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Emotional and behavioral problems in children: A cross-sectional study

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ABSTRACT

Children with disabilities are at a significantly higher risk of developing emotional and behavioral problems (EBPs) than their typically developing peers. This study aimed to assess the prevalence and types of EBPs among children with different disabilities. A quantitative cross-sectional design was used to survey 203 parents and caregivers of children aged 4–16 years. The sample included children with formally diagnosed disabilities (n = 120), including autism spectrum disorder (ASD) and intellectual disabilities, and a comparison group of children without disabilities (n = 83). Data were collected using the validated Arabic version of the Strengths and Difficulties Questionnaire (SDQ). Clinically significant EBPs were identified in 72.4% of the total sample. The prevalence was significantly higher among children with disabilities than among those without disabilities (72.1% vs. 27.9%, $p < 0.001$). Among the different disability types, children with ASD had the highest mean total difficulties score (28.25 ± 5.84), particularly in the hyperactivity/inattention domain. Children with disabilities, particularly those diagnosed with ASD, may experience a substantial and disproportionate burden of emotional and behavioral problems. These findings highlight the need to integrate systematic mental health screening and evidence-based support services into special education and rehabilitation systems.

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1. Introduction

Research directed toward understanding children's mental health is essential for supporting their overall development and well-being. This is remarkably important for children with disabilities, who face unique challenges that increase their vulnerability to emotional and behavioral problems (EBPs). Global data indicate that nearly one in five children experience mental health difficulties, and recent findings have shown that mental, behavioral, and developmental disorders are highly prevalent among children and adolescents (Leeb et al., 2024).

Children with disabilities are significantly more likely to develop such difficulties than their typically developing peers, with estimates suggesting that psychiatric disturbances in children with intellectual disabilities occur at rates three to five times higher than in the general population (Ageranioti-Bélanger et al., 2012). EBPs—including conduct problems, anxiety, depression, and attention-related difficulties—are also leading contributors to activity limitations among children receiving special education services (Pastor and Reuben, 2015).

In the Middle East and North Africa region, mental health disorders among children and adolescents are widespread and often exacerbated by sociocultural barriers and, in some areas, by conflict (Chougule et al., 2024). Developmental disabilities in the region appear to be increasing; however, the underlying causes and associated mental health concerns remain insufficiently addressed (Amiri and AB Khan, 2025).

Awareness of EBPs has grown; however, their identification and service delivery vary widely across settings. Estimates suggest that 20%–25% of children may exhibit emotional or behavioral difficulties, with sociological factors such as gender, parental education, and socioeconomic status influencing symptom recognition (Maajeeny, 2018). Additional research indicates high prevalence rates

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of anxiety and disruptive behavior disorders among children and adolescents, further underscoring the mental health burden in this population (Maajeeny, 2018).

2. Literature review

Different disability types are associated with distinct EBP patterns. Children with intellectual disabilities are at a heightened risk for disruptive and antisocial behaviors, while up to 80% of children with autism spectrum disorder (ASD) may experience co-occurring psychiatric conditions such as anxiety or depression (Altwaijri et al., 2023; Fombonne et al., 2021).

Children with physical disabilities often face social maturity challenges and may exhibit aggressive behaviors, whereas those with learning disabilities frequently present with internalizing symptoms such as anxiety and low self-esteem (Cristofani et al., 2023; Hassan, 2015). The Strengths and Difficulties Questionnaire (SDQ) is widely used to assess these issues and has demonstrated reliability and validity in Arabic-speaking populations (Almaqrami and Shuwail, 2004; El-Keshky and Emam, 2015).

This study was informed by the Neuman Systems Model, a nursing framework that conceptualizes the individual (the child) as an open system that interacts continuously with internal, interpersonal, and extraneous stressors (Neuman and Fawcett, 2011). Despite a growing body of research, most studies focus narrowly on specific conditions, such as ASD, rather than examining EBPs across diverse disability types (Alasiri et al., 2024).

