LAPURAN AKHIR

A STUDY ON RISK FACTORS OF REPEATED ADMISSIONS AMONG SCHIZOPHRENIC PATIENTS IN HOSPITAL KOTA BHARU

GERAN JANGKAPENDEK USM

UNIVERSITI SAINS MALAYSIA

Nama Penyelidik: Dr. Shaiful Bahari Ismail (Jabatan Perubatan Keluarga, PPSP, USM)

Nama Penyelidik-Penyelidik:
Dr. Mohd. Raza Merchant
Dr. Samsul Draman
Dr. Suarn Singh

LAPURAN AKHIR

A STUDY ON RISK FACTORS OF REPEATED ADMISSIONS AMONG SCHIZOPHRENIC PATIENTS IN HOSPITAL KOTA BHARU

GERAN JANGKAPENDEK USM

UNIVERSITI SAINS MALAYSIA

Nama Penyelidik: Dr. Shaiful Bahari Ismail (Jabatan Perubatan Keluarga, PPSP, USM)

Nama Penyelidik-Penyelidik:
Dr. Mohd. Raza Merchant
Dr. Samsul Draman
Dr. Suarn Singh

BAHAGIAN PENYELIDIKAN & PEMBANGUNAN
CANSELORI
UNIVERSITI SAINS MALAYSIA

Laporan Akhir Projek Penyelidikan Jangka Pendek

1) Nama Penyelidik: Dr. Shaiful Bahari Ismail

Nama Penyelidik-Penyelidik Lain (Jika berkaitan) : Dr.Mohd. Raza Merchant
Dr. Samsul Draman
Dr. Suarn Singh

2) Pusat Pengajian/Pusat/Unit : Sains Perubatan/Jabatan Perubatan Keluarga

3) Tajuk Projek: A Study On Risk Factors Of Repeated Admissions Among Schizophrenic Patients In Hospital Kota Bharu

4) (a) Penemuan Projek/Abstrak
(Perlu disediakan makluman di antara 100 – 200 perkataan di dalam Bahasa Malaysia dan Bahasa Inggeris. Ini kemudiannya akan dimuatkan ke dalam Laporan Tahunan Bahagian Penyelidikan & Pembangunan sebagai satu cara untuk menyampaikan dapatan projek tuan/puan kepada pihak Universiti).

Abstract

Introduction: The number of people with psychological problems in the world has reached 1.5 billion in 1996, but only one percent of them have received treatment (10th International Psychopathology Conference). Schizophrenia is a difficult disease that many choose to conceal. Relapse and frequent readmissions among schizophrenic patients are common and various risk factors have been associated with them. These further enhance the existing societal stigma which causes pain to the patients, their family and friends.

Objective: To identify the risk factors of readmission in less than 6 months from the previous admission among schizophrenic patients in Hospital Kota Bharu.

Methodology: A total of 120 outpatients and 120 inpatients who fulfilled DSM IV criteria for schizophrenia from Hospital Kota Bharu between 1st October 2002 until 31st March 2003 were interviewed using a validated questionnaire. The questionnaire includes questions on patients' sociodemographic data, compliance, insight, family support and life events.

Results: Using multiple logistic regression, it was shown that young age (OR: 0.94, p: 0. 004), number of previous admission (OR: 1.163, p: 0.001), good compliance (OR: 0.046, p: 0.001), poor insight (OR: 7.32, p: 0.001), partial insight (OR: 3.08, p: 0.023), importance of follow up (OR: 2.94, p: 0.043) and family remind follow up (OR: 0.17, p: 0.001) were significant risk factors of repeated admissions. Other variables such as marital status, income, education, distance and life events showed no significant associations.

Conclusions. Age, number of previous hospitalization, poor compliance, poor insight and poor family support were important factors in determining repeated admissions among schizophrenic patients. In the management of these patients, good family supports need to be emphasized.

(b) Senaraikan Kata Kunci yang digunakan di dalam abstrak:

Bahasa Malaysia	Bahasa Inggeris
	schizophrenia, repeated admission

5) Output Dan Faedah Projek

(a) Penerbitan (termasuk laporan/kertas seminar)
(Sila nyatakan jenis, tajuk, pengarang, tahun terbitan dan di mana telah diterbit/dibentangkan).

International Publication
Samsul Draman, SB Ismail, M Raza Merchant, Suarn Singh
A Study On Risk Factors Of Repeated Admissions Among Schizophrenic Patients In Hospital Kota Bharu
Imternational Medical Journal (accepted for publication)

National Publication
SB Draman, MR Merchant, M Harmy, Tg Ariff, **SB Ismail**, SS Jasmit Singh. A study on risk factors of repeated admission among schizophrenic patients in Hospital Kota Bharu. The Malaysian Journal of Medical Sciences. Vol 11 No 1

Presentation
8th National Conference on Medical Sciences. Medicine in Genomic Era.
8-9 May 2003 : School of Medical Sciences, USM

7th Family Medicine Scientific Meeting, 24-27 August 2003 Shah Alam, Selangor.

6th Teaching Course for General Practitioners on 12th – 14th September 2003 at Lam Wah Ee Hospital, Penang

2nd Persatuan Alumni Doktor USM (PADU)Medical Symposium on 4th October 2003 at Renaissance Hotel Kota Bharu, Kelantan

(b) Faedah-Faedah Lain Seperti Perkembangan Produk, Prospek Komersialisasi Dan Pendaftaran Paten.
(Jika ada dan jika perlu, sila guna kertas berasingan)

(c) Latihan Gunatenaga Manusia

i) Pelajar Siswazah: Dr. Samsul Draman

ii) Pelajar Prasiswazah:

ii) Lain-Lain :

6. Peralatan Yang Telah Dibeli:

sila lihat lampiran belanjawan

UNTUK KEGUNAAN JAWATANKUASA PENYELIDIKAN UNIVERSITI

.....
.....

.....
.....

.....
.....

.....
.....

.....
.....

.....
.....

.....
.....

Professor Zabidi Azhar Mohd. Hussin
Chairman of Research & Ethics Committee
School of Medical Sciences
Health Campus
Universiti Sains Malaysia
16150 Kubang Kerian,
KELANTAN, MALAYSIA.

T/TANGAN PENGERUSI
J/K PENYELIDIKAN
PUSAT PENGAJIAN

Final Report

A STUDY ON RISK FACTORS OF REPEATED ADMISSIONS AMONG SCHIZOPHRENIC PATIENTS IN HOSPITAL KOTA BHARU

BY

DR SHAIFUL BAHARI ISMAIL

UNIVERSITI SAINS MALAYSIA
March 2005

Acknowledgements

In order to educate the public and healthcare professionals about their role in preventing readmissions, we have presented this study at

1) 8th National Conference On Medical Sciences Medicine In The Genomic Era.8th- 9th May 2003. Organizer: School of Medical Sciences, Health Campus USM.

2) 7th Malaysian Family Medicine Specialist Scientific Conference. 24th to 27th August 2003. Shah Alam, Selangor Darul Ehsan.

3) 6th Teaching Course for General Practitioners 12th to 14th September, 2003 at Nursing School Lecture Theatre, Lam Wah Ee Hospital, Penang organized by Malaysian Medical Association (Penang Branch).

4) 2nd PADU Medical Symposium on 4th October 2003 Kota Bharu Kelantan Organised by Persatuan Alumni Doctor USM (PADU).

It is with deep gratitude and appreciation that I acknowledge the assistance of everyone who had contributed to this study. I would like to express my gratitude to Universiti Sains Malaysia for granting this research.

Dr Sukarno Bin Saud from Klinik Kesihatan Kuala Besut, Trengganu for his full support.

Professor Dr. Mohd Razali Salleh, Head of Department of Psychiatry USM, Associate Professor Dr Hasanah Che Ismail, Dr Rohayah Husain, Dr Muhd Najib Mohd Alwi for their contribution in making questionnaire for this study.

Dr Mary Abraham, Director of Kota Bharu Hospital, Dr Suarn Singh, Head of Psychiatry Department, Dr Mohd Ariff Mohd Noor and Dr Raziffah for allowing me to conduct the study in the hospital and their full support .

All the medical assistants, staff nurses and attendants at Psychiatric Department Hospital Kota Bharu for their assistant and cooperation in carrying out this study.

All patients participated in the study.

Lecturers and training lecturers from the Community Medicine Department, USM: Associate Professor Dr. Syed Hatim and Associate Professor Dr Tengku Arif , Dr Kamarul Imran Bin Musa, Dr Mohd Ismail Bin Ibrahim , Dr Mohd Nazri Bin Shafie and Dr Hamizar Iqbal Bin Abdul Halim for their guidance in statistical analysis.

Colleagues in the Department of Family Medicine, HUSM

Table of contents

List of tables:

List of Figures:

Abbreviations

APA	American Psychiatric Association
DSM IV	4th edition of Diagnostic and Statistical Manual of Mental Disorder
LCU	Life change units
WHO	World Health Organisation

Abstract

Introduction: The number of people with psychological problems in the world has reached 1.5 billion in 1996, but only one percent of them have received treatment (10th International Psychopathology Conference). Schizophrenia is a difficult disease that many choose to conceal. Relapse and frequent readmissions among schizophrenic patients are common and various risk factors have been associated with them. These further enhance the existing societal stigma which causes pain to the patients, their family and friends.

Objective: To identify the risk factors of readmission in less than 6 months from the previous admission among schizophrenic patients in Hospital Kota Bharu.

Methodology: A total of 120 outpatients and 120 inpatients who fulfilled DSM IV criteria for schizophrenia from Hospital Kota Bharu between 1st October 2002 until 31st March 2003 were interviewed using a validated questionnaire. The questionnaire includes questions on patients' sociodemographic data, compliance, insight, family support and life events.

Results: Using multiple logistic regression, it was shown that young age (OR: 0.94, p: 0. 004), number of previous admission (OR: 1.163, p: 0.001), good compliance (OR: 0.046, p: 0.001), poor insight (OR: 7.32, p: 0.001), partial insight (OR: 3.08, p: 0.023), importance of follow up (OR: 2.94, p: 0.043) and family remind follow up (OR: 0.17, p: 0.001) were significant risk factors of repeated admissions. Other variables such as marital status, income, education, distance and life events showed no significant associations.

Conclusions. Age, number of previous hospitalization, poor compliance, poor insight and poor family support were important factors in determining repeated admissions among schizophrenic patients. In the management of these patients, good family supports need to be emphasized.

Justification of study

There are many instances whereby patients if be discharged today, he will be readmitted maybe tomorrow for various reason (Nasir, 1994). There was occasion when parents or close relative request patient to be admitted or sent to Hospital Bahagia forever. Some parents they brought together a letter from Member of Parliament to support their demand. This is totally against Ministry of Health Policy who wants to implement role of community in treating mental patients.

There are many reasons for the shortage of mental health awareness among the public for example lack of resources, inadequate of treatment facilities, social stigma against mental patients, less priorities of mental program. A survey done by WHO in project 2001 in 185 countries. They found more than 1/3 of countries prepared less than 1% budget for mental health. More than 1/3 of them don't have community mental health programme. A quarter of them didn't have facilities to cater for those who had early symptom of mental illness.

Under Expanded scope, Primary Care particularly Family Medicine Specialists have been given a major role to manage and rehabilitate such patients. They had to run a program so called Psychosocial Rehabilitation Program. So far we didn't have any community mental health services.

Public play a major role in order to prevent admission or at least delay the admission. We can save a lot of money by doing that. Study by Weiden PJ (1995), the monthly relapse are estimated to be 3.5% per month for patients on maintenance neuroleptics and 11% per months for patients who have discontinued their medication. Postdischarge noncompliance rates in community settings are estimated to be 7.6% per month. These estimates were entered into a survival analysis model to determine the real world relapse rate of this cohort. An estimated 257 446 multiple episode (> = 2 hospitalizations) schizophrenia patients were discharged from short stay (< 90 days) inpatient units

in the United States during 1986. The estimated aggregate baseline inpatient cost for the index hospitalizations of this cohort was $2.3 billion dollars. Within 2 years after discharge, the aggregate cost of readmission approached $2 billions. Loss of neuroleptic efficacy accounted for roughly 60% of the rehospitalization costs and neuroleptic noncompliance for roughly 40%.

Hopefully by doing this research, Family Medicine Specialist together with Psychiatrist will work together in order to handle and find a solution for repeated admissions.

Chapter 1

Introduction

Schizophrenia is a disease of brain that manifests with multiple signs and symptoms involving thought, perception, emotion, movement and behaviour. Those manifestations combine in various ways, creating considerable diversity among patients, but the cumulative effects of the illness is always severe and usually long lasting. It is a complex illness characterized by hallucinations, delusions, behavioral disturbances, disrupted social functioning and associated symptoms in what is usually an otherwise clear sensorium (Nagomoto, 1996).

The lifetime incidence of schizophrenia is approximately 1%. It is remarkably stable across racial, cultural and national lines (Nagomoto, 1996). The lifetime incidence has been variously reported as ranging from 1 to 1.5%. Consistent with this range, the National Institute of Mental Health – sponsored Epidemiological Catchments Area (ECA) in the U.S. reported lifetime prevalence in the range of 0.6% to 1.9% (Breier *et al*, 1991).

Eugene Bleuler (1950), a Swiss psychiatrist coined the term "schizophrenia" in 1911. Bleuler conceived of schizophrenia as a characterized by fundamental symptoms that directly expressed the destructive process of the disorder and accessory symptoms which are not invariably present and might be transient or never present. He considered the four As disturbances of association and effect and symptoms of autism and ambivalence- to be invariable and fundamental symptoms.
The definition of the term psychotic in the 4th edition of Diagnostic and Statistical Manual of Mental Disorder (DSM IV) refers to narrow and broader definitions of the term. The narrowest definition is restricted to delusions or prominent hallucinations, with the hallucinations occurring in the absence of insight into their pathological nature. Blueler consider hallucinations and delusion as accessory symptoms. Thus, for Blueler, a person suffering from schizophrenia need never be

psychotic in the strictest sense. Blueler postulated a category of simple schizophrenia lacking accessory symptoms, which he considered to be far more common in the community than other types of the disorder and rarely in hospitals.

Kraepelin did not consider autism and ambivalence to be involved and was conscious about the termed simple schizophrenia. This historical competition of broad verses narrow concept of schizophrenia had important sequellae for epidemiological investigations until the 1980s.In the first edition of DSM (DSM-I, 1952) the definition of schizophrenia reactions which were problematically ambiguous and heavily derivative from Blueler's emphasis on fundamental symptoms. The second edition of DSM (DSM-II, 1968) included mention of those symptoms differentiating schizophrenia from paranoid and affective disorders, but otherwise provided little clarification.

In 1980, the American Psychiatric Association (APA) published the third edition of DSM (DSM III) as an official diagnostic system, with the rules for specifiable inclusions and exclusion of symptoms, their severity and the temporal boundaries for diagnosis. Prior to 1980, the APA diagnosis of schizophrenia has strongly condemned several quarters for its requirement of the presence of psychotic symptoms and its heavy reliance on the first rank symptoms considered by Kurt Schneider to be pathognomonic of schizophrenia in the absence of primary organic disease. With the publication of DSM III, the revised third edition (DSM III-R) and now the fourth edition (DSM IV) the official diagnosis of schizophrenia must include the occurrence of active psychotic symptoms at some time.

The cause of schizophrenia can be divided into 3 general epochs (Carpenter and Buchanan, 1995). The first epoch is onset. Onset is insidious in about half of patients, tends to be characterized by increasing emotional withdrawal, diminishing social engagement and social drive and idiosyncratic

response to ordinary events or circumstances, likely to have both poor intermediate and a poor long term course. In other cases onset is relatively sudden or acute with the onset of psychotic symptoms marking a sharp deviation in development, vary widely in terms of intermediate and long term outcome.

The second epoch includes those years immediately following the onset of psychotic symptoms. There are 2 typical patterns to that epoch. One is the continous presence of the psychotic process with the patient never achieving full recovery. The other is an episodic pattern of psychotic manifestations followed by complete or relatively complete recovery.

The third epoch refers to the long term course and outcome. The intensity of psychosis tends to diminish with age and many patients with long term
impairments regain some degree of social and occupational competence. Although the illness becomes less disruptive and easier to manage, the effects of years of dysfunction are rarely overcome.

The course of schizophrenia is highly variable but generally involves significant functional impairment (Nagamoto, 1996). Rates of employment, marriage and independent living are significantly lower among schizophrenic patients compare with the general population, reflecting the functional impairments they experience (Loranger, 1984).

Chapter 2

Literature review

High readmissions rates have been the concern of both professionals and administrators, and there is a vast literature studying the repeated admission of mental patients. A drawback in much of the research is the lack of generally accepted definitions for examples multiple service users, intermittent patienthood, heavy users, revolving door patients. Readmissions is a reflection of a number of components, the conditions in the patient himself, his family, the community and the psychiatric institution, and no single instrument can measure them all (Kastrup M , 1987). Schizophrenia is a recurring or chronic condition and its course is no longer thought to be one of progressive deterioration.

