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National Estimates and Multilevel Modeling of Child Functional Difficulties in Bangladesh: Evidence from the 2025 MICS

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Abstract

Background

Functional difficulties among children can adversely impact education, development, social participation, and overall well-being. However, recent nationally representative evidence on functional difficulties within children in the 5-17-year age range in Bangladesh is limited. The study estimated the prevalence of functional difficulties and identified related factors using data from the 2025 Bangladesh Multiple Indicator Cluster Survey (MICS).

Methods

A cross-sectional study examined 36,709 children. The dependent variable was coded as binary, where 0 denoted no functional difficulty and 1 denoted having a functional difficulty. Weighted prevalence estimates were calculated and associated factors were examined. A multilevel mixed-effects logistic regression model was used to adjust for grouping of children within primary sampling units. The analysis yielded adjusted odds ratios (AORs) and corresponding 95% confidence intervals (CIs).

Results

Weighted prevalence of functional difficulties was 5.67%. Prevalence varied considerably by population characteristics and geographic location. It was highest among children aged 5–9 years (6.96%), those with no education (10.85%), children not attending school (6.38%), and rural residents (6.15%). The highest divisional prevalence was observed in Sylhet (9.54%), followed by Mymensingh (9.07%), whereas Dhaka had the lowest prevalence (2.93%). In adjusted analyses, children aged 15–17 years had higher odds of such difficulties compared with 5–9-year age group (AOR 1.62, 95% CI 1.28–2.06). Primary-level (AOR 0.40, 95% CI 0.33–0.47), secondary-level (AOR 0.18, 95% CI 0.14–0.23), and higher-level education (AOR 0.19, 95% CI 0.11–0.32) showed substantially lower odds. Rural residence showed higher odds (AOR 1.26, 95% CI 1.06–1.50). Higher odds were also observed in Khulna, Mymensingh, and Sylhet, while lower odds were found in Dhaka compared with Barishal.

Conclusion

Functional difficulties affect a considerable proportion of children in Bangladesh, with pronounced educational, rural–urban, and geographic inequalities. Strengthening early identification, inclusive education, community-based rehabilitation, and accessible support services, especially in underserved areas, should be given priority.

Introduction

Functional difficulties among children represent an important global public health concern and should therefore be a priority for people and policymakers worldwide [1]. Especially for children aged 5–17 years, these difficulties can cover a broad range of conditions such as hearing and visual impairments, epilepsy, attention-deficit/hyperactivity disorder (ADHD), autism spectrum disorder (ASD), speech and language difficulties, mobility limitations, difficulties with self-care, behavioral problems, anxiety, depression, and other developmental or psychosocial challenges [2]. These difficulties can adversely affect multiple dimensions of children's lives, including education, cognitive development, communication, physical functioning, mental health, social participation, and engagement in everyday activities as well as potentially limiting their opportunities for healthy development and full participation in society [3]. Promoting health, development, and participation of children with disorders is essential to advancing the Sustainable Development Goals (SDGs), including Goals 1–4, which focus on ending poverty and hunger, promoting health and well-being, and ensuring inclusive and quality education [1].

The prevalence of functional difficulties varies across regions worldwide, with a substantial proportion of 5–17-year-olds reporting one or more functional difficulties. According to the Multiple Indicator Cluster Surveys (MICS), a study of the 2017–2018 MICS in Ghana found that 20.67% of children in this age group had at least one functional difficulty [3]. Furthermore, a recent multi-country analysis of sixth-round MICS data involving 409,306 children within the same age range found that 8.8% had functional difficulties [4]. In rural Sierra Leone, a 2025 study reported functional difficulties in 14.9% of those aged 5–17 years [5], while the corresponding prevalence in Nepal was 13.66% in 2019 [6]. The prevalence of such difficulties in the 5–17-year age group was 11.2% in Mexico [7] and approximately 18% in the United States [8]. The 2017 global estimates indicated that around 291 million children were affected by childhood epilepsy, vision loss, or hearing loss, equivalent to around 11.2% of the population [9].

In Bangladesh, functional difficulties among children have also been identified as an important public health concern like other countries. Findings from the Bangladesh MICS 2019 indicated that 8.27% of children in the 5–17-year age group experienced functional difficulties [10]. It showed that not taking part in early childhood education, geographical division, residential area, and gender were significantly associated with functional difficulties among the children. Similarly, another study found that child age, educational status, maternal characteristics, maternal functional difficulty, religion, and geographical division were associated with functional difficulties among Bangladeshi children [11]. Functional difficulties may also affect the children's daily lives such as educational participation, particularly school enrolment and attendance in Bangladesh [12].

