Psychiatric morbidity of chronic institutionalized patients with schizophrenia: implications for future community care

Mamdoh ElGamal[a], Maha ElTayebani[c] and Rasha Bassim[b]

[a]Department of Psychiatry, Faculty of Medicine, Cairo University, [b]Department of Psychiatry, Faculty of Medicine, Ain Shams University, Cairo and [c]Department of Psychiatry, Faculty of Medicine, Alexandria University, Alexandria, Egypt

Correspondence to Mamdoh ElGamal, Department of Psychiatry, Faculty of Medicine, Cairo University, Cairo, Egypt
Tel: +20 965 991 69015; fax: +20 965 248 41123; e-mail: elgamalmamdoh@yahoo.com

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Background
In many western countries, deinstitutionalization of chronically mentally ill patients was established after the mass introduction of neuroleptics in the late 1960s and the early 1970s. Deinstitutionalization was proven to be successful when there were strong ideological or humanitarian motives and when psychiatric reform was a priority and was completed with a comprehensive system of community. However, its long-term effects should be examined and questioned in terms of improving quality of life and functional abilities.

Aim and objectives
The research aimed at studying the morbidity profile and impact of schizophrenia on chronic institutionalized mentally ill patients as baseline data for planning of deinstitutionalization and a Community care program.

Methods
Data on sociodemographics, course of illness, treatment history, rate of admission, duration of hospital stay, and medical condition were collected retrospectively, followed by a cross-sectional study of a total of 95 patients with a schizophrenia spectrum using psychopathological rating scales such as PANSS, MMSE, CGI-S. Diagnosis according to DSM-IV and an interview using SCID were carried out by two different psychiatrists for high inter-rater reliability. The sample was recruited from among long-stay hospital patients.

Results
The mean age of onset of schizophrenia among the patients was 48.9 ± 10.3 and 21.2 ± 5.7 years. The mean duration of illness was 27.5 ± 9.3 years, whereas the mean duration of repeated admission was 19.07 ± 12.5 years. With respect to the median percentage of total hospital stay, 30% could be attributed to the patients' median age and 55% to illness duration, whereas with respect to chronic hospitalization 20% could be attributed to the patients' median age and 35% to illness duration. Of the patients, 85% were men; 70% were single and unemployed with a low socioeconomic status; 25% lacked private housing; 30% had diabetes mellitus and/or hypertension; 80% were obese and overweight; and 50% were on antilipid drugs. Delusion, hallucination, and conceptual disorganization were the highest-scoring positive symptoms in 50% of cases. Negative symptoms also scored higher (7.4) on all items in 60% of cases. Eighty percent had compromised cognitive deficits. Early age of onset of schizophrenia and being older were powerful predictors for repeated admission, a long duration of illness, and chronic hospitalizations. Severity of illness is also a powerful predictor for long hospital stay.

Conclusion
Schizophrenia is a chronic devastating illness that impacts function and cognitive abilities, and is characterized by a high rate of admission, chronic course of illness as well as chronic institutionalization. For continuity of care and a favorable prognosis, early comprehensive, multidisciplinary, and multimodel programs are required for patients with mental illness from the date of first hospital contact.

Keywords:
community care, deinstitutionalization, schizophrenia, social welfare

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Introduction

Schizophrenia is a heterogeneous disorder with variations in the severity of symptoms and in course and presentation (Davidson and McGlashan, 1997), of which cognitive and functional impairments are core features (Mohamed *et al.*, 1999). Such functional disability results in low employment rates and is a hallmark of many patients with schizophrenia (Lehman *et al.*, 2002). Accordingly, psychiatric rehabilitation may improve social inclusion and

functioning in patients with severe mental illness (Wilcock, 2005).

Comprehensive treatment of patients with schizophrenia focuses on alleviating psychotic symptoms, improving psychosocial function, and decreasing the rate of rehospitalization. Many studies have shown that readmission in schizophrenia is a multifactorial phenomenon whose probability is increased by early onset of the disorder (Vyas *et al.*, 2007), male sex (Lin *et al.*, 2006), substance abuse (Linszen *et al.*, 1994), marital status (i.e. being unmarried) (Lacro *et al.*, 2002), higher number of previous hospitalizations (Roick *et al.*, 2004), and short length of previous hospital stay. Nonadherence to medication and a low-quality support system (Olesen and Mortensen, 2002) are additional risk factors for rehospitalization.

Length of stay depends on not only the number of beds available in the area but also the possibility to refer the patients discharged from the hospital to community services for further care. This follow-up is particularly important for patients with schizophrenia and related disorders, who require continuity of care over prolonged periods of time (Moreno Küstner *et al.*, 2001). In Canada, as in other countries, the rates of rehospitalization or readmission for mental illness are very high relative to those for most other diseases. Among mental illnesses, readmission rates for schizophrenia and psychotic disorders are among the highest. The chronic, highly debilitating, and refractory nature of these disorders means that stabilization of an individual's condition regularly requires long stays in hospital (Canadian Institute for Health Information, 2006, 2007; Madi *et al.*, 2007).

The course and outcome of schizophrenia have received considerable attention since the condition was first described as dementia praecox by Kraepelin in 1896. Although a century's research has given rise to an extensive literature regarding its natural history, some of the original questions on the prognosis and outcome of schizophrenia are just as pertinent today. Kraepelin originally considered dementia praecox to have a deteriorating course, altering this view when he found that some of his severe hospital-based patients showed spontaneous remission (Rosen and Garety, 2005).

Although there has been a tendency to dichotomize outcome into either a chronic, deteriorating course or a full remission one, research has increasingly viewed the outcome of schizophrenia spectrum psychosis (hereafter, 'psychosis') as being on a continuum (Vaillant, 1963, 1964, 1978; Strauss and Carpenter, 1972), and has emphasized both its heterogeneity and complexity (Strauss, 1969; Strauss and Carpenter, 1977; Carpenter and Strauss, 1991; Harding *et al.*, 1992). Although it is now generally accepted that the course of illness is heterogeneous, there is little consensus on the complexity of this heterogeneity, where Ciompi (1980a, 1980b) have described eight main patterns of illness outcome, Huber *et al.* (1980) have described 12 possible courses, whereas Shepherd *et al.* (1989) have described only four.

It appears that the lack of economic resources of families and the related support system and the existing unemployment influence the course of illness, preventing recovery and causing relapses and readmissions; in the 1930s, Faris and Dunham (1939) had reported in their ecologic study in Chicago that the highest treated rates for 'dementia praecox' were concentrated in the slum areas of the greater Chicago area (seven cases per 1000 adults in the slum areas in contrast to two to five per 1000 in the upper class areas); this study was replicated in several other cities of the USA, yielding the same findings.

In Europe and North America, discharges of patients with chronic schizophrenia from mental hospitals began in the 1950s, before the widespread use of antipsychotic drug treatment. Avoiding admission, or early discharge, combined with domestic and industrial rehabilitation in open hospitals, may prevent the accumulation of long-stay 'institutionalized' patients and allow a proportion of them to return to full participation in community life (Wing and Brown, 1970). The therapeutic community movement (Jones, 1952), seen as an ideology rather than a therapeutic theory, did not originate in mental hospitals but spread to them later and, along with concern about institutional neurosis (Barton, 1959), the social breakdown syndrome, (Gruenberg, 1966), and asylum, had a considerable impact socially and politically (Goffman, 1961). Thus, the community care movement was born. In patients with chronic schizophrenia, the success of such care depends on the validity of sociological theories about the causes of defect states; the effectiveness of new drug treatments in alleviating the acute and often bizarre symptoms of mental illness; the patients' compliance with both drug and social treatments; and the provision of suitably staffed amenities such as day hospitals, day centers, industrial units, and local hostels (Goffman, 1961).