Additionally, gaps persist in referral pathways and service provision for children with disabilities, leaving many without adequate psychological support (Alasiri et al., 2024). Cultural beliefs also shape responses to disabilities and mental health issues. While Islamic teachings emphasize dignity and equality for individuals with disabilities, social stigma persists, and families may turn to traditional or spiritual healing practices before seeking professional mental health services (Madi et al., 2019).

Given these gaps, there remains a need for comprehensive studies examining EBPs across multiple disability categories. Therefore, this study aimed to assess the prevalence and types of emotional and behavioral problems among children aged 4–16 years and compare them with typically developing children.

3. Methodology

This study employed a quantitative cross-sectional survey design, which was appropriate for estimating the prevalence of emotional and behavioral problems (EBPs) and identifying associated factors within a defined population at a single point in time. Data were collected using the validated Arabic version of the Strengths and Difficulties Questionnaire (SDQ) and a structured demographic questionnaire completed by parents or primary caregivers.

Participants were recruited from specialized disability centers, special education programs, governmental and private rehabilitation facilities, and community-based non-governmental organizations.

Sample size estimation was performed using an online Raosoft calculator. Based on an estimated child population of 20,000, with a 5% margin of error and 95% confidence level, the recommended sample size was approximately 377 participants. Due to the reliance on caregiver availability and willingness to participate, the final sample included 203 parents or primary caregivers of children aged 4–16 years.

The sample included 203 children. Of these, 120 children had formally diagnosed disabilities, including autism spectrum disorder, intellectual disability, physical disability, or sensory disability, while 83 children without disabilities comprised the comparison group. Convenience sampling was used to select participating schools, centers, and communities.

Children were eligible to participate if they were between 4 and 16 years of age, had a formal diagnosis of one of the specified disabilities or were classified as typically developing, were receiving services from a participating institution, and had a parent or primary caregiver who could provide informed consent in Arabic. Children outside the specified age range and caregivers who were unwilling or unable to complete the questionnaire or provide consent were excluded from the study.

Data collection utilized two instruments. The first was the parent-report Arabic version of the Strengths and Difficulties Questionnaire (SDQ), designed for children aged 4–17 years (Almaqrami and Shuwail, 2004; El-Keshky and Emam, 2015). This 25-item tool comprises five subscales—emotional symptoms, conduct problems, hyperactivity/inattention, peer problems, and prosocial behavior—with the first four subscales combined to yield a Total Difficulties Score ranging from 0 to 40 (Goodman, 1997). SDQ domain scores were categorized based on standard thresholds, with each subscale designated as normal, borderline, or abnormal. A Total Difficulties Score of 17 or higher signifies clinically significant issues. Additionally, prosocial scores of 4 or below indicate abnormal functioning in children. The second instrument was a structured demographic questionnaire developed by the research team to gather information on child characteristics (age, gender, disability diagnosis, and school type) and caregiver characteristics (relationship to the child, level of education, and household income).

After obtaining site permissions, potential participants were contacted at participating centers and schools. The study's purpose, procedures, confidentiality measures, and voluntary nature of participation were explained to them. An electronic

link was distributed via social media platforms such as WhatsApp. Parents who consented to participate received an electronic link containing the demographic survey and SDQ.

All data were entered and analyzed using SPSS version 26.0. SDQ scores were computed based on official scoring guidelines, with Total Difficulties Scores of 17–40 categorized as "clinically significant" EBPs. Descriptive statistics, including frequencies, percentages, means, and standard deviations, were used to summarize the sample characteristics and SDQ results. Inferential analyses included chi-square tests to assess associations between categorical variables, Mann–Whitney U tests for comparisons between two groups, Kruskal–Wallis tests for comparisons across more than two groups, and Spearman's correlation to examine associations between age and SDQ scores. Statistical significance was set at $p < 0.05$.

4. Results

4.1. Demographic characteristics of the sample

A total of 203 parents and caregivers participated in this study. The demographic characteristics of children and their guardians are presented in Table 1. The children's ages ranged from 4 to 16 years, with the largest group aged 4–7 years (39.9%). The sample was predominantly male (58.6%).

