

ORIGINAL RESEARCH



Trends in Rehabilitation Services Use in Chinese Children and Adolescents With Intellectual Disabilities: 2007–2013

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Abstract

Objectives: To investigate trends in rehabilitation services use in children and adolescents with intellectual disabilities, and to explore factors potentially contributing to the trends.

Design: A population-based study using a multistage, randomized cluster-sampling process to ascertain participants in 2006. A subsample was selected for follow-up surveys from 2007 to 2013.

Setting: Thirty-one provinces of China.

Participants: Children (N=5432) aged 0 to 17 years with intellectual disabilities were followed up for 7 years.

Interventions: Not applicable.

Main Outcome Measures: The outcome variable was whether individuals received at least 1 of the following rehabilitation services in the past 12 months: occupational therapy, physical therapy, and speech or communication therapy.

Results: Overall, the utilization rates of rehabilitation services significantly increased from 14.4% in 2007 to 37.1% in 2013. The trends were also significant in children aged 0 to 10 and 11 to 17 years, in boys and girls, and in rural participants. From 2007 to 2013, rehabilitation services utilization increased at an annual rate of 22.39% (95% confidence interval, 18.11%–26.82%) in the total sample. The rise was only significant in rural rather than urban individuals, resulting in the urban-rural gap in rehabilitation services use being narrowed. However, minority populations and those without health insurance still received fewer rehabilitation services than their respective counterparts.

Conclusions: There were upward trends in rehabilitation services use in participants over time, and the urban-rural gap was narrowed. However, there were still socioeconomic differences on rehabilitation services use among children and adolescents with intellectual disabilities.

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Intellectual disabilities (IDs) have become a public health concern,^{1,2} with an estimated prevalence of roughly 1% across the globe.³ Children with IDs are more vulnerable than the general

population, having a higher prevalence of morbidity and mortality,⁴ and thus requiring more effective and affordable health care and rehabilitation services.⁵ With the aim of enabling people with disabilities to achieve and maintain optimal functioning,⁶ rehabilitation can reduce total health care costs and improve health outcomes and quality of life by an integrated care ranging from specialized treatment at the hospital to rehabilitation in the community.^{7,8} However, because of a deficiency of professional personnel and rehabilitation facilities,⁹ as well as insufficient public health coverage,¹⁰ children with IDs and their families

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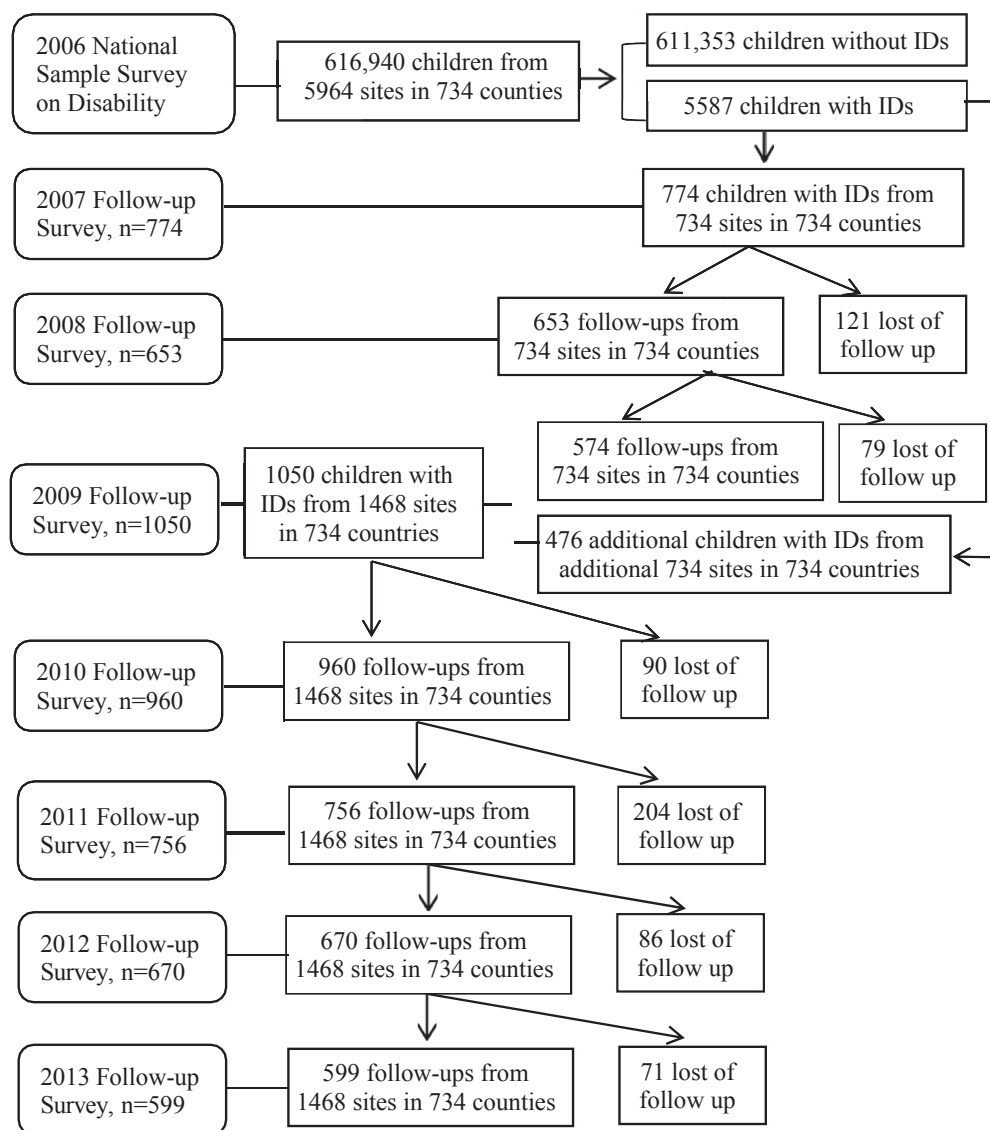