Few studies have focused specifically on reasons for the readmission of patients who make heavy use of services. A review of the literature reveals that predictors of psychiatric hospitalization have commonly been classified into four major categories:

a) Client characteristics, including diagnosis, symptomatology and level of general social functioning

b) Sociodemographic factors, including the influence of the client's sex, age, employment status and ethnicity.

c) Organizational and system determined factors including current hospital policies on admission criteria, and the availability of alternatives, non hospital based resources

d) Characteristics of admitting personnel, including number of years of clinical experience.

The results of those studies are difficult to summarize and compare because the range of variables investigated as possible admission determinants varied from study to study, as did the length of the study periods. Associations were found, however between readmissions and non compliance with medication, low levels of functioning and inadequate social supports, current situational factors, multiple previous admission, early age at first admission and onset of illness, substance abuse and a favorable attitude toward admission by the person accompanying the patient.

Harris and others in 1986 investigated both psychiatric and nonpsychiatric indicators for rehospitalization of 31 chronic psychiatric patients after their discharge from a public mental hospital. More than 60% of the patients had been readmitted for medical or social reasons rather than for psychiatric indication.

Ellison (1986) summarized eight studies and found that as a group, repeaters constitute between 7 and 18 percent of the total patients and up to one third of the visits. They concluded that repeaters are more likely to lack social supports, to be currently in psychiatric treatment, and to have a chronic illness. However the wide spectrum of patient presentations, emergency treatments, and disposition that are part of the emergency service setting present a significant difficulty in using psychiatric emergency visits to identify subgroups of patients. Several authors have reported that frequency of rehospitalization correlates with age, gender, diagnosis or medication compliance and others have noted the value of previous rehospitalization.

Although numerous studies have attempted to describe readmission, there is a lack of consensus in explaining the phenomenon. Several authors speculate that repeated admissions are the product of societal problems, inadequate rehabilitation facilities, poor follow up care or inadequate continuity

of outpatient treatment and state hospital may be used for nonpsychiatric reason, for example, money problem, housing problem or social stressors precipitate hospitalization.

Readmission as a function of patient's symptom and failure to comply with treatment regimens. Although numerous studies have attempted to describe readmission, there is a lack of consensus in explaining the phenomenon. Whatever the perspective, it is clear that frequent rehospitalizations among patients remain a problem in modern society. This has made research on this subject difficult because it needs collective agreement regarding what exactly is to be studied.

In this literature review, we discussed factors that contribute to repeated admissions such as sociodemographic data, compliance, insight, family support and life event.

2.1 Sociodemographic

Gender

The symptoms of schizophrenia typically emerge during adolescence or early adulthood. Even though equally prevalent in men and women, onset is earlier in men than in women. More than half of all male schizophrenic patients but only a third of all female patients are first admitted to a psychiatric hospital before age 25. The peak ages of onset are 15 to 25 years for men and 25 to 35 years for women (Goldstein & Tsuang, 1990; Kaplan & Sadock, 1998). The male onset preceded the female for about 5 years (Loranger, 1984).

Findings from other first admission studies showed that schizophrenic women experienced fewer rehospitalizations, shorter hospital stays, better social and work functioning, better response to neuroleptics, lower relapse rate and less severe psychopathology outcomes (Nyman AK,1983 ; Salokangas RKR 1983).

Many of the studies found that schizophrenic women experienced fewer rehospitalizations and shorter hospital stays than schizophrenic men (Huber G, 1980).

Age

The findings suggest that the target population is the younger males, living in larger cities as single or divorced and suffering from schizophrenia or having alcohol or substance abuse. This group has a high demand for a variety of mental health services and is placing a strain on the delivery system (Kastrup M, 1987).

Harris and Bergman in 1986 hypothesized that the young group experiences a dysfunction at three level: organismic, interpersonal and societal, but these may well be applied on the repeated admissions patients. At the organismic level both groups show confusion in personal goals, at the interpersonal level they have difficulty in relating to others, and at the societal level they have inadequate social networks.

Early adulthood (age 17-45) is characterized by the peaking of biological development, the assumption of major social roles and the evolution of an adult self and life structure (Kaplan and Sadock, 1995). Patient who develop the illness during early adulthood are most likely to resist the notion that they suffer from a major psychiatric illness which may require medication life long. About 90% of the patients in treatment for schizophrenia are between 15 and 55 years old (Kaplan & Sadock, 1998).

Patients in the frequently hospitalized group tended to be young (under age 40) and to have a chronic psychiatric illness features at least intermittent psychosis (Green H, 1988).

Marital status

Franklin (1975) found those readmitted tended to be single, separated or divorced and those not readmitted tended to be married. However, Appleby et al, 1993 found that marital status was not significant as a risk factor for repeated admissions.

Educational status

Education may influence repeated admission however not many study relate it with repeated admissions. Some studies related insight with education, for example, poor insight in schizophrenics was found to be associated with fewer years of full time education (MacPherson *et al*, 1996) and lower intelligence (Young *et al*, 1993)

Job

Unemployment may be thought of as the main contributing factors to rehospitalizations, but these variables alone without regular use of medication and clinic attendance are not sufficient to predict readmission (George Serban, 1974)

Income

Previous research has suggested that the revolving door phenomenon may have its origin in economic problems however, Haywood *et al* (1995) reported from his study that the number of rehospitalizations was not significantly related to money problems prior to the current hospitalization.

Living

Fifty two percent of male psychiatric outpatients living alone failed to take drugs, compared to 35% of those living with their wives (Wilcox *et al*, 1965). Renton et al, 1963 (cited in Blackwell 1972) also found schizophrenic living within families were less likely to relapse.

Falloon *et al* (1982) used family management in the prevention of exacerbation of schizophrenia in a controlled study comparing the individual treatment served to enhance generalization of learning to family life and to minimize failure to keep appointments.

Brown, Birley, Wing (cited in Hirsh 1983) noticed that relapse was more common among schizophrenia who were discharge to live with spouse or parent than those living alone. Vaugh and Leff (1976) reported that patients living in high stress households still relapse more often in the first nine months of after care than patients receiving medication and living with low stress relatives. High stress relatives are designated as High Express Emotion (Leff, 1982). However in this study, High Express Emotion is not our main focus.

Number of previous admissions

Chronic patients with each rehospitalization face the increasing likelihood of further social disorganization. In addition, it may condition the patients to accept the hospital as the only nonrejecting social institution and increase the frequency of their rehospitalization.

Franklin in 1975 mentioned that many patients are readmitted because they find the hospital a familiar and comfortable environment. According to Appleby et al 1993 previous hospitalizations independently predicted readmission. It may be that they find the mental hospital an attractive alternative to the condition of alienation and deprivation they experience in the community.

Duration of illness

Long term studies support that the disease appears to plateau after about five years and not worsen (Carpenter and Buchanan, 1995). Only one study by Christensen (1974), a 5 year follow up of 119 discharged schizophrenic men is reported. 53 patients were not readmitted (defined as successes).Out of 66 failures, 47 were readmitted and discharged and 19 were readmitted and not

discharged (defined as failures). Those who successes were older at discharge had a longer duration of illness than the failures, over 20 years. There were 26 successes whereas failures were 14, $p < 0.005$.

Distance

We have difficulty to relate distance with repeated admissions since not many studies looking at it. Some authors relate distance with compliance like Razali (1995) and Ariff (2000) which they found was not significant. Even Haywood et al (1995) also found that repeated admissions were not significantly related to non-psychiatric conditions such as social or housing problems.

2.2 Compliance

It is essential for patients to maintain their compliance to treatment for the better outcome. Compliance in schizophrenia can be either good or poor. Poor compliance is known to be associated with. Haynes (cited in Evans and Spelman, 1983) defined compliance as the extent to which a person's behavior coincides with medical or healthy advice.

Greenberg (1984) claimed that compliance played an important part of the management, cause and diagnosis of schizophrenia patients. Schizophrenic patients were often did not take their medication. This would lead to readmission. Van Putten (1974) found that between 24-63% of schizophrenic patients take less antipsychotic drug than the amount prescribed and this occur between 15-33% from psychiatric inpatients. He also discussed about reasons why patient refused to take medication. The factors were side effects, poor social supervisions, severity of illness and doctor' attitude.

There were two main methods to measure compliance namely direct and indirect method. Indirect methods were assessed by asking the patient verbally or by questionnaire. Relatives can also be asked to what extent the patient has been complying with the treatment. It was also checked by pill counting where the patient was asked to return a medication container at regular intervals and the amount of medication not used was counted. However the limitation was patient may be not telling the truth. Relatives sometimes were not reliable.

Direct methods include blood level monitoring of many drugs and their metabolite and identify certain drugs, which are excreted in the urine.

As a result of illness, schizophrenic patients have an impaired capacity to cooperate. They also develop poor insight and have negative attitudes towards treatment. Others have found that paranoid features and grandiosity occurring in schizophrenic illness were likely to be associated with poor compliance. All these factors resulted in a higher noncompliance rate for schizophrenia compared with other illnesses despite proven benefits of neuroleptic maintenance treatment in preventing relapse of schizophrenia. Noncompliance was clearly associated with relapse of illness and increased necessity for hospital admission.

Razali (1995) considered compliance to be good if the patient did not miss more than 2 doses of the medication on separate occasions or 2 consecutive doses over a period of 2 weeks and did not default more than 1 follow-up visit since the last discharge. The compliance was considered poor if the patient did not meet both criteria. The duration of 2 weeks was chosen because patients are more likely to remember drug regimens they have taken within the period.

There are some patients relapses while taking maintenance medication. Hogarty (cited in Liberman 1994) noted that 30-40% of schizophrenic patients who are compliance with medication still

relapse within a year. According to Green (1988), through his study on frequent rehospitalization and noncompliance with treatment found a highly significant correlation between medication noncompliance and frequent rehospitalization . For the group of 25 frequently hospitalized patients, the most prevalent factors related to rehospitalization were noncompliance with medication and aftercare. Of 24 patients in this group who were discharged on medication, 22 were found to be noncompliant.

Noncompliance with medication and noncompliance with therapy appointment were the only significant predictors of rapid relapse. Medication noncompliance was judged to be a factor in 73.5% and noncompliance with therapy in 71.7%, (Good pastor, 1991).

2.3 Insight

It appears that patients with poor insight are more severe clinically, less compliant with treatment, less well adjusted, have a poorer prognosis, higher chances of relapse and thus higher rehospitalization rate. Insight is relevant to overall prognosis (David *et al*, 1995); functional outcome (Schwartz *et al*, 1997); need for rehabilitation (O' Connor & Hen-man, 1993; Taylor & Perkins, 1991); and readmission to hospital (Kent & Yellowlees, 1994; David,1998).

Some of the schizophrenic patients may not appreciate the value of their medication. This is because their lack of awareness and deny that they are ill. They are unwilling to remain in the hospital during exacerbation of their illness and discontinue their prescribed psychoactive medications after discharge with the result being clinical deterioration and need for hospitalization. Wilson and Enoch (1967) demonstrated in their study that paranoid delusion that causes the schizophrenia to equate drugs with poison associated with drug defaulting and some patients do not comply with medication because they feel guilty taking any drugs. Patients who recognize benefits

that are secondary relief are more likely to comply (Adams and Howe, 1993). Smith, Hughes and Budd (1999) in their study on schizophrenic patients about their experience of antipsychotic indicate that compliers report more benefits of medication, recognize a direct impact of the drugs on their main symptoms and reported more positive consequences for antipsychotic drugs. This suggests that good attitude toward medication influence for better compliance and reduce relapse.

Mc Evoy et al (1989) prefer to use lack of insight for schizophrenic patient's failure to acknowledge their illness and need for treatment. He reported that patients with better outcomes have not been found to have more insight than who fail to improve. One retrospective study of psychotic decompensation in schizophrenic outpatients found that the percentage of patients without insight who require hospitalization for their relapse is much higher than that of patients with insight (Heinrichs *et al*, 1985).

Lack of insight or denial of illness was cited in 62.2% of the patients' 442 total admissions, followed by relationship problems (61.1%), suicidal ideation (44.8%) and noncompliance with medication (43.2%) (Kent, 1994).

2.4 Family support

Falloon et al (1982) used family management in the prevention of exacerbation of schizophrenia in a controlled study comparing the individual treatment served to enhance generalization of learning to family life and to minimize failure to keep appointments.

It is particularly noteworthy that the only significant predictors of relapse were noncompliance with medication and noncompliance with clinic appointments. Many studies have suggested that increased use of outpatient commitment is an effective means of reducing relapse (Green JH,

1988). So outpatient commitment can substantially delay readmission. Ariff (2000) found that family plays an important role in the management of schizophrenic patients particularly reminding for follow up.

Patients frequently readmitted had less family involvement (John, 1997). However if the family is more supportive and the environment is more conducive this will give better outcome. According to Kavanaugh DJ (1992) the number of rehospitalizations was not significantly related to family problems, however studies on express emotion have found emotional overinvolvement, hostility and criticism to be related to rehospitalization of schizophrenic patients (Haywood *et al*, 1995). They were surprised to find that family problems were not a significant predictor of rehospitalization.

2.5 Life event

Sudden changes in an individual's lifestyle can be traumatic and may collectively represent a tremendous source of stress. In fact, stressful life events are by definitions events that require changes in lifestyle that can range from minor adjustments in daily routine to a major reconstruction of self-identity.

It has also been demonstrated that stressful life events are contributors to psychological problems such as suicide, substance abuse, depression, schizophrenia, and personality disorders (Craig, Drake, Mills, & Boardman, 1994). Moreover, the cross-cultural data that are available indicate that the occurrence of many stressful life events in a short time is a good predictor of psychological distress regardless of the nationality or ethnic background of the individuals involved (Heikkinen, Aro, & Lonnqvist, 1992).

Recent research has clarified that major life changes are in fact a major source of stress but that the impact of major events is manifested via a ripple effect through minor stressors. In other words, major upheavals in a person's life result in numerous minor changes that bombard the individual from many different directions over a long period of time, resulting in chronically elevated levels of stress (Pillow, Zautra, & Sandler, 1996; Zautra, Reich, & Guarnaccia, 1990). Thus, a major event such as the death of a spouse leads to a number of other changes in areas such as financial status, sleeping habits, and relationships, and the multitude of minor stressors may disguise the real impact of the major life event.

A number of different techniques have been developed to measure the stress caused by life events. Some measures are more global in scope, designed to measure the impact of both major and minor life stressors over a specified period of time. Easily the best known and most widely used of these measures is the Social Readjustment Rating Scale (SRRS) developed by Holmes and Rahe (1967). Holmes and Rahe ranked life events according to the degree of change that they require of individuals and assigned weighted values called life change units (LCUs) to each event. The SRRS consists of 43 life events ranging in stressfulness from the death of a spouse (LCU = 100) down to minor violations of the law (LCU = II). According to Holmes and Rahe, accumulating too many LCUs in a short time constitutes a major life crisis accompanied by dangerously high levels of stress. Some researchers have tried to improve on the SRRS by adjusting the weights assigned to life events with more sophisticated psychophysical scaling (e.g., Birnbaum & Sotoodeh, 1991), but there is no evidence that these attempts at rescaling add to the predictive validity of the SRRS (Crandall, 1992).

In spite of the success of the SRRS as a research tool, it does have some weaknesses. One problem of the SRRS is that many of the events included on it (i.e., mortgage foreclosure, business readjustment) are not very relevant to the lives of schizophrenia. Another problem stems from the fact that the SRRS was originally developed for use with Americans, but it is now widely used

around the world in a variety of cultural settings. Although there have been life stress inventories developed for use in other societies (the Life Event Experience Schedule-Revised [LEES-R] developed by Zhang et al, 1992, for use in China is one example), the Holmes and Rahe (1967) scale has been the instrument of choice in most cross-cultural research.

The occurrence of life events is another factor, which may provoke relapse (SR Hirsh 1994). Many studies have found that life events can contribute to frequently readmission. Leff et al (1973) found that patients who relapse on medication are more likely both to have life events and high express emotion relatives. This suggests that the hospital environment itself has a protective effect in shielding from many of the stresses they encounter when living with their families (Brown et al 1972). Outpatients on maintenance therapy are unlikely to relapse unless exposed to some additional stress in the form of one or other life event

Mc Evoy, Howe and Hogarty (1984) separated two subgroups of relapsed and rehospitalised. They reported that compliant patients had a rapid onset of symptoms with prominent affective features, which was frequently associated with environment stresses independent of the patient. Majority of relapsed medication-complaint patients experienced at least one serious, independent, stressful life event during the period immediately before hospitalization.

A Saudi Arabian Study for life events (Al Khani 1986) selected 48 patients with acute schizophrenia from the population of the Najd region of Saudi Arabia. Their life events histories for the 6 months before onset or relapse were compared with those of 62 control subjects.

A positive association between events and onset was established only for married women, although there was a parallel trend for men and single women suffering their first schizophrenic episode. The observed impact of life events was limited to the 3 weeks before onset.