Overall, 120 children (59.1%) were diagnosed with disabilities. Among those with a disability, ASD was the most common diagnosis, accounting for 39.3% of the group with disabilities, followed by intellectual or mental disabilities (30%). Regarding education, 42.4% of children attended public schools. The majority of the questionnaires were completed by the children's mothers (58.6%). The most common educational level among guardians was a bachelor's degree (51.2%), and the most frequent family monthly income bracket was 5,000–15,000 SR (59.6%).

4.2. Overall prevalence of emotional and behavioral problems

The mean total difficulty score on the Strengths and Difficulties Questionnaire (SDQ) for the entire sample was 21.88 ± 5.52. Among the subscales, the prosocial behavior domain had the highest mean score (2.95 ± 1.66), followed by hyperactivity/inattention (2.80 ± 1.81) and peer relationship problems (2.68 ± 1.33). The mean scores for conduct problems and emotional symptoms were 2.57 ± 1.34 and 2.24 ± 1.51, respectively.

Based on the established SDQ cut-off score (≥17), 147 children (72.4%) were classified as having emotional and behavioral problems (EBPs) that warranted further clinical assessment.

Table 1: Distribution of studied participants according to children's demographics, disability, and guardians' characteristics (N = 203)

Variable	Categories	n (%)
Child age	4-7	81 (39.9)
	8-11	76 (37.4)
	12-14	27 (13.3)
	15-16	19 (9.4)
Child gender	Female	84 (41.4)
	Male	119 (58.6)
Disability	No	83 (40.9)
	Yes	120 (59.1)
Type of disability (n=120)	Physical disability (such as paralysis)	17 (14.1)
	Intellectual or mental disability	36 (30)
	Autism spectrum disorder (ASD)	47 (39.3)
	Sensory disability (such as hearing loss or vision loss)	20 (16.6)
School type	Does not attend	8 (3.9)
	Public school	86 (42.4)
	Private school	60 (29.6)
	Government treatment or rehabilitation center	33 (16.2)
	Private treatment/rehabilitation center	16 (7.9)
Relationship with the child	Father	76 (37.5)
	Mother	119 (58.6)
	Legal guardian	8 (3.9)
Highest educational level of the guardian	Primary school	12 (5.9)
	Middle	13 (6.4)
	Secondary	54 (26.6)
	Diploma	3 (1.5)
	Bachelor	104 (51.2)
	Post graduate	17 (8.4)
Family monthly income (SR)	<5000	49 (24.1)
	5000-15000	121 (59.6)
	>15000	33 (16.3)

4.3. Factors associated with disability and emotional and behavioral problems

As shown in Table 2, the presence of a disability was significantly associated with the type of school the child attended ($\chi^2 = 12.79$, $p < 0.001$), the relationship between the guardian and child ($\chi^2 = 7.72$, $p = 0.021$), and the guardian's highest level of education ($\chi^2 = 16.51$, $p = 0.006$). School type was strongly associated with disability status, with children with disabilities more likely to attend private schools or rehabilitation centers than public schools. Additionally, a significant relationship was found between the child's caregiver and disability, indicating differences in caregiving patterns. Guardian education level was also significantly

associated with disability, suggesting that parental educational attainment may influence or reflect factors related to disability. Table 3 presents the relationships between various characteristics and the presence of EBPs. The prevalence of EBPs was significantly higher in children with disabilities (72.1%) than in those without (27.9%) (χ^2 = 17.23, p < 0.001). Furthermore, the prevalence of EBPs differed significantly based on the specific type of disability (p < 0.001), with children diagnosed with ASD representing the largest group of children with EBPs. School type was also significantly associated with the presence of EBPs (p = 0.004). No significant association was found between the presence of EBPs and the child's age, gender, caregiver relationship, guardian's education, or income levels.

