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Unintentional injuries among Chinese children with different types and severity of disability

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Abstract

Purpose—Little research has been done in China to study injury in individuals with disability. We investigated impact of type and severity of disability on injury among children with disability in Hubei Province of China.

Methods—A sample of 1201 children with disability were matched with 1201 healthy children on gender, age, and neighborhood. Disability type and severity were determined using the Chinese national standards. Caregivers were interviewed face-to-face about nonfatal unintentional injuries suffered by the child in the past 12 months prior to the interview. Univariate Chi-square test and logistic regression models were used to investigate association between disability type/severity and nonfatal unintentional injuries.

Results—Injury rate among children with disability was significantly higher than that among children without disability (10.2% vs. 4.4%; P <.001). Children with multiple disabilities had the highest risk of injury after controlling for confounding variables (OR=4.54; 95% CI=2.82, 7.30;

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Conflicts of Interest
Authors declare no conflicts of interest.

P<.001). The magnitude of the association between disability and injury varied by type and severity of disability.

Conclusions—The magnitude of the association between the presence or absence of disability in children and their risk of injury was large and significant, regardless of the type or severity of the children's disabilities.

Keywords

Unintentional injury; Children; Disability; China

Introduction

Globally, an estimated 200 million - or 10% of the world's children - live with disability [1,2]. Disability in childhood brings lifelong physical and psychological challenges to the child and the family and could cause huge economic burdens to the society [3]. Children with disability appear to need more extensive health care services, but experience personal and environmental barriers that prevent full involvement in active life activities [4, 5]. Data from the Second National Disability Survey suggest that almost 83 million people, or nearly 6.3% of the population, have different types of disability in China [6]. Of those with disabilities, about 3.87 million are 0–14 years children [7,8]. It's estimated that about 199,000 new cases of disability in children under 6 years old are diagnosed each year in China [8]. In response to the increasing number of children with disability, China has initiated special public health programs targeted at children with disability in recent years [9,10].

In comparison with children without disability, increasing evidence suggests that children with disability are at higher risk for secondary conditions [11–14], including unintentional injuries [15–21]. Children with disability may have a reduced ability to handle environmental hazards because of physical limitations, impairments in mental processing, or in their ability to adjust to their environment [16,17,22]. Previous publications that reported an increased risk of injury in children with disability came from high income countries [15,17–22]. In our recent publication about medically attended injuries among Chinese children with disability, we found that injury risk in children with disability is significantly higher than in children without disability [23]. We compared the patterns of injuries between children with and without disability and investigated the association between home environmental hazards and risk of nonfatal injuries. However, we did not examine impact of disability types and severity on injury risk in the previous publication.

We hypothesize that injury risk differs between children with different types or severity of disability. In this article, we report injury prevalence of children with single vs. multiple disabilities, injury prevalence by severity of disability, and odds ratios (OR) of injury. We also evaluated the recommended disability screening tool, the UNICEF Ten Questions (TQ) for childhood disability [24–29], in a subsample of Chinese children. Findings from our study add to the world literature on an important public health issue in children with disability.

Methods

Study setting

Hubei province, located in central China, has 102 counties and a total of 60 million population. The China Disabled Persons' Federation (CDPF) is the official agency for individuals with disability in China. A registry database is maintained by the CDPF's county

level office to monitor the number of persons with disability in that county and to track medical and rehabilitation services provided by the government. Individuals with disability who want to apply for government funded services need to be evaluated by a certified physician using the standards of China Classification and Grading Criteria of Disability [30,31]. Individuals who meet the criteria will be issued an official certificate that lists the type and severity of the disability he/she has. With help from the Hubei Disabled Persons' Federation, five counties were randomly selected for our study.

