environment, with its unique historical and social, as well as scientific context. Among medical disciplines, this is nowhere as relevant as in psychiatry. Our intention was to provide context to the rich information from the body of work carried out in Hong Kong and summarised in this book. We hope that our commentary will continue to facilitate intellectual debate and creative reflection, which is much needed in this challenging field.

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