Table 2: Relationship between the presence of disability and children's demographics, disability, and guardians' characteristics (N = 203)

Variable	Categories	Disability		χ2	p-value
		No, n (%)	Yes, n (%)		
Child age	4-7	36 (43.4)	45 (37.5)	5.57	0.134
	8-11	33 (39.8)	43 (35.9)		
	12-14	11 (13.2)	16 (13.3)		
	15-16	3 (3.6)	16 (13.3)		
Child gender	Female	31 (37.3)	53 (44.2)	0.94	0.332
	Male	52 (62.7)	67 (55.8)		
School type	Does not attend	2 (2.4)	6 (5)	12.79	<0.001
	Public school	63 (75.9)	23 (19.2)		
	Private school	17 (20.5)	43 (35.8)		
	Government treatment or rehabilitation center	0 (0.0)	33 (27.5)		
	Private treatment/rehabilitation center	1 (1.2)	15 (12.5)		
Relationship with the child	Father	28 (33.7)	48 (40)	7.72	0.021
	Mother	48 (57.8)	71 (59.2)		
	Legal guardian	7 (8.5)	1 (0.8)		
Highest educational level of the guardian	Primary school	6 (7.2)	6 (5)	16.51	0.006
	Middle	2 (2.4)	11 (9.2)		
	Secondary	13 (15.7)	41 (34.2)		
	Diploma	1 (1.2)	2 (1.6)		
	Bachelor	50 (60.2)	54 (45)		
	Post graduate	11 (13.3)	6 (5)		
Family monthly income (SR)	<5000	16 (19.3)	33 (27.5)	5.25	0.072
	5000-15000	48 (57.8)	73 (60.8)		
	>15000	19 (22.9)	14 (11.7)		

4.4. Comparison of SDQ scores across groups

Significant differences in the SDQ scores were observed between children with and without disabilities. Children with disabilities had a significantly higher mean Total Difficulties score (25.05 ± 6.58) than children without disabilities (16.79 ± 8.01) (p < 0.001). This pattern of significantly higher scores for the group with disabilities was consistent across all SDQ subscales, including emotional symptoms, conduct problems, hyperactivity/inattention, peer relationship problems, and prosocial behavior (p < 0.05 for all).

Furthermore, when comparing SDQ scores among the different disability types (Table 4), there were statistically significant differences in the mean Total Difficulties score (p < 0.001). Children with ASD had the highest mean Total Difficulties score (28.25 ± 5.84). This group also had the highest mean score for the hyperactivity/inattention domain (3.91 ± 1.57), which was significantly higher than that of the other groups (p = 0.001).

5. Discussion

Building on the findings reported above, this section discusses them within the broader regional and international literature. This study provides a critical assessment of emotional and behavioral problems (EBPs) in children with disabilities. The principal finding revealed a stark disparity in mental health outcomes: 72.1% of children with disabilities exhibited clinically significant EBPs compared to only 27.9% of their typically developing peers. These results align with the global literature, indicating that the compounding stressors of disability—such as communication barriers, social exclusion, and academic struggles—significantly heighten the risk of co-occurring psychiatric conditions (Hemdi and Daley, 2017).

The high prevalence observed here exceeds some international estimates for intellectual disabilities (Labib et al., 2024), likely reflecting the specific demographic characteristics of the sample and the sensitivity of the Arabic version of the Strengths and Difficulties Questionnaire (SDQ) in distinguishing clinical populations (Almaqrami and Shuwail, 2004; El-Keshky and Emam, 2015). Children with autism spectrum disorder (ASD) bore the heaviest burden, with the highest mean total difficulty scores and significantly elevated hyperactivity/inattention ratings. This aligns with the literature showing that behavioral regulation difficulties commonly occur in ASD (Amr et al., 2012; Fombonne et al., 2021; Shnitzer-Meirovich et al., 2024). Similarly, children with intellectual disabilities demonstrate high rates of EBPs, reflecting the relationship between cognitive limitations and emotional-behavioral regulation challenges (Ageranioti-Bélanger et al., 2012). The distinct profiles observed across disability categories underscore the need for specialized, diagnosis-specific mental health interventions rather than a "one-size-fits-all" approach.