Data source and study population

We obtained the registry database of persons with all types and severity of disability in the selected five counties. No random sampling was conducted, and all children, aged 1–14 years, registered in the database were eligible for this study. In our survey, a child must have had the disabling condition(s) for at least 12 months prior to the interview to be eligible to participate. This allowed us to ensure that the disabling conditions pre-dated any injury that occurred in the past year. For every child with disability, we matched a healthy child who had the same gender and age and lived in the same neighborhood. If the parent or legal guardian agreed to participate in our study, a thirty minute interview was conducted face-to-face with the parent or guardian. The face-to-face interviews were carried out from May to August 2011 by Master degree and PhD students from Tongji Medical College whose training and field study supervision were overseen by the principal investigator at the Tongji Medical College. The questionnaire was developed together with researchers at the Center for Injury Research and Policy, the Research Institute at Nationwide Children's Hospital, The Ohio State University College of Medicine. The questionnaire was tested before the formal survey. A pilot testing was conducted in 81 children in one of the selected five counties. Both children with disability and their healthy counterparts were interviewed using the same questionnaire except that questions about type and severity of disability, which were asked only in children with disability. During the survey, quality of finished questionnaires was checked by a field data collection manager each day and incomplete questionnaires were returned to the interviewer, who obtained the missing information from parents or guardians the next day.

The protocol of this study was approved by the Institutional Review Board of School of Public Health of Tongji Medical College.

Study measurements

Disability—Disability was categorized using the following six groups that are defined by the China Classification and Grading Criteria of Disability: vision disability, hearing disability, speech disability, physical disabilities, mental retardation, and mental health disorders [30–31]. In addition, individuals were also categorized as having either a single disability or multiple disabilities. In our study, a person who had multiple disabilities was classified into one of the six categories of disability mentioned above according to the most severe type of disability he/she had, which was consistent with the type of the disability listed in his/her official certificate issued by CDPF. Severity of disability was also classified into one of four levels of disability based on the China Classification and Grading Criteria of Disability: level 1 is the most severe disability level and level 4 is the mildest degree of disability [30–31]. The type and severity of disability were obtained from checking every child's official certificate during the face-to-face interview to the parents or guardians, and recorded in the questionnaire by the interviewer.

Injury—Parents or guardians of children were asked to report nonfatal unintentional injuries suffered by the child in 12 months prior to the interview date. An injury was defined as an event that caused the injured child to seek medical care at a hospital or a community clinic.

Detailed information was collected about the most recent injury episode, including the external cause of injury, body parts injured, location of injury, activity at time of injury, and medical treatment after injury. We selected the primary cause as the leading cause of injury. For example, if a child was struck by an object or a person first, and then fell, struck by a person or an object was considered the leading cause of injury.

Sociodemographic variables—We also collected sociodemographic variables that are usually considered as risk factors for injury: gender and age of the child, parent's education level, family income, single-parent family status, time of being supervised by an adult per day, and total number of family members. Family members could include the child, the child's parents, siblings, grandparents, and a father's sister or brother who was not married. The time of being supervised by an adult refers to the average time per day that the child is within the range of his/her primary care giver's supervision. Family income was self-reported as total monthly household income in Chinese currency Renminbi (RMB). One RMB was approximately equal to U.S. $ 0.157 at the time of the survey. All sociodemographic variables were categorical except for the age and number of family members when collected in the questionnaire.

The Ten Questions—In addition to sociodemographic information and health status questions, our questionnaire also included a Chinese language version of the UNICEF Ten Questions (TQ) about limitations in daily activities. The TQ contains ten questions, and is an appropriate and useful instrument for detecting disabilities for all children aged 2–9 years and in all cultures [24–29]. The ten questions were tested previously and found that the sensitivity, specificity and negative predictive value of it were perfect or near perfect for the severe and moderate disabilities [26–29]. To be consistent with previous studies around the world that used the TQ, only children aged 2– 9 years were needed to investigate the questions in the TQ.

Data analysis—Statistical analyses were performed using SAS statistical software. We first compared the rates of injury in children with no disability, single disability, and multiple disabilities by gender and age, parent's education, number of family members, time of being supervised by an adult, single-parent family status, and family income per month. We used the Chi-square test to determine whether the association between disability status and injury rate was statistically significant for matched pairs of children with same sociodemographic status. We also investigated the association between severity of disability and injury rate by these sociodemographic variables.

We calculated odds ratios (ORs) and the 95% confidence intervals (CIs) using logistic regression analyses. Multivariable logistic regression models allowed us to assess injury risk in children who had each of six disability types, multiple disabilities, and severity of disability compared with children without disability, controlling for potential confounding effect of above-mentioned sociodemographic variables.

Results

The disability registry database in the selected five counties had 1379 1- to 14-year-old children with disability. A total of 2402 children completed the survey, including 1201 children with disability and 1201 healthy controls. The overall final response rate was 87.1% in this study. There were 807 boys and 394 girls in both groups of children with and without disability. Age of the interviewed children ranged from 1 to 14 years, with a median age of 6 years and interquartile range of 4 to 10 years.

