Marital and Labor Market Status in the Long Run in Schizophrenia

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Background: Singleness and unemployment increase the risk of schizophrenia. Schizophrenia subsequently increases the risk of singleness and unemployment.

Objective: To describe long-term changes in marital status and labor market affiliation before and after the first admission with schizophrenia.

Design: A case-control study.

Setting and Participants: The sample included 5341 patients with a diagnosis of schizophrenia at the first admission to a psychiatric facility between 1970 and 1999, and 53410 matched control subjects. A person admitted in 1999 was followed up in the registers from 1980 to 1997 (ie, from 19 to 2 years before admission). Individuals admitted in 1970 could be followed up from 10 years until 27 years after admission.

Main Outcome Measures: Annual socioeconomic indicators.

Results: Individuals who were later hospitalized were more frequently living alone, unemployed, receiving social benefits, or otherwise outside the labor market when compared with controls, as early as 19 years before their first admission. For individuals with schizophrenia, the odds ratios of being unmarried or not being fully employed were significantly increased even 25 years after admission. This pattern was especially pronounced for men and for individuals who had more admissions. The ratios increased until admission, with a steeper increase in the years before admission. After admission, the odds declined to the level shown before admission and then stabilized.

Conclusions: Schizophrenia hinders social achievement long before the first admission. The first hospital episode is followed by a period during which social status does not deteriorate further except for the transition into disability pension.

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国际分类法，第10版分类法所有精神科住院设施在丹麦自1969年。有无精神病院在丹麦，并且治疗是免费的。登记的无专家活动的评估在1995年。丹麦医疗记录在 Vital Statistics包含日期和所有死亡在丹麦记录的从死因证书自1976年集成数据库。\textsuperscript{24}信息被记录只有作为长期，这个人是在国家在12月31，因此排除人移居或死亡在年度内问题。


精神分裂症定义为International Classification of Diseases，Eighth Revision code 295和International Classification of Diseases，10th Revision code F20。

每个个体被识别精神分裂症被匹配到一个代表随机子样的确切10个人。相同性，谁是同一性，就是谁和谁住在丹麦在至少1年期间在1980年至1997年，就是没有被记录以前作为无专家。一个首次住院作为日期在其中的个体出现在精神病中央登记在第一个时间，哪记录显示这个人没有被记录在开始的记录在1969年。

结果

表显示了病例和匹配控作为在首次精神分裂症住院前和年后在丹麦在20岁。在每行表，有一组年龄在首次住院和在出生队列。在首次住院，平均年龄的精神分裂症患者是29.2年（SD, 11.0年）和36.4年（16.1年）男性和女性，分别。

图1概述了首次住院的无专家与被匹配到的无专家的匹配的无专家比较。无专家的无专家与被匹配到的无专家没有被展示。到19年以前，无专家和被匹配到的无专家是否是同一性的峰更高。男性和女性在精神分裂症和单个男性有一种特别高风险。没有性差异在无专家和被匹配到的无专家。到25年以后，无专家，无专家是同一性的无专家和被匹配到的无专家可能是同一性的精神分裂症和单个男性有一种特别高风险。无专家和被匹配到的无专家在精神分裂症和被同一性的无专家有特别高风险。无专家的无专家和被匹配到的无专家可能更高。在精神分裂症和无专家，并且控制是特别高比单个男性。
to increase toward the admission year and peak 2 to 3 years after that year, after which they fell to the level before admission for both men and women. The odds ratio of being single was less elevated for those who had been discharged and not readmitted compared with controls, but the sex difference was maintained. Note that the reference category consisted of married individuals who were living with their spouse, and furthermore, that it is mandatory to report a change of address within 5 weekdays.