Fig 1 Flowchart of the study sample.

often face a growing number of obstacles in accessing rehabilitation services, and even experience discrimination in receiving services.¹¹ Moreover, a lack of required data, especially in developing countries, is often a major challenge in making and implementing policies directed toward planning rehabilitation services, allocating adequate resources, and monitoring the health and quality of care for people with IDs.¹

In China, IDs accounted for approximately 70% of all the disabilities in children,¹² with a prevalence rate of 0.9% in 2006.¹³ Although most of the children with disabilities required rehabilitation services, only about a quarter of them had access to care provided by the Chinese government in 2006.¹⁴ Consequently, a multitude of

families had to seek out-of-pocket care for their disabled children, causing a severe disease burden.¹⁵ Despite several studies^{9,16-18} of rehabilitation services utilization among Chinese children with IDs having been conducted, most of them were regional with small sample sizes. In addition, since the implementation of the 11th Strategic Plan on Chinese Disabled Persons, the Chinese central government has created national plans on rehabilitation and established infrastructure and capacity to implement the plan to improve access to rehabilitation. For example, the 11th Strategic Plan aimed to provide professional rehabilitation services for disabled persons in 80% of districts and 70% of counties of China, and at the end of the 11th Plan, 90.5% of districts and 68.9% of counties established community rehabilitation facilities for disabled persons.¹⁹ Nevertheless, whether rehabilitation services use in children and adolescents with IDs has been advanced is still poorly understood.

In this study, using national follow-up data from 2007 to 2013, we sought to examine the time trends in rehabilitation services utilization among children with IDs, and to explore associated factors that may potentially contribute to the changed utilization.

List of abbreviations:

- CI** confidence interval
- DQ** developmental quotient
- ID** intellectual disability
- IQ** intelligence quotient