In the new millennium, the majority of the world's countries belong to the category of lower-middle level of economic development, which is reflected on the existing mental healthcare and psychosocial rehabilitation services, with an increasing incidence of mental disorders imposing a huge global burden (Murray and Lopez, 1996).

The WHO Mental Health Atlas reflects several observable marked discrepancies in the existence of community-based mental health services and the specialized services for chronically mentally ill patients (rehabilitation services); only half of the lower economically developed countries provide community-based psychiatric services, disability benefits, and rehabilitation services in contrast to 97.4–100% of the higher economically developed countries (WHO, 2000, 2001a, 2001b, 2005).

Aim and objectives

The aim of the current research was to study the morbidity profile and the impact of schizophrenia on chronic institutionalized mentally ill patients as baseline

data for planning deinstitutionalization and a Community care program.

Patients and methods

Place of the study

The current study was carried out at the state psychological medicine hospital of Kuwait, which is the only governmental psychiatric hospital in Kuwait, where the services are limited only to the hospital resources, lacking comprehensive, multidisciplinary, and community care. It is considered the third hospital in Kuwait in terms of patients' capacity, with 764 beds (575 beds for the general psychiatric service and 189 for addiction). The bed occupation rate is 69.2%, with an average length of stay of 52.9 days. It has 97 psychiatrists, 656 nurses, and 361 other staff members (psychologists, pharmacists, and medical paramedical coworkers). It has 130 beds for long-stay hospital patients, with 22.6% of beds for the general psychiatric service. In 2010, the Ministry of Heath in Kuwait reported a total of 56 209 visits for outpatient department and 5654 for psychiatric emergencies (Ministry of Health Kuwait 2010 year report.)

Duration of the study and participants

The study was carried out in the period between 1 January up to the end of June 2009, wherein all patients of long-stay wards (other than those in the Geriatric wards) were recruited.

Tools

All cases were subjected to the following:

(1) *Structured Clinical Interview for DSM-IV Axis I diagnosis Clinical Version* (*DSM-IV SCID-I*) (First *et al.*, 1995): It is a semistructured diagnostic interview based on an efficient but thorough clinical evaluation administered by an experienced trained bilingual researcher for Arabic-speaking patients.

(2) *Positive and Negative Syndrome scale* (*PANSS*) (Kay *et al.*, 1987): It includes 30 items on three subscales, with seven items covering positive symptoms, seven items covering negative symptoms, and 16 covering general psychopathology. Each item is scored on a seven-point item-specific scale ranging from 1 to 7; thus, the positive and negative subscales each range from 7 to 49, and the general psychopathology scale ranges from 16 to 112. It is a standard tool for assessing clinical outcome in treatment studies of psychotic disorders and useful for tracking severity in clinical practice.

(3) *Mini-Mental State Examination* (*MMSE*) (Folstein *et al.*, 1975): It is a 30-point cognitive test developed for the bedside assessment of cognitive functions including orientation, memory, attention, construction, and language.

(4) *Clinical Global Impression scale-Severity Index* (*CGI-S*) (Guy, 1976): It is a seven-point scale that requires the clinician to rate the severity of the patient's illness at the time of assessment, relative to the clinician's past experience with patients who have the same diagnosis. Considering the total clinical experience, a patient is assessed on the severity of mental illness at the time of rating.

(5) *Fahmy and El-Sherbini Social Classification scale* (Fahmy and El-Sherbini, 1983): Personal and socioeconomic data include age, sex, level of education and occupation of the parents, family size, estimated economic level, and sanitation in the house. All data were scored; the total socioeconomic score is 30. A score of 25 or higher indicates a high socioeconomic class, 20–24 middle class, 16–20 low social class, and 15 or less very low socioeconomic class.

Procedure

The study included two phases.

(1) *Phase 1*: This was a retrospective part, in which all the files of the patient were received from the file department and reviewed meticulously to collect data related to sociodemographics, as well as clinical and treatment data.

(2) *Phase 2*: This was a cross-sectional study in which patients with the diagnosis of schizophrenia and schizoaffective disorder were enrolled and assessed as follows:
   (a) Diagnosis confirmed by the DSM-IV (SCID-I), and accordingly, 95 cases were included in our study, except the following:
      (i) 8 cases of nonschizophrenia psychosis,
      (ii) 23 cases of mental subnormality,
      (iii) 1 case of personality disorder.
   (a) Clinical picture and psychopathology were assessed by the PANSS.
   (b) Cognitive functions were assessed by the MMSE.
   (c) Severity of illness was assessed by the CGI-S.
   (d) Social class of the patients was determined using the Fahmy and El-Sherbibi Social Classification scale.
   (e) Anthropometric measures such as BMI and waist circumference were obtained.

Interview and rating scales were processed by two different psychiatrists for higher reliability.

Ethical issues

Approval from the local research ethical committee of the hospital was obtained, besides oral and/or written informed consent from patients and/or their families after an explanation of the study procedures and aims was provided; the patient were free to withdraw from the study at any time if they wished.

Statistical analysis

Data were collected and reviewed by analysis using SPSS version 17 (IBM, New York, USA); the following tests were used: Independent-samples *t*-test as a parametric test of significance for comparison between two sample means after performing Levene's test for equality of

variances, the χ^2-test (or likelihood ratio) as a nonparametric test of significance for comparison between the distribution of two qualitative variables, Fisher's exact test as a nonparametric test of significance for comparison between the distribution of two qualitative variables whenever the χ^2-test was not appropriate; it yields the *P*-value directly. A paired-sample *t*-test was used as a parametric test of significance for comparison between before and after values of quantitative variables, one-way analysis of variance (*f*-test) was used as a parametric test of significance for comparison between more than two sample means using either Scheffe's or Tauham's post-hoc tests for the results of homogeneity testing, and the Pearson correlation coefficient (χ^2) was used as a parametric measure of mutual relationship between two normally distributed quantitative variables.

Results

Sociodemographic data

Study of the demographic data of 95 cases of chronic schizophrenia with a long hospital stay showed that 84.2% patients (80) were men, 71.6% were single, and 72.6% did not have a job; 27.4 and 63.4% were from a very low and a low social class, respectively; 27.4% lacked private housing; 50.5% of cases had a positive family history of psychiatric illnesses; and 31.6% had a family history of medical illness (diabetes mellitus, hypertension, and dyslipidemia), as shown in Table 1.

Table 1 Distribution of sociodemographics of patients with chronic schizophrenia (*N*=95)

	N (%)
Sex	
Female	15 (15.8)
Male	80 (84.2)
Marital status	
Single	68 (71.6)
Married	12 (12.6)
Divorced	13 (13.7)
Widow	2 (2.1)
Nationality	
Non-Kuwaiti	23 (24.2)
Kuwaiti	72 (75.8)
Job history	
Jobless	69 (72.6)
Professional	1 (1.1)
Retired	25 (26.3)
Education	
Illiterate	22 (23.2)
Low grade	53 (55.8)
High school	17 (17.9)
University	3 (3.2)
Social standard	
Very low	26 (27.4)
Low	60 (63.2)
Moderate	8 (8.4)
High	1 (1.1)
Housing	
No private	26 (27.4)
Private	69 (72.6)
Family history of psychiatric illnesses	
Positive	47 (49.5)
Negative	48 (50.5)
Medical family history (DM, HTN, dyslipidemia)	
Positive	65 (68.4)
Negative	30 (31.6)

DM, diabetes mellitus; HTN, hypertension.

