

Correlates of Length of Stay among Psychiatric In-Patients in a Tertiary Health Institution in Nigeria

O.A. Adegunloye, A.D. Yussuf, P.O. Ajiboye, B.A. Issa and O.I.N. Buhari

Department of Behavioural Sciences, Faculty of Clinical Sciences,

College of Medicine, University of Ilorin, Ilorin, Nigeria

Abstract: There seems no much information about the patterns of Length of Stay (LOS) in Psychiatric admissions and its associated factors in this environment and it could be a window into measures of efficiency of in-patient care and quality of care. The aim is to describe the pattern of Length of Stay (LOS) and ascertain possible associations between Psychiatric diagnoses and other socio-demographic factors among in-patients of a psychiatric facility in a Nigerian University Teaching Hospital. It was a retrospective case-file study of all admissions and discharges, in the psychiatric in-patient ward of University of Ilorin Teaching Hospital (UITH), between May, 2000 and April, 2005. The data generated was analyzed with SPSS version 11 to obtain frequency distributions and chi-square figures. The level of statistical significance was set at 5%. Within the study period, 502(63.6%) of the 789 records of admitted cases were analysed. 61.0% of the patients stayed on admission for about 30 days (4 weeks) (mean length of stay \pm SD was 23 \pm 19.1 days). About 51.8% of the total admissions were females, 68.5% were in the age group 20-40 years, 58.0% were singles and 36.1% were students. The most frequent diagnosis was schizophrenia, 55.0 and 58.6% of the patients had first episode of psychiatric illness. Length of Stay (LOS) was significantly correlated with marital status and first episode psychiatric illness. A good social support may shorten the length of stay on psychiatric admission, hence, provision of good psycho-educations for all patients and their families as well as effective relapse prevention for first episode of psychiatric illnesses are highly recommended.

Key words: Pattern, correlates, length of stay, psychiatric-in-patients, tertiary health institution, Nigeria

INTRODUCTION

Mental health practitioners have a need to meet the challenge of reducing cost of care and still maintain a high quality of service (Huntley *et al.*, 1998; Mezzich and Coffman, 1985; Creed *et al.*, 1997). The illness cost in psychiatry may be strongly related to the length of in-patient stay and sometimes may be longer than in other specialties (Borchardt and Garfinkel, 1991), hence, physicians, in collaboration with psychiatrists must decide how long each patient remains in hospital, especially during consultation-Liaison services (Huntley *et al.*, 1998).

Prolonged in-patient stay may isolate the patients from their social network, initiates maladaptive patterns in the patients and increases the burden of care on the relatives, as well as their economic concerns as they may need to stay with the patients. Because these may make long hospitalization unacceptable (Goullieux and Loas, 2003), psychiatrists therefore need to be repeatedly

reminded about the need to shorten Length of Stay (LOS) and make treatment as efficient as possible (Huntley *et al.*, 1998).

Currently, there is a growing interest in the LOS in psychiatric admissions as this may be used as an indicator of efficiency for in-patient care, quality of care and as an important factor in the planning and distribution of hospital resources (Jimenez *et al.*, 2004; Broadnell and Roos, 1995; Chassin, 1983; Bradbury *et al.*, 2000; Jezzoni, 2004). While, some studies Mezzich and Coffman (1985), Chang *et al.* (1991) and Gordon *et al.* (1985) have reported some factors that could affect LOS; these include clinical factors (e.g., diagnoses, treatment modalities) and socio-demographic factors (e.g., age, social support and level of adaptive functioning), others (McLay *et al.*, 2005; Richter, 2001; Russo *et al.*, 1997) have however, reported only a minimal association between these variables and LOS.

LOS for a certain period in a psychiatric facility may not be a useful basis for comparison unless it is adjusted for case mix of patients hospitalized during the period

considered (i.e., risk adjustment) (Borchardt and Garfinkel, 1991). However, factors that determine length of stay for psychiatric patient has become a subject of intense concern (McLay *et al.*, 2005) and have been considerably discussed by many hospitals and bill payers (Richter, 2001).