Bebbington et al (1993) found that there is an excess of life events preceding the onset of psychosis of all types. Out of 97 patients from the study who had episodes within the past year were datable, 51 had developed psychotic symptoms from an essentially symptom-free state, 29 had been suffering only from neurotic symptoms and 17 had experienced a marked exacerbation of psychotic symptoms. DSM III diagnoses were collapsed into 3 major groups: 51 cases of schizophrenia, 31 cases of mania and 14 cases of depressive psychosis.

Life events histories were taken for 6 months before onset, and when these were compared with equivalent histories from a psychiatrically healthy sample from the local general population, there was a significant excess of life events. Particularly in the 3 months before onset of psychosis. This was apparent in all groups, and remained even when events were restricted to the independent category.

Conclusions from the literature review

There are many factors that can contribute to repeated admissions in schizophrenia. Most important factor is poor compliance. However many studies found that young age, insight and substance abuse were also contributed for repeated admissions.

Readmissions may reflect the quality of community services or support. Prevention of readmission therefore is likely to be the responsibility of the community care provider rather than the psychiatric hospital. Looking from the primary care aspect, we are trying to look into the risk factors in our patient in order to reduce readmissions.

Chapter 3

Objectives

3.1 General objective

To determine the risk factor for repeated admissions among schizophrenic patients in Hospital Kota Bharu.

3.2 Specific objectives

1) To identify association between sociodemographic factors and repeated admissions
2) To determine association between compliance and repeated admissions
3) To find relationship between insight of schizophrenic patients and repeated admissions
4) To identify association between family support and repeated admissions
5) To determine relationship between life event and repeated admissions.

Chapter 4

Methodology

4.1 Questionnaire

Questionnaire was designed based on various reading of literature research and textbook (Razali 1996) and (Arif 2000 unpublished). Content validity done by 7 psychiatrists, 4 psychiatrists from USM and another 3 from Hospital Kota Bharu. Construct validity was checked by lecturer in Community Medicine Department.

The questions were specifically grouped into five components of this study design. There were compliance, insight, family support and life event. Questionnaires were also consisting of the dermographic data of the respondents. Relatives were interviewed by same investigator to reduce bias.

Compliance defined as the degree to which a patient carried out clinical recommendation of the treating physician. Non compliance defined as missed up more than two doses of the medication on separate occasion and defaulted more than one follow up visit (Razali 1995). Active involvement in follow up is defined by the family members bringing the patient for follow up on regular basis and encouraged the patient to go for follow up. Regular basis is defined as those patients who had never missed any follow up.

Values for the original list of life change derived by Thomas Holmes and Richard Rahe in 1965. In this study we choose Holmes and Rahe life event list, which have been re-scaled twice over the past 30 years- once in 1977 and again by Mark Miller and Richard Rahe in 1995. Values for life change intensity can be summed over arbitrarily defined intervals of time such as one year. These

life change estimates have been expressed as Life Change Units (LCUs). Low (0-300), 301-600 LCU/year is moderate and over 600 LCU/year is high .

The validity of the questionnaire was evaluated using 30 patients who admitted in psychiatric ward in September 2002. Minor adjustment to the questionnaire was made based on the evaluation made, and when tested for reliability analysis, the cronbach alpha was 0.76.

4.2 Study design

Case control

Study area – The study was conducted at Psychiatric Department Hospital Kota Bharu (HKB). Psychiatric ward in HKB have 129 beds and it was the regional mental health center. It occupies an area of 14,467m square. There are four wards for male patients and two wards for female patients. They are from all districts of Kelantan and some from Besut Trengganu.

Each newly admitted patient would be managed by a medical officer who treats the case under the psychiatrists' supervision. All new cases and difficult readmission cases will be presented to the psychiatrist during ward round for further evaluation.

4.3 Study population

All schizophrenic patients who was admitted to Psychiatric ward and all schizophrenic patients attending at psychiatric clinic and fulfill the criteria were included in the study.

4.4 Sample size-two proportions

Calculation of sample size used the Epi. Info software program based on the prevalence of each risk factor (10 & 13), supervised medication: good compliance 64% whereas poor compliance 39%, the largest sample size calculated from Pocok's formula

Independent

Prospective

Uncorrected chi-square test

alpha= 0.05, power=0.8 , po=0.64, p1 = 0.44, m =1,

$$N = \frac{p1\,(1-p1) + p2\,(1-p2)}{(p1-p2)\,(p1-p2)} \qquad (Z\alpha + Z\beta)(Z\alpha + Z\beta)$$

Sample size= 97 + 20% drop out= 120 for each group

The difference in mean/proportion 20% based on 2 studies 'Determinants of compliance with medication in schizophrenic patients-A study on relapse cases (Ariff 2000), and 'Supervised medication on good compliance (64%) and poor compliance (39%)'(Razali,1995).

4.5 Sampling technique

Case studies were chosen from schizophrenic patients in psychiatric ward who had been admitted less than 6 months (National Indicators 2001) from previous admissions.

Control studies were chosen from schizophrenic patients attended psychiatric clinic and had not been admitted in the past 6 months from previous admission. In both groups, systematic random sampling was used looking for 240 patients.

4.6 Inclusion criteria

a) All schizophrenic patients who were admitted frequently less than 6 months from previous admission between 1st October 2002 to 31st March 2003 for case study and all schizophrenic patients attended psychiatric clinic and never been admitted more than 6 months from previous admission for case control
b) Patients must meet DSM-IV criteria for schizophrenia.
c) Patient understood and gave comprehensive answers to the question asked
d) Verbal consent was given either by patient or their relatives.

4.7 Exclusion criteria

a) Patients who have organic pathology, cognitive disorder, alcohol and drug abuse and mental retardation.
b) Patients who refuse to participate
c) Newly diagnosed schizophrenia.
d) Patients who were unable to answer simple question.

4.8 Method of data collection

The demographic data and socio-economic status were determined by interview using the questionnaire, as well as the compliance and life event. Whenever possible, the patient's history is corroborated by family members. The relatives were then interviewed to confirm the answer given by patient or to answer differently. Most of them were parents of the patients. Patients were

interviewed at least after 48-72 hours of admission. After patients settle down, they were screened for selection by DSM IV criteria, the inclusion and exclusion criteria.

4.9 Data analysis

After collecting data by using questionnaire, the information were obtained and will be coded using statistical programme for social science (SPSS) and subsequently analyzed using Multiple Logistic Regression.

Chapter 5

Results

Table 5.1. Distribution of case and control for sociodemographic of schizophrenic patients.

Variables	Control	Case
	N (%)	N (%)
Gender		
Male	90 (75%)	94(78%)
Female	30 (25%)	26(22%)
Marital status		
Divorced	17 (14%)	31 (26%)
Single	74 (62%)	73(61%)
Married	29 (24%)	16(13%)
Education		
Primary	33 (28%)	36 (30%)
Secondary	87 (73%)	84 (70%)
Employment		
Unemployed	74 (62%)	85 (71%)
Employed	46 (38%)	35 (29%)
Stay with family		
Alone	8 (7%)	20 (17%)
Family	112 (93%)	100 (83%)
Duration of illness		
<5 years	35 (29%)	37 (31%)
5-10 years	27 (23%)	19 (16%)
> 10 years	58 (48%)	64(53%)
Distance between house to clinic/ hospital		
<5 km	32 (27%)	23 (19%)
5-10 km	40 (33%)	35 (29%)
>10 km	48 (40%)	62 (52%)

Table 5. 2: Distribution of compliance and insight of case and control.

Variables	Control	Case
	N (%)	N (%)
Compliance		
Poor	41 (34%)	112 (93%)
Good	79 (66%)	8 (7%)
Treatment valuable		
Yes	97 (81%)	45 (81%)
No	23 (19%)	75 (63%)
Insight		
Poor	20 (17%)	64 (53%)
Partial	39 (33%)	38 (32%)
Good	61 (51%)	18 (15%)
Continous follow up		
Yes	98 (82%)	59 (49%)
No	22 (18%)	61 (51%)

Table 5.3: Distribution of family support of case and control among schizophrenic patients.

Variables	Control n(%)	Case n (%)
Family support		
1) Accompany patient during follow up		
Yes	70 (58%)	45 (38%)
No	50 (42%)	75 (63%)
2) Remind follow up		
Yes	97 (81%)	53 (44%)
No	23 (19%)	67 (56%)
3) Supervision of medication		
Yes	70 (58%)	43 (36%)
No	50 (42%)	77 (64%)
4) Remind patient for taking medication		
Yes	98 (82%)	58 (48%)
No	22 (18%)	62 (52%)

Table 5.4: Distribution of life event of case and control among schizophrenic patients.

Variable	Control	Case
	N (%)	N (%)
Life event		
Yes	19 (16%)	36 (30%)
No	101 (84%)	84 (70%)

Table 5.5 : Distribution of age and number of previous admissions .

Variables (n)	Mean	Standard deviation	Min	Maximum
Age (year) (240)	35.74	10.56	16	64
Number of previous hospitalizations (240)	9.09	8.2	1	55
Household income (240)	504.06	408.22	50.00	3000

Figure 5.1: Distribution of control by age

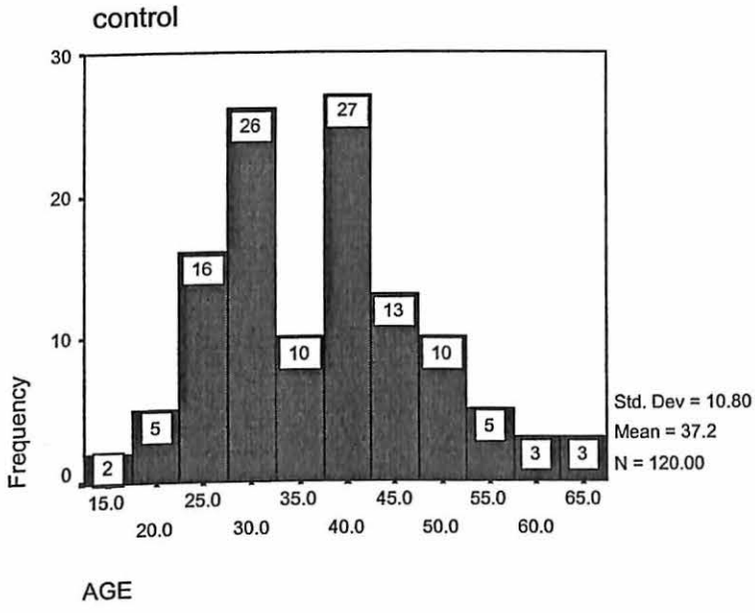


Figure 5.2: Distribution of case by age

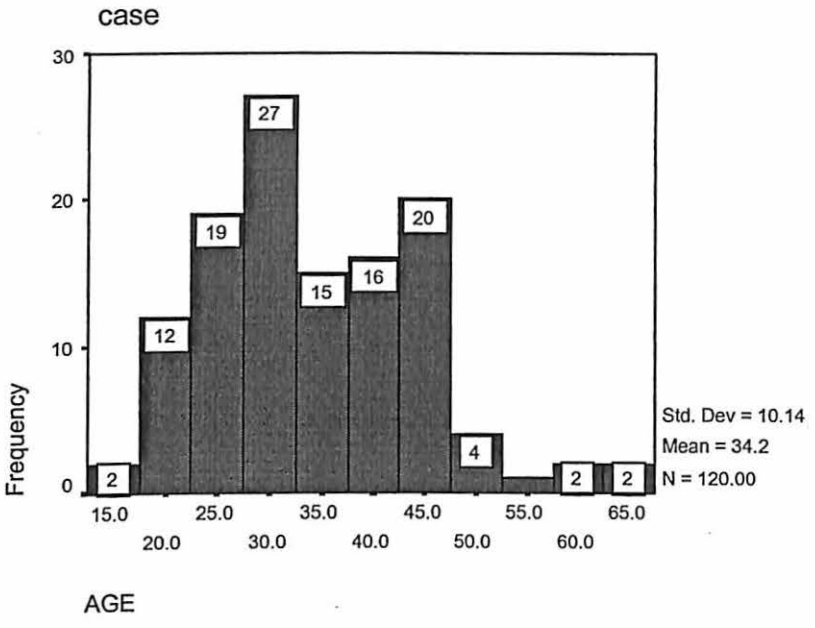


Figure 5.3: Distribution of control by number of previous admissions.

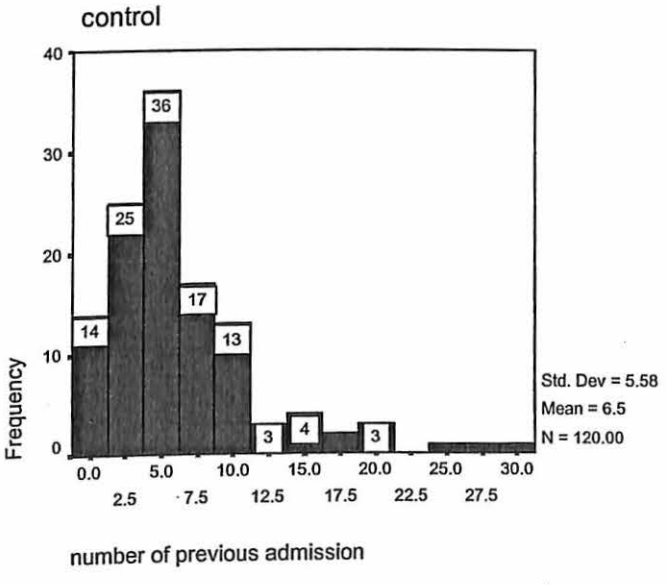


Figure 5.4: Distribution of case by number of previous admissions.

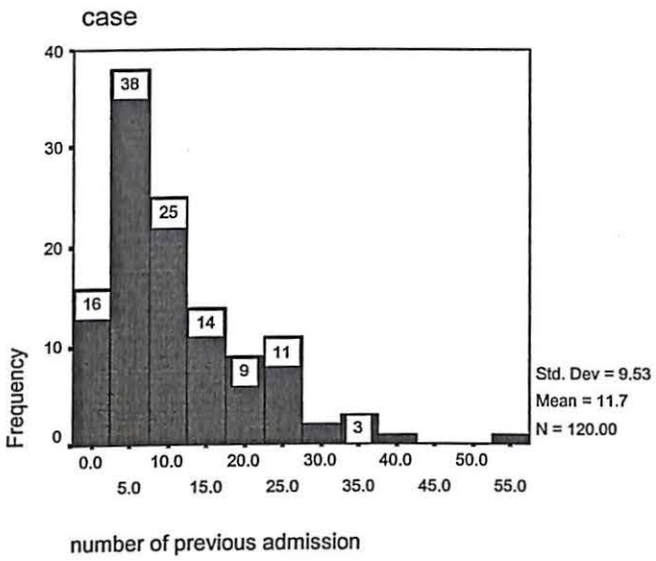


Figure 5.5: Distribution of control by household income.

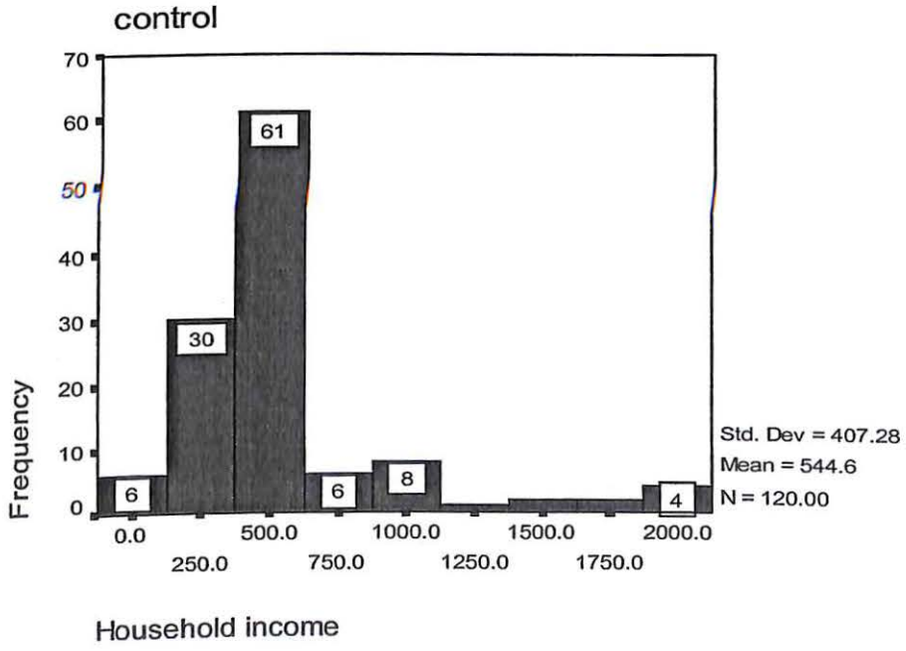
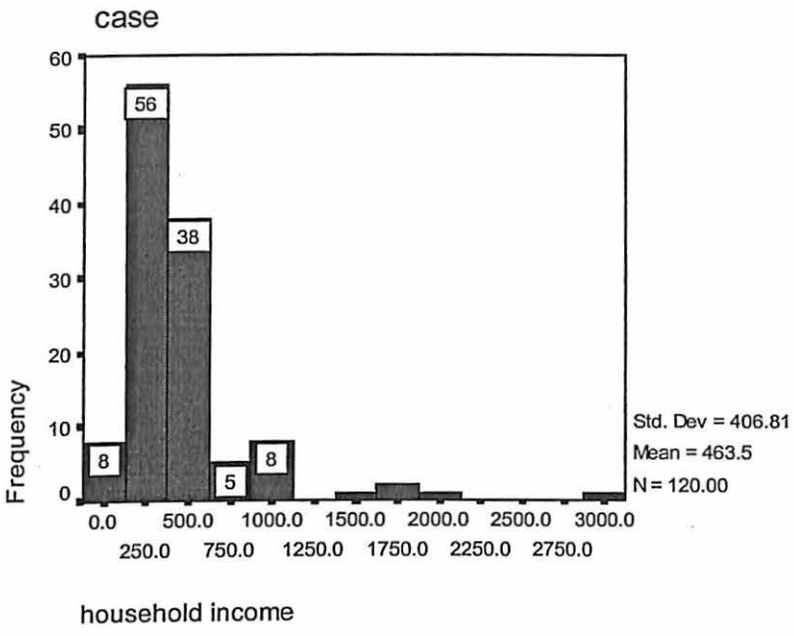


Figure 5.6: Distribution of case by household income.