Clinical and medical characteristics

As can be seen in Table 2, 72 patients (75.8%) experienced the onset of schizophrenia with positive psychotic symptoms. Undifferentiated and paranoid schizophrenia were the most common subtypes (43.2 and 23.2%, respectively). It was also found that the incidences of diabetes mellitus, hypertension, and dyslipidemia were 29.5, 30.5, and 48.4%, respectively.

However, 51.6% patients (49) were obese, with BMI of at least 30, and 30.5% were overweight (BMI 25–29.9). Pathological waist circumference of at least 102 was found in 43.3% of men, whereas all women had a pathological waist circumference, with cut-off point of at least 88, as shown in Table 3.

The mean age at onset of schizophrenia was 48.9 ± 10.3 years, the mean duration of illness was 21.2 ± 5.7 years, the mean age of illness chronicity was 27.5 ± 9.3 years, and the mean frequency of repeated hospital admissions was 19.07 ± 12.5, with a duration of stay of 3.3 ± 3.9 months. The mean duration of last hospital admission was 9.8 ± 6.2 years and the total hospital stay was 14.6 ± 7.4 years.

As shown in Fig. 1, the mean total positive PANSS subscore was 17.8 ± 7.08 with 46.3, 50.5 and 47.3% of cases scoring at least 4 on delusions, conceptual disorganization, and hallucinatory behavior, respectively. Figure 2 shows that the mean total negative score mean was 28.4 ± 10.9, with (69.4%) of cases scoring of at least 4 in stereotyped thinking and blunted affect, 64.2% in poor rapport, 60.5% in emotional withdrawal, and 56.8% in passive social withdrawal. In contrast, the mean score of general psychopathology was 38.5 ± 9.4, with 44.2% scoring at least 4 in preoccupation, 43.1% in unusual thoughts and active social

Table 2 Distribution of medical state and clinical presentation for chronic patients with schizophrenia (*N*=95)

	Frequency (%)
Symptom onset	
Negative symptoms	3 (3.2)
Positive symptoms	72 (75.8)
Mixed	20 (21.1)
DM	
Negative	67 (70.5)
Positive	28 (29.5)
DM/drug used (at onset)	
Conventional	16 (57.1)
Atypical	12 (42.9)
DM/illness course	
Before illness	1 (3.5)
After illness	10 (35.8)
During test stay	17 (60.7)
HTN	
Negative	66 (69.5)
Positive	29 (30.5)
HTN/drug used (at onset)	
Conventional	18 (62.06)
Atypical	11 (37.94)
HIN/illness course	
Before illness	0
After illness	8 (27.6)
During test stay	21 (72.4)
Dyslipidemia	
Negative	49 (51.6)
Positive	46 (48.4)

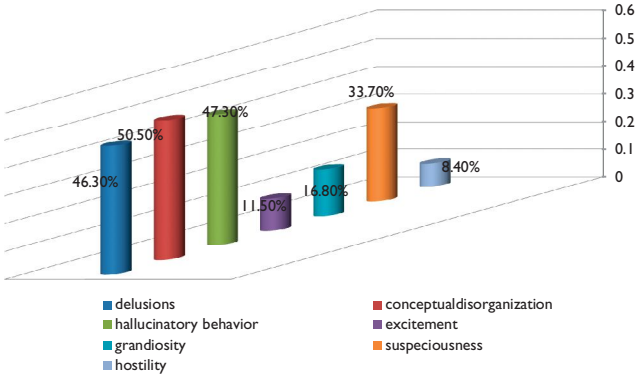
DM, diabetes mellitus; HTN, hypertension.

Table 3 Distribution of medical and anthrapometric characteristics of patients with chronic schizophrenia (*N*=95)

	Frequency (%)
Dyslipidemia drug at onset	
Conventional	14 (30.4)
Atypical	32 (69.6)
Dyslipidemia illness course	
Before illness	2 (4.3)
After illness	4 (8.6)
During test stay	40 (86.9)
Other medical illness	
CVS	7 (7.4)
Hepatitis	4 (4.2)
Renal	1 (1.1)
COPD	5 (5.5)
CNS	1 (1.1)
Hypothyroid	7 (7.4)
Blood disease (ITP)	3 (3.2)
Psoriasis	2 (2.2)
Cancer	1 (1.1)
BMI	
≥30	49 (51.6)
25–29.9	29 (30.5)
<25	17 (17.9)
Waist circumference (male)	
>102	35 (43.2)
94–101.9	19 (20)
<94	41 (36.8)
Waist circumference (female)	
≥88	15 (15.6)

CNS, central nervous system; COPD, chronic obstructive pulmonary disease; CVS, cerebrovascular stroke; ITP, idiopathic thrombocytopenia.

Figure 1



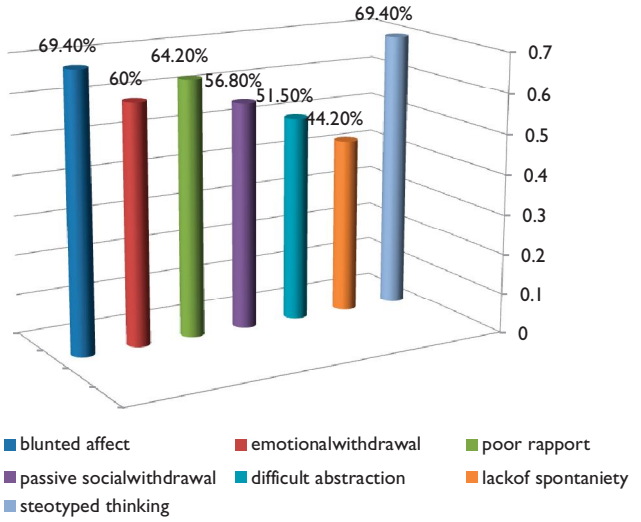
PANSS-positive subscores. PANSS, Positive and Negative Syndrome scale.

withdrawal, 9.5% in both somatic concern and mannerisms, and only 1% in motor retardation, as shown in Figs 3 and 4.

In terms of the severity of illness and assessment of cognitive functions, Table 4 shows that 86.3% of cases scored at least 4, indicating moderate to extremely ill. Moreover, the MMSE showed that 43.1% of cases had a definite cognitive deficit, scoring less than 20 on MMSE, 20% had a suspected cognitive deficit, and 36.8% had a normal range.

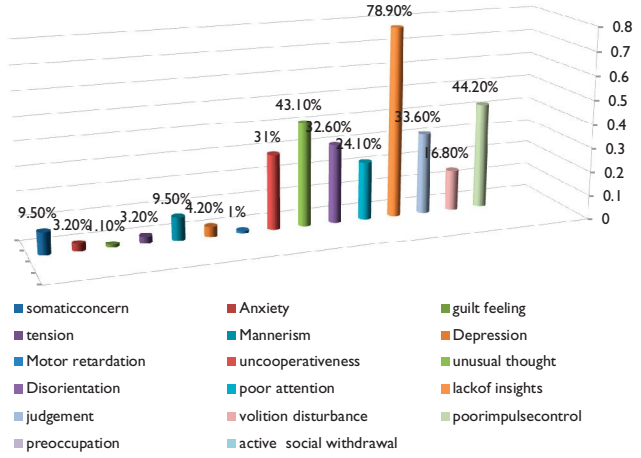
There were two previous failed treatment trails with a full therapeutic dose (400–1000 mg chlorpromazine equivalent) for at least 3–6 months, but with nonresponsiveness. Conventional antipsychotic prescriptions were highly significantly ($P = 0.000$) decreased across the three stages of treatments (85, 37, and 24.2%), whereas atypical groups showed a reversed increase (14, 51, and 75.8%).