When disability status based on the China Classification and Grading Criteria of Disability was compared with disability status defined by the TQ for 2–9 years old children, the Kappa coefficient for agreement was 0.913 (95%CI= 0.894–0.932). There was a high degree of consistency between the TQ and the Chinese criteria for identifying children with disability.

Table 1 presents rate of medically attended injuries occurred during the 12 months prior to interview for children with no disability, single disability and multiple disabilities, stratified by sociodemographic characteristics. Rate of injuries among children with single disability or multiple disabilities was significantly higher than that among children without disability (9.6% and 11.2% vs. 4.4%, P <.001). For the majority of sociodemographic factors, children with disability had a significantly higher rate of injury than children without disability. However, injury rate did not differ significantly between children with and without disability for the following groups (P >.05): children aged 1–4 years and 11–14 years; children in single parent households; children whose parents' highest education was middle shool or less; children with less than 30% of time per day supervised by an adult; and children whose family income per month was less than 1000 RMB.

Table 2 shows rate of medically attended injuries by different severity levels of disability. When compared with children without disability, severity of disability and injury risk were significantly associated for boy, for children aged 1–4 or 5–10, for children whose parents' highest education was high school, for children whose family members were 4–5, for children not came from single parent households, for children whose percent of daily supervision by adult was less than 30%, 30~59% or 60~89%, and for children whose family income per month was 1000–3000 RMB or 3001 –5000 RMB.

Table 3 presents odds ratio of injury from univariate logistic regression models. In comparison with children who had 6 or more family members, odds ratio of injury was much higher for children who had 1–3 family members (OR=2.53, 95% CI=0.93, 4.36) or 4–5 family members (OR=2.48, 95% CI=1.50, 4.08). Odds ratios did not differ significantly among children with other sociodemographic characteristics.

Table 4 presents odds ratios of injury from multivariable logistic regression models. The reference group for all logistic models was children without disability. The multivariable OR of injury among children with any disability was significantly higher than that among children without a disability (OR=3.40; 95% CI=2.32, 4.98; P <.001). Our results indicated that children with multiple disabilities had the highest risk of injury (OR=4.54; 95% CI=2.82, 7.30; P <.001). The 95% CI for OR included unit 1 for children with only vision or hearing disability. For other types of disability, odd ratios of injury were statistically higher than those among the children without disability.

Discussion

Emerging evidence from recent studies indicates that individuals with disability face a significant higher risk of injuries than those without disability [15–22]. Data about injury risk in individuals with disability in China are very limited [23]. Results reported here demonstrated a clear association between disability status (type and severity) and injury risk in this sample of Chinese pediatric population.

Our findings are consistent with studies conducted in developed countries using parent reported or care-giver reported data on pre-existing disabilities and medically attended injuries. Analysis of the U.S. National Health Interview Survey data found that children with disability were at a significant higher risk of injuries than children without disability [19]. A study from Canada reported a 30% increases in the risk of injury in children with disabilities

compared with their healthy peers [20]. Ramirez et al. reported that children with disabilities had over twice the school injury rate of children without disability [32]. A similar association was reported among children with intellectual disability in Australia [22]. Our results also confirm the previous work that reported injury risk difference by disability types [18–20,33]. Although previous studies reported a dose-response association between disability severity and injury risk in adults with disabilities [34,35],we did not find a clear dose-response relationship in our study.

Children with a vision or a hearing disability did not have statistically significant injury OR, but children with other single types of disability did have significantly increased injury ORs compared with children without disability. Our findings are not consistent with the previous research examining injury ORs by specific types of disability in children with disability. One such study found that only children with emotional or behavioral problems had a significantly higher injury OR when compared with children without a disability [19]. In another study, Ramirez et al. reported that children with mental retardation had lower rates of injury compared with children who have physical impairments [32]. Children with multiple disabilities were at the greatest risk of injury after adjusting for sociodemographic factors. This finding supports the finding reported by Ramirez et al [36]. To date, injury risk in children with multiple disabilities has not been thoroughly studied. Prior research studies have sometimes excluded children with multiple disabilities to avoid the complexity in data analysis and in interpreting the results [19,37]. Therefore, further study is needed to investigate the increased injury risk among children with multiple disabilities.