5.1 Sociodemographic and illness variables and association with repeated admissions

Using univariate analysis to see any association between independent and dependent variables, followed by simple logistic regression.

Repeated admissions were common among men either in control or case group, 75% and 78% respectively as compared to women 25% and 22%. However, the difference between the two groups was not statistically significant ($p > 0.05$). Majority of patients were single, 62% (control) and 61% (case). However, in association with repeated admissions status of single was not statistically significance as compared if the patients were either divorce or married ($p < 0.05$)

Education was not statistically significant as a risk factor for repeated admission (table 5.6). Employment also was not statistically significant as a risk factor for repeated admissions. Age was statistically significant as a protective factor with odd ratio 0.973. Number of previous admissions

was also statistically significance with p value <0.001. However household income was not statistically significant.

About 93% stay with family members whereas 7% stay alone in control group. In case group 83% stay with family and 17% stay alone. Staying alone was highly statistically when test for association with repeated admissions as shown in table 5.6. There was no association between duration of illness and repeated admissions. There was also no association between distance and repeated admissions.

5.1 Sociodemographic and illness variables and association with repeated admissions.

Table 5.6: Association between socio-demographic and repeated admissions

Variable (n)	**Odd ratio (OR)**	**95% Confidence interval**	**P**
1) Gender			
Men (184)	1.205	0.662-2.195	0.542
Women (56)	1	-	-
Variable (n)	**Odd ratio (OR)**	**95% Confidence interval**	**P**
1) Gender			
Men (184)	1.205	0.662-2.195	0.542
Women (56)	1	-	-
2) Marital status			
Divorced (48)	3.305	1.413-7.732	0.006
Single (147)	1.788	0.896-3.567	0.099
Married (45)	1	-	0.022
3) Education			
Primary (69)	1.130	0.646-1.977	0.669
Secondary (171)	1		
4) Employment			
Unemployed (159)	1.510	0.881-2.588	0.134
Employed (81)	1	-	-

Table 5.6: Association between sociodemographic and repeated admissions

Variable	Odd ratio (OR)	95% Confidence interval	P
Age	0.973	0.949-0.997	0.029
Number of previous admission	1.101	1.056-1.148	<0.001
Household income	0.999	0.9-1	0.131

Table 5.6: Association between sociodemographic and repeated admissions.

Variable (n)	Odd ratio (OR)	95% Confidence interval	P
Stay alone (28)	2.798	1.180-6.632	0.019
Stay with family members (212)	1		
Duration of illness			
> 10 years (122)	1.044	0.583-1.870	0.885
5- 10 years(46)	0.666	0.315-1.405	0.286
< 5 years (72)	1		0.422
Distance house to clinic/hospital			
> 10 km (110)	1.217	0.603-2.457	0.583
5-10 km (75)	1.797	0.933-3.46	0.079
< 5 km (55)	1		0.168

Poor compliance was a significant factor for repeated admissions as shown in table 5.7. Those who said no value in treatment were statistically significant associated with repeated admission. As shown in the Table 5.2, page 30, 23 subjects (19%) from the control group said that the treatment had no value or ineffective whereas 97 subjects (81%) still believed that the treatment were of value. In the case group, 75 subjects (63%) claimed no value of the treatment and 45 subjects (38%) had claimed that treatment were still of value. The association between value of treatment claimed by the patients and repeated admission was statistically significant as shown in table 5.7.

5.2: Association between compliance and repeated admissions

Table 5.7: Association between compliance and repeated admissions

Variable (n)	Odd ratio (OR)	95% Confidence interval	P value
Compliance			
Poor compliance (153)	26.98	12-61	<0.001
Good compliance (87)	1		
Treatment valuable			
No valuable (98)	7.029	3.913-12.62	<0.001
Valuable (142)	1		

Insight was noted to be strong risk factor for repeated admissions, poor insight had 10 times more risk for being readmitted if compared to partial insight 3 times. Those who said that follow up were not important also had almost 5 times risk for repeated admission.

5.3 Association between insight and repeated admission

Table 5.8: Association between insight and repeated admission

Variable (n)	Odd ratio (OR)	95% Confidence interval	P value
Insight			
Poor (84)	10.8	5.242-22.435	<0.001
Partial (77)	3.3	1.656-6.583	<0.001
Good (79)	1		
Importance of follow up			
No (83)	4.606	2.567-8.265	<0.001
Yes (157)	1		

Those who came to the clinic follow up without relatives have high risk for repeated admission if compared to those accompanied by relatives. Patients with no relatives to remind them for follow up were statistically significant associated with repeated admissions.

5.4 Association between family support and repeated admissions

Table 5.8: Association between family support and repeated admissions

Variable (n)	Odd ratio (OR)	95% Confidence interval	P value
Relative accompany patient during follow up			
No relative (125)	2.333	1.390- 3.917	0.001
Relative available (115)	1		
Relatives remind for follow up			
No reminder (90)	5.331	2.985-9.522	<0.001
Reminder around (150)	1		
Supervision of medication			
No supervision (127)	2.507	1.490-4.219	0.001
Supervision (113)	1		
Relatives remind patient to take medicine			
No reminder (84)	4.762	2.653-8.546	< 0.001
Reminder around	1		

(156)			

Life event was another factor that associated with repeated admissions

Table 5.9: Association between repeated admissions and life event.

Variable (n)	Odd ratio (OR)	95% Confidence interval	P value
No life event (185) Life event (55)	2.278 1	1.217- 4.263	0.01

Multivariate analysis

Table 6.0: Multivariate analysis

Variables	Odd ratio	Confidence interval	Wald	P value
Age	0.94	0.92-0.98	8.507	0.004
Number of previous admission	1.163	1.088- 1.243	19.68	0.001
Good compliance	0.046	0.017-0.124	36.69	0.001
Poor insight	7.32	2.354-22.766	11.82	0.001
Partial insight	3.08	1.171- 8.1	5.197	0.023
Importance of follow up	2.944	1.033- 8.394	4.08	0.043
Family remind follow up	0.17	0.07-0.412	15.39	0.001

Chapter 6
Discussions

This study is important since repeated admissions become so frequent at Hospital Kota Bharu. From the study, the risk factors for repeated admissions were young age, number of previous admission, poor compliance, poor insight, importance of follow up and family do not remind follow up. Life event was not a significant as a risk factor for repeated admissions.

Review of the result

6.1 Sociodemographic

6.1.1 Gender

Our study found that gender was not significantly related (p 0.542) to repeated admissions. This may be due to small sample size. Many studies however found that gender difference significant, the onset of psychosis for the male patients was earlier than that for the female patients. The onset of psychosis after the age of 35 years occurred in 17% of women and in only 2% of men. The sex difference remained when the cases were divided into first admissions and repeated admission (Loranger ,1984).

According to Lewine RRJ et al (1981) men may have a stronger dose of the genetic predisposition for schizophrenia than women. Firstly indirect evidence for this genetic difference has taken the form of a suggestion that environmental factors were more important in the development of schizophrenia in women than men. Secondly, because men are the biologically more vulnerable to schizophrenia. Third, men more sensitive to stress than women. Such a difference has been demonstrated in experimental studies of animals. There was some evidence that the psychosocial stresses during late adolescence early adulthood were greater for men than women.

Goldstein (1988) in his study tested the hypothesis that schizophrenic women experience a less severe course of illness than schizophrenic men. Ninety patients with diagnoses of schizophrenia, who were in the early stages of illness, were followed for 10 years with respect to rehospitalizations and length of time in the hospital. The results showed women experienced fewer rehospitalizations and shorter stays than did the men.

6.1.2 Age

In this study, subject's age ranged from 17 to 64 years. The average was 35 years. Young age was significantly associated with repeated admissions. This could probably be explained that schizophrenia has its onset at early adulthood, the peak onset was between 15-25 years in men and between 25-35 years in women (Hafner et al, 1994). This in line with other study like Appleby 1993 who also found similar finding. Vincenzo et al (1996) reported that a specific profile for the patient with heightened risk of hospital admission: a young, unmarried, African American male who has schizophrenia without comorbid substance abuse.

6.1.3 Marital status

In our study, we found that married patients (p 0.02) and divorced patients (p 0.006) were risk factors for repeated admission. However being single was not significant (p 0.09). The sample consisted of more single schizophrenics compared to the married ones, and due social and occupational dysfunction, many of them did not get married.

Franklin et al (1975) however found those frequently admission tend to be single, separated or divorced and those less frequent admission tend to be married or widowed. However another study by Appleby et al (1993) mentioned that marital status was not significant at any of the relapse time.

6.1.4 Education

This study did not find any significant association between education and repeated admission. Majority of patients had secondary school (73%) control and case (70%). 28% of patients in the control group attended up to primary school and for case just 30%. Schizophrenic patients have premorbid educational deficits (Jones *et al*, 1994), and the cause of the cognitive impairment commonly associated with the schizophrenic process continues to be debated (Helmsley, 1992).

6.1.5 Occupational status

We found that occupation ($p > 0.133$) and income ($p > 0.05$) were not significant risk factors for repeated admissions. Most of the subjects were unemployed. This was similar to study by Franklin (1975) who suggested that employment per se may be less important in maintaining the ex patient in the community than previously considered.

Majority of the subjects belonged to low social economic class. Patients whose illness had an insidious onset at adolescence did not attain any professional or technical skill, those whose illness started acutely before admission dropped in social class shortly before admission, while those who were mentally subnormal as well as schizophrenic did not achieve any level of skill at all (Goldberg and Morrison, 1963). This reflected the social selection or drift hypothesis among the chronic schizophrenics (Eaton 1985).

6.1.6 Living

Our study found that stay alone was significant as a risk factor $p < 0.02$. As mentioned by Wilcox et al (1965) that 52% of male psychiatric outpatients living alone failed to take drugs, compared to 35% of those living with their wives. This indicates the important role of family members to remind patient taking their treatment.

Our finding further supported by Christensen (1974) from his study, of the 53 successes (were not readmitted), 11 were living a completely isolated life having no contact with other people. This applied to 4 out of 66 failures (repeated admissions) $p < 0.05$. Only 5 of these 15 patients complained of loneliness at follow up. As a whole, all the patients were living a very isolated life, the majority having only very little contact with others, and then as a rule with their parents, siblings or spouses. Loneliness, poor housing conditions and social conflicts contributed to sending the patient back to hospital.

However if they have high stress relatives, patients still relapse than patients receiving medication and low stress relatives (Vaugh and Leff, 1976).

6.1.7 Number of previous admission.

There was significant association between numbers of previous admission ($p < 0.001$) with repeated admissions. These findings were consistent with that of other studies described below.

Fontana and Dowds (1975), who identified the variable of past psychiatric hospitalizations as the most potent predictor of rehospitalization. Rosenblatt and Mayer also concluded that the number of previous hospitalizations was the most consistent factor in readmission.

Bene - Kociemba *et al*, (1979) found that, the more a patient has been hospitalized in the past, the more likely he or she is to be hospitalized in the future. What was striking about her finding was the appearance of previous hospitalizations as a factor during the latter 6 months of the study period. The pull of returning to the hospital seems to build up gradually during the first year out of the hospital. Until the community can fulfill the role of home to patients who have hardly known another besides the hospital, this phenomenon is likely to continue.

6.1.8 Duration of illness

In our study, this variable was not significance as a risk factor for repeated admissions, < 5 years p-0.422, 5- 10 years p- 0.286 and > 10 years p – 0.885. There were not many study linked duration of illness with repeated admissions. However, Christensen (1974), noted that successes (were not readmitted) were older at discharge, had a longer duration of illness than the failures, over 20 years 26 successes whereas failures (repeated admission) were 14 ($p < 0.005$). They used different classification of duration of illness, 5-10 years, 11-20 years and over 20 years.

6.1.9 Distance of clinic or hospital from house

Distance from house was not significant as a risk factor for repeated admission. It was not surprising that this variable was not significant, even if a patient stays beside a clinic or hospital. It doesn't prevent patient from repeated admission because the main factors are compliance, insight and family support. These factors will help patients from being repeated admission.

6.2 Compliance

We found, compliance was a protective factor for repeated admissions. Our study showed 93% of non compliance were in case group whereas 34% were in control group. Many researchers have reported that compliance was important to prevent relapse as well as readmission.

In a 5 year follow up study of male schizophrenic patients Christensen (1974) found that problems with medication were the most important cause of readmission. Drug therapy was an important defense against relapse. Marked differences in relapse rate between patients receiving placebo and neuroleptic drugs have been observed (69% after 1 year for the placebo group versus 26% for the neuroleptic group). First year relapse rates can be reduced from 75% to 15% with neuroleptic treatment. Follow up studies suggest that non compliance with medication, pharmacological factors, psychosocial factors, alcohol and drug abuse contribute to setting off new psychotic episodes. The most important of these was non compliance with medication.

From local study, Razali (1995) claimed that improving compliance alone by monitoring follow up and regular drug intake will reduce the risk of relapse significantly. Other author (Ariff 2000) showed compliance is important to reduce readmission but need active family involvement.

Study by Goodpastor (1991) found that noncompliance with medication and noncompliance with therapy appointments were the only significant predictors of rapid relapse. Apart from that, the

relationship was between frequent rehospitalization and compliance with treatment. Green JH (1988) on his study on frequent rehospitalization and noncompliance with treatment found that 92% of patients were not compliance to the treatment.

In our study, compliance was found to be a protective factor from repeated admissions with p <0.0001. Poor compliance is a very important factor that leads to repeated admission. This finding was similar to that of H. Verdoux *et al.* (2000), subjects with poor medication adherence were five times more likely to present with an episodic course of illness. They were at increased risk of being readmitted; in particular, the risk of compulsory admission was three times greater in subjects with poor medication adherence. According to them, poor medication adherence during the first 6 months of the follow up strongly predicted poor medication adherence during the next 18 months. This result was similar to that reported in earlier studies.

Majority of schizophrenic patients who suffered a clinical exacerbation and required hospitalization (73%) did not comply with the treatment prescribed (Ayuso, 1997). In view of poor compliance, many measures had been taken, for example Psychiatric department Hospital Kota Bharu have developed community services like home visit by domiciliary team (Suarn S, 1999). This team comprise of a medical doctor, staff nurses, medical assistant will visit patients to giving treatment and assessing the progression of patient.

Psychoeducation program has been started in January 2001, most patients with records of frequent readmissions were identified and enrolled for psychoeducation. Selected inpatients will attend at least one session of psychoeducation before discharge. After discharge, patients who were judged by their treating doctor as having poor insight or poor treatment compliance would then be referred for psychoeducation again.

This program emphasizes on brief account on schizophrenia, common symptoms and signs, possible etiology, types of medications prescribed, emphasis on the need for regular medications and follow-up and common side effects of medications. Patients were explained in layman terms and had opportunity to raise any questions or concerns after the session. Each session was conducted in a group of 10-15 patients and typically took about 30 minutes. The objectives of this program were to reinforce compliance and to give insight (Lee D. H., 2003).

6.3 Insight

We found that poor insight will lead to 7 times increased risk for repeated admission. About 53% of patient had poor insight and 33% had partial insight. Research suggested that persons with schizophrenia were often unaware of their psychiatric symptoms and the emotional, cognitive and behavioral manifestations of their disorder. Two independent multinational studies estimated that poor insight exists in > 80% of persons with schizophrenia which suggests that poor insight may be an important manifestation of schizophrenia and may have prognostic and treatment implications (Carpenter et *al*, 1976).