In practice, there has been no commonly accepted length of stay guidelines for psychiatric in-patients as this may be subject to substantial variations (Borchardt and Garfinkel, 1991; Figueroa *et al.*, 2004; Fortney, 1996) and may reflect the differences in psychiatrists' practice styles (Figueroa *et al.*, 2004). Some studies Kirshner (1982) and Pepper (1991) however, found that about 28 days was considered as an adequate length of stay for psychiatric patients in a general hospital setting and that patients who had diagnoses of schizophrenia or affective disorder were more likely to be hospitalized beyond 30 days (Mai *et al.*, 1993). While some studies Mai *et al.* (1993) and Hirsch *et al.* (1979) have shown that there was no advantage in long term hospitalization, the minimum length of effective hospitalization as a function of diagnosis has not yet been established, others (Hirsch *et al.*, 1979; Borroffka and Olatawura, 1976) have shown that some patients may require long periods of hospitalization.

Due to paucity of information on the correlates of LOS of patients in psychiatric facilities in developing countries and in Nigeria particularly, it has become important to generate information about factors affecting in-patient stay in a tertiary health institution. It is our belief that this will impact positively on the cost and burden of care of psychiatric illnesses.

The aim of this study, was to ascertain the pattern of LOS and the possible associated factors among psychiatric in-patients of a psychiatric unit in a tertiary hospital in a north-central town of Nigeria.

The study setting: The University of Ilorin Teaching Hospital (UITH) is a 450-bed tertiary institution, located in Ilorin, the capital of Kwara State Nigeria, West Africa. Ilorin is about 500 kms from Abuja, the Federal Capital of Nigeria and 350 km from Lagos, the commercial centre of the country. The hospital belonged to the second generation of Teaching Hospitals in the country which were established by law in 1980. It provides health services for Kwara State, a north-central state of Nigeria and takes referrals from other surrounding states (Benue, Kogi, Niger, Osun and Oyo). It has a 20-bed psychiatric unit (10 beds each for both sexes) for in-patient care and has seven psychiatrists (including a professor), 8 psychiatric residents, a clinical psychologist, an

occupational therapist, two social workers, three EEG technicians, psychiatric nurses and community health workers. Laboratory facilities (chemical pathology and immunology, heamatology, histopathology, medical microbiology, parasitology and radiology) are also available for necessary investigations.

The psychiatric unit runs four out-patient clinics per week, one of which is the child and adolescent mental health clinic. It also, provides psycho-geriatric services within the hospital; forensic psychiatric services within the state prison and bostal services as well as consultation-liaison services to other departments in the hospital. The psychiatric social workers help in tracing patients and solving as much as possible whatever social problems patients may have, while the clinical psychologist performs psychotherapeutic interventions (e.g., family therapy, marital therapy and group therapy) where necessary.

MATERIALS AND METHODS

This is part of a large study. Records of all admission and discharges from the in-patient psychiatric ward of the hospital between May, 2000 and April, 2005 were identified from the ward admission registers by PMT. Information on socio-demographic (e.g., age, gender, marital status and occupation) and clinical characteristics (e.g., diagnosis, length of stay, number of readmission, Family history of mental illness, past psychiatric history, treatment, medication compliance and adverse reaction to medications) was extracted from the case files. Patients Occupation was classified according to the system of Borofka and Olatawura (1976).

The cases were reassessed by consultant psychiatrists based on the clinical features documented and clinical diagnoses reassigned using ICD₁₀ where necessary. Data was analysed using SPSS for Windows, version 11 (SPSS, 2001). Frequency distribution, cross tabulations, chi-squared figures and Pearson correlation were calculated for the variables and level of statistical significance was set at 5%.

RESULTS AND DISCUSSION

The socio-demographic and clinical characteristics are as shown in Table 1. Of the 789 records of admission identified and retrieved within the study period, 502 (63.6%) had complete information and were analyzed, a sample size which was considered sufficient to give an overview of the Length of Stay (LOS) within the study

Table 1: Showing demographic and clinical variables

Variable	N	(%)
Mean age in years	30.5±10.28	
Age group (years):		
<20	85	16.9
20-40	344	68.5
41-60	71	14.1
>60	2	0.4
Gender:		
Male	242	48.2
Female	260	51.8
Marital status:		
Single	291	58.0
Married	210	41.8
Divorced/widowed/separated	1	0.2
Occupation status:		
1	22	4.4
2	90	17.9
3	26	5.2
4	18	3.3
5	121	24.1
6	34	6.8
Students	181	36.1
Retirees	8	1.6
Clergy (Christian/Islam)	2	0.4
Psychiatric diagnosis:		
Schizophrenia	276	55.0
Affective disorder	54	10.8
Psychosis (unclassified)	115	22.9
Organic brain disorder	20	4.0
Substance induced disorder	16	3.2
Others	21	4.2
Mean length of stay (SD):	23±19.1 days	
Duration of stay (weeks):		
<2	18	43.4
2-10	240	47.8
11-20	29	5.8
>20	15	3.0
No of episodes:		
1	294	58.6
2-5	194	38.6
>5	4.0	2.8

