Psychiatric admission in a general hospital

Patients profile and patterns of service utilization over a decade

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ABSTRACT

Objectives: To analyze the socio-demographic and clinical characteristics of admitted patients and the patterns of their service utilization over a decade from March 1988 to March 1998.

Methods: Prospective data compilation using a structured questionnaire, hospital records and follow-up observations at King Fahd Hospital of the University in Al-Khobar, Kingdom of Saudi Arabia.

Results: A total of 1366 patients (683 of each sex) had 2217 admissions in 10 years. By the International Classification of Diseases, 10th edition criteria, 19.5% had schizophrenia, 15.2% bipolar disorder, 9.9% depressive episodes, 8.6% acute and transient psychotic disorders, 7.7% adjustment disorders and 7.6% dissociative disorders. Males were more frequently admitted for schizophrenia and females for mood and anxiety disorders. Most non-Arab expatriates were diagnosed as acute and transient psychotic, stress-related or dissociative disorders. Re-hospitalizations constituted 28% of all admissions. The mean length of stay was 25 days per admission and 41 days per patient. The overall bed occupancy rate was 84.9%. A subgroup of 16.9% of patients, mostly with schizophrenia or bipolar disorder, consumed 62.3% of the bed occupancy.

Conclusion: Gender and immigration were the main determinants of variance in patient characteristics, nosological distribution and pattern of service use. More beds are needed. Psycho-educational programs should be intensified to reduce the social stigma and societal intolerance to mental patients. Active family involvement improves compliance and might reduce re-hospitalization rates. Heavy service consumers should be transferred to long-stay facilities.

Keywords: Psychiatric hospitalization, gender differences, psychiatric service utilization, heavy service users.

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King Fahd Hospital of the University in Al-Khobar is a 444-bedded general and tertiary hospital. It receives referrals from different parts of the Eastern Province of the Kingdom of Saudi Arabia (population = 2,575,820 in 1992).[1] Its psychiatric ward is the first and only inpatient psychiatric facility in the town of Al-Khobar and its outskirts. Opened on March 19, 1988, it ran throughout its first decade on a capacity of 18 beds (10 male and 8 female). Except for 2 brief communications,[2,3] the bulk of the experience remains unreported. The present study aims to evaluate the ward functioning over the first decade of its operation. Analysis of the sociodemographic and clinical characteristics of admitted patients might cast some light on the nature, magnitude and distribution of local inpatient psychiatric morbidity.[4] Description of the pattern and trends of service utilization, in terms of the

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frequency of admissions and re-admissions, length of stay and bed occupancy rate, might provide realistic estimates that are necessary for appropriate deployment of services and planning of future services. Comparison of our data may add a modest contribution to transcultural studies.

Methods. ***Study population.*** All admissions to the ward during its first decade (19 March 1988 to 18 March 1998) were included in this study. Data was prospectively collected from clinical interviews, case presentations, ward observations and follow-up information.

Questionnaire. A fully structured 45-item questionnaire was specially designed for data collection. Its sociodemographic section included the patient's age, sex, nationality, education, occupation, marital status, residence, employment status, income, job performance and job satisfaction, personal and family history, interpersonal relationships and social support. The clinical component included the source of referral, informants, presenting symptoms, onset and duration of illness, life events, past medical and psychiatric history, premorbid personality, psychoactive substance use, previous treatments and admissions, current diagnosis, length of stay, condition on discharge and follow-up information.

Diagnosis. Until February 1993, diagnoses were made according to the Diagnostic and Statistical Manual of Mental Disorders, 3rd revised edition (DSM-III-R)[5] criteria. Thereafter, the International Classification of Diseases, 10th edition (ICD-10)[6] was adopted. Earlier diagnoses were meticulously reviewed and converted to corresponding ICD-10 categories. Invariably, all diagnoses were revised in follow-up inpatient or outpatient encounters.

Statistical analysis. Statistical package for social sciences WIN-7.5 was used for data entry and analysis. Univariate distributions were previewed in frequency tables. Bivariate analyses used contingency tables and Chi-square values for dependent nominal and ordinal variables, and mean values with their standard deviations and t-Test or F-value for numeric variables. Multivariate techniques included multiple regression for determinants of the length of stay in hospital, survival analysis by Cox Proportional Hazard Model for the relative risk of re-hospitalization, and logistic regression for predictors of heavy service use. Only statistically significant findings ($p < 0.05$) are reported.