Several studies have investigated functional difficulties among children in Bangladesh; however, the existing evidence is largely drawn from the 2019 MICS [10, 11, 13]. However, these studies relied on data collected several years ago and may therefore not adequately reflect the current situation of functional difficulties [10, 11, 13]. According to the information that is currently available, no previous research has used MICS 2025 data from Bangladesh to evaluate these difficulties in the 5–17 age range. Therefore, the study addresses this gap, and its findings may inform evidence-based policies and targeted measures to address inequalities, promote health and participation among those with such difficulties.

Methods

Data Source and Study Design

This study used nationally representative data from the 2025 Bangladesh MICS and followed a quantitative cross-sectional design. A stratified two-stage cluster sampling was applied. Primary sampling units (PSUs) were chosen, followed by the selection of households from the sampled clusters. Information was gathered through in-person household interviews using Computer-Assisted Personal Interviewing (CAPI).

Study Variables

Outcome Variable

Functional difficulty measure was recoded into a binary variable and used as the dependent variable in the bivariate and multilevel mixed-effects logistic regression analyses, with 0 denoting no functional difficulty and 1 denoting functional difficulty.

Explanatory Variables

The explanatory variables considered in the study included demographic, schooling, socioeconomic, household, and geographical characteristics. These consisted of child's sex, age group, educational level, current school attendance, maternal educational attainment, health insurance coverage, household head’s sex, household head's educational level, household size, internet access at home, ethnicity of the household head, household wealth index, area of residence, and administrative division **[**Table 1**]**.

Table 1
Description and classification of explanatory variables included in the analysis.

Explanatory variable	Categories
Sex of child	Male; Female
Child’s age group (years)	5–9; 10–14; 15–17
Child's educational level	None; Primary; Secondary; Higher
Currently attending school	Yes; No
Mother's educational level	None; Primary; Secondary; Higher
Health insurance coverage	With insurance; Without insurance
Sex of household head	Male; Female
Household head's educational level	None; Primary; Secondary; Higher
Household size	< 6 members; ≥6 members
Internet access at home	Yes; No
Ethnicity of household head	Bangali; Other
Household wealth index quintile	Poorest; Second; Middle; Fourth; Richest
Area of residence	Urban; Rural
Division	Barishal; Chattogram; Dhaka; Khulna; Mymensingh; Rajshahi; Rangpur; Sylhet

Multilevel Mixed-Effects Modeling

Factors associated with such difficulties within the 5–17-year age range were examined using a two-level mixed-effects logistic regression model, with children clustered within primary sampling units. A PSU-level random intercept was included to capture within-cluster correlation and unobserved heterogeneity. Four nested models were fitted. Model 0 (null model) contained only a random intercept to estimate baseline variation across PSUs. Model 1 incorporated participant characteristics, including age group, educational attainment, and maternal education. Model 2 included community-level characteristics, namely household head's educational level, household wealth index, place of residence, and division. Model 3 (full model) fitted all variables from Models 1 and 2 simultaneously to obtain mutually adjusted associations. Sampling weights were applied to account for unequal selection probabilities. Adjusted odds ratios (AORs) with 95% confidence intervals were presented in this study. The intra-class correlation coefficient quantified the proportion of total variance attributable to differences between PSUs. Model fit was assessed using log-likelihood, AIC, and BIC, with lower AIC and

BIC values indicating better fit. Random-effects variation across primary sampling units was assessed using PSU variance with 95% confidence intervals, the ICC, and the MOR to characterize between-PSU heterogeneity in the odds of functional difficulties.

Statistical Analysis

Statistical analyses were performed in Stata. Categorical data were summarized by frequency and percentage. The association between each explanatory variable and functional difficulties was examined using the weighted percentages with p-values. Variables showing $p < 0.20$ were retained for multivariable modeling. Data from 36,709 children in the 5 to 17-year age range were included in the analysis. Four sequential models were estimated: Model 0 (null), Model I (individual factors), Model II (community factors), and Model III (full model). Sampling weights and PSU-level random intercepts were incorporated into the mixed-effects logistic models. Results with $p < 0.05$ were considered significant. Prior to fitting the final multivariable model, explanatory-variable multicollinearity was evaluated using the VIF. The mean VIF was 2.11, suggesting low multicollinearity. Thus, no explanatory variables were excluded prior to fitting the multivariable model.