period. Of the 502 case files of admission with complete information, 51.8% were females, while 58.0% were single. Majority (68.5%) of the patients were in the age group 20-40 years (mean age!SD = 30.5±10.28 years). Students constituted 36.1% of the patients admitted during the study period, 55.0% of the admissions had a diagnosis of schizophrenia, 58.6% had single episode of psychosis, 47.8% stayed for between 2 and 10 weeks on admission, followed by those who stayed for <2 weeks (14 days), 43.4%. The mean length of stay on admission was 23.9±19.1 days.

Table 2 shows the comparison of socio-demographics and clinical factors of the patients with their LOS on admission. This indicates that patients who were single significantly stayed between 2-10 weeks on admission ($\chi^2 = 17.94$, $df = 6$, $p = 0.006$) and patients who had single episode of psychiatric disorders spent significantly <2 weeks on admission compared to patients with multiple episodes ($\chi^2 = 16.29$, $df = 6$, $p = 0.012$).

Table 3 shows a comparison of groups having first episode psychosis versus multiple episode psychosis, with about 58.6% having their first experience of psychosis.

We have tried to improve on earlier studies by providing a greater range of categories of duration of stay on psychiatric admission, hence the duration of stay (in weeks): < 2, 2-10, 11-20 and >20 weeks. Within the study period, it was observed that majority of the patients stayed for about 2-10 weeks on admission, a finding that was similar to previous studies (Kirshner, 1982; Pepper, 1991). This perhaps might be due to the fact that most patients were found to be having their first episode of Psychosis. This could be due to the possibility that first episodes psychiatric illnesses are not likely to have developed physical and psychological tolerance to anti-psychotics and likely to respond better and faster than relapsed psychiatric illnesses.

We also, observed that married patients significantly had short LOS, a finding that was similar to earlier studies (McLay *et al.*, 2005; Richter, 2001). This finding of an association between marital status and LOS could be due to: The positive impact of social support, which provides opportunities for self- expression and practical feedback from the significant others about problems experienced. Being married could also have provided motivation, encouragement to achieve goals, assistance in drug monitoring and opportunities for fun sharing with relaxation (Fraser, 2003). A dysfunctional social network may lead to long duration of untreated psychosis (Richard *et al.*, 2000), hence may increase severity of symptoms and may lead to prolonged hospitalization. For the patients who were married, the significant others may have shown more interest in their symptoms or condition, this may enhance early presentation and therefore shortening the duration of untreated psychosis, less severity of symptoms and ultimately, a short LOS on in-patient admission.

Our study also, showed that patients with first episode of psychiatric illness spent significantly <2 weeks on admission, compared to those who had multiple episodes of mental illness. This may be due to early presentation, as relatives might have developed great concern over patients' ill-health. With early presentation the symptom severity may be less and may respond more rapidly to treatment, unlike those who had multiple episodes of psychiatric illness, who might have had social dysfunction consequent upon the illness. It has been suggested that social dysfunction could erode social support (Fraser, 2003) and as families try to cope with their non-compliant and repeatedly relapsing relative, are likely to find it increasingly difficult to maintain their

Table 2: Comparison of socio-demographic and clinical variables with length of stay

