

Variable Effects of Psychosocial Factors on the Clinical Course of Schizophrenia

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Background. Recent work suggests that psychosocial stress factors play a lesser role (qualitatively) in the progression of schizophrenic illness in male patients. The authors endeavored to determine if hospitalization in schizophrenic patients of both sexes is associated with less quantifiable psychosocial stress over time.

Methods. Male and female, schizophrenic inpatients from 2 urban centers in New York State (n=31) were enrolled in this retrospective and cross-sectional study. Linear regression analysis was performed with illness duration as the independent variable and $\ln(1 + \text{Paykel Life Events Schedule})$ score, associated with current hospitalization, as the dependent variable.

Results. Linear regression analysis revealed an inverse relationship (slope = $-.086$) that was statistically significant ($p < .01$). This result indicates an annual 92% reduction in the psychosocial stress load associated with hospitalization. The inverse relationship remained intact when males and females were analyzed separately.

Conclusions. The data suggest that, over time, male and female patients with schizophrenia experience hospitalization and, likely, relapse as well in response to less of a total significance load of psychosocial stress.

Keywords Schizophrenia, Relapse, Psychosocial stress

INTRODUCTION

It is well established that environmental factors play an important role in the development and longitudinal course of major psychiatric syndromes (1). Accordingly, in both unipolar and bipolar affective illnesses acute decompensations are attended by high levels of psychosocial stress (2,3). The role of this stress factor tends to diminish over time, however (4,5). Schizophrenic illness, as well, tends to develop within a context of psychosocial turmoil (6). Furthermore, it is well known that high expressed emotion family environments contribute to increased relapse frequency (7,8). However, less is known about the influence of psychosocial factors over longer time

periods in schizophrenic illness. Recent work suggests that, as in affective illness, psychosocial stress plays a lesser role in illness relapse over time (9). In this important study only male veterans were assessed, limiting the generalizability of the findings. Furthermore, although psychosocial factors were considered qualitatively (recent life events preceding current hospitalization were found to be negatively correlated with the number of previous hospitalizations), no consideration was given for quantifying their effects. This is an important matter. Indeed, there is support in the literature for differential effects of stress factors according to their level of psychosocial significance (10,11). Therefore, we endeavored to expand the important findings of the aforementioned study by answering the following question: Does the level of quantifiable psychosocial stress (i.e., total significance load) associated with hospitalization in male and female schizophrenic patients diminish over time?

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METHODS

Subjects in this study are 18–65-year-old males and females who were given a clinical diagnosis of schizophrenia or schizoaffective disorder, per DSM IV (12) criteria, and who were consecutively admitted to one of the following hospitals from June 1997 through March 1998: Hutchings Psychiatric Center (HPC), a state psychiatric hospital in Syracuse, New York; or Olean General Hospital (OGH), a community hospital with an inpatient psychiatric unit in Olean, New York. The study was approved by the Institutional Review Board of each institution and the patients provided informed consent (after the nature of the assessments involved were fully explained) and met none of the following exclusion criteria: cognitive disorders (per DSM IV (12) criteria), neurologic disorders, mental retardation, and active substance abuse/dependence (within the last 6 months). All aspects of the study were carried out in accordance with the tenets of the Declaration of Helsinki. DSM IV diagnoses were made by the treating psychiatrist in each case. Data collection was done by physicians at each hospital site. The following demographic and clinical data were collected for all patients: age (in years), sex, age at first hospitalization, illness duration [=age-age at first hospitalization] (in years) and number of hospitalizations. The following assessment instruments were used: the Paykel Life Events Schedule (10) [PLES] (quantifying the level of psychosocial stress present 6 months prior to hospitalization), Global Assessment of Function (11) (GAF), and the Symptom Check List – 90 (13) (SCL-90). Since collateral informants were available for only a small portion of the study subjects, the PLES was completed based upon patient response only.

The HPC and OGH data were pooled (common variance). Linear regression analysis was performed with illness duration (in years) as the independent variable and $\ln(1 + \text{PLES})$ score as the dependent variable. The $\ln(1 + \text{PLES})$ score was utilized since the PLES value was 0 in some cases. Also, duration of illness is recorded since it is more likely to be an indicator of relapse occurrence than is number of hospitalizations (as not every relapse results in hospitalization). A p value of $< .05$, two-tailed, is accepted as evidence of statistical significance.

RESULTS

Thirty-one subjects were enrolled. The following demographic and clinical values were found: age 40.4 \pm 9.4, sex 54.8% male/ 45.2% female, age at first hospitalization 24.0 \pm 5.2, illness duration 16.6 \pm 10.1, hospitalizations 10.4 \pm 6.4, PLES 18.1 \pm 26.9, GAF 57.6 \pm 8.9, and SCL-90 87.0 \pm 62.9.