According to Macpherson *et al* (1996) only 26% of long term psychiatric patients believed they were psychiatrically ill. Green JH (1988) reported 44% of patients had denial of illness in his study. Impaired insight was associated with the belief that treatment was unnecessary and a wish to stop treatment. Similarly, McEvoy *et al* (1989) found that schizophrenic patients with insight were more likely to co-operate with treatment. Schizophrenic patients have also demonstrated low levels of knowledge about illness and treatment (Geller, 1982). As reported by Kent *et al* (1994), lack of insight or denial of illness was cited in 62.2% of the patients' 442 total admission, followed by relationship problems (61.1%), suicidal ideation (44.8%) and noncompliance with medication (43.2%)

Several studies have linked assessments of awareness to medication adherence and the likelihood of hospital readmission, as reviewed by Amador and Strauss (1993). These studies were, however, limited by retrospective designs, inadequate measures of illness awareness, and inattention to modes of treatment other than medication.

6.4 Continous follow up

According to Goodpastor (1991), the only significant predictors of relapse were noncompliance with medication and noncompliance with clinic appointments. Consequently, the effectiveness of outpatient treatment may be less an issue than compliance with treatment. This assumption was strengthening by the finding that outpatient commitment can substantially delay readmission. Thus this study supports the work of other authors, Green JH (1988) who has suggested that increased use of outpatient commitment was an effective means of reducing relapse. Long term follow up indicates that some schizophrenic patients will remain relapse free and that there were patients who remain well without neuroleptics, but it is not possible to select those for whom prophylactic neuroleptics will not reduce the risk of relapse (Johnstones *et al*, 1994).

6.5 Family support

We found that family support play an important role in preventing repeated admissions. After multivariate analysis, only variable as family members who did not remind patient for follow up was noted to be of significance. Schizophrenic patient more often took their drugs being supervised by a relative (Parkes, Brown and Monck, 1962). There was evidence from number of studies that families are heavily relied on to take care of their members. However after patients have had several hospitalizations that families may separate patients from them (Nyman *et al* 1983).

Many studies emphasize the importance of family support. According to Christensen *et al* (1974), a need of more extensive after care facilities and a closer contact with relatives was important in preventing readmissions and making life easier for the patients and their family in the community. He found that repeated admission took at own request discharge. The successes (were not readmitted) were more socially isolated, and at the time of follow up, they were less accepted by their relatives and had less of an awareness of being mentally ill. Aggravation of psychotic symptoms because of the patients' omission to take prescribed drugs was the most important cause of readmissions. At the time of follow up, more successes were severely disturbed. All the patients showed increasing social and familial problems during the follow up period.

Winston (1977) found that schizophrenics who continue treatment after discharge from the hospital were rehospitalized at a significantly lower rate than schizophrenics who did not enter follow-up treatment. As mentioned by John *et al* (1997), the readmitted patients had less family involvement. According to Franklin (1975) those readmitted rarely interacted with relatives and frequently spent their time sitting, thinking and daydreaming.

6.5 Life event

From our study, life event was noted to be significant (p-0.01) at univariate analysis, however after multivariate analysis it was not significant enough to be considered as a risk factor for repeated admission. Out of 120 patients in control group only 19 (16%) patients had life event whereas 36 patients (30%) case group had life events. All of them had life change unit (LCU) less than 300, which was low or mild.

Many studies have found that life events contributed to frequent readmission (Brown et al, 1972; Leff et al, 1973 and Bebbington et al, 1993). Canton et al in 1985 also found that life event as a

contributory factor in the development of schizophrenic episodes in a large proportion of patients. The fact that 28% of the patients in his sample developed an acute schizophrenic episode in the absence of significant life events and that majority of relapse chronic schizophrenic patients had a life event pattern similar to that of the normal population suggested that life events were not necessary precondition for development of the disturbance.

Schizophrenic patients living in the community and not taking drugs seem to relapse as a result of the disturbing effects of everyday social interactions. Outpatients on maintenance therapy were protected against the stresses implicit in uneventful social intercourse, and were unlikely to relapse unless exposed to some additional stress in the form of one or other life event as measured in the study (Leff *et al*, 1973).

According to McEvoy et al (1984), two subgroups of relapsed and rehospitalized schizophrenic patients were separated on the basis of preadmission compliance or noncompliance with prescribed antipsychotic medications. Noncompliant patients had a gradual onset of episode with prominent psychotic features, required involuntary commitment and remained in hospital longer. Compliant patients had a rapid onset of symptoms with prominent affective features (anxiety and depression), which were frequently associated with environmental stressors independent of the patient.

Compliant patients were usually voluntary admissions and recovered quickly with minimal or no change in their antipsychotic pharmacotherapy. The pathogenesis of relapse among drug compliant patients remains unknown, but likely includes aspects of environmental stress, an emergent affective syndrome, and to some less clear extent, akinesia and akathisia.

Chapter 7

Conclusions

In conclusion, this study has highlighted the risk factors that lead to repeated admissions. There were many factors contributed to repeated admissions young age, number of previous admission, good compliance, poor insight, partial insight, importance of follow up, family remind patient for follow up.

Chapter 8

Limitations

1) The patients in our study were not representative of the entire spectrum of people with schizophrenia because they were in patients from a geographically defined area.

2) Some of family members refused to come for further interview may be because of social stigma and poor financial status.

3) The results of other studies were difficult to summarize and compared because the range of variables varied from study to study. The literature reviews were also limited because we used different approach to conduct this study. We also had difficulty in getting local literature related to subjects studied.

4) Questionnaire was not properly validated even though content validity and factorial analysis had been done.

5) We relied on the report of patients and their relatives and healthcare professionals for our measure of compliance. This was not ideal and like pill counts and serum drug levels probably overestimates compliance.

Chapter 9

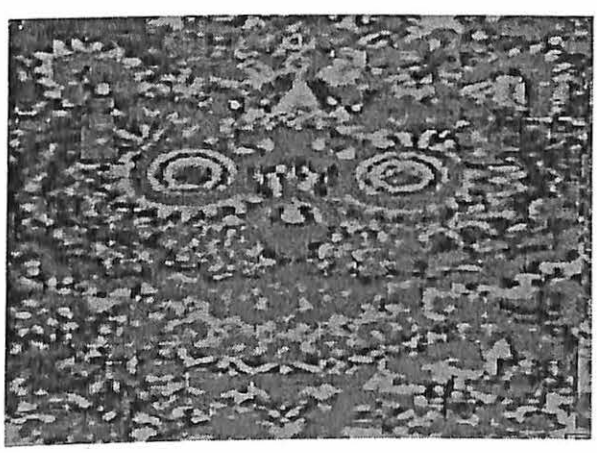
Recommendations

From the pictures below which drawn by Loius Wain , a schizophrenic patient also an artist in 20th century who was cat lover. As the disease progress the picture from a to d also deteriorated, (Salina Abdul Aziz, 31st August 2003 Mingguan Malaysia).

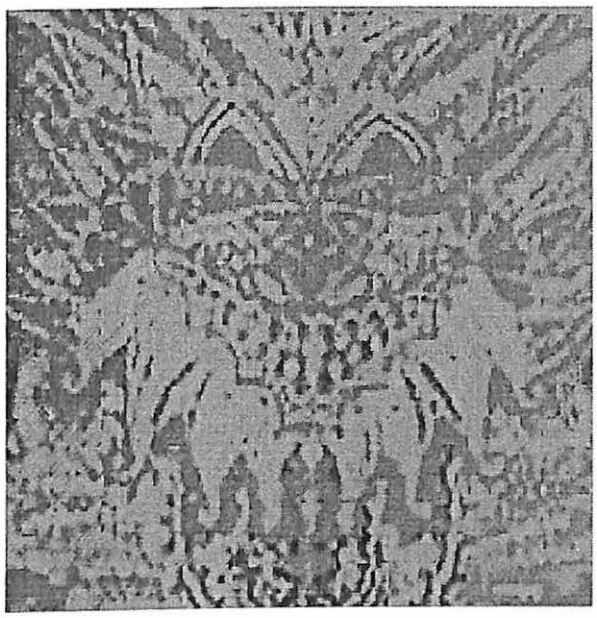
a)

b)

c)



d)



As a Family Physician we can't prevent admission but at least we can try to delay the progression as well as admission. Johnstone (1994) reviewed studies published between 1932 and 1980 in which the mean follow-up period was at least 10 years and the reported outcomes could be graded as recovered, improved or not improved. Across these 22 studies totaling more than 4,000 patients, the proportion classified as recovered ranged from 2% to 52% (median 26%); the proportion reported as improved ranged from 8% to 46% (median age 26%); and the proportion not improved ranged from 17% to 80% (median 50%). Among seven studies published since 1970, the proportion of cases not improved ranged from 17% to 47% (median 35%), confirming the trend toward better outcomes in recent years (Henry and Donald, 2002). So we must do something to improve further:

1) Family members should be educated about the disease. Families often live with patients on a 24-hour basis, yet most feel they have been given little or no information from mental health professionals, nor are they encouraged to seek it out for themselves. They need clear, nontechnical

explanations and the most accurate prognosis possible. They also need advice about appropriate techniques for handling disturbing behaviors and information on the availability of resources.

2) Receiving a variety of services had the greatest impact on lengthening community tenure. Community mental health aftercare services may not prevent readmission in general, but they seem to be effective in lengthening the time between readmissions. The influence of the number of types of services can be seen as mentioned by Solomon (1984).

3) Hospitals should have guidelines for hospitalization of the chronic patients. These guidelines should suggest a change in the way the psychiatric hospital is being utilized. Hospital is part of comprehensive, continuous and coordinated mental health services in which specific target problems can be diagnosed, managed and treated in order to maintain the patient in the community.

4) Hospital should have discharge plan before sending patient to community.

5) Those that are discharged should be referred to Psychosocial Rehabilitation Centre at Health Clinic if they fulfilled the criteria for example interested to participate in the program or those who are poor compliance. So there is continuity of care between hospital and health clinic. At the moment there is no teamwork between them. Whenever patient discharged to the community, there is no system to alert the health clinic to follow up this patient. It is up to the patient or their family members to continue the treatment.

6) In future, this study can be extended to analyze those referred to Health Clinic for Psychosocial Rehabilitation Program and those referred to Health Clinic without any intervention.

It is important for those who are working at primary clinic to emphasize patient and family members on these factors. Indirectly, we can reduce the number of admission as well as

unnecessary admission. The quality of life can also be improved and save money from hospitalization.

References

Adams,S.G. & Howe,J.T. (1993). Predicting medication compliance in a psychotic population. *J Nerv Mental Dis*, 181,558-560.

Al Khani et al: Life Events and Schizophrenia (1986): A Saudi Arabian Study. **Br J Psychiatry, 148, 12-22.**

Amador XF, Strauss DH, Yale SA, Flaum MM, Endicott J, Gorman JM (1993). Assessment of insight in psychosis. *Am J Psychiatry* 150: 873-879

Appleby L, Desai PN, Luchins DJ, Gibbons RD, Hedeker DR (1993):Length of stay and recidivism in schizophrenia: a study of public psychiatric hospital patients. *Am J Psychiatry.* 150: 72-76

Arif Mohd, M.N.(2000): Determinants of compliance with medication in schizophrenic patients-a study on relapse cases. Dissertation submitted in partial fulfillment of the requirements for the degree of master of medicine (psychiatry). Universiti Sains Malaysia.

Ayuso- Gutierrez JL, del Rio Vega JM (1997). Factors influencing relapse in the long term course of schizophrenia. *Schizophr Res* Dec 19; 28(2-3): 199-206

Bebbington et al: Life Events and Psychosis initial results from the Camberwell Collaborative Psychosis Study.*Br J Psychiatry* (1993), 162, 72-79

Bene- Kociemba A, Cotton PG, Frank A 1979: Predictors of community tenure of discharged state hospital patients. *Am J Psychiatry* 136: 1556-1561.

Birnbaum, M.H. & Sotoodeh, Y.(1991). Measurement of stress: Scaling the magnitudes of life changes, *Psychological Science*, 2, 236- 243.

Bleuler E: Dementia Praecox or the Group of Schizophrenia.New York, International Universities Press, 1950.

Breier, A, Schreiber, J.L., Dyer, J & Pickar, D.(1991). National Institute of Mental Health longitudinal study of chronic schizophrenia: Prognosis and predictors of outcome. *Arch Gen Psychiatry*, 48,239.

Brown,C.W. and Birley,J.L.T and Wing,J.K.(1972).Influence of family life on the course of schizophrenic disorders: a replication. *Br J Psychiatry*, **116,327**-33

Canton G, Fracon G (1985). Life events and schizophrenia. A replication.*Acta Psychiatr Scand*, 71,211-216.

Carpenter WT, Bartko JJ, Carpenter CL, Strauss JS (1976). Another view of schizophrenia subtypes. *Arch Gen Psychiatry* 33: 508-516

Carpenter, W.T. and Buchanan, R.W. 1995. *Schizophrenia: Clinical feature.* In : Kaplan, H.I. & Sadock, B.J. (Editors) Comprehensive Textbook of Psychiatry, Sixth edition, Williams & Wilkins,1,889-902.

Christensen JK 1974: A five year follow –up of male schizophrenics: evaluation of factors influencing success and failure in the community. *Acta Psychiatr Scand* 50: 60-72

Colin O'Donnell, Gary Donohoe, Louise Sharkey, Nicholas Owens, Maria Migone, Raewyn Harries, Anthony Kinsella, Conall Larkin, Eadbhard O.(2003).Compliance therapy: a randomized controlled trial in schizophrenia. *BMJ*; 327:834

Craig, T.K.J., Drake ,H., Mills,K., & Boardman,A.P. (1994). The South London somatisation study: II. The influence of stressful life events and secondary gain. *Br J Psychiatry* , 165,248-258.

Crandall, C.S. (1992). Psychological scaling of stressful life events. *Psychological Science.* 3, 256-258.

David,A., Van Os, J., Jones,P., Harvey, I., Foerster, A. Fahy,T.(1995). Insight and psychotic illness: Cross- sectional and longitudinal associations. *Br J Psychiatry.* 167,621-628.

David, A.S. & Beck- Sander, A. (1998). Commentary on: 'Is insight into psychosis meaningful'? *Journal of Mental Health*, 7, 579-588.

Donald J.S. and Henry A.N. (2002). *Contemporary Diagnosis and Management of The Patient With Schizophrenia,* p. 97. Pennsylvania: Handbooks in Health Care Co

Eaton, W.W. (1985). Epidemiology of schizophrenia. Epidemiologic Review, 7,105-126.

Ellison JM, Blum N, Barsky AJ (1986): Repeat visitors in the psychiatric emergency service: a critical review of the data. *Hosp Community Psychiatry* 37:37- 41,

Evans, L. and Spelman, M. 1983. The problem of non compliance with drug therapy. *Drugs*, 25, 63-76.

Falloon,I.R.H., Boyd, J.L., McGill,C.W.,et.al.1982. Family management in the prevention of exacerbations of schizophrenia. *The New England Journal of Medicine*,306,1437-1440.

Fontana AF, Dowds BN. (1975). Assessing treatment outcome: II. The prediction of rehospitalization. *J Nerv Ment Dis* 161:231-238.

Franklin JL, Kittredge LD, Thrasher JH. (1975). A survey of factors related to mental hospital readmission. *Hosp Community Psychiatry* 26: 749-751.

Goldberg, E.M. and Morrison, S.L.(1963). Schizophrenia and social class. *Br J Psychiatry*, 109,789-802.

Goldstein JM (1988) : Gender differences in the course of schizophrenia. *Am J Psychiatry.* 145:684-689

Goldstein, J.M. & Tsuang,M.T. (1990). Gender and schizophrenia: An introduction and synthesis of findings. *Schizophrenia Bulletin*, 16,179.

Geller, J.L. (1982) State hospital patients and their medication- do they know what they take? *Am J Psychiatry* . 134, 287-289.

Geller JL (1986) : In again, out again: preliminary evaluation of a state hospital 's worst recidivist. *Hosp Community Psychiatry* . 37:386-390

Goodpastor WA, Hare BK (1991). Factors associated with multiple readmissions to an urban public psychiatrc hospital. *Hosp Community Psychiatry*. 42:85-87

Green JH (1988) : Frequent rehospitalization and noncompliance with treatment. *Hosp Community Psychiatry*; 39:963-966

Greenberg, R.N. (1984). Overview of Patient Compliance with Medication Dosing. A Literature Review . Clinical Therapeutic, 6, 592-599.

H. Verdoux, J. Lengronne, F. Liraud, B. Gonzales, F. Assens, F. Abalan, J. van Os (2000). *Acta Psychiatr Scand.* 102: 203-210

Hafner, H., Maurer,K.,loffler,W.et al (1994). The epidemiology of early schizophrenia: Influence of age and gender on onset and early course. *Br J Psychiatry.* Suppl 23,29-38.

Harris M, Bergman HC, Bachrach LL (1986). Psychiatric and nonpsychiatric indicators for rehospitalization in a chronic patient population. *Hosp Community Psychiatry* .37:630-631

Haywood TW, Kravitz HM, Grossman LS, Cavanaugh JL Jr,Davis JM, Lewis DA (1995). Predicting the revolving door phenomenon among patients with schizophrenic, schizoaffective and affective disorders. *Am J Psychiatry.* 152:856-861

Heikkinen,M., Aro, H., & Lonnqvist,J. (1992). Recent life events and their role in suicide as seen by the spouses. *Acta Psychiatr Scand.* 86,489-494

Heinrichs,D.W., Cohen, B.P. & Carpenter,W.T.Jr.(1985). Early insight and the management of schizophrenic decompensation. *J Nerv Ment Dis,* 173,133-138.