Table 1 Characteristics of participants in surveys, 2007–2013

Characteristics	Total (N = 5432)	2007 (n = 744)	2008 (n = 653)	2009 (n = 1050)	2010 (n = 960)	2011 (n = 756)	2012 (n = 670)	2013 (n = 599)	<i>P</i> _{trend} *
Age (y)	10.6±4.1	9.1±4.8	9.5±4.6	10.0±4.2	10.6±3.9	11.3±3.4	11.8±3.1	12.3±2.7	<.001
0–10y	2685 (49.4)	439 (59.0)	376 (57.6)	585 (55.7)	510 (53.1)	335 (44.3)	261 (39.0)	179 (29.9)	<.001
Female children	2191 (40.3)	302 (40.6)	269 (41.2)	431 (41.0)	393 (40.9)	298 (39.4)	263 (39.3)	235 (39.2)	.333
Rural	4784 (88.1)	646 (86.8)	576 (88.2)	939 (89.4)	862 (89.8)	672 (88.9)	575 (85.8)	514 (85.8)	.238
Minority	885 (16.3)	124 (16.7)	108 (16.5)	168 (16.0)	149 (15.5)	122 (16.1)	113 (16.9)	101 (16.9)	.872
Single parent and no parent	992 (18.3)	141 (19.0)	119 (18.2)	161 (15.3)	133 (13.9)	167 (22.1)	151 (22.5)	120 (20.0)	.012
Carers' education below middle school	2988 (55.0)	430 (57.8)	359 (55.0)	603 (57.4)	512 (53.3)	407 (53.8)	365 (54.5)	312 (52.1)	.024
Family income below average	3150 (58.0)	434 (58.3)	389 (59.6)	605 (57.6)	533 (55.5)	445 (58.9)	396 (59.1)	348 (58.1)	.989
Uninsured	2721 (50.1)	522 (70.2)	394 (60.3)	582 (55.4)	482 (50.2)	296 (39.2)	243 (36.3)	202 (33.7)	<.001
Mild ID	2377 (43.8)	297 (39.9)	262 (40.1)	440 (41.9)	420 (43.8)	345 (45.6)	319 (47.6)	294 (49.1)	<.001

NOTE. Values are mean ± SD, n (%), or as otherwise indicated.

* *W*alt test.

Methods

Study design and participants

The data for this study were derived from the Second National Sample Survey on Disability in 2006 and from the consecutive follow-up investigations once a year from 2007 to 2013. The 2006 survey aimed to investigate the prevalence, causes, and severity of disabilities, as well as the living conditions and health service needs of the disabled. As detailed in our previous work,²⁰ multi-stage, stratified random cluster sampling, with probability proportional to size, was used in 734 counties (districts), 2980 towns (streets), and 5964 communities (villages) from all provinces, autonomous regions, and municipalities. The sample size was 2,526,145 individuals, representing 1.9 per 1000 noninstitutionalized inhabitants of China. Of these, there were 5587 with IDs among 616,940 children aged 0 to 17 years.¹³

To monitor the living conditions, sociodemographic characteristics, health care and rehabilitation services utilization, as well as the home and community environment of people with disabilities, a subsample of disabled people was selected for annual follow-up surveys since 2007. During the surveys, the parents or main carers of children were asked to complete a formal questionnaire at their respective homes. In 2007 and 2008, the follow-up samples included those from 734 randomly selected study sites in 734 counties, 1 site for each county. From 2009 to 2013, an additional site was added in each county, leading to a sample of 1468 sites in 734 counties.²¹ Figure 1 shows the flowchart of study participants. Of 5587 children with IDs in the 2006 survey, 774 were randomly selected in 2007, and 653 and 574 were followed up in 2008 and 2009, respectively. A total of 476 additional cases were added in 2009, resulting in a sample of 1050 children with IDs. Of these, 960, 756, 670, and 599 cases were followed up from 2010 to 2013, respectively. The overall participation rate of the follow-up studies was 89.35%.

Definition of ID

The definition and classification of disabilities were established by the Expert Committee of the Second National Sample Survey on Disability according to the World Health Organization's *International Classification of Functioning, Disability, and Health*.²² Interviewers were recruited from local primary care institutions and trained by the provincial expert teams in the methods of survey and screening.²⁰ Children aged 0 to 6 years were first screened for disabilities by specialists at clinics or community health centers using the standardized Denver Development Screening Test.²³ In those with suspected IDs, a developmental quotient (DQ) was determined using the Gesell Developmental Inventory to establish a definitive diagnosis of ID (DQ<76),²⁴ and a social life ability scale was used to assist in the diagnosis.²⁵

Children aged 7 to 17 years were screened by interviewers using disability screening questionnaires at their homes. If the screening found that the subjects might have an ID, they would be referred to developmental pediatricians and psychiatrists to make the final diagnosis of ID based on both the intelligence quotient (IQ<70) and adaptive behavior.²⁵ The IQ was evaluated by the Wechsler Intelligence Scale for Children–Revised and the Wechsler Adult Intelligence Scale–Revised by China for children aged 7 to 16 years and 17 years, respectively.¹³ In the 2006 survey, the severity of IDs was classified as mild (DQ: 55–75 or IQ:

Table 2 Trends in utilization rates of rehabilitation services among Chinese children with ID in all participants and by age, sex, and region, 2007–2013