Variables	Duration of admission (weeks)				χ ²	r	df	p-value
	<2	2-10	11-20	>20				
Gender:								
Male	104 (47.7%)	111 (46.2%)	18 (62.1%)	9 (60.0%)	3.48	-0.5	3	0.33
Female	114 (52.3%)	129 (53.8%)	11 (37.9%)	6 (40.0%)				
Age group (years):								
<20	39 (17.9%)	42 (17.5%)	3 (10.3%)	1 (20.0%)	5.69	0.03	9	0.77
20-40	148 (67.9%)	161 (67.1%)	22 (75.9%)	3 (60.0%)				
41-50	31 (14.2%)	35 (14.6%)	4 (13.8%)	1 (20.0%)				
>60	-	2 (8.3%)	-	-				
Marital status:								
Single	121 (55.5%)	142 (59.2%)	18 (62.1%)	10 (66.7%)	17.94		-0.04	60.01
Married	97 (44.5%)	98 (40.8%)	10 (34.5%)	5 (33.3%)				
Divorced	-	-	1 (3.4%)	-				
Occupational group:								
1	11 (5.0%)	9 (3.75%)	1 (3.4%)	1 (6.7%)	16.32	NA	24	0.89
2	46 (21.1%)	36 (15.0%)	7 (24.1%)	1 (6.7%)				
3	11 (5.0%)	11 (4.6%)	2 (6.9%)	2 (13.3%)				
4	6 (2.8%)	10 (4.2%)	1 (3.4%)	1 (6.7%)				
5	55 (25.2%)	59 (24.6%)	4 (13.8%)	3 (20.0%)				
6	11 (5.0%)	21 (8.8%)	1 (3.4%)	1 (6.7%)				
Clergy	-	2 (8.3%)	-	-				
Retired	4 (1.8%)	3 (1.2%)	1 (3.4%)	-				
Student	74 (33.9%)	89 (37.1%)	12 (41.4%)	6 (40.0%)				
Diagnosis:								
Affective-disorders	27 (12.7%)	19 (8.2%)	7 (25.0%)	1 (5.9%)	21.66	-0.12	15	0.12
Psychosis-unclassified	56 (26.4%)	53 (22.9%)	4 (14.3%)	2 (11.8%)				
Organic brain syndrome	12 (5.7%)	8 (3.5%)	-	-				
Schizophrenia	105 (49.5%)	144 (62.3%)	15 (53.6%)	12 (70.6%)				
Others	12 (5.7%)	7 (3.0%)	2 (7.1%)	2 (11.8%)				
Episodes:								
1st	148 (67.9%)	122 (50.8%)	15 (51.7%)	9 (60.0%)	16.29	0.12	6	0.01
2nd-5th	66 (30.3%)	110 (45.8%)	12 (41.4%)	6 (40.0%)				
>5th	4 (1.8%)	8 (3.3%)	2 (6.9%)	-				

NA: Not Applicable

Table 3: Diagnosis versus episode

Diagnosis	No. episodes			χ ²	r	df	p-value
	1st (%)	2nd-5th (%)	>5 (%)				
Schizophrenia	142 (48.3)	123 (63.4)	11 (78.6)	26.82	-0.167	10	0.003
Affective disorder	32 (10.9)	19 (9.8)	3 (21.4)				
Psychosis unclassified	75 (25.5)	40 (20.6)	-				
Organic brain syndrome	19 (6.5)	1 (5.2)	-				
Substance-induced disorders	10 (3.4)	6 (3.1)	-				
Others	10 (3.4)	5 (2.6)	-				
Total	294 (58.57%)	194 (38.65%)	14 (2.79%)				

supportive role. There may also, be an increased possibility of stigma to the family, which may make them further dissociate from the patient, or deny his/her illness and avoid health facilities; or by probably holding him/her responsible for non-compliance with treatment and hence may worsen the severity of illness and the resultant prolonged LOS on Psychiatric admission. This may increase the burden of care and further weakens the available family support (Fraser, 2003; Cole *et al.*, 1995).

The absence of significant association between other socio-demographic factors (e.g., age, gender, occupational status) and LOS give credence to the earlier findings that pattern of LOS could be a reflection of the style of practice of psychiatrists (e.g., choice of drugs,

dose range, use of Electro Convulsive Therapy (ECT) and period of observation before discharge following resolution of acute symptoms) and the hospital policies (because the study center was a unit of the Teaching Hospital, with limited psychiatric in-patients' facilities and may have a higher turnover rate than a specialized psychiatric hospital with possibly more in-patients' facilities (Choy and Dunn, 2007; Figueroa *et al.*, 2004). Hence, there is a need to remind Psychiatrists to shorten LOS, while making patient care as efficient as possible.

CONCLUSION

Our study has shown the import of social support and index episode of psychiatric illness in the determinant

of LOS. It emphasizes the need for Psychiatrists to endeavour to minimize the cost of patients care by offering quality services, the need for Psycho-education for the patients' spouses and other relatives.