Results

Prevalence of Functional Difficulties among Children

The weighted prevalence of functional difficulties among those between 5 and 17 years was 5.67%, while 94.33% had no reported functional difficulties. Thus, approximately one in every eighteen children in the study population experienced functional difficulties **[**Fig. 1**].**

Bivariate Association between Selected Characteristics and Functional Difficulties among Children

Table 2 demonstrates significant variation in functional difficulties across several demographic, educational, socioeconomic, and geographic characteristics. The difficulties varied significantly by age group, child's educational level, school attendance, maternal education, household head's education, internet access, household wealth, area of residence and division (all $p < 0.01$). The highest prevalence occurred in the 5–9 years group (6.96%) and it declined among those aged 10–14 years (4.72%) and 15–17 years (4.97%). There was a clear educational gradient with functional difficulties decreasing from 10.85% among children with no education to 5.84% among those with primary education and 3.45% among those with secondary education. Children currently out of school had a higher prevalence than those who were currently attending school (6.38% vs. 4.84%). Maternal and household educational attainment showed similar trends. Prevalence was 6.84% among children whose mothers had no education and 4.26% among those whose mothers had higher education. The corresponding figures for the household heads were 7.09% and 4.17% respectively. Functional difficulties were also more common in children without Internet access (7.07%) compared with those with access (5.08**%).** The prevalence

differed across wealth groups, decreasing from 7.04% in the poorest households to 4.18% in the richest households. The differences between regions were especially sharp. Rural children had higher prevalence than urban children (6.15% vs. 4.48%). Across divisions, prevalence ranged from 2.93% in Dhaka to 9.54% in Sylhet, with comparatively high levels also observed in Mymensingh (9.07%), Khulna (6.93%), and Rangpur (6.91%). In contrast, sex, health insurance coverage, household head's sex, household membership, and ethnicity were not significantly associated with functional difficulties.

Table 2
Bivariate Association between Selected Characteristics and Functional Difficulties among Children

Variable	Unweighted N	Child's Functional Difficulty (Weighted %)		p-value
		Yes	No	
Sex of child				**0.29**
Male	18,727	5.83	94.17	
Female	17,982	5.51	94.49	
Child's age group (years)				**< 0.01**
5–9	14,733	6.96	93.04	
10–14	13,514	4.72	95.28	
15–17	8,462	4.97	95.03	
Child's educational level				**< 0.01**
None	5,266	10.85	89.15	
Primary	16,894	5.84	94.16	
Secondary	13,511	3.45	96.55	
Higher	1,016	4.23	95.77	
Currently attending school				**< 0.01**
Yes	30,833	4.84	95.16	
No	4,286	6.38	93.62	
Mother's educational level				**< 0.01**
None	6,130	6.84	93.16	
Primary	9,122	5.98	94.02	
Secondary	16,428	5.50	94.50	
Higher	4,718	4.26	95.74	
Health insurance coverage				**0.62**
With insurance	186	4.93	95.07	
Without insurance	32,452	5.75	94.25	
Sex of household head				**0.83**
Male	31,487	5.69	94.31	

Variable	Unweighted N	Child's Functional Difficulty (Weighted %)		p-value
		Yes	No	
Sex of child				**0.29**
Female	5,222	5.58	94.42	
Household head's educational level				**< 0.01**
None	10,232	7.09	92.91	
Primary	10,457	5.68	94.32	
Secondary	10,997	4.99	95.01	
Higher	5,009	4.17	95.83	
Household size				**0.78**
< 6 members	28,208	5.64	94.36	
>=6 members	8,501	5.75	94.25	
Internet access at home				**< 0.01**
Yes	25,470	5.08	94.92	
No	11,237	7.07	92.93	
Ethnicity of household head				**0.66**
Bangali	35,826	5.68	94.32	
Other	883	4.88	95.12	
Household wealth index quintile				**< 0.01**
Poorest	8,788	7.04	92.96	
Second	8,032	6.61	93.39	
Middle	7,386	5.67	94.33	
Fourth	6,584	4.62	95.38	
Richest	5,919	4.18	95.82	
Area of residence				**< 0.01**
Urban	9,887	4.48	95.52	
Rural	26,822	6.15	93.85	