Results. ***Admissions.*** The ward received 2,217 admissions in 10 years (1109 males and 1108 females). Of these, 1366 (61.8%) were first admissions (683 of each sex). The overall mean ± standard deviation (SD) length of stay per admission was 25.2±27.4 days, and the stay per patient over all was 40.7±82.1 days. Males had significantly longer stays than females both per single admissions (27.3±29.0 and 22.8±25.4) and over all admissions (40.9±82.1 and 36.7±67.7). The overall bed occupancy rate was 84.9%, being slightly, yet significantly, higher in the female than in the male section (85.8 and 84.2%).

Sociodemographic data. As seen in **Table 1**, three-quarters were Saudis and the remainder was mostly non-Saudi Arabs or non-Arab Asians. The age ranged from 11 to 80 years, three-quarters between 20 and 39 years of age. The mean±SD age was 29.7±10.5 years; the median age was 27 and the mode 30 years. There was no significant gender difference in the age distribution. Expatriates had a slightly, but significantly, higher mean age than Saudis (31.5±8.6 and 29.0±10.6 years); their lesser SD reflects their being mostly mature, but young adults. By education, females were 3 times more frequently illiterate. The mean±SD of completed grades of education was 7.2±5.1; being higher in males than females (8.3±4.9 and 6.1±5.2 grades). Only one 3rd of the patients were of secondary or higher education. By occupation, 11.4% of the patients were still at school, and half the remainder had no income generating activity. This unemployment was 3-fold more common among females, particularly Saudis. Most working expatriate males were manual workers and females were housemaids. The few working Saudi females were teachers, nurses or office employees in female institutions. By marital status, 2 out of 5 patients were never married; males were 2-fold over-represented in this category. Three quarters of first marriages occurred before the age of 25. One out of 6 marriages ended in a divorce. The divorce rate was significantly higher among females, particularly Saudis. Three quarters of the patients were residents of Al-Khobar or other parts of the greater Dammam area. Four-fifths of the patients were living with their families, nuclear or extended. This applied to nearly all the Saudis (94.2%), but to only 39.3% of the expatriates. Most male expatriates shared living with friends or work-mates, whereas their female counterpart mostly lived either in their employers' homes or in female hostels.

Clinical features. As seen in **Table 2**, the index illness was of acute onset in nearly half the patients, being considerably more common in females than in males, and in expatriates than in Saudis. Stressful life events were reportedly implicated in the onset of illness in half the patients, being significantly more common in females than in males and in expatriates than in Saudis. About two-thirds of the patients presented with psychotic symptoms, which were more common in males than females and in Saudis than expatriates. A positive family history of mental disease was reported in more than one 3rd of patients with little inter-group differences, except for its being less frequent among expatriate females.

Table 1 - Sociodemographic characteristics by nationality and gender shown as percentages.

Variable	Total	All patients		Saudi		Non-Saudi		Significance*
		Males	Females	Males	Females	Males	Females	
TOTALS	**1366**	**683**	**683**	**518**	**502**	**165**	**181**	
Age								
Below 20 years	13.3	11.0	15.7	12.7	18.9	5.5	6.6	ABCEF
20 - 39 years	72.2	74.4	70.0	74.1	65.9	75.2	81.2	BF
40 - 59 years	12.3	12.0	12.6	10.2	12.9	17.6	11.6	DE
60 and above	2.2	2.6	1.7	2.9	2.2	1.8	0.6	DEF
Education								
Illiterate	18.3	8.6	28.0	9.3	30.0	6.5	22.4	ABCDEF
Elementary	28.6	29.1	28.2	27.0	26.0	35.1	34.4	BEF
Intermediate	18.9	22.7	15.1	24.5	16.0	17.3	12.6	ABCEF
Secondary	22.5	25.6	19.5	25.0	19.2	27.4	20.2	ACE
College	11.6	14.0	9.2	14.2	8.8	13.7	10.4	AC
Occupation								
No occupation	43.3	20.8	65.9	25.3	75.7	6.7	38.7	ABCDEF
Students	11.4	11.0	11.9	12.0	14.9	7.9	3.3	BDEF
Manual/Skilled	18.5	23.4	13.7	12.4	1.2	58.1	48.7	ABDEF
White-collar	17.2	26.3	8.1	26.9	7.8	24.2	8.9	ACD
Business	1.8	3.5	-	4.1	-	-	-	ABCE
Military	7.7	15.1	0.3	19.5	0.4	1.2	-	ABCDEF
Maritial Status								
Single	44.1	58.1	30.0	63.1	33.3	42.4	21.0	ABCDEF
Married	41.8	32.7	51.0	27.6	45.0	48.5	67.4	ABCDEF
Divorced	10.3	8.1	12.6	7.9	14.1	8.5	8.3	ACF
Other	3.7	1.1	6.4	1.4	7.6	0.6	3.3	ABCDF
Residence								
Al-Khobar	29.9	26.9	32.8	21.4	27.9	44.1	46.6	BCEF
Dammam	32.1	33.4	30.7	35.0	28.3	28.6	37.5	CDEF
Qateef area	6.7	7.1	6.3	7.8	7.5	5.0	2.8	BDF
Hafoof area	6.5	6.5	6.4	8.0	8.6	1.9	0.6	BDEF
Other provinces	24.8	26.0	23.7	27.8	27.7	20.5	12.5	BDEF