Figure 2



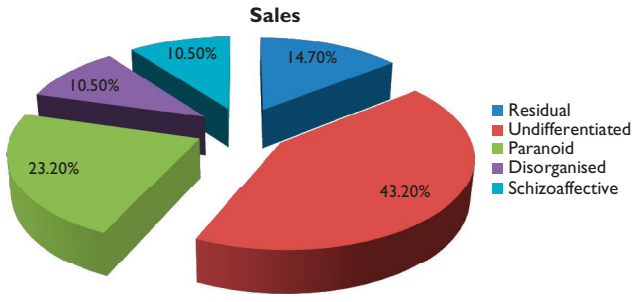
PANSS-negative subscore. PANSS, Positive and Negative Syndrome scale.

Figure 3



General psychopathology subscores.

Figure 4



Distribution of schizophrenia subtypes.

Review of their medical treatment data showed that 49.5% of them had received antihyperlipidemic agents, 31.6% had received antihypertensives, and 28.5, 20, and

Table 4 Clinical Global Impression scale-Severity Index and Mini-Mental State Examination

	N (%)
CGI-S	
Moderate to extremely ill	82 (86.3)
MMSE	
<20: definite cognitive deficient	41 (43.1)
20–40: suspected cognitive deficient	19 (20)
25–30: normal cognitive function	35 (36.8)

CGI-S, Clinical Global Impression scale-Severity Index; MMSE, Mini-Mental State Examination.

9.5% had received oral hypoglycemics, cardiac medications, and insulin, respectively. However, drugs for nonmetabolic disturbances, such as antacids, vitamins, and minerals, and for other specific treatments such as thyroxin, cardiac, bronchodilators, and topical ointments had been used by less than 20%, as shown in Figs 5–7.

Illness chronicity

The chronicity of illness was indicated by a long duration of illness (27.5 ± 9.3 years). Table 5 shows a statistically highly significant correlation with age, repeated admissions, long hospital stay, and total years of hospitalization ($P = 0.000$) each.

Patients with a chronic course of illness showed more severe cognitive dysfunction indicated by a highly significant statistical correlation with a lower MMSE score and higher scores on the disorientation item ($P = 0.000$), as shown in Table 5.

In terms of psychopathology, chronic patients with schizophrenia were significantly less delusional ($P = 0.05$) and suspicious ($P = 0.003$), with significantly less somatic concern ($P = 0.008$ and 0.003). In contrast, conceptual disorganization and difficult abstraction were more statistically significant in chronic patients enrolled in the study ($P = 0.005$ and 0.02, respectively; Table 6).

As can be seen in Table 7, the correlation between the duration of illness in our schizophrenia cases and their medical profile showed that those with a longer duration of illness were significantly more prone to hypertension versus those with a lower duration of illness (32.03 ± 7.8 vs. 25.5 ± 9.3, $P = 0.002$) and more significantly prone to metabolic syndrome versus those with a lower duration of illness (29.63 ± 9.3 vs. 21.6 ± 8.3, $P = 0.04$).

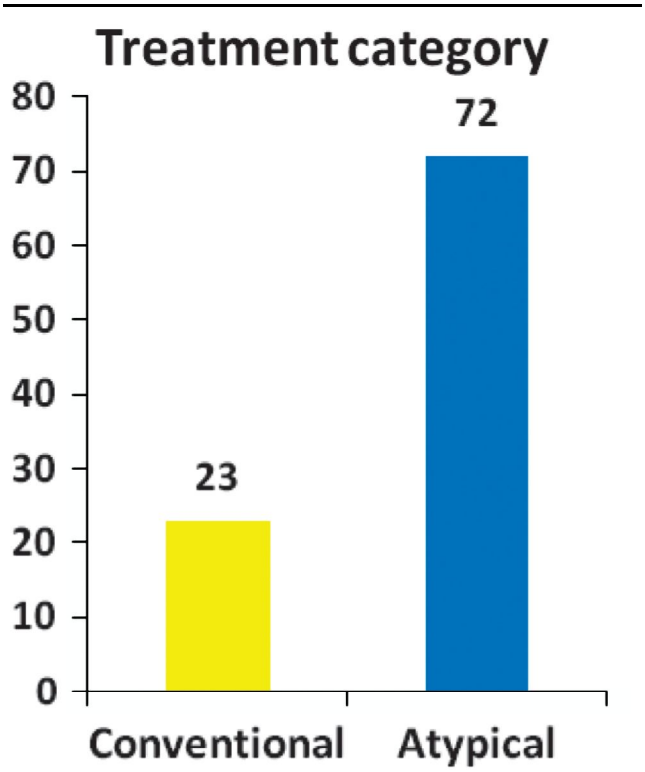
At the same time, there was a significant difference between patients with a longer duration of illness (34.0 ± 9.1 years), and those with a shorter duration of illness (25.5 ± 8 years, $P = 0.04$), in the severity of the illness using the GCI-S; those with a longer duration of illness were found to be borderline mentally ill versus those with a shorter duration, who were found to be extremely ill, as shown in Table 7.

Illness chronicity and medications

Table 8 shows that conventional antipsychotics were prescribed more for those with a longer duration of illness (30.4 ± 9.7) than the atypical group with a less duration of illness (26.5 ± 9.1), but was statistically insignificant ($P = 0.08$). Meanwhile, it was found that both clozapine and olanzapine were significantly more prescribed for those with a shorter duration of illness (25.3 ± 8.4 and 24.1 ± 8.7, respectively).

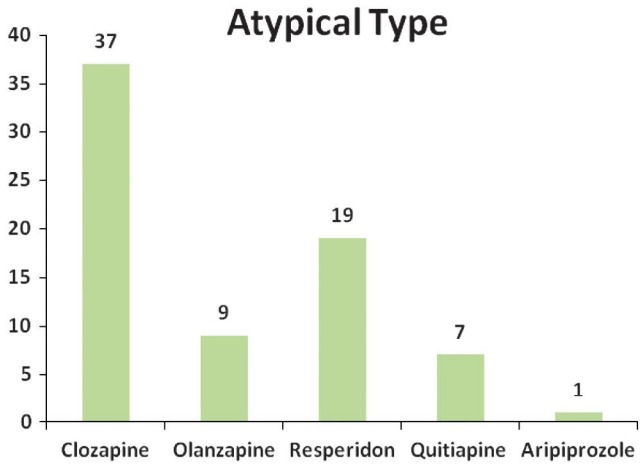
Using the multiple logistic regression model ($f = 2.704$, $P < 0.000$ and $R^2 = 0.991$), the most powerful significant predictors for illness chronicity were being older (0.987) and an early age of onset of schizophrenia (1.008); other

