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A retrospective population-based data analyses of inpatient care use and medical expenditure in people with intellectual disability co-occurring schizophrenia

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ABSTRACT

The paper aims to analyze the hospital inpatient care use and medical fee of people with ID co-occurring with schizophrenia in Taiwan. A nationwide data were collected concerning hospital admission and medical expenditure of people with ID ($n = 2565$) among national health insurance beneficiaries in Taiwan. Multiple regression analyses were undertaken to determine the role of the explanatory variables to hospital psychiatric inpatient care and medical expenditure. We found that there were 2565 individuals with ID used hospital psychiatric inpatient care among people with ID in 2005, and 686 cases (26.7%) co-occurring with schizophrenia according to hospital discharge claims. Those ID patients co-occurring with schizophrenia consumed more annual inpatient fee than those without schizophrenia (251,346 vs. 126,666 NTD) ($p < 0.001$). We found factors of female cases, longer hospital stay in chronic ward and general ward users among ID patients co-occurring with schizophrenia used more hospital inpatient care ($R^2 = 0.417$). Annual hospital inpatient days were significantly affected by factors of severe illness card holder, annual inpatient care fee, longer hospital stay in acute or chronic ward ($R^2 = 0.746$). Those factors of female cases, high inpatient care users, longer hospital stay in acute ward and general ward were consuming more medical care fee than their counterparts ($R^2 = 0.620$). The study highlights the future study should examine the efficacy of hospital inpatient care for people with ID and schizophrenia.

1. Introduction

Schizophrenia is a serious mental illness that affects about one per cent of the population, and people with ID can also suffer from schizophrenia (Government of South Australia, 2008). However, the prevalence of people with ID co-occurring with schizophrenia varied by country. Crews, Bonaventura, and Rowe (1994) found the point prevalence rate for dual diagnoses based on DSM-III-R criteria in individuals with ID was 15.55% in US, and Bakken et al. (2010) reported psychiatric disorders was 17.4% in Norway. In Sweden, Nettelbladt, Göth, Bogren, and Mattisson (2009) conducted a cohort study. They found that the mental disorder problems in persons with ID were more serious than in the reference group. The cumulative incidence of schizophrenia and other psychotic disorders was 8%. In Australia, 31.7% of people with ID had a psychiatric disorder, and 3.7–5.2% of those with ID had co-occurring schizophrenia (Morgan, Leonard, Bourke, & Jablensky, 2008).

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In Italy, La Malfa, Lassi, Bertelli, Venturi, and Placidi (2004) found schizophrenia has a prevalence in the population with ID of about 1.3–3.7% which is high when compared with 0.4% in the general population.

Both ID and severe psychiatric illness result in serious and lifelong impairments (Morgan et al., 2008). These impairments can affect many parts of everyday functioning, feelings, relationships, thoughts, perceptions, and motivation for general population and people with ID (Government of South Australia, 2008). In addition, one study found that people with ID who develop schizophrenia have significantly higher rates of birth complications than controls (O'Dwyer, 1997).

Although our understanding of the relationship of ID and psychiatric illnesses include schizophrenia has improved in the past decades (Bouras et al., 2008; Cookson & Dickson, 2010; Crews et al., 1994; Fletcher et al., 2009; Kravariti et al., 2010; Lin, Yen, Li, & Wu, 2005; Linaker & Helle, 1994; Reid, 1989; Sanderson, Doody, Best, Owens, & Johnstone, 2001; Sturmey, Reed, & Corbett, 1991; Swiezy, Matson, Kirkpatrick-Sanchez, & Williams, 1995; Thorson, Matson, Rojahn, & Dixon, 2008; Vitiello & Behar, 1992). However, many deficits still exist in our knowledge such as a lack of familiarity with the phenomenology of schizophrenia as it presents in people with ID and in practice, the diagnosis is little used in individuals with severe and severe to moderate ID patients (O'Brien, 2002). Furthermore, little information is available about how they access to psychiatric care and the access barriers of these patients with dual diagnosis, and their medical cost in health services. Therefore, the present paper aimed to analyze the hospital inpatient care use and medical fee of people with ID co-occurring with schizophrenia based on population-based National Health Insurance (NHI) claims data in Taiwan.

2. Methods

A cross-sectional study was employed by using an integrated database created for hospital medical care claims by Bureau of National Health Insurances (NHI), Department of Health in Taiwan. The database was derived from the demographic data of people with disabilities and their hospital inpatient care utilization in 2005. The intellectual disability and schizophrenia was identified according to the International Classification of Diseases, 9th revision, Clinical Modified (ICD-9-CM) coding system which has been used in Taiwan NHI diagnosis system. Those ID cases are ICD code 317, 318, 318.1, 318.2 and 319, and schizophrenia cases are ICD code 295, 295.0–295.9. Data were analyzed by SPSS 18.0 software which the main methods included number, percentage, mean, Chi-square and t test to describe research subject admitted to hospital characteristics and medical care fee of people with ID. Multiple regression analyses were used to test the relation of participant's personal characteristics and inpatient care use in people with ID co-occurring with schizophrenia.

3. Results

Table 1 presents the demographic and hospital admission characteristics of people with ID. There were 2565 persons with ID admitted to inpatient care within the year of 2005 NHI beneficiaries, which male patients were 1440 (56.1%) and female patients were 1125 (43.9%). The mean age of them was 31.86 years old. Among the inpatient care users, there were 78.5% hold severe illness card which copayment can partially waived from NHI scheme. The mean of hospitalization frequency was 3.33 annually, there was 41.1% cases use one inpatient care, 26.2% use 2–3 times, and 32.4% use more than four times. The results also show that average hospital stay was 92.65 days, days in acute ward was 44.22 days and in chronic ward was 196.84 days.

Table 2 shows the disease category of inpatient care among people with ID. We found that there were 8539 person-times hospital inpatient care among people with ID, and 36.5% cases were ID co-occurring with schizophrenia in the full year of 2005. Among these inpatient care usages, there were 2565 individuals with ID and 686 cases (26.7%) accompanied with schizophrenia. Table 3 reports the annual inpatient fee among people with ID co-occurring with schizophrenia, the mean expenditure is 251,346 NTD (1 USD = 32 NTD) and they used more inpatient care fee than those without schizophrenia ($p < 0.001$). We also found that people with ID co-occurring with schizophrenia consumed more diagnose fee, ward fee, drug fee and psychiatric treatment fee than individuals without schizophrenia in *t*-tests.

Table 4 describes the relationship between demographic characteristics of ID individuals and co-occurring with schizophrenia in chi-square tests. Factors such as a patient's age, holding a severe illness card, frequency of inpatient care, hospital stay either in acute ward or chronic ward were significant differences in two groups of ID individuals with or without schizophrenia. The other factors such as gender and low household income status were not significant differences in schizophrenia occurrence among ID population.

Tables 5–7 report the results of possible determinants of hospital inpatient care by people with ID co-occurring with schizophrenia by multiple regression analyses. Data in Table 5 show that female cases, longer hospital stay in chronic ward and general ward users among ID patients co-occurring with schizophrenia were more likely to use hospital inpatient care than their counterparts ($R^2 = 0.417$). Annual hospital inpatient days were significantly affected by factors of severe illness card holder, annual inpatient care fee, longer hospital stay in acute or chronic ward ($R^2 = 0.746$) (Table 6). Finally, we tested the determinants of annual inpatient fee among people with ID co-occurring with schizophrenia. Table 7 shows that factors of female cases, high inpatient care users, longer hospital stay in acute ward and general ward were consuming more medical care fee than their counterparts ($R^2 = 0.620$).