Groups	2007		2008		2009		2010		2011		2012		2013		P _{trend} †
	n (%)	OR* n (%)	OR (95% CI)	n (%)	OR (95% CI)	n (%)	OR (95% CI)	n (%)	OR (95% CI)	n (%)	OR (95% CI)	n (%)	OR (95% CI)	n (%)	
Total	107 (14.4)	1.00	1.19 (17.3)	202 (19.2)	1.32 (1.02–1.71)	286 (29.8)	2.30 (1.79–2.96)	216 (28.6)	2.10 (1.61–2.74)	242 (36.1)	2.97 (2.27–3.87)	222 (37.1)	3.05 (2.32–4.01)	<.001	
Age (y)															
0–10	59 (13.4)	1.00	1.56 (1.07–2.27)	118 (20.2)	1.53 (1.08–2.16)	164 (32.2)	2.77 (1.98–3.89)	91 (27.2)	2.10 (1.44–3.06)	89 (34.1)	2.93 (1.99–4.31)	65 (36.3)	3.16 (2.07–4.82)	<.001	
11–17	48 (15.7)	1.00	0.79 (0.49–1.26)	84 (18.1)	1.10 (0.74–1.63)	122 (27.1)	1.82 (1.25–2.65)	125 (29.7)	2.01 (1.37–2.94)	153 (37.4)	2.85 (1.96–4.16)	157 (37.4)	2.82 (1.93–4.10)	<.001	
Sex															
Male	64 (14.5)	1.00	1.17 (0.80–1.70)	126 (20.4)	1.40 (1.00–1.95)	172 (30.3)	2.30 (1.66–3.18)	124 (27.1)	1.94 (1.38–2.74)	135 (33.2)	2.58 (1.83–3.65)	137 (37.6)	3.11 (2.19–4.42)	<.001	
Female	43 (14.2)	1.00	1.22 (0.78–1.93)	76 (17.6)	1.22 (0.81–1.85)	114 (29.0)	2.32 (1.56–3.45)	92 (30.9)	2.35 (1.55–3.57)	107 (40.7)	3.66 (2.41–5.56)	85 (36.2)	2.99 (1.94–4.62)	<.001	
Region															
Urban	26 (26.5)	1.00	1.13 (0.57–2.25)	34 (30.6)	1.02 (0.54–1.95)	35 (35.7)	1.20 (0.62–2.32)	25 (29.8)	0.85 (0.42–1.74)	37 (38.9)	1.64 (0.83–3.25)	29 (34.1)	1.40 (0.68–2.86)	.219	
Rural	81 (12.5)	1.00	1.21 (0.87–1.68)	168 (17.9)	1.42 (1.06–1.89)	251 (29.1)	2.61 (1.98–3.45)	191 (28.4)	2.41 (1.80–3.22)	205 (35.7)	3.35 (2.50–4.50)	193 (37.5)	3.57 (2.64–4.83)	<.001	

Abbreviations: CI, confidence interval; OR, odds ratio.

* Reference.

† Adjusting for age, sex, region, ethnicity, family structure, main carers' education, family income, health insurance, and severity of IDs.

50–69), moderate (DQ: 40–54 or IQ: 35–49), severe (DQ: 26–39 or IQ: 20–34), and extremely severe (DQ: <26 or IQ<20) according to the Criteria for Disability issued by the State Council of the People's Republic of China.¹² In this analysis, individuals were divided into 2 groups: mild ID (DQ: 55–75 or IQ: 50–69) and severe ID (DQ <55 or IQ<50).

Measures

The outcome variable was whether or not individuals used rehabilitation services because of their disabilities in the past 12 months. The types of services (yes or no for each service) included occupational therapy to increase self-care abilities, physical therapy for strengthening and ambulation programs, and speech or communication therapy to improve language skills at rehabilitation services centers, hospitals, communities, or homes.

According to the World Health Organization report,²⁶ factors that affect access to health services for children with IDs consist of location (urban vs rural setting, geographic location), socioeconomic status (family income, parents' education), demographic characteristics (sex, age, ethnicity), and the level of disability. As shown in table 1, factors such as age, family structure (single or no parent vs both parents), carers' education, health insurance coverage, and the severity of ID have changed over time. The distribution of some factors, such as sex, region, ethnicity, and family income, has not changed over time, but following^{27,28} prior studies on rehabilitation services use in people with IDs, we also held all these factors in the regression models to obtain consistent estimates. Therefore, independent factors in this study included children's age (0–10 and 11–17y), sex (male and female), region (urban and rural residents), ethnicity (Han and minority), family structure (both parents and single or no parent), main carers' education (below middle school and above), annual family income per capita (below national average and above), health insurance (covered and not covered by Urban Residents' Health Insurance or New Rural Cooperative Medical Scheme), and severity of IDs (mild and severe).