Figure 5



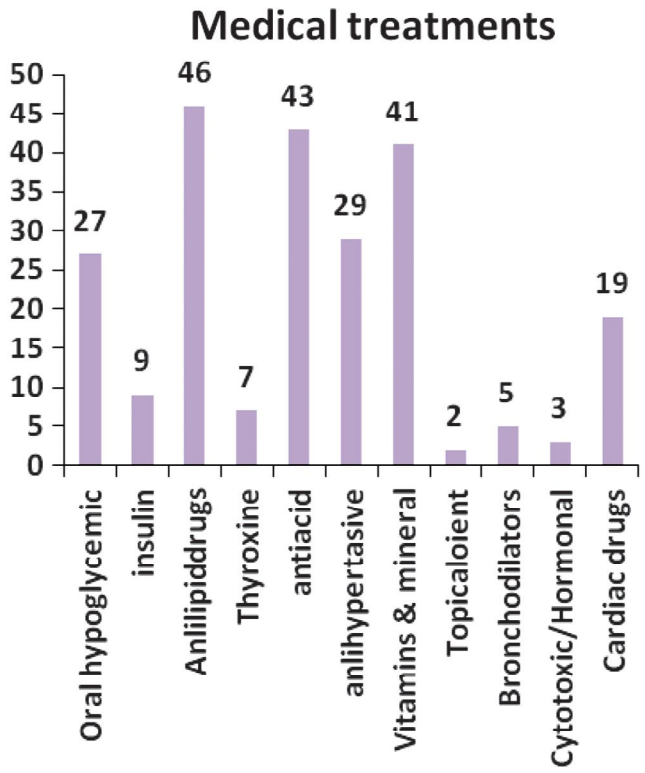
Distribution of treatment among cases.

Figure 6



Distribution of atypical antipsychotics used.

Figure 7



Treatment of medical conditions.

variables such as sex, social standard, family psychiatric history, scores of MMSE, PANSS, and CGI-s had no predictive value, as shown in Table 9.

Repeated hospital admission

There was a highly significant direct correlation between the mean number of repeated hospital admissions and each of age ($P = 0.001$), and duration of illness ($P = 0.000$), total period of hospitalization ($P = 0.01$), as well as being retired ($P = 0.03$), as shown in Table 6.

Table 10 shows that there was also a highly statistically significant difference between our chronic schizophrenia cases with respect to housing in relation to repeated relapses and hospital admission, wherein those with no private housing were more prone to repeated admissions ($P = 0.007$). In contrast, higher rates of repeated relapses and hospital admission were significantly highly associated with a moderate to high socioeconomic standard ($P = 0.002$).

Also, patients who have been currently diagnosed with residual schizophrenia or schizoaffective disorder had a history of significantly higher rates of repeated admission ($P = 0.04$), as shown in Table 7. At the same time, volition disturbance was significantly higher ($P = 0.03$) with repeated hospitalization, as shown in Table 6.

The multiple logistic regression model ($f = 2.907$, $P < 0.004$, $R^2 = 0.268$) showed that the most powerful predictors for repeated relapses and a high rate of hospitalization were being older (+ 0.706) and having an early age of onset of schizophrenia (1.035 years). Other variables lacked the power of prediction such as sex social standard, family history , and PANSS, MMSE, and CGI-S scores, as shown in Table 9.

Longer hospitalization and chronic institutionalization

The mean total hospitalization stay per year was 14.6 ± 7.4 and 9.8 ± 6.2 for chronic institutionalization. The longer hospitalization is indicated by the sum of duration of repeated admissions and the last continuous hospital stay period.

Patients with schizophrenia with longer durations of hospitalization are those with a longer course of illness ($P = 0.000$), older patients ($P = 0.000$), and of course those with a high rate of admission ($P = 0.001$) and chronic institutionalization ($P = 0.000$). They had higher scores on disorientation ($P = 0.03$) and volition disturbance ($P = 0.04$), as well as conceptual disorganization ($P = 0.02$). This means that these symptoms may have a role in their long hospitalization, as shown in Table 5. Also, these patients were more significantly likely to have dyslipidemia ($P = 0.03$), as shown in Table 7, and conventional antipsychotics were more significantly prescribed for these patients ($P = 0.04$).

With respect to the median percentage of total hospital stay, 30% could be attributed to the patients' median age and 55% to illness duration, whereas in the case of chronic hospitalization, 20% could be attributed to patients' median age and 35% to illness duration, as shown in Table 11.

As shown in Table 9, the multiple logistic regression model for total hospital stay ($f = 6.979$, $P < 0.001$, $R^2 = 0.492$) showed that the most powerful predictors were being older (10.519), early onset age of schizophrenia (0.0723), higher scores on the positive PANSS scale (0.233), and high psychopathological severity, as evidenced by CGI-S (1.732).

The most powerful predictors for chronic continuous institutionalization (significant model; $f = 2.70$, $P < 0.07$, $R^2 = 0.273$) were older age (0.328) and early age onset of schizophrenia (0.043), as shown in Table 9.

Discussion

Need for community care services

Long-stay patients with chronic schizophrenia represent a small proportion of all patients with such an illness, but in many cases, these patients account for a majority of the cases associated with the treatment of the illness (Harvey *et al.*, 2000). Meanwhile, deinstitutionalization is a multifunctional process to be viewed in a parallel with the existing unmet socioeconomical needs of the person to be discharged in the community and the development of care alternatives (Mechanic and Rochefort, 1990; Madianos, 2002).

The Psychological Medicine Hospital of Kuwait is the only and official state hospital that still depends on a hospital-based service. It has 764 beds for psychiatric and addiction services (575 for psychiatric general services

Table 5 Correlation of duration of illness, relapse number, duration, and total and last stay with age, onset age, cognitive parameters, and Positive and Negative Syndrome scale scores in 95 cases of schizophrenia

	Duration of illness	Relapse number	Relapse duration	Total hospital stay	Last stay duration
Duration of illness					
R		0.449	0.083	0.440	0.608
P		0.000	0.424	0.000	0.000
Relapse number					
R	0.449	1	−0.166	0.002	0.259
P	**0.000**		0.108	0.986	0.011
Relapse duration					
R	0.083	−0.166	1	−0.077	0.196
P	0.424	0.108		0.456	0.058
Last stay duration (years)					
R	0.440	0.002	−0.077	1	0.807
P	**0.000**	0.986	0.456		**0.000**
Total stay					
R	0.608	0.259	0.196	0.807	1
P	0.000	0.011	0.058	0.000	
Mini-Mental State Examination					
R	−0.378	−0.014	0.007	−0.172	−0.146
P	**0.000**	0.894	0.949	0.096	0.158
Total positive PANSS					
R	−0.136	−0.002	−0.084	0.045	0.057
P	0.188	0.982	0.421	0.665	0.585
Total negative PANSS					
R	0.040	−0.079	0.101	−0.105	−0.068
P	0.701	0.446	0.329	0.313	0.510
Disorientation score					
R	0.382	0.174	0.168	0.125	0.223
P	**0.000**	0.092	0.103	0.229	**0.030**
Lack of attention score					
R	0.193	0.070	0.144	0.116	0.156
P	0.061	0.497	0.162	0.262	0.132
Age					
R	0.816	0.322	0.158	0.335	0.458
P	**0.000**	**0.001**	0.127	**0.001**	**0.000**
Age at onset					
R	−0.151	−0.141	0.056	−0.136	−0.206
P	0.145	0.174	0.586	0.19	**0.045**

Bold indicates *P*-value was significant or highly significant.
PANSS, Positive and Negative Syndrome scale.

and 189 for addiction). The percentage of bed occupancy is 68.2 and 72.3%, respectively; the duration of admissions is 52.4 days for both, with a turnover rate of 25.4 and 28.5 (Ministry of Health report, 2009). The total population of the country is 3 566 737; there is one bed for 4668.1 and one psychiatrist for 37 150 patient population (Kuwait census, 2009).