Helmsley,D.R.(1992).Cognitive abnormalities and schizophrenic symptoms. *Psychological Medicine* . 22,839-842.

Holmes, I.H. & Rahe, R.H. (1967). The Social Readjustment Rating Scale. *Journal of Psychosomatic Research,* 189-194.

Huber G, Gross G, Schuettler R (1980): Longitudinal studies of schizophrenic patients. *Schizophr Bull* ; 6: 592-605.

John et al (1997). Predicting Readmission to the Psychiatric Hospital in a Managed Care Environment: Implications for Quality Indicators . *Am J Psychiatric.* 154: 337-340.

Jones, R., Guth, L., Lewis, S., et al (1994) . Low intelligence and poor educational achievement precede early onset psychosis. In *The Neuropsychology of Schizophrenia* (eds A.S. David & J.C. Cathy), pp 131-144. Hove: Lawrence Erlbaum Associates.

Johnstones EC, Geddes J.(1994).How high is the relapse rate in schizophrenia .*Acta Psychiatr Scand* .Suppl:382:6-10

Kaplan, H.I. & Sadock, B.J. (1995). Comprehensive Textbook of Psychiatry, 6th Edition, Williams and Wilkins, 1, 534-543

Kaplan, H.I. & sadock, B.J. (1998). Synopsis of Psychiatry, Behavioral Sciences / Clinical Psychiatry, 8th Edition, Williams and Wilkins, 254,457-491.

Kastrup M.(1987). The use of a psychiatric register in predicting the outcome revolving door patient. *Acta psychiatr scand.* 76,552- 560

Kastrup M. (1987). Who became revolving door patients: Findings from a nation-wide cohort of first –time admitted patients. *Acta psychiatr scand.*76 ,80-88

Kavanaugh DJ (1992): Recent developments in expressed emotion and schizophrenia. *Br J Psychiatry.*160: 601-620

Kemp R, Hayward P, Applewhaite G, Everitt B, David A.(1996) Compliance therapy in psychotic patients : randomized controlled trial. *BMJ.* 312:345-9

Kemp R, Kirov G, Everitt B, Hayward P, David A (1998). Randomised controlled trial of compliance therapy. 18 months follow up. *Br J Psychiatry* .172:413-9

Kent, S. & Yellowlees, P. (1994). Psychiatric and social reasons for frequent rehospitalization. *Hosp Community Psychiatry.* 45, 347-350.

Lee D.H. (2003). Insight in schizophrenia: Its relationship to illness profile and psychopathology. Dissertation submitted in partial fulfillment of the requirements for the degree of master of medicine (psychiatry). Universiti Sains Malaysia.

Leff JP,Hirsh SR,Gaind R, Rhodes PD,Stevens BC. Life events and maintenance therapy in schizophrenia relapse. *Br J Psychiatry* 1973;123:659-60

Leff,J., Kuipers,L., Berkowitz,R., Eberlain- Vries, R. and Sturgeron,D. (1982). A controlled trial of social intervention in the family of schizophrenic patients. *Br J Psychiatry*, 141,121-134.

Liberman,R.P. (1994). Psychological treatment for schizophrenia. *Psychiatry*,57,104-114.

Lewine RRJ, Strauss JS, Gift TE (1981): Sex differences in age at first hospital admission for schizophrenia: Fact or artifact? *Am J Psychiatry.* 138: 440- 444

Loranger, A.W. (1984) . Sex difference in age of onset of schizophrenia. *Arch Gen Psychiatry*, 41, 157-161.

MacPherson, R., Jerrom, B. & Hughes, A. (1996). Relationship between insight, educational background and cognition in schizophrenia. *Br J Psychiatry,* 168, 718-722.

McEvoy JP, Howe AC, Hogarty GE (1984). Differences in the nature of relapse and subsequent inpatient course between medication-compliant and noncompliant schizophrenic patients. *J. Nerv Ment Dis.* 172(7):412-6

McEvoy, J.P., et al (1989b). Insight and the clinical outcome of schizophrenic patients. *J. Nerv Ment Dis*, 177,48-51.

Nagomoto, H.T. (1996) *Schizophrenia and Schizophreniform disorders*. In: Jacobson, J.L.& Jacobson, A.L. (Editor) Psychiatric Secrets, First Edition, 1996, Hanley & Belfus, Inc, 53.

Nasir (1994).Kajian tentang kekerapan kemasukan kes ulangan di wad psikiatri, Jabatan Psikiatri,Hospital Kota Bharu. Unpublished.

National Indicators in Psychiatry (2001). Notes on implementation .Ministry of Health.

Nyman AK, Jonsson H.(1983) : Differential evaluation of outcome in schizophrenia. *Acta Psychiatr Scand* .68:458-475.

O' Connor, R. & Hen-man, H. (1993). Assessment of contributions to disability in people with schizophrenia during rehabilitation. *Australian and New Zealand Journal of Psychiatry* , 27, 595-600.

Parkes, C.M., Brown, G.M. and Monck, E.M. (1962). The General Practitioner and the schizophrenic patients. *BMJ.* 972-976

Pillow ,D.R.,Zautra,A.J. & Sandler, I (1996). Major life events and minor stressors: Identifying mediational links in the stress process. *Journal of Personality and Social Psychology.* 70, 381-394.

Razali, M.S. and Yahya,H. 1995.Compliance with treatment in Schizophrenia: A drug intervention program in a developing country. *Acta Psychiatr Scand.* 31,331-335.

Rosenblatt and J.E. Mayer (1974). The recidivism of mental patients: A review of past studies. American Journal of Orthopsychiatry, Vol 44,697-706.

Salina Abdul Aziz (31 August 2002). Mengenal dunia schizophrenia. Mingguan Malaysia

Salokangas RKR (1983): Prognostic implications of the sex of schizophrenic patients. *Br J Psychiatry* ; 142: 145-151.

Schwartz,R.C., Cohen,B.N. & Grubaugh, A.(1997). Does insight affect long-term inpatient treatment outcome in chronic schizophrenia? *Comprehensive Psychiatry,* 38,283-288.

Serban G, Thomas A (1974). Attitudes and behaviour of acute and chronic schizophrenic patients regarding ambulatory treatment. *Am J Psychiatry.* 131: 991-995.

Solomon P, Davis J, Gordon B (1984). Discharged state hospital patient's characteristics and use of aftercare: effect on community tenure. *Am J Psychiatry* . 141. 1566-1570

Smith,J.A., Hughes, I.C.T. & Budd,R.J. (1999). Non compliance with antipsychotic depot medication: Users' views on advantages and disadvantages. Journal of Mental Health, 8, 287-296.

SR Hirsh (1994). Psychosocial factors in the cause and prevention of relapse in schizophrenia. *BMJ* V286 1600-1603.

Suarn, S. (1999). Kota Bharu Hospital Report 1999, Kota Bharu Hospital, Kelantan.

Surber RW, Winkler EL, Monteleone M, Havassy BE, Goldfinger SM, Hopkin JT (1987). Characteristics of high users of psychiatric inpatient services. *Hosp Community Psychiatry* . 38: 1112-1114

Taylor, K.E. & Perkins, R.E. (1991). Identify and coping with mental illness in long stay psychiatric rehabilitation. *British Journal of Clinical Psychology.* 30, 73-85.

Van Putten, T.1974.Why do schizophrenic patients refuse to take their drugs? *Arch Gen Psychiatry.*31,67-72.

Vaugh, C.E. and Leff, J.P. (1976). The influence of family and social factors on the course of psychiatric illness. *Br J Psychiatry* . 129, pp 125-137

Vincenzo et al (1996): Retrospective Study of 2,200 Involuntary Psychiatric Admissions and Readmissions. *Am J Psychiatric* .153:392-396

Weiden PJ, Olfson M (1995).Cost of relapse in schizophrenia. *Schizophr Bull.* 21 (3): 419-29

Willcox, D.R.C. and Gillon, R.1965. Do psychiatric out patients take their drugs? *BMJ.* 2, 790-792.

Wilson, J.D. & Enoch,M.D. (1967). Estimation of drug rejection by schizophrenic inpatients with analysis of clinical factors. *Br J Psychiatry*, 113,209-211.

Winston A, Pardes H, papernick D, et al (1977): Aftercare of psychiatric patients and its relation to rehospitalization. *Hosp Community Psychiatry.* 28: 118-121.

Young, D.A., Davilla, R. & Scher, H. (1993). Unawareness of illness and psychological performance in chronic schizophrenia. *Schizophrenia Research*, 10, 117-124.

Zautra, A.J., Reich ,J.W., & Guarnaccia,C.A. (1990) .Some everyday life consequences of disability and bereavement for older adults. *Journal of Personality and Social Psychology.* 57, 550-561.

Zhang , Y, Song , W., Yao, L., & Xia, C. (1992). Preliminary analysis of revised life event experience schedule in 560 patients. *Acta Psychologica Sinica*, 24,35-42.

Appendices

1A : DSM-IV DIAGNOSTIC CRITERIA FOR SCHIZOPHRENIA

Characteristic symptoms

Two or more of the following, each present for a significant portion of time during a one month period or less if successfully treated.

a) Delusion
b) Hallucinations
c) Disorganized speech
d) Grossly disorganized or catatonic behaviour
e) Negatives symptoms, i.e. affective flattening, alogia or avolition

Social/ occupational dysfunction

For a significant portion of the time since the onset of the disturbance, one or major areas of functioning such as work, interpersonal relations , or self care are markedly below the level achieved prior to the onset (or when the onset is in childhood or adolescence, failure to achieve expected level of interpersonal, academic or occupational achievement.

Duration

Continous signs of the disturbance persist for at least six months. This six month period must include at least one month symptoms or less successfully treated that meet criterion A (i.e. active phase symptoms) and may include period of prodormal or residual symptoms. During this prodormal or residual periods, the signs of the disturbance may be manifested by only negative symptoms or two or more symptoms listed in criterion A present in an attenuated form

D. Schizoaffective and mood disorder exclusion

Schizoaffective disorder and mood disorder with psychotic features have been ruled out because either (1) no major depressive, manic, or mixed episodes have occurred concurrently with the active-phase symptoms, or (2) if mood episodes have occurred during active-phase symptoms, their total duration have been relative to the duration of the active and residual periods.

E. Substance/ general medical condition exclusions

The disturbance is not due to the direct physiological effects of a substance (e.g. a drug of abuse, a medication) or a general medication condition.

F. Relationship to a pervasive development disorder

If there is a history of Autistic Disorder or another Pervasive Development Disorder, the additional diagnostic of Schizophrenia is made only if prominent delusions or hallucinations are also present for at least one month (or less if successfully treated)

1B Questionnaire

No.

A)Sociodemographic data
1)Address----------

2) Sex:----
1= Male
2= Female

3) Age---

4) Marital status-------

1= married
2= single
3= widow
4= divorced

5)Educational status--------

1= no formal education
2= primary school
3= secondary school
4= university
5 = post graduate

6) Job

1= employed
2=unemployed
3=unknown

7) Income:-------

8) Stay with:-------

1=parent
2= spouse
3=sibling
4=children
5=alone

9) Number of previous admission-----

10) Duration of illness

1)<1 year

2)1-5 years
3)5-10 years
4)> 10 years
11) How far your house from the clinic or hospital that you regularly take your medication?
1) <5 km
2)5-10 km
3)>10 km

B. Compliance.
12) Did you miss 2 consecutives doses over a period of 2 weeks?
1) Yes
2) No
3) Unknown

13) Did you default more than 1 follow-up visit since the last discharge (Date of last discharge)
1)Yes
2) No
3) Unknown

14) How much the medication left at home?
1) Nil
2) A few tablets
3) Large amount

15) Is the drug valuable to you?----
1) Yes
2) No
3) Unknown

C Insight

16) What problem have brought you to hospital over the year?
1) Mental illness
2) Physical illness
3) Others, please state----------
4) Unknown

17) Do you need treatment for the above problem ?
1) Yes
2) No
3) Unknown

18) Do you need continous follow up?
1) Yes
2) No
3) Unknown

D Family support

19) Who do you normally come to your follow up with?
1) Alone

2) Parents
3) Spouse
4) Relatives
5)Others, please specify----------

20) Do your family member often remind you about follow up?
1) Yes
2) No
3) Unknown

21) Who supervised your medication?
1) Self
2) Parents
3) Spouse
4) Relative
5)Others- specify--------

22) Will they remind you to take medication if you forget?
1) Yes
2) No
3) Unknown

E Life event.

23) Do you have any life events for the past 6 months?
1) Yes
2) No
3) Unknown

24) If yes, please explain
Refer to Life Event scale(Holmes and Rahe Social Readjustment Rating Scale)

Life event scale	
Life event	Value
Death of spouse	119
Divorce	98
Death of close family member	92
Marital separation	79
Fired from work	79
Major personal injury	77
Jail term	75
Death of close friend	70
Pregnancy	66
Major business readjustment	62
Foreclosure on a mortgage or loan	61
Gain of new family member	57
Marital reconciliation	57
Change in health or behaviour of family member	56

Change in financial state	56
Retirement	54
Change to different line of work	51
Change in number of argument with spouse	51
Marriage	50
Spouse begins or ends work	46
Sexual difficulties	45
Child leaving home	44
Mortgage or loan greater than $10,000	44
Change in responsibilities at work	43
Change in living condition	42
Change in residence	41
Begin or end school	38
Trouble with in laws	38
Outstanding personal achievement	37
Change in work hours or condition	36
Change in school	35
Christmas	30
Trouble with boss	29
Change in recreation	29
Mortgage or loan less than $10,000	28
Change in personal habit	27
Change in eating habit	27
Change in social activities	27
Change in number of family get together	26
Change in sleeping habit	26
Vacation	25
Change in church activities	22
Minor violations of the law	22

<300-low
301-600- moderate
>600-high

1D Guidelines for hospitalization of the chronic patient

Indications for hospitalization

1) To control the following acute psychotic symptoms (the classic indications for hospitalization)

a) symptoms so disturbing to the patient or society that the patient can not be managed outside the hospital

b) overt and serious homicidal or suicidal ideation (including acute exacerbations of chronic symptoms)

c) delirium

2) To change or initiate as sequential medication trial

3) To carry out a treatment that almost always has to be done in a hospital such as electroconvulsive therapy.

4) To detoxify

5) To observe the patient in a controlled setting in order to clarify diagnosis or to change drug management

6) To manage chronic patients whose deficits have led to intrapsychic or interpersonal problems resulting in noncompliance or decompensation.

Contraindications for hospitalization

1) To repeat a previously failed treatment for the same reasons it was tried before.

2) To try a host of treatment in the hope that something will work

3) To attempt to bring about major character changes or alternations in family structure

4) To wash out all drug effects and start medication anew when the patient's history indicates a likelihood of poor response to the new medication

5) To try to convince the patient and the family to change a living situation when both have no desire to do so
6) Top shelter malingerers or patients facing legal charges who enter the hospital to avoid a court date
7) To use the hospital to accomplish a task that could be accomplished as efficaciously in an outpatient setting.

A Study on Risk Factors of Repeated admissions among Schizophrenic Patients in Hospital Kota Bharu

Key words: Repeated admissions, schizophrenia, risk factors

Abstract

Introduction: The number of people with psychological problems in the world has reached 1.5 billion in 1996, but only one percent of them have received treatment (10^{th} International Psychopathology Conference). Schizophrenia is a difficult disease that many choose to conceal. Relapse and frequent readmissions among schizophrenic patients are common and various risk factors have been associated with them. These further enhance the existing societal stigma which causes pain to the patients, their family and friends.

Objective: To identify the risk factors of readmission in less than 6 months from the previous admission among schizophrenic patients in Hospital Kota Bharu.

Methodology: A total of 120 outpatients and 120 inpatients who fulfilled DSM IV criteria for schizophrenia from Hospital Kota Bharu between 1^{st} October 2002 until 31^{st} March 2003 were interviewed using a validated questionnaire. The questionnaire includes questions on patients' sociodemographic data, compliance, insight, family support and life events.

Results: Using multiple logistic regression, it was shown that young age (OR: 0.94, p: < 0.004), number of previous admission (OR: 1.163, p: <0.001), good

compliance (OR: 0.046, p: <0.001), poor insight (OR: 7.32, p: <0.001), partial insight (OR: 3.08, p: <0.023), importance of follow up (OR: 2.94, p:< 0.043) and family remind in follow up (OR: 0.17, p: <0.001) were significant risk factors of repeated admissions. Other variables such as marital status, income, education, distance and life events showed no significant associations.

Conclusions. Age, number of previous hospitalization, poor compliance, poor insight and poor family support were important factors in anticipating repeated admissions among schizophrenic patients.

Introduction

Schizophrenia is a disease of brain that is manifested with multiple signs and symptoms involving thought, perception, emotion, movement and behaviour. It is a complex illness characterized by hallucinations, delusions, behavioral disturbances, disrupted social functioning and associated symptoms in what is usually an otherwise clear sensorium (Nagomoto, 1996).