Table 3: Relationship between the presence of emotional and behavioral problems and children's demographics, disability, and guardians' characteristics (N = 203)

Variable	Categories	Presence of emotional and behavioral problems		χ2	p-value
		No, n (%)	Yes, n (%)		
Child age	4-7	17 (30.3)	64 (43.5)	3.85	0.277
	8-11	22 (39.3)	54 (36.7)		
	12-14	10 (17.9)	17 (11.6)		
	15-16	7 (12.5)	12 (8.2)		
Child gender	Female	25 (44.6)	59 (40.1)	0.34	0.56
	Male	31 (55.4)	88 (59.9)		
Disability	No	42 (75)	41 (27.9)	17.23	<0.001
	Yes	14 (25)	106 (72.1)		
Type of disability (n=120)	Physical disability (such as paralysis)	4 (7.1)	13 (8.8)	19.2	<0.001
	Intellectual or mental disability	5 (8.9)	31 (21.1)		
	Autism spectrum disorder (ASD)	3 (5.4)	44 (29.9)		
	Sensory disability (such as hearing loss or vision loss)	2 (3.6)	18 (12.3)		
	No disabilities (healthy child)	42 (75)	41 (27.9)		
	Does not attend	1 (1.8)	7 (4.8)		
School type	Public school	34 (60.7)	52 (35.4)	15.36	0.004
	Private school	16 (28.5)	44 (29.9)		
	Government treatment or rehabilitation center	2 (3.6)	31 (21.1)		
	Private treatment/rehabilitation center	3 (5.4)	13 (8.8)		
Relationship with the child	Father	19 (33.9)	57 (38.8)	0.48	0.787
	Mother	35 (62.5)	84 (57.1)		
	Legal guardian	2 (3.6)	6 (4.1)		
Highest educational level of the guardian	Primary school	4 (7.1)	8 (5.4)	8.78	0.118
	Middle	2 (3.6)	11 (7.5)		
	Secondary	9 (16.1)	45 (30.6)		
	Diploma	2 (3.6)	1 (0.7)		
	Bachelor	32 (57.1)	72 (49)		
	Post graduate	7 (12.5)	10 (6.8)		
Family monthly income (SR)	<5000	10 (17.9)	39 (26.5)	2.55	0.279
	5000-15000	34 (60.7)	87 (59.2)		
	>15000	12 (21.4)	21 (14.3)		

Table 4: Relationship between the type of disability and the mean scores of the SDQ scale and its domains (N = 203)

Scale/domain	Disability type				Kruskal-Wallis test	p-value
	Physical disability	Intellectual or mental disability	ASD	Sensory disability		
	Mean ± SD	Mean ± SD	Mean ± SD	Mean ± SD		
Total difficulty score	20 ± 5.01	24.38 ± 7.12	28.25 ± 5.84	23 ± 4.51	16.49	<0.001
Emotional symptoms domain	2.23 ± 1.2	2.25 ± 1.36	3.14 ± 1.39	2.75 ± 0.96	11.22	0.011
Conduct problems domain	2.17 ± 1.18	2.55 ± 1.4	3.02 ± 1.11	3.05 ± 1.05	80.39	0.039
Hyperactivity/inattention domain	2.17 ± 1.13	2.94 ± 1.49	3.91 ± 1.57	2.35 ± 1.3	14.01	0.001
Peer relationship problems domain	2.88 ± 0.92	3.08 ± 1.13	2.7 ± 1.01	3.15 ± 0.48	13.33	0.004
Prosocial behavior domain	2.52 ± 1.32	3.16 ± 1.46	4.31 ± 1.65	2.9 ± 1.29	12.13	<0.001

Cultural attitudes toward disability and caregiving norms may influence both parental reporting and children's emotional and behavioral outcomes. Although Islamic teachings emphasize the dignity and equal worth of individuals with disabilities, the stigma surrounding disability and mental illness may lead some caregivers to underreport or normalize behavioral difficulties (Madi et al., 2019).