*Statistically significant difference was found between: A = all males versus all females; B = all Saudis versus all non-Saudis; C = Saudi males versus Saudi females; D = non-Saudi males versus non-Saudi females; E = Saudi males versus non-Saudi males; F = Saudi females versus non-Saudi females

ICD-10 diagnoses. **Table 2** shows that the most common single diagnoses were schizophrenia and bipolar disorder, followed in descending order by depressive, acute and transient psychotic, stress-related and dissociative disorders. Males were more frequently admitted for schizophrenia, schizoaffective, personality and delusional disorders, while females had more of dissociative, stress-related, anxiety and depressive disorders. There was a significant over-representation of Saudis in schizophrenia, personality and substance-related disorders, and of expatriates in acute and transient, stress-related and dissociative disorders. Within the expatriate group, significantly more frequently Arabs were admitted for schizophrenia, schizoaffective, delusional and mood disorders, and non-Arabs for stress-related, dissociative and acute psychotic disorders.

Re-hospitalizations. There were 851 (38.4%) re-hospitalizations involving 382 (28%) of the patients. In this respect there were no significant gender differences. Saudis were considerably more frequently rehospitalized than expatriates, and, within the latter, Arabs were more frequently re-hospitalized than others (20.0% and 9.7%). Survival analysis using Cox Proportional Hazard Model (**Table 3**) revealed significantly higher relative risk (RR) for re-hospitalization in patients with schizoaffective disorder, followed in descending order by bipolar disorder, schizophrenia and personality disorder, as well as having a duration of illness of more than one year, being a Saudi or Arab and being discharged against medical advice.

Length of stay. Two multiple regression equations (**Table 4**) extracted sets of variables that independently contributed to the explanation of one 5th of the variance in the length of stay per admission and of two-thirds of the variance in the stay per patient. Having a diagnosis of bipolar disorder or schizophrenia, a gradual onset of illness, presenting with psychotic symptoms and being unmarried positively contributed to the variance in both the stay

Table 2 - ICD-10 diagnoses by nationality and gender shown as percentages.

ICD-10 Diagnoses	All patients			Saudi		Non-Saudi		Significance*
	Total	Males	Females	Males	Females	Males	Females	
Totals	**1366**	**683**	**683**	**518**	**502**	**165**	**181**	
F0 Organic mental	3.3	4.1	2.5	4.2	3.0	3.6	1.1	
F2 Substance related	2.7	5.1	0.3	6.6	0.4	0.6	-	BCE
F20 Schizophrenia	19.5	27.8	11.1	34.7	13.7	6.1	3.9	ABCEF
F22 Delusional disorder	1.7	2.6	0.7	2.3	0.4	3.6	1.7	AC
F23 Acute psychosis	8.6	8.5	8.8	1.7	2.0	29.7	27.6	BEF
F25 Shizoaffective	4.6	5.9	3.4	6.6	3.8	3.6	2.2	A
F30 Manic/Hypomanic	3.4	4.0	2.9	3.9	3.4	4.2	1.7	
F31 Bipolar disorder	15.2	15.2	15.1	16.4	9.9	16.9	8.8	BF
F32 Depressive episode	9.9	7.6	12.2	7.9	13.3	6.7	8.8	ABCF
F33 Recurrent depression	4.5	3.7	5.3	3.9	6.6	3.0	1.7	
F41 Anxiety disorders	2.2	0.9	3.5	1.0	4.0	0.6	2.2	AC
F43 Stress related disorder	7.7	3.4	12.0	1.2	9.8	10.3	18.2	ABCEF
F44 Dissociative disorder	7.6	4.5	10.7	3.3	8.8	8.5	16.0	ABCDEF
F5 Psychophysiol disorder	1.5	0.3	2.6	0.2	3.4	0.6	0.6	AC
F60 Personality disorder	3.2	2.5	4.0	2.7	5.0	1.8	1.1	BF
F7 Mental retardation	0.8	1.0	0.6	1.2	0.4	0.6	1.1	
F9 Child onset disorder	0.1	0.1	0.1	-	0.2	0.6	-	
Other features								
Acute onset	45.8	38.8	52.7	26.7	45.9	69.9	75.2	ABCEF
Psychotic symptom	61.8	70.4	53.1	72.6	51.0	63.6	59.1	ACE
Life events	51.1	40.5	61.7	30.7	55.1	70.8	80.1	ABCEF
Family history	37.1	38.9	35.3	39.9	38.3	34.8	24.2	BF
Police case	4.5	7.0	1.9	7.1	1.0	6.7	4.4	ACF

