



Outpatient physical therapy utilization for children and adolescents with intellectual disabilities in Taiwan: A population-based nationwide study



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ABSTRACT

This study analyzed the utilization and utilization determinants of outpatient physical therapy (PT) among children and adolescents with intellectual disabilities (ID) in Taiwan. A cross-sectional study was conducted to analyze 2007 national health insurance (NHI) claim data from 35,802 eighteen-year-old and younger persons with intellectual disabilities. A total of 3944 (11.02%) claimants received outpatient physical therapy. Variables that affected PT utilization included age, residence urbanization level, ID level, copayment status and major co-morbidity. The average annual PT visit frequency was 25.4 ± 33.0 ; pre-school children, claimants suffering from catastrophic disease and ID co-occurring with cerebral palsy had a higher mean cost per visit. Age, ID level, copayment status and co-morbidity were factors that influenced expenditure. Pre-school children, males, individuals who resided in the lowest urbanization areas and individuals with a catastrophic disease tended to use hospital services. The point prevalence of epilepsy and cerebral palsy were 12.10% and 19.80%, respectively. Despite the NHI program and government regulations to provide special services, the use of physical therapy for children and adolescents with intellectual disabilities was low, and the utilization decreased as the subjects aged.

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1. Introduction

Children and adolescents with intellectual disabilities (ID) often suffer a variety of developmental and neurological disorders that involve problems in sensory processing, reflex maturation and motor skills (Francis & Rarick, 1959; Howe, 1959; Montgomery, 1981). The US Education for All Handicapped Children Act mandates that public schools must provide specific treatments and services including physical therapy (PT) for all handicapped students (Sommerfeld, Fraser, Hensinger, & Beresford, 1981). To ensure the health and welfare of children and adolescents with ID in Taiwan, municipal and county governments must establish an early intervention system and provide early treatment, including physical therapy for children with developmental disorders (Children Welfare Act, 1993). The goal of physical therapy for this

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population is “to develop, maintain and restore maximum movement and functional ability throughout the lifespan. This includes providing services in circumstances where movement and function are threatened by aging, injury, diseases, disorders, conditions or environmental factors” (World Confederation for Physical Therapy, 2011).

The National Health Insurance (NHI) program of Taiwan provides rehabilitation services, including physical therapy (PT), occupational therapy (OT), and communication therapy (CT), for people who need them. Previous studies revealed that children and adolescents with ID or attention deficit hyperactivity disorder (ADHD) utilize more rehabilitation services than normal children and adolescents in Taiwan (Chiang et al., 2013; Lin, Chen, & Lin, 2013). However, general information regarding types of rehabilitation care use among ID patients in Taiwan is scarce. The purposes of this study were to describe the profile of outpatient PT utilization for children and adolescents with ID in Taiwan and to explore the factors that influence the utilization. The findings may provide evidence that can guide social and health service rehabilitation service policy-making for children and adolescents with ID.

2. Materials and methods

2.1. Data source

The present study involved a cross-sectional analysis of a national health insurance outpatient service dataset from the NHI program. The dataset was provided by the National Health Research Institute (NHRI). The detailed data set structure and the information safety precautions are described on the NHRI web site (NHRI, 2011a, 2011b). The NHI program was introduced in Taiwan in 1995 to eliminate financial barriers to medical services and to solve social problems that are caused by poverty and illness. The program is a compulsory social insurance program and covered 99.60% of the population in Taiwan at the end of 2011; in 2011, 92.60% of medical institutions in Taiwan were affiliated with the Bureau of National Health Insurance (BNHI) (BNHI, 2013).

2.2. Study population

This study used 2007 NHI claim data from 35,802 eighteen-year-old and younger patients with ID. The resultant data sets contained outpatient care expenditures by visits and the details of the outpatient care orders, including dates of visits, medical care facilities, patient gender, birth dates, three major diagnoses (as coded by the International Classification of Disease, Ninth Revision, Clinical Modification [ICD-9-CM] format), copayment status, medical expenses and prescriptions by a physician for each visit in all medical care institutions that were under contract with the BNHI of Taiwan. Urbanization was stratified into four levels (I, II, III and IV), ranging from higher to lower degrees of urbanization in residential areas (Hsu, Chiang, Lin, & Lin, 2012). Based on the claimant's age, age the group was classified into four groups: an age < 6 years old (pre-school), between 6 and 13 years old (elementary school), between 13 and 16 years old (junior high school) and between 16 and 18 years old (senior high school).

2.3. Co-morbidity

Kancherla, Amendah, Grosse, Yeargin-Allsopp, and Van Naarden Braun (2012) determined that children with cerebral palsy and co-occurring ID had higher medical expenditures. To evaluate the relationship between major co-morbidity and PT utilization, we classified the study subjects into three categories: category I included ID only subjects; category II included ID subjects with epilepsy coding (ICD-9-CM Diagnosis Code 345. x); and category III included ID subjects with and cerebral palsy coding (ICD-9-CM Diagnosis Code 343).

2.4. Data analysis

Differences in distributions of age group, gender, urbanization, ID level, copayment status and co-morbidity between the physical therapy group and the non-physical therapy group were examined using chi-squared tests, and a stepwise logistic regression was used to associate these variables with PT utilization. An ANOVA was conducted to assess the variables in terms of physical therapy annual visit frequencies, cost per treatment and annual expense of treatment. The general estimating equation (GEE) was used to verify the differences in average PT expenses per visit among age group, urbanization, ID level, copayment status and co-morbidity. The data were analyzed using SAS 9.2 for Windows (SAS Institute Inc., Cary, NC, USA).

3. Results

Among 35,802 claimants, 3944 (11.02%) received physical therapy in 2007. The demographic characteristics of the physical therapy group (PT group) and the non-physical therapy group (NPT group) are presented in Table 1. Epilepsy and cerebral palsy prevalence was 12.10% and 19.17%, respectively. The PT group was significantly younger than the NPT group. With the exception of gender, all variables were significantly different between the two groups ($\chi^2 < 0.05$).

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