Odds ratios of (1) being a student, (2) receiving a pension for age or disability, (3) receiving social security, (4) being outside the labor market, (5) being unemployed, and (6) being fully employed or self-employed for cases vs controls were calculated. As long as 15 years before admission, individuals who were not fully employed or self-employed had a significantly higher risk of being admitted with schizophrenia. In general, the odds ratios increased from those who were students through the unemployed, and from those outside the labor market and those who were pension recipients to those who were recipients of social security benefits; furthermore, the rates increased in the years toward the admission year. In the years succeeding the admission years, the odds of not being fully employed or self-employed increased, whereas later they declined to some extent. This pattern was particularly pronounced for students, pension recipients, social security recipients, and those outside the labor market, but was also evident for the unemployed.

Generally, the odds of being a pension recipient, being a social security recipient, and being outside the labor market were less marked for those who had been discharged and not yet readmitted. Figure 2 displays the odds ratios associated with being unemployed more than 1% of the year for cases vs controls. The odds ratios associated with unemployment increased steadily toward the admission year, after which they decreased both for those who were still admitted, or had been readmitted, and for those who had been discharged and not readmitted, when compared with controls. Figure 3 shows that individuals who would be or who had been admitted with schizophrenia had a higher odds ratio of receiving a pension than healthy controls. The odds ratios increased slowly until the matching year, where there was a steep increase, especially for those who were still admitted, or had been readmitted, and for those who had been discharged and not readmitted, after which they decreased gradually as individuals in the general population retired.

**COMMENT**

This population-based study shows that individuals with schizophrenia differ from the general population with respect to marital and labor market behavior 15 to 20 years before, as well as up to 20 to 25 years after, their first admission to a psychiatric hospital. The main finding is...
the strong long-term association between schizophrenia, singleness, disadvantaged socioeconomic position, and labor market marginalization. Furthermore, these relationships were relatively unaffected by admission to a psychiatric hospital—except for the transition into disability. These findings have strong implications for understanding the onset and course of schizophrenia.

Although untreated psychosis and acute and insidious onset of illness are indistinguishable in our study, evidence is added to the conjecture that schizophrenia does not appear suddenly,12,27 since our study shows that the social disadvantage is present up to 15 to 20 years before the actual first admission. In the ABC (Age, Beginning, and Course) Schizophrenia Study, which includes information on a sample of 232 first-admitted patients with schizophrenia, Hafner and colleagues36-38 suggested that negative symptoms, and presumably associated social disadvantage, appear up to 5 years before admission. As opposed to the ABC studies, our study findings suggest that social disadvantage, and presumably associated negative symptoms, might emerge earlier, which has been suggested in some studies of premorbid factors.31-34 Apparently, the etiologically relevant period is very long and the effects of single status, or low social status, accumulate very slowly to an etiologic threshold, which eventually precipitates an episode of hospitalization.

The long-term association between social disadvantage and schizophrenia is not in conflict with the neurodevelopmental hypothesis of schizophrenia, which assumes a disruption in the normal development of the brain, secondary to genetic and environmental factors.35-37 Central to the neurodevelopmental hypothesis of schizophrenia is the idea that neurologic or behavioral abnormalities or deficits preceding overt clinical symptoms of adult schizophrenia characterize those at risk during childhood and adolescence.31,36-40 Although our socioeconomic measures apply only to the adult population, our findings are not in keeping with models of schizophrenia that hypothesize that abnormalities develop relatively close to the illness onset.41

Individuals who are young at the admission or matching date were children during the years before, which implies that their marital status and labor market status are recorded as “child” and “outside the labor market,” respectively, and the matching by age accounts for this. Therefore, it is primarily information on those who are older at the admission or matching date that contributes to the odds ratios measured several years before, which means that the onset of schizophrenia must be relatively late for these cases. Social isolation and withdrawal are recognized as premorbid and prodromal syndromes,15,52-54 and our finding suggests that individuals with a late disease onset could have had a prolonged premorbid or initial prodromal phase, where they were living alone or where they were marginalized from the labor market. Our study could not examine whether the length of these early phases of schizophrenia had a predictive value for the illness course.43-46 and it should be noted that the first hospitalization is only an indicator of the first illness episode.47 However, individuals whose socioeconomic and marital status could be observed several years before had an admission or matching date later in the calendar period, which further ensures that the admission actually is the first admission.