Variable	Unweighted N	Child's Functional Difficulty (Weighted %)		p-value
		Yes	No	
Sex of child				**0.29**
Division				**< 0.01**
Barishal	3,356	4.71	95.29	
Chattogram	7,134	5.50	94.50	
Dhaka	7,968	2.93	97.07	
Khulna	5,123	6.93	93.07	
Mymensingh	2,173	9.07	90.93	
Rajshahi	4,096	5.38	94.62	
Rangpur	4,484	6.91	93.09	
Sylhet	2,375	9.54	90.46	

Prevalence of Functional Difficulties among Children across Divisions in Bangladesh

Figure 2 illustrates that there are substantial geographic differences in the level of functional difficulties among the divisions of Bangladesh. The prevalence was highest in Sylhet (9.54%), with Mymensingh having the second-highest prevalence (9.07%), whereas Dhaka had the lowest prevalence (2.93%). Higher prevalence was also observed in Khulna (6.93%) and Rangpur (6.91%), while Rajshahi (5.38%), Chattogram (5.50%) and Barishal (4.71%) recorded comparatively lower levels. Overall, the results show that there are considerable regional differences in functional difficulties, particularly high in the northeastern divisions of Sylhet and Mymensingh.

Model adequacy and random-effects measures from the multilevel mixed-effects logistic regression of functional difficulties

Model III (full model) showed the best overall fit (Table 3). Model III had a lower AIC (22,236.55) and BIC (22,449.08) than the corresponding adjusted models, with a log-likelihood of − 11,093.27. The full model also showed substantial clustering at the PSU level, with an ICC of 34.22% and an MOR of 4.66, supporting the use of a multilevel modeling method.

Table 3
Model adequacy and random-effects measures from the multilevel mixed-effects logistic regression of functional difficulties

Random Effects Model	Model 0	Model I	Model II	Model III (Full Model)
PSU variance (95% CI)	0.63 (0.52–0.77)	1.93 (1.73–2.14)	1.63 (1.46–1.81)	1.71 (1.53–1.91)
ICC (%)	16.10%	36.92%	33.07%	34.22%
Log-likelihood	−7,931.12	−11,191.92	−11,484.52	−11,093.27
AIC	23,220.93	22,403.83	23,003.04	22,236.55
BIC	23,237.95	22,488.85	23,147.71	22,449.08
MOR	2.20	4.74	4.24	4.66

Factors Associated with Functional Difficulties among Children: Multilevel Mixed-Effects Logistic Regression

Table 4 presents the multilevel mixed-effects logistic regression results. Age, child's educational attainment, household head's education, area of residence, and division were significantly associated with functional difficulties. Children within the 15–17-year age range had higher odds than those within the 5–9-year age range (AOR = 1.62, 95% CI: 1.28–2.06, $p < 0.01$).

Educational attainment was inversely related to such difficulties. Compared with children with no education, those with primary education had 60% lower odds (AOR = 0.40, 95% CI: 0.33–0.47), while those with secondary education had 82% lower odds (AOR = 0.18, 95% CI: 0.14–0.23). Children with higher education also had lower odds (81%; AOR = 0.19, 95% CI: 0.11–0.32).

For household head's education, secondary education was associated with 18% lower odds compared with no education (AOR = 0.82, 95% CI: 0.68–0.99, $p = 0.03$). Maternal education was not significant at the 5% level, although higher maternal education was associated with lower odds (AOR = 0.77, 95% CI: 0.56–1.04, $p = 0.09$).

Area of residence was significant. Rural children had 26% higher odds than those in urban settings (AOR = 1.26, 95% CI: 1.06–1.50, $p < 0.01$). Geographic variation was also evident. Relative to Barishal, Dhaka had 40% lower odds (AOR = 0.60, 95% CI: 0.46–0.80), whereas Khulna, Mymensingh, and Sylhet had 57% (AOR = 1.57, 95% CI: 1.19–2.08), 61% (AOR = 1.61, 95% CI: 1.16–2.23), and more than twice the odds (AOR = 2.19, 95% CI: 1.62–2.96), respectively. No significant associations were found for household wealth, Chattogram, Rajshahi, or Rangpur.