The total number of beds for long hospital stays is 130, representing 22.6% of the total psychiatric hospital beds (575), which includes nongeriatric patients with different diagnoses with a 96.9% occupancy rate. Patients with disorders in the schizophrenia spectrum represent 79.3% of patients with chronic institutionalization (mean 9.8 ± 6.2 years). Patients with mental illness suffer from inadequate availability of community-based psychiatric services, specialized services for chronic mental illness, and specialized mental health programs for children and adolescents. However, a specific program for elderly patients has been developed recently focusing on their mental and physical problems; a disability benefit policy has also been formulated recently. These findings are not consistent with higher socioeconomic status and social welfare in the Kuwait community.

The substantial cost because of unmet needs for patients with chronic schizophrenia with a long hospital stay highlights the importance of the current study, which points out the nature of this group of mentally ill patients.

Outcome of participants

Our sample of patients with chronic schizophrenia with a long hospital stay has shown some indicators for poor outcomes, wherein 50% of them have a moderate to severe degree of positive and negative symptoms with a positive family history. At the same time, more than 70% were men, never married, unemployed, or retired, with a low educational level and a low socioeconomic standard, besides a high rate of admission and long stay in the hospital. Moreover, 50% were obese, 90% had a risk of metabolic syndrome, and only 20% had intact cognitive functions. These findings of sample characteristics are in agreement with those of other studies (Curson *et al.*, 1988), and in agreement with the study by Harvey *et al.* (2000), who concluded that hospital patients had severe negative and cognitive symptoms as well as functional defects.

Our patient characteristics lack the known good prognostic factors such as being married (Shepherd *et al.*, 1989; Wiersma *et al.*, 1998), having a higher level of education (Geddes *et al.*, 1994), and being female (only 15% of our sample are female patients) (Watt *et al.*, 1983; Jablensky *et al.*, 1992; Leff *et al.*, 1992; Harrison *et al.*, 1996; Murray and Van Os, 1998; Moriarty *et al.*,

Table 6 Correlation of duration of illness, relapse number, duration and total hospital stay, and last hospital stay with Positive and Negative Syndrome scale subscores

	Duration of illness		Relapse number		Relapse duration		Last stay duration		Total stay duration	
	Pearson's correlation	Significance (two tailed)	Pearson's correlation	Significance (two tailed)	Pearson's correlation	Significance (two tailed)	Pearson's correlation	Significance (two tailed)	Pearson's correlation	Significance (two tailed)
Positive PANSS subscores										
Delusion	−0.199	**0.050**	−0.109	0.295	−0.071	0.492	0.039	0.706	0.059	0.572
Conceptual disorganization	0.283	**0.005**	0.048	0.644	0.128	0.216	0.172	0.096	0.233	**0.023**
Hallucinating behavior	−0.142	0.171	−0.022	0.832	0.059	0.568	−0.009	0.929	−0.009	0.933
Excitement	−0.091	0.382	0.071	0.494	−0.094	0.364	0.046	0.657	0.034	0.746
Grandiosity	−0.007	0.949	0.000	0.996	−0.114	0.272	−0.015	0.883	0.018	0.861
Suspiciousness	−0.297	**0.003**	−0.015	0.886	−0.222	**0.031**	−0.015	0.883	−0.069	0.509
Hostility	−0.170	0.100	0.066	0.528	−0.121	0.244	−0.033	0.752	−0.045	0.665
Negative PANSS subscores										
Blunted effect	0.056	0.590	−0.070	0.500	0.089	0.392	0.037	0.721	0.035	0.740
Emotional withdrawal	−0.042	0.686	−0.084	0.417	0.000	0.997	−0.093	0.368	−0.105	0.311
Poor rapport	−0.018	0.859	−0.070	0.498	0.082	0.429	−0.148	0.153	−0.110	0.287
Passive social withdrawal	−0.053	0.611	−0.075	0.473	0.053	0.608	−0.210	**0.041**	−0.180	0.082
Difficult abstraction	0.225	0.028	0.033	0.748	0.188	0.068	0.020	0.845	0.123	0.235
Lack of spontaneity in conversation	−0.016	0.880	−0.100	0.333	0.087	0.400	−0.120	0.249	−0.081	0.436
Stereotyped thinking	0.132	0.204	−0.081	0.434	0.103	0.320	−0.027	0.795	−0.022	0.835
General psychopathology subscores										
Somatic concern	−0.270	**0.008**	−0.090	0.385	−0.001	0.991	−0.004	0.973	−0.076	0.461
Anxiety	−0.062	0.548	−0.008	0.937	−0.101	0.332	−0.051	0.622	−0.076	0.466
Guilt feeling	−0.083	0.425	0.060	0.565	−0.085	0.413	−0.162	0.117	−0.176	0.087
Tension	−0.071	0.494	0.048	0.645	−0.086	0.406	0.027	0.796	−0.008	0.938
Mannerism	0.071	0.494	−0.060	0.566	0.188	0.068	−0.029	0.778	−0.028	0.787
Depression	−0.186	0.071	0.114	0.273	−0.163	0.115	−0.189	0.066	−0.154	0.136
Motor retardation	−0.110	0.287	−0.045	0.664	0.004	0.966	−0.156	0.132	−0.159	0.124
Uncooperativeness	−0.094	0.364	0.060	0.560	−0.107	0.303	−0.128	0.216	−0.098	0.346
Unusual thought	−0.185	0.072	−0.099	0.340	−0.166	0.108	−0.065	0.530	−0.132	0.201
Disorientation	0.382	**0.000**	0.174	0.092	0.168	0.103	0.125	0.229	0.223	0.030
Poor attention	0.193	0.061	0.070	0.497	0.144	0.162	0.116	0.262	0.156	0.132
Lack of insights/ judgment	0.062	0.548	−0.074	0.474	−0.014	0.896	−0.027	0.795	−0.011	0.916
Violent disturb	−0.173	0.094	−0.221	**0.031**	0.028	0.790	−0.126	0.223	−0.211	**0.041**
Poor impulse control	−0.047	0.654	−0.008	0.938	−0.113	0.277	0.100	0.335	0.048	0.645
Preoccupation	−0.060	0.563	0.154	0.137	−0.196	0.057	−0.080	0.441	−0.054	0.606
Active social avoidance	−0.009	0.928	−0.052	0.615	0.005	0.960	−0.152	0.140	−0.130	0.209

Highly significant if $P<0.001$.
Significant if $P<0.05$. Bold indicates P-value was significant or highly significant.
PANSS, Positive and Negative Syndrome scale.

2001). Other good prognostic factors include no family history of psychiatric illness (Vaillant, 1964; Murray and Van Os, 1998) as well as an older age at onset (Shepherd *et al.*, 1989; Jablensky *et al.*, 1992; Loebel *et al.*, 1992). However, our sample of patients lacked all these predictors of a good prognosis, especially the latter factor; in contrast, younger age of onset of illness (<20 years) was a powerful predictor for repeated admission, longer hospital stay, and chronicity of illness in our study, which are all considered as indices for poor outcomes.

The negative effect of schizophrenia was evident in our sample of patients: they have spent 50% of their lives suffering from the illness and have lived around 30% of their lives in hospitals, with 20% of their lives having been lost in chronic institutionalization.