Ethical approval

The surveys were conducted in all provinces by the Leading Group of the National Sample Survey on Disability and the National Bureau of Statistics. The 2006 survey and the follow-up surveys were all approved by the China State Council (no. 20051104) and implemented within the legal framework governed by the Statistical Law of the People's Republic of China (1996 amendment). The children's parents or carers signed the informed consent, which covered their participation in the survey and the clinical assessment process. The data analysis was exempt from further review because data were deidentified.

Analytical approach

Logistic regression models were used to estimate the relationship between the outcome measure and associated factors. Wald tests of linear trend were used to determine differences in the characteristics of participants and in the utilization of rehabilitation services over the time series, and the interaction terms between the survey time and related factors were included in the logistic regression models to examine the time trends in the associations between the various factors and outcome variable. A P value <.05

Table 3 Average percentage changes (95% CI) in utilization rates of rehabilitation services among Chinese children with ID, 2007–2013

Characteristics	Model 1	Model 2	Model 3
Total	24.98 (20.85–29.25)*	25.38 (21.15–29.76)*	22.39 (18.11–26.82)*
Age (y)			
0–10	23.22 (17.21–29.55)*	24.20 (18.08–30.62)*	20.18 (14.04–26.65)*
11–17	27.32 (21.45–33.47)*	27.19 (21.32–33.35)*	25.06 (19.06–31.37)*
Sex			
Male	23.11 (17.89–28.56)*	23.37 (18.03–28.95)*	20.73 (15.31–26.41)*
Female	27.86 (21.22–34.86)*	28.35 (21.55–35.53)*	25.04 (18.15–32.33)
Region			
Urban	6.68 (–1.88 to 15.97)	9.74 (0.42–19.91) [†]	6.47 (–3.66 to 17.66)*
Rural	28.59 (23.93–33.41)*	28.70 (23.97–33.61)*	25.42 (20.67–30.36)*

NOTE. Model 1, unadjusted; model 2, adjusted for age, sex, and region; model 3, additionally adjusted for ethnicity, family structure, main carers' education, family income, health insurance coverage, and severity of ID.

Abbreviation: CI, confidence interval.

* $P < .001$.

[†] $P < .05$.

was considered statistically significant. The software Stata version 12 for Windows^a was used for the statistical analysis.

Results

Characteristics of samples

From 2007 to 2013, the mean age of individuals increased from 9.1 to 12.3 years ($P_{\text{trend}} < .001$); the proportion of participants having a single or no parent increased ($P_{\text{trend}} = .012$), whereas the educational level of children's main carers decreased ($P_{\text{trend}} = .024$); and more individuals were covered by health insurance ($P_{\text{trend}} < .001$) and were identified as having mild IDs ($P_{\text{trend}} < .001$). The distribution of sex, region, and ethnicity, as well as family income, did not significantly change over time (see table 1).

Trends in rates of rehabilitation services use

Overall, the utilization rates of rehabilitation services increased from 14.4% in 2007 to 37.1% in 2013. After adjusting for age, sex, region, ethnicity, family structure, main carers' education, family income, health insurance, and severity of IDs, the rehabilitation services used showed significant growth over time ($P_{\text{trend}} < .001$). The stratified analyses showed that the growth of rehabilitation services use was significant in children aged 0 to 10 years ($P_{\text{trend}} < .001$) and 11 to 17 years ($P_{\text{trend}} < .001$), in boys ($P_{\text{trend}} < .001$) and girls ($P_{\text{trend}} < .001$), and in those living in rural areas ($P_{\text{trend}} < .001$) instead of urban areas ($P_{\text{trend}} = .219$) (table 2).

Annual changes in rates of rehabilitation services use

As seen from table 3, in the unadjusted model (model 1), the annual rate of rehabilitation services use increased by 24.98% on average in the total sample. After controlling for all covariates (model 3), the average annual rise in the rehabilitation services use was 22.39% (95% confidence interval [CI], 18.11%–26.82%). In the multiple logistic models (model 3), the annual increase was statistically significant in participants aged 0 to 10 years (20.18%; 95% CI, 14.04%–26.65%) and 11 to 17 years (25.06%; 95% CI,

19.06%–31.37%), in boys (20.73%; 95% CI, 15.31%–26.41%) and girls (25.04%; 95% CI, 18.15%–32.33%), and in rural areas (25.42%; 95% CI, 20.67%–30.36%).