Clinical implications:

- The need to strengthen the social support system available to the patients
- The need to educate patients on maintaining or developing a good social network that may require them to be pro-active
- Early intervention services in first episode Psychiatric illnesses should concentrate on the need for relapse prevention

Limitations: We have identified the followings as possible limitations of our study: The study, being a retrospective one and the study centre still using the traditional method of case filing (with the use of file tags) resulting in possible loss of data pages. This could have been responsible for the incomplete records experienced, thereby making it difficult for the result of this study to be generalizable. In addition, our merging of some diagnostic categories (e.g., Affective-Disorders, Psychosis-Unclassified, Organic Brain Syndrome, Schizophrenia and Others) for analysis of data could have influenced the outcome of this study. Anecdotal findings during weekly departmental academic sessions revealed practice differences in the 3 existing firms (i.e., consultant units) within the department, e.g., individual psychiatrist may have a preference in different medications, initial dosage, rate of review of drugs, as well as, possible use of adjuvant therapies (e.g., E.C.T.) hence this might have some effects on the LOS, though no comparative study was done, the psychiatric department is one of the several units in this tertiary hospital, hence the Teaching Hospital policies may have had some effect, as opposed to a specialized psychiatric hospital and the methodological differences between this study and some of the previous ones may preclude definitive comparison (e.g., categorization of LOS and merging of some diagnostic categories).

REFERENCES

Borchardt, C.M. and B.D. Garfinkel, 1991. Predictors of length of stay of Psychiatric adolescent in-patients. *J. Am. Acad. Child Adolesc. Psychiatry*, 30: 994-998. PMID: 1757450. <http://www.jaacap.com/pt/re/jaacap/userLogin.htm?jsessionid=JZrCQcKC1JBR YnJhGeY4PTGFTpJCvSwB2V60qy0hGBvvn4JvW2P1!-1327505820!181195628!8091!-1>.

Borroffka, A. and M.O. Olatawura, 1976. Community psychiatry in Nigeria: The current status. *Int. J. Soc. Psychiatry*, 23: 1154-1158. PMID: 608814.

Bradbury, R.C., J.H. Golec and P.M. Steen, 2000. Linking health outcomes and resource efficiency for hospitalized patients: do physicians with low mortality and morbidity rates also have low resource expenditures? *Health Serv. Manage. Res.*, 13 (1): 57-68. PMID: 11184006.

Broadnell, M.D. and N.P. Roos, 1995. Variation in length of stay as a measure of efficiencies in Manitoba hospitals. *CMAJ*, 1, 152 (5): 675-682. PMID: 7882230. <http://www.pubmedcentral.nih.gov/articlerender.fcgi?tool=pubmed&pubmedid=7882230>. PMCID: PMC1337615.

Brock, I.P. and G.R. Brown, 1993. Psychiatric length of stay determinants in a military medical center. *Gen. Hosp. Psychiatry*, 15 (6): 392-398. PMID: 8112563.

Chang, G., L. Brenner and K. Bryant, 1991. Variables predicting inpatient length of stay in a CMHC. *Hosp. Community Psychiatry*, 429 (8): 853-855. PMID: 1894265. <http://ps.psychiatryonline.org/cgi/reprint/42/8/853>.

Chassin, M.R., 1983. Health Technology case study 24. Variation in hospital length of stay. Their relationship to health outcomes. Washington Dc, US Congress, Office of Technology Assessment 1983. <http://www.princeton.edu/~ota/disk3/1983/8329/8329>.

Choy, L.W. and E.L.W. Dunn, 2007. Determinants of length of stay in a General Hospital Psychiatric Unit in Hong Kong. *Hong Kong. J. Psychiatr.*, 17: 131-138. http://hkjpsych.com/journal_file/0704_V17N4-p131-138.pdf.

Creed, F., B. Tomenson, P. Anthony and M. Trammer, 1997. Predicting length of stay in psychiatry. *Psychol. Med.*, 27: 961-966. PMID: 9234473.

Cole, E., G. Leavey, M. King, E. Johnson-Sabine and A. Hoar, 1995. Pathways to care for patients with first episode of Psychosis. A comparison of clinical groups. *Br. J. Psychiatry*, 167: 770-776. <http://bjp.repsych.org/cgi/reprint/167/6/770>.

Figuerola, R., J. Harman and J. Engberg, 2004. Use of claims data to examine the impact of length of inpatients Psychiatric stay on readmission rate. *Psychiatric Services*, 55: 560-565. PMID: 15128965. <http://ps.psychiatryonline.org/cgi/content/full/55/5/560>.

Fortney, J.C., 1996. Variation among VA hospitals in length of stay of treatment for depression. *Psychiatric Services*, 47: 608-13. <http://psychservices.psychiatry-online.org/cgi/reprint/47/6/608>. PMID: 8726487.