In a study comparing between different groups of patients with schizophrenia who had experienced deinstitutionalization across different periods, Honkonen *et al.* (1992) found that patients had shown more satisfaction with their current situation, without an increased rate of mortality, and a low rate of homelessness. Also, Sytema *et al.* (2002) reported extra benefits for deinstitutionalization with an available community-based program that shortens the length of stay and provides a potentially low rate of rehospitalization, rather than hospital-based ones.

In our sample, the prevalence of acute psychotic illness as well as the negative symptoms that affect the patients' social skills and coping abilities forewarn of the problems that may develop if community services are insufficiently comprehensive and insufficiently organized and funded. Thus, a careful assessment of patients in a deinstitutionalization program should be based on functional scores (Odes *et al.*, 2011) and life skill profiles for assessment of disability profiles (Eu *et al.*, 2001). Moreover, we should

Table 7 Comparison of duration of illness, relapse number, duration of last stay, and total stay duration (h) according to medical, anthropometric, and clinical characteristics

		Duration of illness		Relapse number		Relapse duration		Last stay duration		Total stay duration	
	N	*M*±SD	*P*	*M*±SD	*P*	*M*±SD	*P*	*M*±SD	*P*	*M*±SD	*P*
Diabetes mellitus											
Negative	67	27.6±9.5	0.89	19.0±12.5	0.93	3.05±1.8	0.26	9.5±6.1	0.47	14.6±7.7	0.88
Positive	28	27.3±9.2		19.2±12.7		4.1±6.7		10.5±6.6		14.8±6.8	
Hypertension											
Negative	66	25.5±9.3	**0.002**	17.8±11.1	0.15	3.06±1.8	0.21	9.2±5.9	0.21	13.8±7.6	0.11
Positive	29	32.03±7.8		21.8±14.9		4.1±6.6		11.03±6.8		16.5±6.7	
Dyslipidemia											
Negative	49	26.4±9.0	0.27	16.9±11.8	0.08	2.9±1.6	0.30	8.7±6.6	0.07	13.1±7.3	**0.03**
Positive	46	28.6±9.7		21.3±12.9		3.8±5.9		11.0±5.6		16.3±7.2	
Metabolic syndrome											
Normal	9	21.6±8.3	**0.04**	15.8±8.2		2.6±1.4		7.9±7.1	0.77	11.0±8.1	0.16
Risky	17	31.8±9.5		20.5±13.1	0.34	3.2±2.4	0.31	10.5±6.9		17.6±9.6	
High risky	47	28.5±8.9		17.4±12.4		2.9±1.6		10.05±6.4		14.2±6.9	
Definite cases	22	28.6±9.5		22.6±13.8		4.7±7.5		9.5±4.9		14.8±5.8	
BMI											
≥30	49	26.4±9.3	0.50	19.1±12.2	0.87	3.8±5.1		9.0±5.3	0.44	13.6±5.8	0.38
25–29.9	29	28.4±8.8		18.2±13.2		2.7±1.9	0.45	10.8±7.5		15.8±8.4	
<25	17	29.0±10.3		20.2±12.2		3.0±1.6		10.3±6.3		15.5±9.6	
Schizophrenia subtypes											
Residual	14	34.1±8.6	**0.005**	28.1±14.8	**0.04**	2.9±1.6	0.79	12.9±5.5	0.32	19.4±8.4	0.19
Undifferentiated	41	25.5±8.3		17.5±12.9		4.05±5.7		8.9±5.7		13.3±6.7	
Paranoid	22	24.1±8.7		15.5±9.5		2.7±1.6		9.4±6.9		13.4±7.4	
Disorganized	10	32.0±7.07		17.5±8.4		3.4±1.7		8.0±5.3		15.5±8.6	
Schizoaffective	8	30.4±11.1		25.0±11.6		2.0±0.64		10.2±8.2		14.4±7.3	
Clinical Global Impression scale-Severity Index											
Borderline ill	13	34.0±9.1	**0.04**	20.0±13.7	0.08	6.0±8.1	0.33	13.0±7.2	0.34	23.0±7.9	0.43
Moderate ill	18	23.0±7.6		16.9±12.1		3.3±1.8		10.08±7.1		4.0±7.1	
Marked ill	27	27.0±9.5		23.4±13.1		2.9±1.4		9.5±6.3		15.03±7.02	
Severity ill	21	31.6±9.1		20.2±13.7		2.6±2.2		11.3±6.6		15.7±8.9	
Extremely	16	25.5±8.4		12.4±9.9		±0.7		±		±	

Highly significant if $P<0.001$.
Significant if $P<0.05$. Bold indicates *P*-value was significant or highly significant.

Table 8 Comparison of duration of illness, relapse number, duration of last stay, and total stay duration (h) according to the treatment characteristics of 95 patients with schizophrenia

		Duration of illness		Relapse number		Relapse duration		Last stay duration		Total stay duration	
	N	*M*±SD	*P*	*M*±SD	*P*	*M*±SD	*P*	*M*±SD	*P*	*M*±SD	*P*
Treatment category											
Conventional	23	30.4±9.7	0.08	23.0±14.2	0.08	3.04±1.5	0.62	11.2±6.2	0.2	17.3±8.4	**0.04**
Atypical	72	26.5±9.1		17.8±11.7		3.5±4.4		9.3±6.2		13.8±6.9	
Current treatment type											
Clozapine	37	25.3±8.4	**0.02**	19.1±12.0	0.36	2.7±1.6	0.5	9.1±6.7	0.45	13.1±7.2	0.16
Olanzapine	9	24.3±8.9		18.6±11.1		2.6±1.7		10.6±6.8		14.2±6.4	
Risperidone	19	27.4±10.4		15.1±3.6		4.5±7.8		9.5±5.4		14.2±6.8	
Quitiapine	7	31.1±11.1		15.8±4.2		5.5±2.7		7.8±6.1		14.9±8.2	
Aripiprazole	1	27.0±0.00		30.0±0.00		1.2±0.00		11.0±0.00		14.0±0.0	
Haldol	23	33.3±7.2		24.2±14.3		3.5±1.5		12.2±5.7		18.9±8.07	
Treatment history											
Trial I											
Conventional	81	27.7±10.09	0.74	19.07±12.5	0.15	8.1±1.7	**0.002**	8.6±4.04	0.55	12.9±5.4	0.81
Atypical	14	28.2±8.4		23.0±21.2		4.0±2.6		7.8±3.8		14.6±7.4	
Trial II											
Conventional	36	28.4±9.5	0.69	19.0±8.9	0.09	3.3±3.9	0.41	9.8±6.2	0.12	15.6±8.1	0.21
Atypical	59	28.7±10.1		18.1±10.1		3.4±1.9		7.1±5.6		14.5±7.7	

Bold indicates *P*-value was significant or highly significant.

not rely heavily on the efficiency of new drug treatment nor on the ability and willingness of the family to tolerate deviant social behavior in one of its members and his poor compliance even on long-acting injection (Curson *et al.*, 1988).