Figure 1 shows the function derived from the linear regression analysis. Noteworthy is the negative slope of .086 which was found to be significant at the $p < .01$ level ($df=24$). This equates to an annual 92% reduction in the magnitude of psychosocial stress associated with hospitalization. When males

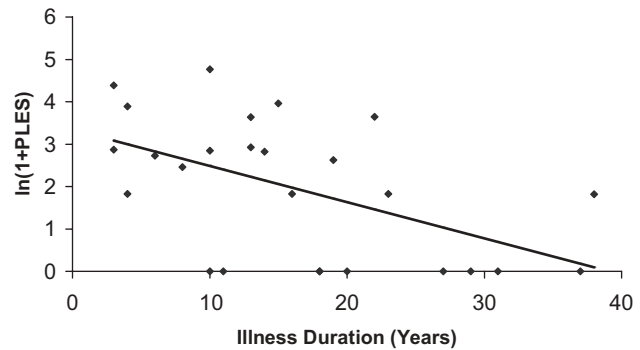


Figure 1 Linear regression analysis of psychosocial stress level prior to hospitalization vs. illness duration in schizophrenia/schizoaffective disorder.

and females were analyzed separately, negative slopes of .047 and .139, respectively, were found. The former was not significant but the latter was highly significant at the $p=.008$ level ($df=12$).

DISCUSSION/CONCLUSIONS

The data suggest that, with increasing years of illness, male and female schizophrenic patients are hospitalized after exposure to less quantifiable psychosocial stress. Since years of illness are, arguably, a better indicator of relapse occurrence than is number of hospitalizations, the data further suggest that schizophrenic relapse over time is precipitated by less psychosocial stress. Accordingly, the results indicate that the total significance load of psychosocial stress is an important factor in the precipitation of schizophrenic illness relapse, albeit one that has a diminished role over time. This holds for both male and female study subjects and extends previous work on this topic (9).

The mechanism(s) by which a patient with schizophrenia becomes more vulnerable to relapse over time are not well understood. Some investigators have proposed that a progressive, pathophysiologic process produces frontotemporal brain volume changes, while noting that faster rates of such changes are associated with increased symptom severity and length of time hospitalized. (14). However, there is evidence contradicting the presence of such a progressive, deterioration of brain function. (15). Others have noted that frequent relapses might impair social performance and possibly contribute to stress vulnerability (16). Such a phenomenon is not necessarily exclusive of a pathophysiologic brain process. A kindling model has been proposed to account for the decreased level of psychosocial stress associated with recurrent manic relapse over time (4). There is a fair amount of support for this hypothesis (4), but it is not universally accepted (17). Furthermore, whether or not it is involved in the phenomena we observed in patients with schizophrenia cannot be answered by our study. Lastly, it is important to consider the role of medication noncompliance. There is evidence that independent life events play less of a role in relapse prediction during a medication-free period (18).

A potential clinical implication of these findings is that early intervention, targeted at relapse prevention, may stem progression of illness and maintain function at a higher level. There is evidence for the effectiveness of early treatment interventions with improved longitudinal outcomes (19,20).

In summary, we conclude that male and female schizophrenic patients experience illness relapse in response to less of a significance load of psychosocial stress over time. Supporting evidence includes a highly, statistically significant, inverse relationship between illness duration and psychosocial stress level associated with current hospitalization.

There are caveats, however. Our study was retrospective and had a small sample size. For adequate power of 0.80 at the $p < .05$ level (two-tailed), a sample of at least 36 subjects is required. (21) Accordingly, the loss of statistical significance when males were analyzed separately is likely due to the limited power associated with sampling bias. Nevertheless, a highly significant result was obtained for the inverse relationship between psychosocial stress load and years of illness when male and female subjects were analyzed as one group. In addition, medication compliance was not assessed nor was diagnostic reliability between sites. However, strict adherence to DSM-IV diagnostic criteria was employed by the study psychiatrists.

Future studies should be prospective in nature, adequately powered, and of sufficient duration. In addition, following all relapses experienced (and not just hospitalizations) and medication compliance, as well as utilizing a more rigorous and reliable diagnostic methodology (e.g., SCID), would allow for a direct answer to the question of whether or not there exist variable effects of psychosocial stress factors over time in schizophrenic illness. Repeated brain imaging and neuropsychological testing would provide insight into the pathophysiologic mechanisms involved.

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