Although patients with early- and late-onset illness might have different pathways to admission, the finding in the present study cannot be used to resolve the ongoing controversies of whether early- and late-onset schizophrenia are different or similar disorders.28-49 On the basis of our findings, it could be argued that patients with late-onset disease might have needed treatment years earlier, which adds weight to the point of view that early- and late-onset schizophrenia are more similar disorders. On the other hand, the fact that individuals with late onset manage to stay out of the hospital could mean that they suffer less severe symptoms and, therefore, that there might be differences regarding the symptoms of schizophrenia. However, on the basis of our findings, it could be claimed that early- and late-onset schizophrenia become indistinguishable over time, which is in accordance with earlier reports.50-53 On the basis of our findings, it could be argued that patients with late-onset schizophrenia might have suffered a decline from an already achieved social status (ie, social drift),54 or our findings could suggest a less-than-expected achievement years before the first admission (ie, social selection),55 which is in keeping with other studies.56,57

The first hospital episode with schizophrenia is preceded by a period of years, where future patients increasingly often live alone or are marginalized from the labor market. Three explanations seem immediately evident: The incidence of untreated psychosis or insidious symptoms is higher close to the admission, or the duration of illness before the first hospital admission is skewed toward short durations, or future patients might be more likely to remain unemployed, marginalized, or single after entering the labor and marital markets. The data from our analysis suggest that the first admission episode with schizophrenia is followed by a period of leveling, during which the social status is not further deteriorated. However, the odds ratio of becoming a disability pension recipient is overwhelming, which could reflect that psychiatrists at mental hospitals tend to endorse a disability pension once the diagnosis has been established, or that the social welfare system recognizes the disabling impact of schizophrenia. The decreasing rates associated herewith primarily reflect the transition into age pension in the general population, but possibly also that the disability attributed to schizophrenia generally ameliorates.56,57 One plausible explanation for the leveling could be that hospital treatment is actually beneficial, which could also explain the differences between individuals who have been discharged and not readmitted and those who are readmitted or still admitted.

The odds ratios associated with being single or recipients of disability pensions or social security benefits are smaller among individuals who have been discharged and not readmitted. This leads us to conclude that the more severely ill schizophrenic patients are also more likely to be readmitted or to stay in the hospital. In addition, the data from the present study show decreasing odds ratios associated with singleness, which could reflect that patients find a spouse or a cohabitee
around the time of hospitalization, or it could reflect high rates of divorce in the general population during the period, an argument that generally applies in our study. We found a sex difference insofar as the odds ratios associated with singleness were greater in men than women, which is a well-established finding. However, the mean first-admission age was higher in women, which has previously been reported, whereas a decreasing first-admission rate for schizophrenia in Denmark also was reported, which probably could be attributed to a shift to outpatient cases. In our study, the first-admission age was rather high, as only patients who were diagnosed as having schizophrenia at the first admission were enrolled, and the first-admission rates of schizophrenia in Denmark have been significantly increasing since the late 1980s.

Studies on the cost of illness have shown that schizophrenia imposes an enormous economic burden on both society and the individual person. Our study suggests that these costs, and in particular the indirect costs in terms of lost income and productivity, could be biased and conservatively estimated, as the costs associated with the period before the first hospitalization might be underestimated. Furthermore, our study shows that the long-term indirect cost in patients with relapses is higher than in those who are not readmitted, and presumably that the quality of life and the social functioning are also higher in these patients. Hence, effective treatments used early in the course of schizophrenia may help reduce the costs associated with schizophrenia beyond the immediate reduction in direct costs and in alleviating the personal burden of the illness.

In this study, social patterning such as early social drift and putative biological risk factors are indistinguishable. However, sustained low socioeconomic status, rather than acute social problems, is associated with hospital admission, or, alternatively, schizophrenia deteriorates or hinders social achievement long before the actual admission to a psychiatric hospital.

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REFERENCES


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