Claims of underfunding as the main obstacle to adequate community services should be tempered by criticisms of the high cost of repeated admissions, long hospital stay as well as poor coordination of health services. The community psychiatric services should not only be well organized but should also provide inpatient services. Facilities, albeit at a local level, will be required to offer genuine asylum for the patients who are most severely ill, with the needs of the patient being based on their social

Table 9 Multiple logistic regression model for significant predictors of chronicity, repeated admissions, total institutionalization period, chronic institutionalization

Multiple logistic regression model for significant predictors of chronicity for 95 patients with schizophrenia	
Duration of illness (years)	= 2.817 (constant) + 0.987 × current age (years) − 1.008 × age at onset of schizophrenia (years)
$F = 795.76$, $P < 0.000$, $R^2 = 0.991$	
Logistic regression model for significant predictors for repeated number of hospitalizations for 95 patients with schizophrenia	
Repeated hospitalization number	= 4.548 (constant) + 0.706 × age (years) − 1.035 × onset age of schizophrenia
$F = 2.907$, $P < 0.004$, $R^2 = 0.268$	
Multiple logistic regression model for significant predictors of the total institutionalization period for patients with chronic schizophrenia	
Total institutionalization period	= 4.541 (constant) + 0.579 × age (years) − 0.723 × onset age of schizophrenia + 0.233 total positive score of the PANSS scale + 1.732 × CGI-S score
$F = 6.979$, $P < 0.001$, $R^2 = 0.492$	
Multiple logistic regression model for significant predictors of chronic institutionalization (years) for 95 patients with schizophrenia	
Long continuous hospital stay	= 6.145 (constant) + 0.328 × current age (years) − 0.403 × age at onset of schizophrenia
$F = 2.704$, $P < 0.007$, $R^2 = 0.273$	

CGI-S, Clinical Global Impression scale-Severity Index; PANSS, Positive and Negative Syndrome scale.

disablement (Wing and Furlong, 1986; Crumpton, 1988; Griffiths, 1988).

Finally, the results highlight a problem that is still imperfectly understood by policy makers and administrators in health authorities who are responsible for planning and implementing services for integrative, comprehensive, and continuous psychiatric care with cost benefit and humanitarian motives in a community characterized by a high socioeconomic standard and social welfare for mentally ill patients since their first contact with psychiatric services.

Conclusion and recommendation

Schizophrenic patients with long hospital stays and chronic illness have poor prognostic factors, functional deficits, and weak coping skills that require multimodel comprehensive deinstitutionalization and rehabilitation programs depending on careful assessment, care continuity with cost effectiveness, and humanitarian motivation and social welfare support.

Deinstitutionalization is effective in reducing the quality of life for the chronically ill, whereas community programs are useful for psychiatric patients who are highly motivated. An effective institution with well-trained, flexible staff may be more able to meet the needs of those who are chronically ill.

Table 10 Comparison of duration of illness, relapse number, duration (per month), total stay duration (per year), and last stay duration (years) according to sociodemographics

		Duration of illness/year		Relapse number		Relapse duration/month		Last stay duration/year		Total stay duration/year	
	N	*M* ± SD	*P*	*M* ± SD	*P*	*M* ± SD	*P*	*M* ± SD	*P*	*M* ± SD	*P*
Sex											
Female	15	27.2 ± 9.6	0.88	18.7 ± 11.7	0.900	4.5 ± 1.7	0.23	10.06 ± 6.0	0.87	16.5 ± 6.5	0.29
Male	80	27.5 ± 9.3		19.1 ± 12.7		3.1 ± 4.2		9.7 ± 6.3		14.3 ± 7.6	
Marital status											
Single	68	26.2 ± 8.3	0.13	17.7 ± 11.3	0.060	3.6 ± 4.5	0.71	10.02 ± 6.3	0.55	14.7 ± 7.0	0.64
Married	12	32.1 ± 12.05		20.6 ± 10.1		2.3 ± 1.7		11.1 ± 5.3		15.3 ± 6.4	
Divorced	13	30.35 ± 10.6		26.2 ± 17.7		3.3 ± 1.9		8.0 ± 6.3		14.8 ± 10.3	
Widow	2	25.5 ± 13.4		6.5 ± 4.9		1.7 ± 0.35		7.0 ± 8.4		8.0 ± 7.7	
Job											
Jobless	60	26.7 ± 9.1	0.46	17.06 ± 11.3	**0.030**	3.6 ± 4.4	0.62	10.07 ± 6.5	0.37	14.9 ± 7.7	0.42
Professional	1	30.0 ± 0.0		20.0 ± 0.0		2.4 ± 0.0		1.5 ± 0.0		5.5 ± 0.0	
Retired	25	29.4 ± 10.0		24.6 ± 14.4		2.7 ± 2.1		9.4 ± 5.4		14.2 ± 6.5	
Education											
Illiterate	22	30.7 ± 9.3		18.6 ± 17.7		5.1 ± 7.9		10.6 ± 6.6		16.2 ± 9.2	
Low grade	53	27.3 ± 9.5	0.42	20.4 ± 13.09	0.820	2.8 ± 1.5	0.24	9.7 ± 6.4	0.90	14.7 ± 7.09	0.72
High school	17	25.7 ± 8.5		16.7 ± 8.9		3.0 ± 2.1		9.7 ± 5.7		13.4 ± 6.3	
University	3	24.0 ± 9.8		17.3 ± 20.03		3.3 ± 1.3		7.0 ± 6.0		10.8 ± 9.2	
Social standard											
Very low	26	30.2 ± 8.7		21.5 ± 12.4		2.7 ± 1.5		12.1 ± 6.7		16.8 ± 8.4	
Low	60	25.7 ± 9.4	0.09	16.1 ± 11.3	**0.002**	3.8 ± 4.8	0.45	8.9 ± 6.2	0.15	13.7 ± 7.2	0.30
Moderate	8	31.1 ± 9.1		30.7 ± 12.09		2.1 ± 0.76		8.7 ± 2.9		14.08 ± 4.1	
High moderate	1	35.0 ± 0.0		40 ± 0.00		2.1 ± 0.00		13.0 ± 0.00		20.0 ± 0.0	
Housing											
No private	26	29.08 ± 7.4	0.32	24.6 ± 14.7	**0.007**	2.8 ± 1.6	0.41	8.3 ± 5.6	0.16	13.3 ± 6.4	0.27
Private	69	26.9 ± 10.0		16.9 ± 10.9		3.5 ± 4.2		10.3 ± 6.4		15.1 ± 7.7	
Family history of psychiatric illness											
Negative	47	28.1 ± 9.9	0.51	18.3 ± 13.2	0.570	3.8 ± 5.2	0.22	9.6 ± 6.1	0.74	14.5 ± 7.6	0.89
Positive	48	26.9 ± 8.8		19.7 ± 11.8		2.9 ± 1.8		10.03 ± 6.4		14.7 ± 7.3	
Family history of DM, HTN, dyslipidemia											
Negative	65	27.9 ± 9.4	0.47	19.2 ± 12.8	0.850	3.5 ± 4.6	0.46	9.8 ± 6.2	0.99	14.7 ± 7.6	0.97
Positive	30	26.56 ± 9.2		18.7 ± 11.8		2.9 ± 1.8		9.8 ± 6.2		14.6 ± 7.1	

Bold indicates *P*-value was significant or highly significant. DM, diabetes mellitus; HTN, hypertension.

Table 11 Median of percent of total hospitalization and period of chronic institutionalization in relation to age and illness course duration of the studied cases (*N*=95)

	Total hospital stay duration		Chronic hospital stay	
Variables	Age	Duration	Age	Duration
Min–maximum	2.1–61.29	7.14–98.28	1.09–55.59	1.67–83.33
Q1	21.82	38.71	10.64	18.75
Median	**30.16**	**55.0**	**20.0**	**34.78**
Q3	38.28	68.75	27.27	52.00

Bold indicates *P*-value was significant or highly significant.

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Conflicts of interest

There are no conflicts of interest.

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