Table 4
Factors Associated with Functional Difficulties among Children: Multilevel Mixed-Effects Logistic Regression

Characteristics	AOR	95% CI	p-value
Child's age group (years)			
5–9	Ref.		
10–14	1.16	0.97–1.39	0.11
15–17	1.62	1.28–2.06	< 0.01
Child's educational level			
None	Ref.		
Primary	0.40	0.33–0.47	< 0.01
Secondary	0.18	0.14–0.23	< 0.01
Higher	0.19	0.11–0.32	< 0.01
Mother's educational level			
None	Ref.		
Primary	0.92	0.76–1.13	0.42
Secondary	0.91	0.73–1.12	0.35
Higher	0.77	0.56–1.04	0.09
Household head's educational level			
None	Ref.		
Primary	0.87	0.72–1.04	0.12
Secondary	0.82	0.68–0.99	0.03
Higher	0.81	0.63–1.04	0.09
Household wealth index			
Poorest	Ref.		
Second	1.02	0.85–1.21	0.85
Middle	0.95	0.77–1.16	0.60
Fourth	0.85	0.69–1.05	0.14
Richest	0.93	0.73–1.20	0.58
Area of residence			

Characteristics	AOR	95% CI	p-value
Child's age group (years)			
Urban	Ref.		
Rural	1.26	1.06–1.50	< 0.01
Division			
Barishal	Ref.		
Chattogram	0.92	0.69–1.23	0.55
Dhaka	0.60	0.46–0.80	< 0.01
Khulna	1.57	1.19–2.08	< 0.01
Mymensingh	1.61	1.16–2.23	< 0.01
Rajshahi	1.02	0.75–1.38	0.91
Rangpur	1.32	0.98–1.76	0.06
Sylhet	2.19	1.62–2.96	< 0.01

Discussion

Overall, 5.67% of Bangladeshi 5–17-year-olds experienced functional difficulties, indicating that approximately one in eighteen children was affected. Functional difficulties were more prevalent among children aged 5–9 years, those with no education, children not attending school, those from less-educated and poorer households, children without internet access, and rural residents. Marked geographic variation was observed, with Sylhet and Mymensingh reporting the highest prevalence and Dhaka reporting the lowest. After adjustment, older age, lower educational attainment, rural residence, and geographic location remained significantly related to functional difficulties. Children in the 15–17-year age group had higher odds, while those with at least primary education had substantially lower odds than children with no education. Rural children also had higher odds, particularly in Sylhet, Mymensingh and Khulna and lower odds in Dhaka. The weighted prevalence of functional difficulties was 5.67%. This estimate is highly consistent with the official national estimate reported in the survey report [14]. The fully adjusted multilevel model revealed that child age, child educational attainment, household head educational level, place of residence, and administrative division retained statistically significant independent associations with functional difficulties. Specifically, the odds were significantly higher among older adolescents, rural children and residents of Khulna, Mymensingh and Sylhet. There were strong inverse associations between functional difficulties and higher levels of child and household head education.

Comparing this result with previous data highlights a lower prevalence than that reported in the 2019 Bangladesh MICS estimates, where a prevalence of 8.27% was observed among children in the 5–17-year age range [10] and another study also identified a significant prevalence of such difficulties [11]. This decline may reflect progressive programming for social development, better access to health care for mothers and children, and increased awareness of public health issues. Also, this may reflect changes in carer reporting and socio-cultural attitudes toward functional limitations across survey periods. Importantly, these inter-survey variations do not necessarily reflect a true epidemiological reduction, as differences in measurement approaches and survey implementation may contribute to variations in prevalence estimates across survey rounds [15]. That said, the close agreement between the present analysis and the official national report supports the consistency of our estimate with the nationally reported prevalence [14].

Multi-country evaluations in low and middle-income countries (LMICs) reported an average rate of around 8.8% [4]. Single-country MICS and national survey analyses have reported higher estimates, including 13.7% for the 5–17-year age range in Nepal [6], 20.67% for the same age group in Ghana [3], and 14.9% among schoolchildren in rural Sierra Leone [5]. Such variation in prevalence across countries may be interpreted in the context of differences in population characteristics, alongside variations in the coverage and reliability of data on developmental disabilities [16].

The multivariable model demonstrated an age-dependent pattern of association. Although bivariate analysis showed the highest unadjusted prevalence among children aged 5–9 years (6.96%), adjusting for socioeconomic and educational covariates revealed that those aged 15–17 years had higher odds of functional difficulties compared to the youngest cohort. This age-related difference may partly reflect differences in the reporting of functional difficulties across age groups [4]. Furthermore, the higher odds of functional difficulties among older children may partly reflect the presence of health conditions and other health-related difficulties, which have been shown to be closely associated with functional difficulties in children who require additional health care support [17].