Our study used the latest China Classification and Grading Criteria of Disability to define disability type and severity. Although the international standard, International Classification Functioning, Disability and Health (ICF), has been published [38], the 2011 revised Chinese standards took into account Chinese culture, history of Chinese previous standards, and practical operation of these standards in the field. This disability identification and classification system provides terminology, definition, and code of disability classification to regulate case identification in the field. According to the China Classification and Grading Criteria of Disability, disability is defined as “problems in body function or structure, individual activity limitations, and participation restrictions.” To some extent, the Chinese criteria are consistent with the main concepts of ICF. Because of the poor economics, weak social security system and some other sociocultural factors, low income and developing countries tend to adopt a measure focused on a narrow definition of impairments and report a lower disability prevalence rate than high income countries [39–41]. Although ICF has more domains that can provide more comprehensive information about the disability, simple operational case identification and classification standards for surveys need to be developed in China.

Our literature search and review identified a dozen publications on injury risk in individuals with disability from the high income countries but none from China. Our study provided some preliminary findings about unintentional injuries suffered by children with disability in China. As the first of this kind of research in individuals with disability in China, our study has several limitations. First, in comparison with studies conducted in the U.S. and Canada [18–20], the sample size of our survey was relatively small so that some of injury risk estimates in Table 2 was not stable. Second, our study was based on retrospective reporting from parents or guardians and is thus subject to recall bias. Our results would be biased if respondents for children with disability reported injuries differently than respondents for children without disability. Further research is needed to identify how disability status and severity of disability influence recall bias in injury reporting by parents or guardians. Finally, operational survey questions based on ICF that could be implemented in large population surveys have not yet been developed so we used the Chinese national standards

to define disability. The advantage of using the disability type and severity information in the official certificate in our survey was the standardized classification confirmed by medical professionals. In future studies in China, researchers are encouraged to develop and use disability measurements based on the international ICF.

In conclusion, children with disability in China appear to have a significantly increased risk for nonfatal unintentional injuries than children without disability. However, little research and prevention efforts have been conducted to address this important issue in China. Thus, we call for more attentions from researchers and public health professionals to this public health problem and encourage efforts along the line of this research area in China.

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ABBREVIATIONS

OR	Odds ratios
CI	Confidence interval
UNICEF	The United Nations Children's Fund
TQ	Ten Questions
CDPF	China Disabled Persons' Federation
ICF	International Classification of Functioning, Disability, and Health

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Table 1

Rate of medically attended injuries among children with different disability status by selected sociodemographic characteristics in Hubei Province, The People's Republic of China, 2011

Characteristics	Children without disability		Children with single disability		Children with multiple disabilities		*P* -value[a]
	N	Injured n (%)	N	Injured n (%)	N	Injured n (%)	
Total	1201	53(4.4)	738	71(9.6)	463	52(11.2)	<.001
Gender							
Boy	807	36(4.5)	493	53(10.8)**	314	34(10.8)**	<.001
Girl	394	17(4.3)	245	18(7.3)	149	18(12.1)**	.005
Age (years)							
1–4	359	19(5.3)	214	15(7.0)	145	14(9.7)	.202
5–10	598	21(3.5)	379	43(11.3)**	219	27(12.3)**	<.001
11–14	244	13(5.3)	145	13(9.0)	99	11(11.1)	.141
Parent's education[b]							
Middle school or less	148	6(4.1)	183	15(8.2)	116	9(7.8)	.284
High school	748	30(4.0)	462	48(10.4)**	316	35(11.1)**	<.001
Undergraduate degree or higher	305	17(5.4)	93	8(8.6)	31	8(25.8)**	.003
Number of family members							
1–3	353	22(6.2)	162	20(12.3)*	71	8(11.3)	.048
4–5	620	28(4.5)	401	43(10.7)**	260	36(13.8)**	<.001
6 or more	228	3(1.3)	175	8(4.6)	132	8(6.1)**	.032
Single-parent family							
Yes	48	3(6.3)	46	4(8.7)	42	2(4.8)	.755
No	1153	50(4.3)	692	67(9.7)**	421	50(11.9)**	<.001
Daily adult supervision (% of day)							
<30%	256	15(5.9)	64	7(10.9)	17	3(17.6)	.142
30–59%	332	15(4.5)	129	18(14)**	34	6(17.6)**	.001
60–89%	444	19(4.3)	280	23(8.2)*	138	19(13.8)**	<.001
>90%	169	4(2.4)	265	23(8.7)*	274	24(8.8)*	.021