High readmissions rates have been the concern of both professionals and administrators, and there is a vast literature studying the repeated admission of mental patients. Readmissions is a reflection of a number of components; the conditions in the patient himself, his family, the community and the psychiatric institution, and no single instrument can measure them all (Kastrup M , 1987).

Harris M. and others in 1986 investigated 31 chronic psychiatric patients after their discharge from a public mental hospital. More than 60% of the patients had been readmitted for medical or social reasons rather than for psychiatric indication.

Ellison (1986) summarized eight studies and concluded that repeaters are more likely to lack social supports, to be currently in psychiatric treatment, and to have a chronic illness.

Sociodemographic

Schizophrenic women experienced fewer rehospitalizations, shorter hospital stays, better social and work functioning, better response to neuroleptics, lower relapse rate and less severe psychopathology outcomes (Huber G, 1980; Nyman AK, 1983; Salokangas RKR 1983).

Patients in the frequently hospitalized group tend to be young (under age 40) and to have a chronic psychiatric illness features at least intermittent psychosis (Green H, 1988).

Franklin (1975) found those readmitted tend to be single, separated or divorced and those not readmitted tend to be married. However, Appleby et al, 1993 found that marital status was not significant as a risk factor for repeated admissions.

Education may influence repeated admission. However, not many studies relate it with repeated admissions. Some studies relate insight with education (MacPherson *et al*, 1996, Young *et al*, 1993).

Unemployment and income may have its origin in economic problems. However; Haywood *et al* (1995) reported from his study that the number of rehospitalizations was not significantly related to money problems prior to the current hospitalization.

Fifty two percent of male psychiatric outpatients living alone failed to take drugs, compared to 35% of those living with their wives (Willcox *et al*, 1965). Brown, Birley, Wing in 1972 noticed that relapse was more common among schizophrenia who were discharged to live with spouse or parent than those living alone. Vaugh and Leff (1976) reported that patients living in high stress households still relapse more often in the first nine months of after care than patients receiving medication and living with low stress relatives. High stress relatives are designated as High Express Emotion (Leff, 1982).

Franklin in 1975 mentioned that many patients are readmitted because they find the hospital a familiar and comfortable environment. According to Appleby et al 1993 previous hospitalizations independently predicted readmission. It may be that they find the mental hospital an attractive alternative to the condition of alienation and deprivation they experience in the community.

Compliance

It is essential for patients to maintain their compliance to treatment for the better outcome. Greenberg (1984) claimed that compliance played an important part of the management, cause and diagnosis of schizophrenia patients.

Van Putten (1974) found that 24-63% of schizophrenic patients take less antipsychotic drug than the amount prescribed and this occur between 15-33% from psychiatric inpatients. The reasons why patient refused to take medication were side effects, poor social supervisions, severity of illness and doctor' attitude.

Razali (1995) considered compliance to be good if the patient did not miss more than 2 doses of the medication on separate occasions or 2 consecutive doses over a period of 2 weeks and did not default more than 1 follow-up visit since the last discharge. The compliance was considered poor if the patient did not meet both criteria. The duration of 2 weeks was chosen because patients are more likely to remember drug regimens they have taken within the period.

Some patients had relapses while taking maintenance medication. Hogarty (cited in Liberman 1994) noted that 30-40% of schizophrenic patients who are compliance with medication still relapse within a year. Noncompliance with medication and noncompliance with therapy appointment were the only significant predictors of rapid relapse. Medication noncompliance was judged to be a risk factor about 73.5% and noncompliance with therapy in 71.7%, (Good pastor, 1991).

Insight

It appears that patients with poor insight are more severe clinically, less compliant with treatment, less well adjusted, have poorer prognosis, higher chances of relapse and thus higher rehospitalization rate. Insight is relevant to overall prognosis (David *et al*, 1995); functional outcome (Schwartz *et al*, 1997); need for rehabilitation (O' Connor & Hen-man, 1993; Taylor & Perkins, 1991); and readmission to hospital (Kent & Yellowlees, 1994).

Mc Evoy et al (1989) prefer to use lack of insight for schizophrenic patient's failure to acknowledge their illness and need for treatment. He reported that patients with better outcomes have been found to have more insight than those who failed to improve. One retrospective study of psychotic decompensation in schizophrenic outpatients found that the percentage of patients without insight who require hospitalization for their relapse is much higher than that of patients with insight (Heinrichs *et al*, 1985).

Lack of insight or denial of illness was cited in 62.2% of the patients' 442 total admissions, followed by relationship problems (61.1%), suicidal ideation (44.8%) and noncompliance with medication (43.2%) (Kent, 1994).

Family support

Ariff (2000) found that family plays an important role in the management of schizophrenic patients particularly on reminding for follow up.

Patients frequently readmitted had less family involvement (John, 1997). However if the family is more supportive and the environment is more conducive this will give better outcome. According to Kavanaugh DJ (1992) the number of rehospitalizations was not significantly related to family problems, however studies on express emotion have found emotional overinvolvement, hostility and criticism to be related to rehospitalization of schizophrenic patients (Haywood *et al*, 1995). They were surprised to find that family problems were not a significant predictor of rehospitalization.

Life event

The occurrence of life events is another factor, which may provoke relapse (SR Hirsh 1994). Leff et al (1973) found that patients who relapse on medication are more likely to have both life events and high express emotion relatives. This suggests that the hospital environment itself has a protective effect in shielding them from many of the stresses they encounter when living with their families (Brown et al 1972). Outpatients on maintenance therapy are unlikely to relapse unless exposed to some additional stress in the form of one or other life event

Mc Evoy, Howe and Hogarty (1984) separated two subgroups of relapsed and rehospitalised. They reported that compliant patients had a rapid onset of symptoms with prominent affective features, which was frequently associated with environment stresses independent of the patient. Majority of relapsed medication-compliant patients experienced at least one serious, independent, stressful life event during the period immediately before hospitalization.

Life events histories were taken for 6 months before onset, and when these were compared with equivalent histories from a psychiatrically healthy sample from the local general population, there was a significant excess of life events. Particularly in the 3 months before onset of psychosis. This was apparent in all groups, and remained even when events were restricted to the independent category.

Prevention of readmission therefore is likely to be the responsibility of the community care provider rather than the psychiatric hospital. Looking from the primary care aspect, we are trying to look into the risk factors in our patient in order to reduce readmissions.

Objectives

General objective

To determine the risk factor for repeated admissions among schizophrenic patients in Hospital Kota Bharu.

Specific objectives

1) To identify the association between sociodemographic factors and repeated admissions
2) To determine the association between compliance and repeated admissions
3) To find the relationship between insight of schizophrenic patients and repeated admissions
4) To identify the association between family support and repeated admissions
5) To determine the relationship between life event and repeated admissions.

Methodology

Questionnaire

Questionnaire was designed based on various reading of literature research and textbook (Razali 1996) and (Arif 2000 unpublished). Content validity was done by 7 psychiatrists, 4 psychiatrists from University Sains Malaysia and another 3 from Hospital Kota Bharu, Ministry of Health. Construct validity was checked by a lecturer in Community Medicine Department, University Sains Malaysia, Kelantan, Malaysia.

The questions were specifically grouped into five components. There were sociodemographic, compliance, insight, family support and life event. Questionnaires were also consists of the demographic data of the respondents. Relatives were interviewed by the same investigator to reduce biased.

Compliance was defined as the degree to which a patient carried out clinical recommendation of the treating physician. Non compliance was defined as missing out up more than two doses of the medication on separate occasion and defaulted more than one follow up visit (Razali 1995). Active involvement in follow up visit is defined as family members bringing the patient for follow up visit on regular basis and encouraging the patient to go for follow up. Regular basis is defined as those patients who had never missed any follow up visit given to them.

Values for the original list of life change derived by Thomas Holmes and Richard Rahe in 1965. In this study we chose Holmes and Rahe life event list, which have been re-scaled twice over the past 30 years- once in 1977 and again by Mark Miller and Richard Rahe in 1995. Values for life change intensity can be summed over arbitrarily defined intervals of time such as one year. These life changes estimates have been expressed as Life Change Units (LCUs). Low (0-300), 301-600 LCU/year is moderate and over 600 LCU/year is high .

The validity of the questionnaire was evaluated by 30 patients who were admitted in psychiatric ward Hospital Kota Bharu in September 2002. Minor adjustment to the questionnaire was made based on the evaluation , and when tested for reliability analysis, the cronbach alpha was 0.76.

This is a case control study. The study was conducted at Psychiatric Department Hospital Kota Bharu , Kelantan, Malaysia. Psychiatric ward in HKB have 129 beds and it was the regional mental health center. It occupies an area of 14,467m square. There are four wards for male patients and two wards for female patients. They are from all districts of Kelantan and some from Besut Trengganu.

Each newly admitted patient would be managed by a medical officer who treats the patient under the psychiatrists' supervision. All new patients and difficult readmission patients will be presented to the psychiatrist during ward round for further evaluation and management.

Study population

All schizophrenic patients who were admitted to Psychiatric ward and all schizophrenic patients attending at psychiatric clinic and fulfill the criteria were included in the study.

Sample size-two proportions

Calculation of sample size using the Epi. Info software program was based on the prevalence of each risk factor , supervised medication: good compliance 64% whereas poor compliance 39% (Razali,1995), the largest sample size was calculated from Pocok's formula

Sample size= 97 + 20% drop out= 120 for each group

The difference in mean/proportion was 20% and it was based on 2 studies : 'Determinants of compliance with medication in schizophrenic patients-A study on relapse cases (Ariff 2000), and 'Supervised medication on good compliance (64%) and poor compliance (39%)'(Razali, 1995).

Sampling technique

Case studies were chosen from schizophrenic patients in psychiatric ward who had been admitted less than 6 months (National Indicators 2001) from previous admissions.

Control studies were chosen from schizophrenic patients attending psychiatric clinic yet had not been admitted in the past 6 months from the previous admission. In both groups, systematic random sampling was used to look for 240 patients.

Inclusion criteria

a) All schizophrenic patients who were readmitted less than 6 months from previous admission between 1st October 2002 to 31st March 2003 for case study and all schizophrenic patients attending psychiatric clinic and yet have not been readmitted more than 6 months from the previous admission for control group.
b) Patients must meet DSM-IV criteria for schizophrenia.
c) Patients understood and gave comprehensive answers to the questions asked
d) Patients gave informed consent .

Exclusion criteria

a) Patients who have organic pathology, cognitive disorder, alcohol and drug abuse and mental retardation.
b) Patients who refused to participate
c) Newly diagnosed schizophrenia.

The demographic data and socio-economic status were determined by interview using the questionnaire, as well as the compliance and life event. Whenever possible, the patient's history is corroborated by family members. The relatives were then interviewed to confirm the answer given by patients. Most of them were

parents of the patients. Patients were interviewed at least after 48-72 hours of admission.

The data were coded using statistical programme for social science (SPSS) and subsequently analyzed using Multiple Logistic Regression.

Results

Distribution of case and control for sociodemographic of schizophrenic patients.

Variables	Control	Case
	N (%)	N (%)
Gender		
Male	90 (75%)	94(78%)
Female	30 (25%)	26(22%)
Marital status		
Divorced	17 (14%)	31 (26%)
Single	74 (62%)	73(61%)
Married	29 (24%)	16(13%)
Education		
Primary	33 (28%)	36 (30%)
Secondary	87 (73%)	84 (70%)
Employment		
Unemployed	74 (62%)	85 (71%)
Employed	46 (38%)	35 (29%)
Stay with family		
Alone	8 (7%)	20 (17%)
Family	112 (93%)	100 (83%)
Duration of illness		
<5 years	35 (29%)	37 (31%)
5-10 years	27 (23%)	19 (16%)
> 10 years	58 (48%)	64(53%)
Distance between house to clinic/ hospital		
<5 km	32 (27%)	23 (19%)
5-10 km	40 (33%)	35 (29%)
>10 km	48 (40%)	62 (52%)

Distribution of compliance and insight of case and control.

Variables	Control	Case
	N (%)	N (%)
Compliance		
Poor	41 (34%)	112 (93%)
Good	79 (66%)	8 (7%)
Treatment importance		
Yes	97 (81%)	45 (81%)
No	23 (19%)	75 (63%)
Insight		
Poor	20 (17%)	64 (53%)
Partial	39 (33%)	38 (32%)
Good	61 (51%)	18 (15%)
Continous follow up		
Yes	98 (82%)	59 (49%)
No	22 (18%)	61 (51%)

Distribution of family support of case and control among schizophrenic patients.

Variables	Control n(%)	Case n (%)
Family support		
1) Accompany patient during follow up		
Yes	70 (58%)	45 (38%)
No	50 (42%)	75 (63%)
2) Remind follow up		
Yes	97 (81%)	53 (44%)
No	23 (19%)	67 (56%)
3) Supervision of medication		
Yes	70 (58%)	43 (36%)
No	50 (42%)	77 (64%)
4) Remind patient for taking medication		
Yes	98 (82%)	58 (48%)
No	22 (18%)	62 (52%)

Distribution of life event of case and control among schizophrenic patients.

Variable	Control	Case
	N (%)	N (%)
Life event		
Yes	19 (16%)	36 (30%)
No	101 (84%)	84 (70%)

Distribution of age and number of previous admissions.

Variables (n)	Mean	Standard deviation	Min	Maximum
Age (year) (240)	35.74	10.56	16	64
Number of previous hospitalizations (240)	9.09	8.2	1	55
Household income (240)	504.06	408.22	50.00	3000

Sociodemographic and illness variables and its association with repeated admissions.

Association between socio-demographic and repeated admissions

Variable (n)	Odd ratio (OR)	95% Confidence interval	P
1) Gender			
Men (184)	1.205	0.662-2.195	0.542
Women (56)	1	-	-
Variable (n)	**Odd ratio (OR)**	**95% Confidence interval**	**P**
1) Gender			
Men (184)	1.205	0.662-2.195	0.542
Women (56)	1	-	-
2) Marital status			
Divorced (48)	3.305	1.413-7.732	0.006
Single (147)	1.788	0.896-3.567	0.099
Married (45)	1	-	0.022
3) Education			
Primary (69)	1.130	0.646-1.977	0.669
Secondary (171)	1		
4) Employment			
Unemployed (159)	1.510	0.881-2.588	0.134
Employed (81)	1	-	-

Association between sociodemographic and repeated admissions

Variable	Odd ratio (OR)	95% Confidence interval	P
Age	0.973	0.949-0.997	0.029
Number of previous admission	1.101	1.056-1.148	<0.001
Household income	0.999	0.9-1	0.131

Association between sociodemographic and repeated admissions.

Variable (n)	Odd ratio (OR)	95% Confidence interval	P
Stay alone (28)	2.798	1.180-6.632	0.019
Stay with family members (212)	1		
Duration of illness			
> 10 years (122)	1.044	0.583-1.870	0.885
5- 10 years(46)	0.666	0.315-1.405	0.286
< 5 years (72)	1		0.422
Distance house to clinic/hospital			
> 10 km (110)	1.217	0.603-2.457	0.583
5-10 km (75)	1.797	0.933-3.46	0.079
< 5 km (55)	1		0.168

Association between compliance and repeated admissions

Variable (n)	Odd ratio (OR)	95% Confidence interval	P value
Compliance			
Poor compliance (153)	26.98	12-61	<0.001
Good compliance (87)	1		
Treatment valuable			
No valuable (98)	7.029	3.913-12.62	<0.001
Valuable (142)	1		

Association between insight and repeated admission

Variable (n)	Odd ratio (OR)	95% Confidence interval	P value
Insight			
Poor (84)	10.8	5.242-22.435	<0.001
Partial (77)	3.3	1.656-6.583	<0.001
Good (79)	1		
Importance of follow up			
No (83)	4.606	2.567-8.265	<0.001
Yes (157)	1		

Association between family support and repeated admissions

Variable (n)	Odd ratio (OR)	95% Confidence interval	P value
Relative accompany patient during follow up			
No relative (125)	2.333	1.390- 3.917	0.001
Relative available (115)	1		
Relatives remind for follow up			
No reminder (90)	5.331	2.985-9.522	<0.001
Reminder around (150)	1		
Supervision of medication			
No supervision (127)	2.507	1.490-4.219	0.001
Supervision (113)	1		
Relatives remind patient to take medicine			
No reminder (84)	4.762	2.653-8.546	< 0.001
Reminder around (156)	1		

Association between repeated admissions and life event.

Variable (n)	Odd ratio (OR)	95% Confidence interval	P value
No life event (185) Life event (55)	2.278 1	1.217- 4.263	0.01

Multivariate analysis

Variables	Odd ratio	Confidence interval	Wald	P value
Age	0.94	0.92-0.98	8.507	0.004
Number of previous admission	1.163	1.088- 1.243	19.68	0.001
Good compliance	0.046	0.017-0.124	36.69	0.001
Poor insight	7.32	2.354-22.766	11.82	0.001
Partial insight	3.08	1.171- 8.1	5.197	0.023
Importance of follow up	2.944	1.033- 8.394	4.08	0.043
Family remind follow up	0.17	0.07-0.412	15.39	0.001

Discussions

The risk factors for repeated admissions were young age, number of previous admission, poor compliance, poor insight, importance of follow up and family did not remind the follow up. Life event was not as significant as a risk factor for repeated admissions from this study.

