

Demographic And Diagnostic Correlates Of Need For Inpatient Psychiatric Treatment

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Abstract

Partly based on a paper presented at the congress of the World Psychiatric Association in Madrid, Spain, September 14 to 18, 2014.

Clinical files of all psychiatric patients from the previous 2 years in a semi-rural Canadian hospital were reviewed to statistically examine demographic and diagnostic correlates of the number of psychiatric admissions and length of hospital stay. The sample included 429 patients of age 15 to 92 years (average at 39.7, SD=17.5). The largest diagnostic categories included mood disorders (43.6 %), personality disorders (19.6%), substance abuse (19.1%), and schizophrenia (18.4%). The length of stay ranged from 0 to 87 days with the average at 10.4 days (SD=10.0). The average number of hospital admissions in the last 2 years was 0.6 (SD=0.8) per patient. To exclude statistically significant but excessively weak correlations, only Pearson r s above .19 with $p < .01$ were considered. With respect to psychiatric diagnoses, only schizophrenia was associated with longer hospital stay ($r = .24$) and also with more admissions over lifetime ($r = .26$). When measured via linear correlations, neither the length of stay nor number of hospital admissions in the last 2 years correlated significantly with age, gender, education, and marital status. However, the relationship of hospital stay and number of admissions to age in our data was curvilinear. Statistical analysis indicated significantly less frequent hospital admissions in patients older than 57 years (t-test, $p = .007$). While significantly less of these elderly patients were admitted, their admissions were significantly longer than in their younger counterparts (chi square = 19.5, $df = 2$, $p < .0001$). On average, younger patients had more admissions, but their average hospital stay was shorter.

Other demographic variables had no significant impact.

INTRODUCTION

Psychiatric hospitalisations are associated with high economic cost both in terms of hospital care and also due to the patients' absence from the workforce. Statistical procedures can help to identify diagnostic or sociodemographic predictors of long hospital stays. Huntley, Cho, Christman, and Csernansky (1998) used stepwise multiple regression procedures on records of 760 psychiatric patients Missouri (USA) and found that primary diagnosis of schizophrenia or mood disorder, the number of previous admissions, and older age were associated with longer stays. Alcohol or drug abuse was associated with shorter stays. Gopalakrishna, Ithman, and Malwitz (2015) conducted a Medline search for studies in this area with keywords "length of stay, acute psychiatric hospital and predictors." Their analysis of the published data also

determined that while substance abuse was consistently associated with a shorter length of stay, the mood disorder and psychoses in general were associated with longer stays. Gopalakrishna and his co-workers also reported that women tended to stay longer in hospitals.

Some of these statistical correlates of long stays may have a cross-cultural validity to settings such as Eastern Africa. For example, a recent study in Ethiopia by Addisu F, Wondafrash M, Chemali Z, Dejene T, Tesfaye M. (2015) also found that the diagnosis of bipolar disorder, schizophrenia, or of other psychoses was associated with longer hospital stays.

We investigated demographic and diagnostic correlates of inpatient treatment in the catchment area of our hospital as the data could hopefully help to develop strategies to reduce

the length of local hospital stay.

METHOD

Our hospital is located in a semi-rural area of South-Western Ontario, Canada. We compiled an electronic file with hospital admission data from the last 2 years. The data entries included the number of psychiatric admissions, length of hospital stay, diagnosis, and each patient's demographic data: age, gender, marital status, and education. The data file contained information on 429 patients (207 women and 222 males). Their age ranged from 15 to 92 years (average at 39.7, SD=17.5). The proportions of largest diagnostic categories (with overlap) were as follows: 43.6 % mood disorder, 19.6% personality disorder, 19.1% substance abuse, 18.4% schizophrenia, 11.4% impulse disorder, 8.9% anxiety disorder, 5.8% delirium, and 5.4% adjustment disorder.

RESULTS

The average number of hospital admissions in the last 2 years was 0.6 (SD=0.8) per registered psychiatric patient. We were particularly interested in the length of stay, coded in the number of days. The average length of stay per patient was 10.4 days (SD=10.0). The length ranged from 0 to 87 days.

When conducting studies on similarly large samples of patients, even correlation coefficients of trivial size such as $r < .20$ can reach statistical significance. Such correlations are too close to irrelevant for clinical predictions in individual cases. In a similar context, some college textbooks such as Witte (1993) warn researchers that very large samples may lead to significant but excessively weak correlations that lack in practical importance.

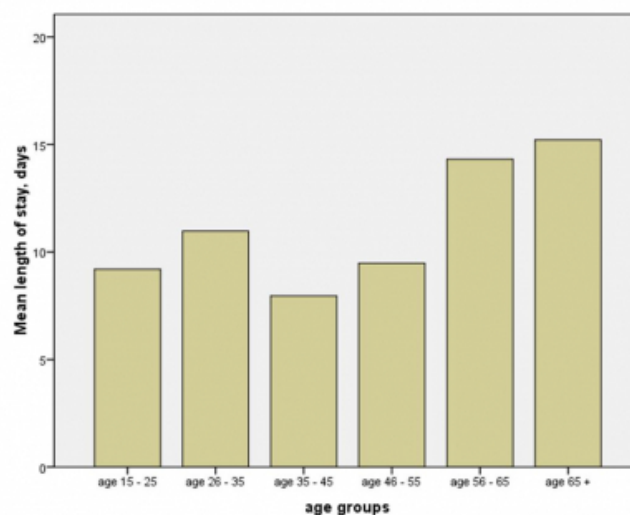
This is particularly true when medical studies are conducted on large samples in search of potential clinical predictors that would be used when assessing an individual patient. To avoid irrelevant results, we report only Pearson correlation coefficients that meet the statistical criterion of $p < .01$, but are also larger than .19.