- Fraser, S., 2003. Early Psychosis Intervention Program- Social Support. Copyright ©, Fraser South EPI Program.
- Gordon, R.E., P. Jardiolin and K.K. Gordon, 1985. Predicting length of stay of Psychiatric patient. *Am. J. Psychiatry*, 2: 235-237. PMID: 3918469.
- Goullieux, E. and G. Loas, 2003. Brief Psychiatric hospitalization. a possible way, a strategy to evolve? *Encephale*, 29 (3 Pt 1): 223-231. PMID: 12876546. DOI: ENC-6-2003-29-3-0013-7006-101019-ART4. <http://www.em-consulte.com/article/83181>.
- Huntley, D.A., D.W. Cho, J. Christman and J.G. Csernasky, 1998. Predicting Length of stay in Acute Psychiatric Hospital. *Psychiatr. Serv.*, 49: 1049-53. PMID: 9712211. <http://ps.psychiatryonline.org/cgi/content/full/49/8/1049>.
- Hirsch, S.R., S. Platt, A. Knights and A. Weyman, 1979. Shortening hospital stay for psychiatric care; effect on patients and their families. *Br. Med. J.*, 1 (6161): 442-446. PMID: 71597797. PMID: 427401. <http://www.pubmedcentral.nih.gov/articlerender.fcgi?tool=pubmed&pubmedid=427401>.
- Iezzoni, L.I., 2004. Risk Adjustment for Measuring Health Care Outcomes. 3rd Edn. *Int. J. Quality in Health Care* 16 (2): 181-182. <http://intqhc.oxfordjournals.org/cgi/reprint/16/2/181>.
- Jiménez, R.E., R.M. Lam, M. Marot and A. Delgado, 2004. Observed-predicted length of stay for an acute Psychiatric department, as an indicator of in patient care inefficiencies. Retrospective case series study. *BMC Health Serv. Res.*, 4 (1): 4. PMID: 15102334. DOI: 10.1186/1472-6963-4-4. <http://www.biomedcentral.com/1472-6963/4/4>.
- Kirshner, L.A., 1982. Length of stay of Psychiatric patient: A critical review and discussion. *J. Nerv. Ment. Dis.*, 170: 27-33. PMID: 6798169.
- Mai, F.M., J. Gosselin, L. Varan, L. Bourgon and J.R. Navarro, 1993. Effect of treatment and alternative care on length of stay on general hospital psychiatric unit-result and audit. *Can J. Psychiatry*, 38: 39-45. PMID: 8448719.
- McLay, R.N., A. Dylo and P.S. Hammer, 2005. Predictors of Length of Stay in Psychiatric ward serving active duty military and civilian patients. *Mil. Med.*, 170 (3): 219-22. PMID: 15828698.
- Mezzich, J.E. and G.A. Coffman, 1985. Factors influencing length of hospital stay. *Hosp. Community Psychiatry*, 36: 1262-1270. PMID: 4086000. <http://ps.psychiatryonline.org/cgi/reprint/36/12/1262>.
- Munley, P.H., N. Devone, C.M. Einhorn, I.A. Gash, L. Hyer and K.C. Kuhn, 1977. Demographic and clinical characteristics as predictors of length of hospitalization and readmission. *J. Clin. Psychol.*, 33: 1093-1099. PMID: 925165.
- Pepper, B., 1991. Power and governance issues in general Psychiatry. *Hosp. Commun. Psychiatry*, 42: 1169-1172. PMID: 1743651.
- Richard, J. Drake, Clifford J. Haley, Shahid Akhtar and Shon W. Lewis, 2000. Causes and Consequences of duration of untreated Psychosis in Schizophrenia. *Br. J. Psychiatry*, 177: 511-515. <http://bjp.rcpsych.org/cgi/reprint/177/6/511.pdf>. PMID: 11102325.
- Richter, D., 2001. Psychiatric in-patient length of stay. And overview of methods, influences and consequences. *Fortschr. Neurol. Psychiatr.*, 69 (1): 19-31. PMID: 11227984.
- Russo, J., P Rey-Byrne, C. Jaffe, R. Ries, C. Dagadakis and D. Avery, 1997. Psychiatric status, quality of life and levels of care as predictors of outcome of acute inpatient treatment. *Psychiatric Services*, 48 (11): 1427-34. <http://ps.psychiatryonline.org/cgi/reprint/48/11/1427>.
- SPSS, 2001. Statistical Package for Social Sciences (SPSS) for Windows. SPSS Technical Support. <http://www.spss.com/tech/>.