Institutional and demographic factors further contextualized these findings. A significant association between school type and EBPs revealed that children in public schools showed higher rates of difficulties than those in private or specialized rehabilitation settings. This pattern suggests that public schools may require specialized resources or trained personnel to support children with complex behavioral needs. Additionally, the reporting of EBPs by mothers and guardians with higher education levels likely reflects differences in caregivers' mental health literacy or caregiving involvement. Mothers typically assume primary caregiving responsibilities, providing them with deeper insight into their child's behavioral challenges (Alkhateeb et al., 2022; Madi et al., 2019). This study has some limitations. The cross-sectional design of the study prevented causal inferences. Longitudinal studies are required to examine these causal relationships. The use of convenience sampling may have introduced selection bias, and the findings may not be representative of the wider population of children with disabilities in Saudi Arabia. Moreover, the total sample (n = 203) was smaller than the recommended sample size, which may have reduced the statistical power and limited the generalizability of the findings. Furthermore, reliance on parent reports alone may introduce response bias. Future studies should incorporate a multiple-informant approach that includes reports from teachers, children, and clinicians.

The SDQ is not a diagnostic tool, and the prevalence rates of "clinically significant EBPs" as used in this study reflect scores above validated screening cut-offs rather than confirmed clinical diagnoses. Some demographic variables, including disability severity, were incompletely recorded and should be systematically collected in future studies to address this limitation. Furthermore, this study performed multiple statistical comparisons across demographics, disability types, and SDQ variables. The analyses were not adjusted for multiplicity, which could increase the risk of a Type I error;

therefore, these results should be interpreted with caution.

Future research should employ longitudinal designs to track the developmental trajectories of EBPs in this population. Studies evaluating the effectiveness of culturally adapted interventions for children and their parents are crucial. Finally, comparative research across different regions could illuminate how varying levels of service provision and cultural norms impact the mental health outcomes of children with disabilities.

Routine emotional and behavioral screening using the Strengths and Difficulties Questionnaire (SDQ) should be incorporated into regular assessment practices within special education programs and rehabilitation centers, given the high overall prevalence of EBPs and the particularly elevated scores observed in children with ASD. Because public schools in this sample were associated with a higher prevalence of EBPs than private schools and specialized rehabilitation settings, priority could also be given to strengthening behavioral-health resources and staff training within public school settings serving children with disabilities.

6. Conclusion

Children with disabilities experience a higher burden of emotional and behavioral problems (EBPs) than their typically developing peers. With a prevalence of 72.1% among children with disabilities, these findings highlight a critical gap in mental health support for this vulnerable population. The research identified children with autism spectrum disorder as being particularly at risk, demonstrating greater difficulties, especially in the domains of hyperactivity and inattention.

In conclusion, this study provides important information indicating the urgent need for integrated mental health services within special education and pediatric healthcare systems. Addressing these emotional and behavioral challenges is not merely an adjunct to disability care but is fundamental to improving the health outcomes of children with disabilities.

List of abbreviations

ASD	Autism spectrum disorder
EBPs	Emotional and behavioral problems
SD	Standard deviation
SDQ	Strengths and Difficulties Questionnaire
SPSS	Statistical Package for the Social Sciences
SR	Saudi Riyal

Compliance with ethical standards

Ethical considerations

The study was approved by the Institutional Review Board (IRB) of the Faculty of Nursing at King Abdulaziz University (Reference No. 1T.1; approval date: October 22, 2025), and ethical approval was obtained before data collection. Informed consent was obtained electronically from parents or primary caregivers before participation. Given that the study involved children aged 4–16 years, parental or legal guardian consent was obtained for their participation. The authors should clarify whether age-appropriate assent was also obtained from the children, where applicable. Participation was voluntary, and participants were informed that their decision to participate or withdraw would not affect the services received by them or their children. Confidentiality was maintained throughout the study, and the collected data were anonymized and reported in aggregate form. The primary researcher's contact details were provided to participants for questions or concerns.

Conflict of interest

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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