*Statistically significant difference was found between: A = all males versus all females; B = all Saudis versus all non-Saudis; C = Saudi males versus Saudi females; D = non-Saudi males versus non-Saudi females; E = Saudi males versus non-Saudi males; F = Saudi females versus non-Saudi females, ICD = International classification of diseases.

Table 3 - Relative risk for re-hospitalization after first discharge: Survival analysis by cox proportional hazards model.

Variable	B	SE	Wald	df	R	Exp (B)	Lower-Upper	P-value
F25 - Schizoaffective disorder	1.33	0.22	35.53	1	0.09	3.77	(2.44 - 5.84)	0.0001
F31 - Bipolar disorder	1.15	0.15	56.70	1	0.12	3.15	(2.34 - 4.25)	0.0001
F20 - Schizophrenia	0.65	0.17	14.60	1	0.06	1.91	(1.37 - 2.66)	0.001
F60 - Peronality disorder	0.64	0.30	4.50	1	0.03	1.89	(1.05 - 3.41)	0.05
Duration > 1 year	0.47	0.14	11.48	1	0.05	1.60	(1.22 - 2.11)	0.0001
Saudi/Arab	0.59	0.31	3.79	1	0.02	1.81	(1.01 - 3.29)	0.05
Discharge AMA	0.49	0.14	12.86	1	0.05	1.63	(1.25 - 2.13)	0.001

2 log likelihood = 2753.15; overall chi-square = 132.26; df = 7; Residual chi-square = 27.47 with 25 df
B - beta value; SE - standard error; Wald - method of computing multiple regression; df - degrees of freedom; R - correlation coefficient; ExpB - exponential beta AMA - against medical advice

Table 4 - Determinants of length of stay: the final step of the multiple regression.

Variables	B	SE B	Beta	T	Significance
Stay per admission*					
Saudi citizen	5.34	1.46	0.11	3.64	0.001
Unemployed	2.92	1.19	0.07	2.45	0.01
Unmarried	4.04	1.31	0.08	3.09	0.01
Bipolar disorder	5.86	1.62	0.10	3.61	0.001
Schizophrenia	3.80	1.73	0.07	2.20	0.05
Gradual onset	4.36	1.28	0.10	3.41	0.001
Psychotic symptoms	8.01	1.35	0.17	5.93	0.001
Discharge AMA	-4.41	1.25	-0.10	-3.53	0.001
Constant	8.16	2.30	-	3.55	0.001
Stay per patient*					
Unmarried	9.18	5.24	0.06	2.20	0.05
Bipolar disorder	50.47	7.09	0.24	7.12	0.001
Schizophrenia	19.65	7.82	0.09	2.51	0.05
Gradual onset	34.65	13.88	0.21	2.50	0.05
Psychotic symptoms	16.10	6.17	0.09	2.61	0.01
Duration > 5 years	19.64	5.98	0.11	3.28	0.001
Discharge AMA	20.02	6.59	0.09	3.04	0.01
Duration of follow-up	58.77	6.28	0.13	4.12	0.001
Constant	49.79	27.65	-	1.80	0.07

*$R^2 = 0.214$; df = 8; F = 91.63; $p < 0.01$
**$R^2 = 0.678$; df = 8; F = 16.33; $p < 0.0001$
AMA - Against medical advice;
B - beta; SE B - standard error of beta; T - student's t-test

per admission and per patient. Being a Saudi and being unemployed contributed to the variance in stay per admission, but not in the stay per patient. Conversely, the duration of illness and that of follow-up contributed to variance in stay per patient, but not in stay per admission. Discharge against medical advice contributed positively to the length of stay per patient but negatively to the stay per admission.