Trends in associations between various factors and rehabilitation services use

From table 4, after controlling for multiple potential confounders, the higher rates of rehabilitation services use were significantly associated with participants aged 0 to 10 years and being a girl, in 2008 and 2012, respectively. The minority individuals significantly received fewer services in 2008, 2012, and 2013. Rural individuals had less access to services in the first 3 years than urban individuals, but this gap disappeared afterward. The lower rates of services utilization were significantly associated with having a single or no parent and a lower family income, in 2011 and 2007, respectively. With the exception of 2007, the remaining years did show a lower use of services among the uninsured participants.

The trend in the association of living in rural areas (reference: in urban areas) with rehabilitation services use was significantly changed from 2007 to 2013 ($P_{\text{trend}} < .001$). Nevertheless, the strengths of associations between the remaining factors and outcome variables did not significantly change over time.

Discussion

This is the first study to examine the trends in rehabilitation services use in Chinese children with IDs, as well as to identify the potential factors associated with the trends. With the use of nationwide follow-up samples, the primary results of the current analyses showed that there were increasing trends in the utilization rates of rehabilitation services among children with IDs over time even though most of the participants did not receive any services in the past 12 months. The trends were evident in individuals aged 0 to 10 and 11 to 17 years, in boys and girls, and in rural areas, even when a broad range of demographic, socioeconomic, and disability-related factors were taken into account.

This study found a larger proportion of participants who received rehabilitation services than previous reports in mainland China (<25% in 2006)¹⁴ and in Taiwan (<20% in 2001).²⁷ Apart

Table 4 Odds ratios (95% CI) and trends in rehabilitation service utilization by study variables among Chinese children with ID, 2007–2013

Variables	2007 (n = 744)	2008 (n = 653)	2009 (n = 1050)	2010 (n = 960)	2011 (n = 756)	2012 (n = 670)	2013 (n = 599)	<i>P</i> _{trend} *
0–10y (ref: 11–17y)	0.86 (0.56–1.32)	1.69 (1.07–2.65) [†]	1.17 (0.85–1.62)	1.26 (0.94–1.67)	0.88 (0.63–1.22)	0.87 (0.62–1.23)	0.90 (0.62–1.31)	.275
Female children (ref: male children)	0.99 (0.64–1.51)	1.08 (0.71–1.66)	0.87 (0.63–1.20)	0.99 (0.74–1.32)	1.26 (0.91–1.75)	1.43 (1.03–1.99) [†]	0.98 (0.69–1.40)	.311
Minority (ref: Han)	0.77 (0.41–1.45)	0.41 (0.20–0.86) [†]	1.30 (0.84–1.99)	0.87 (0.57–1.30)	0.94 (0.60–1.48)	0.60 (0.38–0.97) [†]	0.43 (0.26–0.72) [†]	.100
Rural (ref: urban)	0.42 (0.25–0.71) [†]	0.43 (0.25–0.76) [†]	0.58 (0.36–0.91) [†]	0.94 (0.59–1.49)	1.06 (0.62–1.81)	0.98 (0.61–1.57)	1.40 (0.84–2.33)	<.001
Single parent and no parent (ref: both parents)	0.75 (0.42–1.35)	0.90 (0.51–1.59)	0.81 (0.51–1.28)	1.16 (0.77–1.74)	0.60 (0.39–0.93) [†]	1.16 (0.79–1.71)	0.79 (0.51–1.22)	.749
Carers' education below middle school (ref: above middle school)	1.13 (0.71–1.81)	0.88 (0.56–1.38)	0.83 (0.60–1.16)	0.81 (0.60–1.10)	0.90 (0.64–1.26)	0.75 (0.54–1.05)	1.07 (0.75–1.52)	.912
Family income below average (ref: above average)	0.57 (0.37–0.89) [†]	0.74 (0.47–1.15)	0.79 (0.57–1.10)	0.93 (0.69–1.25)	0.78 (0.56–1.09)	1.15 (0.82–1.62)	0.78 (0.55–1.11)	.134
Uninsured (ref: insured)	0.77 (0.49–1.20)	0.50 (0.32–0.76) [†]	0.58 (0.42–0.81) [†]	0.54 (0.41–0.73) [§]	0.63 (0.45–0.90) [†]	0.59 (0.41–0.84) [†]	0.55 (0.37–0.80) [†]	.836
Mild ID (ref: severe ID)	0.87 (0.56–1.35)	0.80 (0.52–1.24)	0.77 (0.55–1.07)	0.89 (0.66–1.19)	0.89 (0.64–1.25)	0.81 (0.58–1.12)	0.88 (0.63–1.25)	.939

Abbreviation: ref, reference.