Characteristics	Children without disability		Children with single disability		Children with multiple disabilities		*P* -value[a]
	N	Injured n (%)	N	Injured n (%)	N	Injured n (%)	
Family income per month							
Less than 1000 RMB	65	5(7.7)	112	10(8.9)	74	6(8.1)	.955
1000–3000 RMB	413	14(3.4)	340	40(11.8)**	223	25(11.2)**	<.001
3001–5000 RMB	513	22(4.3)	237	18(7.6)	152	17(11.2)**	.006
5000 or higher	210	12(5.7)	49	3(6.1)	14	4(28.6)**	.037

[a] *P*- values were derived from Chi-square analysis between disability status and injury prevalence, by selected sociodemographic characteristics.

[b] Parent's education was defined as the highest level of education achieved by either the child's mother or father.

* Children with single disability or multiple disabilities compared with children without disabilities, respectively;

** :P<0.01;

* :P<0.05.

Table 2

Rate of medically attended injuries among children with different severity of disability by selected sociodemographic characteristics in Hubei Province, The People's Republic of China, 2011

Characteristics	Level 1 disability		Level 2 disability		Level 3 disability		Level 4 disability		P -value[a]
	N	Injured n (%)	N	Injured n (%)	N	Injured n (%)	N	Injured n (%)	
Total	308	25(8.1)	278	32(11.5)	269	28(10.4)	243	25(10.3)	<.001
Gender									
Boy	202	15(7.4)	189	24(12.7)**	182	19(10.4)**	146	18(12.3)**	<.001
Girl	106	10(9.4)	89	8(9.0)	87	9(10.3)	97	7(7.2)	.153
Age (years)									
1–4	94	3(3.2)	72	9(12.5)*	67	5(7.5)	80	9(11.3)	.05
5–10	151	15(9.9)**	140	19(13.6)**	130	13(10.0)**	120	13(10.8)**	<.001
11–14	63	7(11.1)	66	4(6.1)	72	10(13.9)*	43	3(7.0)	.125
Parent's education									
Middle school or less	97	10(10.3)	76	6(7.9)	67	7(10.4)	59	1(1.7)	.087
High school	200	15(7.5)*	187	23(12.3)**	183	19(10.4)**	176	24(13.6)**	<.001
Undergraduate degree or higher	11	0(0.0)	15	3(20.0)*	19	2(10.5)	8	0(0.0)	.307
Number of family members									
1–3	39	3(7.7)	43	4(9.3)	53	6(11.3)	38	8(21.1)**	.064
4–5	171	16(9.4)*	159	24(15.1)**	150	18(12.0)**	142	15(10.6)**	<.001
6 or more	98	6(6.1)*	76	4(5.3)	66	4(6.1)*	63	2(3.2)	.057
Single-parent family									
Yes	33	3(9.1)	22	0(0.0)	16	1(6.3)	15	2(13.3)	.476
No	275	22(8.0)*	256	32(12.5)**	253	27(10.7)**	228	23(10.1)**	<.001
Daily adult supervision (% of day)									
<30%	8	1(12.5)	11	4(36.4)**	24	2(8.3)	38	3(7.9)	.017
30–59%	17	2(11.8)	32	5(15.6)*	60	10(16.7)**	53	7(13.2)*	.001
60–89%	98	13(13.3)**	99	11(11.1)*	99	7(7.1)	92	9(9.8)*	.006
>90%	185	9(4.9)	136	12(8.8)	86	9(10.5)	60	6(10.0)*	.299

Characteristics	Level 1 disability		Level 2 disability		Level 3 disability		Level 4 disability		*P* -value[a]
	N	Injured n (%)	N	Injured n (%)	N	Injured n (%)	N	Injured n (%)	
Family income per month									
Less than 1000 RMB	46	6(13)	56	3(5.4)	41	5(12.2)	39	2(5.1)	.512
1000–3000 RMB	154	13(8.4)*	127	15(11.8)**	139	19(13.7)**	113	12(10.6)**	.002
3001–5000 RMB	104	5(4.8)	84	13(15.5)**	78	4(5.1)	82	9(11.0)*	.003
5000 or higher	4	1(25.0)	11	1(9.1)	11	0(0.0)	9	2(22.2)	.121

[a] *P*- values were derived from Chi-square analysis of association between severity levels of disability and injury prevalence.