Child educational attainment was most strongly associated with lower odds of functional difficulties in the adjusted model. Compared with children with no education, those with primary education had lower odds of functional difficulties, with still lower odds among those with secondary or higher education. This negative relationship is consistent with findings from Nepal, where children with functional difficulties experienced substantial challenges in education and completed fewer years of schooling [6], as well as with regional evidence indicating that children with functional difficulties face greater difficulties in entering and remaining in school [18]. Because this study is cross-sectional, this association should not be interpreted as causal, as the two factors may influence each other. Functional difficulties may be associated with structural and environmental barriers to school enrolment and attendance, while limited educational participation may also be associated with poorer educational and developmental outcomes [12, 19].

Household head educational level also showed an independent inverse association. Children living in households where the head completed secondary education had 18% lower odds of functional difficulties. This association may reflect the higher ability of more educated household heads to make informed healthcare decisions and seek timely healthcare, as higher household-head education has been associated with greater healthcare utilization in Bangladesh [10, 20]. However, while maternal education and household wealth were significantly associated in the bivariate analysis, both became non-significant when the model was fully adjusted. This attenuation suggests that these crude associations may have been confounded by other socioeconomic characteristics included in the adjusted model. The association of household wealth with functional difficulties is also consistent with evidence linking disability with socioeconomic disadvantage in developing countries [21].

Geographical differences were clear across both rural-urban and divisional areas. Rural children had higher odds of such difficulties compared to children in urban areas, which may reflect structural disadvantages in rural areas, particularly limited healthcare and rehabilitation facilities and higher poverty rates [22]. Across divisions, children in Dhaka had 40% lower odds compared with those in Barishal, whereas significantly higher odds were observed in Khulna, Mymensingh, and Sylhet. The higher odds observed in Sylhet may partly reflect structural and environmental challenges associated with recurrent flooding, which has affected critical infrastructure and schools in northeastern Bangladesh and disrupted children's access to education and essential services [23].

From a policy perspective, these results show the need for stronger public health strategies in Bangladesh. Expansion of rehabilitation services in rural communities and educational programs that support children with functional difficulties should prioritize socioeconomically disadvantaged and flood-prone regions, particularly Sylhet and Mymensingh. Standardized tools such as UNICEF/Washington Group Child Functioning Module could also improve population-level monitoring of child development and support Bangladesh in tracking its progress toward the Sustainable Development Goals [15].

Strengths of the Study

The study has a number of notable strengths. First, the study used Bangladesh MICS 2025 data that were nationally representative, so that the findings could provide a current national estimate of functional difficulties in 5–17-year-olds. Second, the sample of 36,709 children was relatively large to examine differences by demographic, educational, socioeconomic, and geographic characteristics with sufficient statistical power. Third, the analysis used the survey sampling weights to obtain population-representative prevalence estimates. Finally, the study examined a wide range of individual, household and geographic factors, thus offering a comprehensive evaluation of inequalities in functional difficulties across Bangladesh.

Limitations of the Study

Several limitations should also be noted. First, the cross-sectional design does not permit the determination of temporal or causal relationships between functional difficulties and associated

characteristics. For example, the observed association between educational attainment and functional difficulties may go both ways, as functional difficulties can impact schooling, while educational participation may also influence child development and identification of difficulties. Second, these difficulties were derived from survey data provided by carers and might be subject to recall, reporting or social response bias and may differ in awareness and cultural perceptions of disability. Third, the analysis was based on variables available in the MICS 2025 dataset, and therefore, potentially relevant factors such as specific medical diagnoses, access to rehabilitation services, nutritional status, and detailed health conditions could not be examined. Finally, although substantial geographic differences were identified, the study was unable to fully determine the contextual mechanisms responsible for these regional differences. Therefore, the findings demonstrate associations but do not establish causal relationships.

Conclusion

A total of 5.67% of children in Bangladesh within the 5–17-year age group experienced functional difficulties, with unbalanced educational, residential, and geographic backgrounds. Older adolescents, children with less education, and those from rural areas had greater odds of experiencing such difficulties, while especially higher odds were observed in Sylhet, Mymensingh, and Khulna. These findings suggest the existence of ongoing inequalities in child functioning and the need for locally appropriate and targeted responses. Strengthening early identification, inclusive school environments, community-based rehabilitation, and accessible health and support services, particularly in rural and underserved areas, may help reduce these inequalities and improve the participation of children with functional difficulties. Also important is continued population-based monitoring using standardized measures of child functioning to guide policies and monitor progress on inclusive development in Bangladesh.