Consistently with prevailing findings by other authors, our data showed that neither length of stay nor the number of hospital admissions in the last 2 years correlated with age, gender, education, and marital status, as long as only linear correlations were calculated. However, after inspecting scatterplots of the correlational data, we decided to use a nonlinear statistical approach to examine the relationships with respect to age. As the first step, we divided the age into

6 groups: 15 to 25, 26 to 35, 36 to 45, 46 to 55, 56 to 65, and age > 65, see Figure 1.

Figure 1

Mean length of stay across age groups

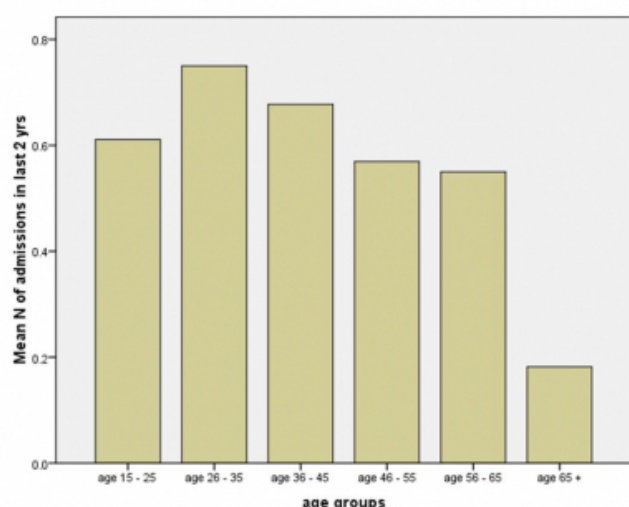


An ANOVA comparing the average length of stay (LOS) of these age groups was significant ($p > .01$). As shown in the graph, the main difference is between those younger than 56 and their older counterparts. In fact, this difference is statistically significant in t-tests, and it was particularly salient when the age cutoff point was set to 58 years ($t=3.2$, $df=81.1$, $p=.002$, 2-tailed, Cohen's $d=.48$, $r=.23$). Those younger than 58 years had an average LOS of 9.4 days (SD=8.5) compared to 15.1 days (SD=14.5) for patients older than 57 years. On average, older patients had approximately 50% longer hospital stays.

The linear correlation between age and number of admissions in the last 2 years was very low ($r=.09$, $p=.092$, 2-tailed), however, the graph of the relationship of age to number of admissions (see Figure 2) shows an unexpected drop in the number of admissions after the age of 65. These older patients had approximately three times less admissions than their younger counterparts. However, a closer inspection of the data showed that, in the group of the 33 elderly patients, only 5 were admitted at least once in the last 2 years of our study. Among these 5 patients, 4 were admitted only once and the remaining one patient had only two admissions. The t-test comparing those older than 65 to their younger counterparts was statistically significant ($p < .005$), but the underlying correlations ($r=.16$) is too weak to be of relevance for clinical predictions in individual cases.

Figure 2

Mean number of admissions across age groups



Similarly, when comparing the number of admission for patients older than 57 (N=68) to their younger counterparts, the t-test is significant ($p=.007$), but the underlying relationship is too weak for clinical predictions ($r=.13$). Of the 68 older patients, only 19 had at least one admission in the last 2 years. Of these 19 patients, 12 had only one admission and 7 had 2 admissions. The pattern in our data suggests that admissions of these elderly patients were infrequent but more lengthy than in the case of their younger counterparts. Among those older than 65 years, 21.6% were hospitalised for longer than 20 days in the last 2 years and 10.8 % for longer than 30 days, compared to only 8.2 % of their younger counterparts hospitalised for longer than 20 days and 3.3 % for longer than 30 days (chi square = 19.5, $df=2$, $p<.0001$). The longest recorded hospital stay in the last 2 years was 87 days in the elderly group and 73 days in the younger group.

Of the diagnostic categories, only schizophrenia was associated with longer hospital stay ($r=.24$, $p <.001$) and also

with more admissions over lifetime ($r=.26$, $p<.001$).

DISCUSSION

Almost all published studies on correlates of the length of hospital stay or of number of hospital admissions are carried out only with linear or monotonic statistical methods, such as the Pearson or Spearman correlation coefficients. Such studies are likely to fail to detect curvilinear patterns in the data. The results of our statistical analyses indicate that research with a nonlinear statistical approach is necessary and much needed to properly identify subgroups of patients with the highest length of stay.

In our data set, patients over the age of 57 had approximately 50% longer hospital stays in the last 2 years than their younger counterparts. The trends in our sample indicated that while significantly less of the elderly patients (age > 57) were admitted, the admissions of those admitted were significantly longer than in their younger counterparts.

Consistently with the findings of many other studies, the patients with schizophrenia had more admissions and longer stays.

Hopefully, more frequent home visits of these patients by visiting health professionals such as nurses, social workers, or caseworkers could be an effective preventive measure.

References

1. Addisu F, Wondafrash M, Chemali Z, Dejene T, Tesfaye M. (2015) Length of stay of psychiatric admissions in a general hospital in Ethiopia: a retrospective study.
2. International Journal of Mental Health Systems. Vol. 10 (9), 13.
3. doi: 10.1186/s13033-015-0006-x.
4. Gopalakrishna G, Ithman M, Malwitz K. (2015) Predictors of length of stay in a psychiatric hospital. International Journal of Psychiatry in Clinical Practice. Vol. 22:1-7.
5. Huntley DA, Cho DW, Christman J, Csernansky JG. (1998) Predicting length of stay in an acute psychiatric hospital. Psychiatric Services. Vol. 49(8):1049-53.

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