* Children with 4 levels of disability compared with children without disabilities, respectively;

** : $P < 0.01$;

* : $P < 0.05$.

Table 3

Univariate logistic regression results of medically attended injuries among children by sociodemographic characteristics in Hubei Province, The People's Republic of China, 2011

Variables	Sample N	Injured n (%)	Univariate model OR 95% CI
Daily adult supervision (% of day)			
<30%	337	25(7.4)	0.97(0.59, 1.59)
30–59%	495	39(7.9)	0.95(0.59, 1.54)
60–89%	862	61(7.1)	1.07(0.63, 1.80)
>90%	708	51(7.2)	1
Gender			
Boy	1614	123(7.6)	1.14(0.82, 1.60)
Girl	788	53(6.7)	1
Age			
1–4	718	48(6.7)	0.87(0.56, 1.36)
5–10	1196	91(7.6)	1.01(0.68, 1.49)
11–14	488	37(7.6)	1
Number of family members			
1–3	586	50(8.5)	2.53(0.93, 4.36)
4–5	1281	107(8.4)	2.48(1.50, 4.08)*
6 or more	535	19(3.6)	1
Parent's education			
Middle school or less	447	30(6.7)	0.86(0.72, 1.44)
High school	1526	113(7.4)	0.96(0.64, 1.44)
Undergraduate degree or higher	429	33(7.7)	1
Family income per month			
Less than 1000 RMB	251	21(8.4)	1.22(0.64, 2.33)
1000–3000 RMB	976	79(8.1)	1.18(0.70, 1.98)
3001 –5000 RMB	902	57(6.3)	0.90 (0.53, 1.54)
5000 or higher	273	19(7.0)	1
Single-parent family			
Yes	136	9(6.6)	0.89 (0.45,1.78)
No	2266	167(7.4)	1

Table 4

Multivariable logistic regression results of type and severity of disability on nonfatal injuries among children with disability, in Hubei Province, The People's Republic of China, 2011

	Sample n	Injured n (%)	Univariate model OR 95% CI[a]	Multivariable model OR 95% CI[b]
No disability (reference)	1201	53(4.4)	1.00	1.00
Any disability Type of disability	1201	123(10.2)	2.47(1.77, 3.45)	3.40 (2.32, 4.98)
Any single disability	738	71(9.6)	2.31(1.60,3.33)	3.05 (2.03, 4.56)
Vision	79	6(7.6)	1.78(0.74,4.28)	2.00(0.81,4.91)
Hearing	53	5(9.4)	2.26(0.86,5.90)	2.32(0.88,6.14)
Speech	138	16(11.6)	2.84(1.58,5.12)	2.83(1.54,5.20)
Other physical disabilities	250	21(8.4)	1.99(1.18,3.36)	2.12(1.22,3.68)
Mental retardation	139	14(10.1)	2.43(1.31,4.50)	2.36(1.26,4.43)
Mental health disorder	79	9(11.4)	2.78(1.32,5.88)	2.66(1.25,5.67)
Multiple disabilities	463	52(11.2)	2.74(1.84,4.08)	4.54(2.82,7.30)
Severity level of disability				
Level 1 (Most severe)	308	25(8.1)	1.91(1.17,3.13)	3.39(1.90,6.04)
Level 2	278	32(11.5)	2.82(1.78,4.46)	4.37(2.58,7.40)
Level 3	269	28(10.4)	2.52(1.56,4.06)	3.26(1.94,5.46)
Level 4	243	25(10.3)	2.48(1.51,4.08)	3.14(1.84,5.34)
Total	1098	110 (10.0)	2.41(1.72,3.38)	3.47(2.32,5.80)

OR=odds ratio; CI=confidence interval.

[a] ORs were calculated for each type and severity level of disability versus no disability using univariate logistic regression.

[b] ORs were calculated for each type and severity level of disability versus no disability using multivariable logistic regression and controlling for gender, age, parent's education, family income per month, number of family members, daily adult car supervision, and single-parent family status.