Abbreviations

Abbreviation	Full Form
AOR	Adjusted Odds Ratio
ADHD	Attention-Deficit/Hyperactivity Disorder
ASD	Autism Spectrum Disorder
AIC	Akaike Information Criterion
BIC	Bayesian Information Criterion
CAPI	Computer-Assisted Personal Interviewing
CI	Confidence Interval
ICC	Intra-Class Correlation Coefficient
LMICs	Low- and Middle-Income Countries
MICS	Multiple Indicator Cluster Survey
MOR	Median Odds Ratio
PSU	Primary Sampling Unit
SDGs	Sustainable Development Goals
VIF	Variance Inflation Factor
UNICEF	United Nations Children's Fund
WHO	World Health Organization
WG	Washington Group

Declarations

Ethical Considerations

Publicly available MICS data were used for secondary analysis; therefore, separate ethical approval was not needed. The Bangladesh MICS 2025 survey was validated by the relevant technical committee of the Bangladesh Bureau of Statistics. Participants provided consent before taking part in the survey. The dataset was accessed and used with authorization from the MICS team.

Competing interests

Regarding this work, the authors disclose no conflicting interests.

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Author Contribution

NHT contributed to writing original draft, review and editing. MRH conducted the formal analysis, interpreted the results, and contributed to writing, review and editing. MR was responsible for data curation and data visualization. MSH and MJU provided supervision and contributed to review and editing.

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Data Availability

The dataset is freely accessible through the UNICEF MICS site https://mics.unicef.org/ .