Repeated admissions were common among men either in control or case group, 75% and 78% respectively as compared to women 25% and 22%. However, the difference between the two groups was not statistically significant ($p > 0.05$). This may be due to small sample size. Loranger in 1984 however found that gender difference was significant, the onset of psychosis for the male patients was earlier than that for the female patients.

In this study, subject's age ranged from 17 to 64 years. The average was 35 years. Young age was significantly associated with repeated admissions. This could probably explained that schizophrenia has its onset at early adulthood, the peak onset was between 15-25 years in men and between 25-35 years in women (Hafner et al, 1994). This is in line with other study like Appleby 1993 and Vincenzo et al (1996).

Majority of patients were single; 62% (control) and 61% (case). We found that patients who were married and divorcee had risk factors for repeated admissions. However being single was not significant . The sample consisted of more single schizophrenics compared to the married ones, and due to social and occupational dysfunction, many of them did not get married.

Franklin et al (1975) however found that those who were frequently admitted tend to be single, separated or divorced and those with less frequent admission tend to be married or widowed. Appleby et al (1993) however mentioned that marital status was not significant at any of the relapse time.

Staying alone was significant as a risk factor . As mentioned by Wilcox et al (1965) that 52% of male psychiatric outpatients living alone failed to take drugs, compared to 35% of those living with their wives. This indicated the important role of family members to remind patient in taking their treatment.

This study did not find any significant association between education level and repeated admission. Schizophrenic patients have premorbid educational deficits (Jones *et al*, 1994). We found that occupation and income were not significant risk factors for repeated admissions. Most of the subjects were unemployed and belonged to low social economic class. This reflected the social selection or drift hypothesis among the chronic schizophrenics (Eaton 1985).

Number of previous admission.

There was a significant association between number of previous admissions with repeated admissions. These findings were consistent with Rosenblatt and Mayer (1974), Fontana and Dowds (1975), who identified the variable of past psychiatric hospitalizations as the most potent predictor of rehospitalization..

Bene - Kociemba *et al*, (1979) also found that, the more a patient has been hospitalized in the past, the more likely he or she is to be hospitalized in the future.

In our study, duration of illness was not significant as a risk factor for repeated admissions. Distance from house was also not significant as a risk factor for repeated admission.

Compliance

We found, compliance was a protective factor for repeated admissions. Our study showed 93% of non compliance were in the case group whereas 34% were in the control group. Many researchers have reported that compliance was important to prevent relapse as well as readmission (Christensen 1974, Green JH 1988,Goodpastor 1991, Razali 1995).

Majority of schizophrenic patients who suffered clinical exacerbation and required hospitalization (73%) did not comply with the treatment prescribed (Ayuso, 1997).

Insight

We found that poor insight will lead to 7 times increased risk for repeated admission. About 53% of patient had poor insight and 33% had partial insight. Carpenter et *al* in 1976 estimated that poor insight exists in > 80% of persons with schizophrenia, which suggests that poor insight, may be an important manifestation of schizophrenia and may have prognostic and treatment implications.

According to Macpherson *et al* (1996) only 26% of long term psychiatric patients believed they were psychiatrically ill. Green JH (1988) reported 44% of patients

had denial of illness in his study. Impaired insight was associated with the belief that treatment was unnecessary and a wish to stop treatment.

Family support

We found that family support plays an important role in preventing repeated admissions. After multivariate analysis, only variable as family members who did not remind patient for follow up was noted to be of significance. Schizophrenic patient more often took their drugs supervised by a relative (Parkes, Brown and Monck, 1962). There was evidence from number of studies that families are heavily relied on to take care of their members. However, after patients have had several hospitalizations that families may separate patients from them (Nyman *et al* 1983).

Winston (1977) found that schizophrenics who continue treatment after being discharged from the hospital were rehospitalized at a significantly lower rate than schizophrenics who did not enter follow-up treatment. As mentioned by John *et al* (1997), the readmitted patients had less family involvement. According to Franklin (1975) those readmitted rarely interacted with relatives and frequently spent their time sitting, thinking and daydreaming.

Life event

From our study, life event was noted to be significant at univariate analysis, however after multivariate analysis it was not significant enough to be considered

as a risk factor for repeated admissions. Out of 120 patients in control group only 19 (16%) patients had life event whereas 36 patients (30%) in case group had life events. All of them had life change unit (LCU) less than 300, which was low or mild.

Many studies have found that life events contributed to frequent readmissions (Brown et al, 1972; Leff et al, 1973 and Bebbington et al, 1993). Canton et al in 1985 also found that life event as a contributory factor in the development of schizophrenic episodes in a large proportion of patients. The fact that 28% of the patients in his sample developed an acute schizophrenic episode in the absence of significant life events and that majority of relapse chronic schizophrenic patients had a life event pattern similar to that of the normal population suggested that life events were not necessary precondition for development of the disturbance.

Schizophrenic patients living in the community and not taking drugs seem to relapse as a result of the disturbing effects of everyday social interactions. Outpatients on maintenance therapy were protected against the stresses implicit in uneventful social intercourse, and were unlikely to relapse unless exposed to some additional stress in the form of one or other life event as measured in the study (Leff *et al*, 1973).

Conclusions

There are many factors contributing to repeated admissions such as young age, number of previous admission, good compliance, poor insight, partial insight, importance of follow up and family reminding patient for follow up.

Acknowledgement.
Thanks to the Dean of PPSP Universiti Sains Malaysia for the research grant, Dr Shaiful Bahari Ismail, Dr Mohd Raza Merchant, Dr Harmy Mohd Yusof, Associate Professor Dr Tengku Arif and Dr Suarn Sing for their help and comments on this study.

References

Appleby L, Desai PN, Luchins DJ, Gibbons RD, Hedeker DR (1993):Length of stay and recidivism in schizophrenia: a study of public psychiatric hospital patients. *Am J Psychiatry.* 150: 72-76

Arif Mohd, M.N.(2000): Determinants of compliance with medication in schizophrenic patients-a study on relapse cases. Dissertation submitted in partial fulfillment of the requirements for the degree of master of medicine (psychiatry). Universiti Sains Malaysia.

Ayuso- Gutierrez JL, del Rio Vega JM (1997). Factors influencing relapse in the long term course of schizophrenia. *Schizophr Res* Dec 19; 28(2-3): 199-206

Bebbington et al: Life Events and Psychosis initial results from the Camberwell Collaborative Psychosis Study.*Br J Psychiatry* (1993), 162, 72-79

Bene- Kociemba A, Cotton PG, Frank A 1979: Predictors of community tenure of discharged state hospital patients. *Am J Psychiatry* 136: 1556-1561.

Brown,C.W. and Birley,J.L.T and Wing,J.K.(1972).Influence of family life on the course of schizophrenic disorders: a replication. *Br J Psychiatry*, **116,327**-33

Canton G, Fracon G (1985). Life events and schizophrenia. A replication.*Acta Psychiatr Scand*, 71,211-216.

Carpenter, W.T. and Buchanan, R.W. 1995. *Schizophrenia: Clinical feature*. In : Kaplan, H.I. & Sadock, B.J. (Editors) Comprehensive Textbook of Psychiatry, Sixth edition, Williams & Wilkins,1,889-902.

Christensen JK 1974: A five year follow –up of male schizophrenics: evaluation of factors influencing success and failure in the community. *Acta Psychiatr Scand* 50: 60-72

David,A., Van Os, J., Jones,P., Harvey, I., Foerster, A. Fahy,T.(1995). Insight and psychotic illness: Cross- sectional and longitudinal associations. *Br J Psychiatry.* 167,621-628.

Eaton, W.W. (1985). Epidemiology of schizophrenia. Epidemiologic Review, 7,105-126.

Ellison JM, Blum N, Barsky AJ (1986): Repeat visitors in the psychiatric emergency service: a critical review of the data. *Hosp Community Psychiatry* 37:37- 41,

Fontana AF, Dowds BN. (1975). Assessing treatment outcome: II. The prediction of rehospitalization. *J Nerv Ment Dis* 161:231-238.

Franklin JL, Kittredge LD, Thrasher JH. (1975). A survey of factors related to mental hospital readmission. *Hosp Community Psychiatry* 26: 749-751.

Goodpastor WA, Hare BK (1991). Factors associated with multiple readmissions to an urban public psychiatrc hospital. *Hosp Community Psychiatry.* 42:85-87

Green JH (1988) : Frequent rehospitalization and noncompliance with treatment. *Hosp Community Psychiatry*; 39:963-966

Greenberg, R.N. (1984). Overview of Patient Compliance with Medication Dosing. A Literature Review . Clinical Therapeutic, 6, 592-599.

Hafner, H., Maurer,K.,loffler,W.et al (1994). The epidemiology of early schizophrenia: Influence of age and gender on onset and early course. *Br J Psychiatry.* Suppl 23,29-38.

Harris M, Bergman HC, Bachrach LL (1986). Psychiatric and nonpsychiatric indicators for rehospitalization in a chronic patient population. *Hosp Community Psychiatry* .37:630-631

Haywood TW, Kravitz HM, Grossman LS, Cavanaugh JL Jr,Davis JM, Lewis DA (1995). Predicting the revolving door phenomenon among patients with schizophrenic, schizoaffective and affective disorders. *Am J Psychiatry.* 152:856-861

Heinrichs,D.W., Cohen, B.P. & Carpenter,W.T.Jr.(1985). Early insight and the management of schizophrenic decompensation. *J Nerv Ment Dis,* 173,133-138.

Holmes, I.H. & Rahe, R.H. (1967). The Social Readjustment Rating Scale. *Journal of Psychosomatic Research*, 189-194.

Huber G, Gross G, Schuettler R (1980): Longitudinal studies of schizophrenic patients. *Schizophr Bull* ; 6: 592-605.

John et al (1997). Predicting Readmission to the Psychiatric Hospital in a Managed Care Environment: Implications for Quality Indicators . *Am J Psychiatric.* 154: 337-340.

Jones, R., Guth, L., Lewis, S., et al (1994) . Low intelligence and poor educational achievement precede early onset psychosis. In *The Neuropsychology of Schizophrenia* (eds A.S. David & J.C. Cathy), pp 131-144. Hove: Lawrence Erlbaum Associates.

Kastrup M.(1987). The use of a psychiatric register in predicting the outcome revolving door patient. *Acta psychiatr scand.* 76,552- 560

Kavanaugh DJ (1992): Recent developments in expressed emotion and schizophrenia. *Br J Psychiatry.*160: 601-620

Kemp R, Hayward P, Applewhaite G, Everitt B, David A.(1996) Compliance therapy in psychotic patients : randomized controlled trial. *BMJ.* 312:345-9

Kent, S. & Yellowlees, P. (1994). Psychiatric and social reasons for frequent rehospitalization. *Hosp Community Psychiatry.* 45, 347-350.

Leff JP,Hirsh SR,Gaind R, Rhodes PD,Stevens BC. Life events and maintenance therapy in schizophrenia relapse. *Br J Psychiatry* 1973;**123**:659-60

Leff,J., Kuipers,L., Berkowitz,R., Eberlain- Vries, R. and Sturgeron,D. (1982). A controlled trial of social intervention in the family of schizophrenic patients. *Br J Psychiatry*, 141,121-134.

Liberman,R.P. (1994). Psychological treatment for schizophrenia. *Psychiatry*, 57,104-114.

Loranger,A.W. (1984). Sex difference in age of onset of schizophrenia.Arch Gen Psychiatry,41,157-161.

MacPherson, R., Jerrom, B. & Hughes, A. (1996). Relationship between insight, educational background and cognition in schizophrenia. *Br J Psychiatry,* 168, 718-722.

McEvoy JP, Howe AC, Hogarty GE (1984). Differences in the nature of relapse and subsequent inpatient course between medication-compliant and noncompliant schizophrenic patients. *J. Nerv Ment Dis.* 172(7):412-6

McEvoy, J.P., et al (1989b). Insight and the clinical outcome of schizophrenic patients. *J. Nerv Ment Dis*, 177,48-51.

Nagomoto, H.T. (1996) *Schizophrenia and Schizophreniform disorders.* In: Jacobson, J.L.& Jacobson, A.L. (Editor) Psychiatric Secrets, First Edition, 1996, Hanley & Belfus, Inc, 53.

Nyman AK, Jonsson H.(1983) : Differential evaluation of outcome in schizophrenia. *Acta Psychiatr Scand* .68:458-475.

O' Connor, R. & Hen-man, H. (1993). Assessment of contributions to disability in people with schizophrenia during rehabilitation. *Australian and New Zealand Journal of Psychiatry*, 27, 595-600.

Parkes, C.M., Brown, G.M. and Monck, E.M. (1962). The General Practitioner and the schizophrenic patients. *BMJ.* 972-976

Razali, M.S. and Yahya,H. 1995.Compliance with treatment in Schizophrenia: A drug intervention program in a developing country. *Acta Psychiatr Scand.* 31,331-335.

Rosenblatt and J.E. Mayer (1974). The recidivism of mental patients: A review of past studies. American Journal of Orthopsychiatry, Vol 44,697-706.

Salokangas RKR (1983): Prognostic implications of the sex of schizophrenic patients. *Br J Psychiatry* ; 142: 145-151.

Schwartz,R.C., Cohen,B.N. & Grubaugh, A.(1997). Does insight affect long-term inpatient treatment outcome in chronic schizophrenia? *Comprehensive Psychiatry,* 38,283-288.

SR Hirsh (1994). Psychosocial factors in the cause and prevention of relapse in schizophrenia. *BMJ* V286 1600-1603.

Taylor, K.E. & Perkins, R.E. (1991). Identify and coping with mental illness in long stay psychiatric rehabilitation. *British Journal of Clinical Psychology.* 30, 73-85.

Van Putten, T.1974.Why do schizophrenic patients refuse to take their drugs? *Arch Gen Psychiatry.*31,67-72.

Vincenzo et al (1996): Retrospective Study of 2,200 Involuntary Psychiatric Admissions and Readmissions. *Am J Psychiatric* .153:392-396

Willcox, D.R.C. and Gillon, R.1965. Do psychiatric out patients take their drugs? *BMJ.* 2, 790-792.

Winston A, Pardes H, papernick D, et al (1977): Aftercare of psychiatric patients and its relation to rehospitalization. *Hosp Community Psychiatry.* 28: 118-121.

Young, D.A., Davilla, R. & Scher, H. (1993). Unawareness of illness and psychological performance in chronic schizophrenia. *Schizophrenia Research*, 10, 117-124.

UNIVERSITI SAINS MALAYSIA
JABATAN BENDAHARI
KUMPULAN WANG PENYELIDIKAN GERAN USM(304)
PENYATA PERBELANJAAN SEHINGGA 31 JANUARI 2005

Jumlah Geran:	RM	4,385.00	Ketua Projek:	DR.MUHAMMAD RAZA MERCHANT
Peruntukan 2003 (Tahun 1)	RM	0.00	Tajuk Projek:	A Study on Risk Factors of Repeated Admission Among Schizophrenic Patients in Hospital Kota Bharu
Peruntukan 2004 (Tahun 2)	RM	0.00		
Peruntukan 2005 (Tahun 3)	RM	0.00	Tempoh:	01 Januari 03 - 31 Disember 04
			No.Akaun:	304/PPSP/6131260

Kwg	Akaun	PTJ	Projek	Donor	Peruntukan Projek	Perbelanjaan Tkumpul Hingga Tahun Lalu	Peruntukan Semasa	Tanggungan Semasa	Bayaran Tahun Semasa	Belanja Tahun Semasa	Baki Projek
304	11000	PPSP	6131260		-	-	-	-	-	-	-
304	14000	PPSP	6131260		-	-	-	-	-	-	-
304	15000	PPSP	6131260		-	-	-	-	-	-	-
304	21000	PPSP	6131260		2,285.00	838.50	1,446.50	-	-	-	1,446.50
304	22000	PPSP	6131260		-	-	-	-	-	-	-
304	23000	PPSP	6131260		300.00	-	300.00	-	-	-	300.00
304	24000	PPSP	6131260		-	-	-	-	-	-	-
304	25000	PPSP	6131260		-	-	-	-	-	-	-
304	26000	PPSP	6131260		-	-	-	-	-	-	-
304	27000	PPSP	6131260		200.00	1,499.50	(1,299.50)	300.00		300.00	(1,599.50)
304	28000	PPSP	6131260		-	-	-	-	-	-	-
304	29000	PPSP	6131260		1,600.00	428.00	1,172.00	-		-	1,172.00
304	32000	PPSP	6131260		-	-	-	-	-	-	-
304	35000	PPSP	6131260		-	-	-	-	-	-	-
					4,385.00	2,766.00	1,619.00	300.00	-	300.00	1,319.00