Heavy service utilization. A relatively small subgroup of 232 (16.9%) patients received 955 (43.3%) of all admissions. They occupied 34,772 (62.3%) of all the bed-nights spent in the wards. Their mean number of admissions was 4.1 compared with 1.2 for other patients; their mean total stay was 150 nights compared with just 15 for other patients. Logistic regression analysis (**Table 5**) extracted a group of 8 independent background variables which conjointly predicted heavy service utilization with an overall accuracy rate of 81.9%.

Discussion.

Limitations. The present material was obtained from one, albeit the only, public sector inpatient psychiatric facility in Al-Khobar area. Some residents of the area receive treatment in private or specialized hospitals, whereas some of our hospitalized patients are not regular residents of the area. Many admitted expatriates left for home shortly after discharge with no follow-up feedback. Due caution should be exercised in interpreting our presented data.

Findings. Equal numbers of males and females had been hospitalized, despite a male:female ratio of 3:2 in the general population,[1] of 1.3:1 in our outpatient attendance, and of 1.3:1 in our bed capacity. This relatively higher female admission rate might be partly explained by males having more admission alternatives; the predominantly male substance abusers are treated in the specialized Amal Hospital,[7] military personnel go to military hospitals[8] and non-government expatriate male employees are treated in private hospitals,[3] whereas their female counterparts, being predominantly housemaids, are granted eligibility for treatment in our hospital. Significantly more males were hospitalized for schizophrenia, and more females for mood or anxiety disorders. This is generally consistent with many other reports.[9-12] It has been suggested that schizophrenia in females has a relatively later age of onset,[13-15] a milder course,[16-18] a lesser degree of socio-occupational disability[19-21] and a better overall prognosis.[22-26] Male schizophrenics are reportedly at higher risk of hospitalization, being less tolerated by the society.[27-28] The relatively earlier female ages of puberty, marriage and maternity enable them to assume adult social roles prior to their later onset of schizophrenia.[13,19,20] On the other hand, mood disorders are known to be more common in females;

Table 5 - Predictors of heavy service use: logistic regression.

Variable	B	SE	Wald	df	R	Exp (B)	P-value
Bipolar disorder	1.10	0.19	33.18	1	0.17	2.99	0.0001
Schizoaffective disorder	1.15	0.32	12.81	1	0.10	3.17	0.001
Schizophrenia	0.63	0.22	7.97	1	0.05	1.88	0.01
Psychotic symptoms	1.28	0.26	25.34	1	0.15	3.61	0.0001
Duration > 5 years	0.63	0.19	10.67	1	0.09	1.88	0.001
Unmarried	0.75	0.18	16.83	1	0.12	0.47	0.0001
Living with family	0.82	0.29	7.91	1	0.07	0.44	0.01
Discharge AMA	0.49	0.21	5.71	1	0.06	1.63	0.01
Constant	2.10	0.44	22.85	1	-	-	0.0001

Overall predictive accuracy rate = 81.9%; B - beta; SE - standard error; Wald - method of computing multiple regression;
df - degrees of freedom; R - correlation coefficient: ExpB - exponential beta; AMA - against medical advice

also, many of them present with socioculturally embarrassing-disinhibited behavior that compels the family to seek their hospitalization. For expatriates, the lower rates of major psychotic ("functional") disorders is likely to be a selection bias of manpower immigration involving healthy, productive young adults, while their higher rates of acute psychotic, dissociative and adjustment disorders might be a related to their socio-cultural alienation, occupational difficulties, loneliness and inadequate social support.[29-35]

The study identified a subgroup of heavy service consumers characterized by longer stays and more frequent rehospitalizations. This seems a global trend.[36-39] It raises a serious concern about the futility and cost-effective feasibility of treating such patients in acute psychiatric wards of a general hospital. A supportive family attitude might help many such patients stay in the community, benefiting from regular outpatient and community-based services. Psycho-educational programs would improve families' knowledge about the nature of mental illness, the needs of its patients and the appropriate ways of coping with them. This is likely to improve compliance and to reduce the family rejection. Yet, there would remain a subgroup of patients who need long-term hospitalization, which cannot be feasibly provided in acute psychiatric wards of general hospitals. For these, small-size psychiatric hospitals with multidisciplinary treatment and rehabilitation programs would be more suitable.

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