* Adjusting for age, sex, region, ethnicity, family structure, main carers' education, family income, health insurance, and severity of IDs.

[†] *P* < .05.

[‡] *P* < .01.

[§] *P* < .001.

from the variation of survey time and observation periods (12mo in mainland China; 7mo in Taiwan), other factors may also need to be considered. To begin, early in 1990, Chinese government was signatory to the United Nations Convention Rights of Persons With Disabilities and enacted the Law of the People's Republic of China on the Protection of Disabled Persons.²⁹ This solemn international promise and political will, plus a strong ability to implement policy and mobilize resources, secured the policy priority setting for disabled persons, including children with IDs. In addition, it is important to realize that establishing infrastructure and the capacity to implement the plan are critical to improving access to rehabilitation.³⁰ Since the 11th 5-year Strategic Plan on Chinese Disabled Persons, the Chinese government has largely promoted investments in human resources and infrastructure to provide rehabilitation services for people with disabilities.³¹

A striking finding in this study is that we only found a significant growth in the utilization of rehabilitation services in rural instead of urban participants. We can speculate about some potential factors that may have contributed to this finding. First, an initial urban-rural gap in rehabilitation services use was present in 2007 (see table 2). From this perspective, it was more urgent to facilitate the utilization of rehabilitation services in rural areas at the very beginning of the follow-up surveys. Second, in the past several years, some interventions on rehabilitation services were targeted at children in poor families in China. For instance, the Rehabilitation Project for Children With Physical and Intellectual Disabilities in Poor Families tailored at least 3 months of rehabilitation services for 5000 children with IDs each year during 2009 to 2011.³² As a consequence, the interventions greatly improved access to rehabilitation services for poor children with disabilities, particularly in rural areas.³³

The secondary objective of this analysis was to identify factors associated with the trends in rehabilitation services use in children with IDs. In different survey years, we found that those with lower socioeconomic status, in the form of being a minority, living in rural areas, being cared for by adults with an education level below middle school, living in relatively low-income families, and having no health insurance, faced more challenges in receiving rehabilitation services. The results are consistent with previous studies^{9,14,16,25} in China, as well as in other countries.^{26,34,35} More importantly, this study found that the trend in the urban-rural difference in rehabilitation services use among individuals changed over time. This is a new finding in China, indicating that the urban-rural gap in using rehabilitation services in children with IDs has narrowed over the past years.

Study limitations

These analyses are subject to several limitations. First, self-reported information on the utilization of rehabilitation services at various health facilities across a year may have a recall bias. Second, because of data constraints, the categorization of rehabilitation services in this study did not differentiate patterns from varying providers (ie, hospitals, community health centers, rehabilitation facilities) or potential overlaps among these services. Third, despite the fact that multiple determinants on rehabilitation services use have been taken into consideration, supply-side factors, including the ability and level of providing services, were excluded mainly because of the limitation of our study design. Finally, because of constraints of data availability, comorbidities of children with IDs, such as autistic spectrum

disorders, epilepsy, and other childhood disorders, were not allowed in this analysis. Regardless of the above limitations, the strengths of this study include a nationally representative sample drawn from multiple sites in diverse sociodemographic settings, and a relatively long period of follow-up assessments with consistent approaches and high participation rates over time.

Conclusions

This study found that great progress was made over time in increasing the utilization of rehabilitation services by Chinese children with IDs. In particular, the urban-rural gap in using rehabilitation services was narrowed. However, there were also socioeconomic inequalities, specifically ethnic discrimination and lack of health insurance, that hindered rehabilitation services use by children with IDs in China. Future studies are needed to explore the reasons for the observed change and to identify specific policies for further improving access to rehabilitation services by this population.

Supplier

a. Stata version 12 for Windows; Stata Corp.

Keywords

Child; Intellectual disability; Rehabilitation

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