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Figures

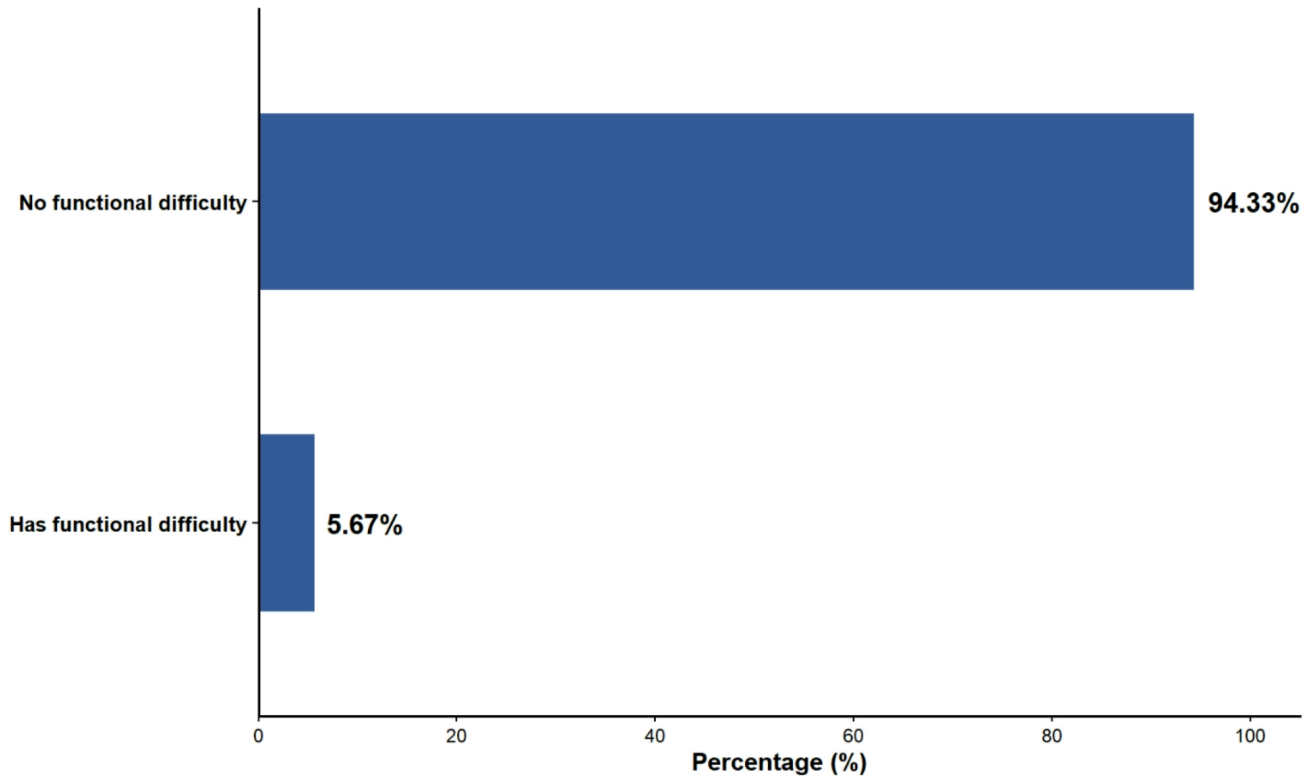


Figure 1

Prevalence of Functional Difficulties among Children

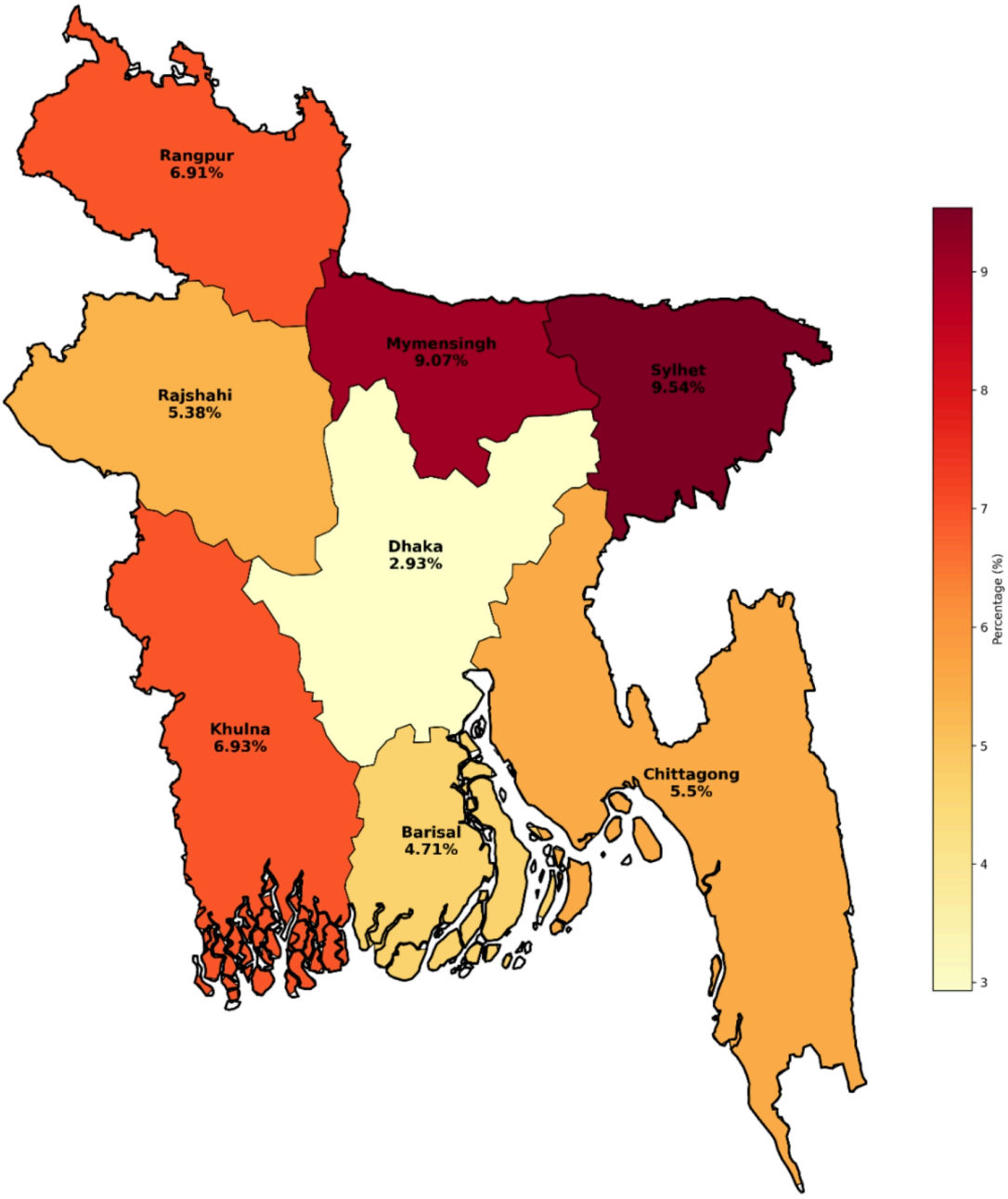


Figure 2

Prevalence of Functional Difficulties among Children across Divisions in Bangladesh