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Prevalence of Child Mental Health Disorders in Primary Health Care Settings, Riyadh, Saudi Arabia

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Abstract

Child mental health disorders, such as ADHD, ASD, and anxiety, represent a growing global public health concern. These conditions often emerge in early childhood and are frequently identified first in primary care settings [1,2]. Without early recognition and treatment, these disorders can impair social, academic, and emotional development [3]. This study assesses the prevalence of these disorders among children attending AlWazarat Health Center at Prince Sultan Military Medical City (PSMMC) in Riyadh, Saudi Arabia, and explores associated gender and sociodemographic patterns. A cross-sectional and follow-up study included patterns of mental health Disorders among children attending Al Wazarat Healthcare Center at Prince Sultan Military Medical City (PSMMC), Riyadh, Saudi Arabia, between October 2023 to November 2024. Patients who did not attend the clinic on their appointment time were excluded. Data were collected through structured interviews with either parent, father, mother, or the guardian attending the appointment. Diagnosis was established using DSM-5-aligned clinical tools by qualified practitioners. Data were collected on sociodemographic variables (gender, family status, parental education) and diagnosed mental health conditions, including ADHD, anxiety, autism spectrum disorder (ASD), learning disabilities, and speech delay. Chi-square tests were used to examine associations, with p-values < 0.05 considered statistically significant. A total of 251 children were included in this study. The most prevalent diagnosis was ADHD (59.8%), followed by ASD (13.9%), anxiety (11.6%), speech delay (8.8%), and learning disabilities (6.0%). Males represented 72.1% of the sample and had significantly higher rates of ADHD (63.5% vs. 50%) and speech delay (11.0% vs. 2.9%) compared to females. Anxiety was more common in females (22.9%) than males (7.2%), with p <0.05 [4,5]. Parental education and family status were not significantly associated with diagnostic categories (p>0.05) [6]. This study highlights the high burden of neurodevelopmental and emotional conditions in children seen in primary healthcare. ADHD is the most commonly diagnosed child mental health disorder in this primary care setting, with notable gender differences. These findings support the urgent need for integrated mental health screening and training for primary care physicians in Saudi Arabia [7, 8].

Keywords: *ADHD, ASD, Autism, Anxiety, Children, Primary Healthcare, Prevalence, Saudi Arabia, DSM-5.*

Introduction

Global Burden and Epidemiology

Mental health disorders among children and adolescents represent a major public health challenge worldwide. According to the World Health Organization (WHO), approximately 10–20% of children globally experience mental health conditions, yet the vast majority remain undiagnosed and untreated [1]. These disorders often manifest during school-age years and can persist into adulthood if not identified and managed early [2]. They are associated with adverse outcomes, including academic underachievement, strained peer relationships, poor self-esteem, and an increased risk of substance abuse and legal problems later in life [3].

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Among the most frequently diagnosed childhood psychiatric conditions are attention-deficit/hyperactivity disorder (ADHD), autism spectrum disorder (ASD), anxiety disorders, speech and language delays, and specific learning disabilities [4]. ADHD alone affects approximately 5–7% of children globally [5], though prevalence estimates vary depending on diagnostic criteria, geographic location, and methodological differences in studies [6]. In many Western countries, awareness campaigns and school-based screening have contributed to earlier detection, but underdiagnosis remains a concern in low- and middle-income countries (LMICs) [7].

Autism spectrum disorder is another condition with increasing global recognition. The Centers for Disease Control and Prevention (CDC) reports that approximately 1 in 36 children in the United States is diagnosed with ASD [8]. While this may partially reflect improved awareness and diagnostic sensitivity, the upward trend underscores the need for robust early screening strategies in primary healthcare. Similarly, anxiety disorders—ranging from generalized anxiety and separation anxiety to social phobia—affect up to 10% of children and adolescents worldwide, with females disproportionately affected [9,10].

Speech and language delays, though sometimes transient, may also signify broader neurodevelopmental conditions, particularly when they co-occur with behavioral concerns or learning disabilities. These conditions are often overlooked during general consultations unless physicians are specifically trained to identify them [11]. The increasing burden of child and adolescent mental health problems globally has led many countries to incorporate mental health strategies into primary healthcare frameworks to enhance access and equity [12].

Mental Health in Saudi Arabia and Role of Primary Care

In the Kingdom of Saudi Arabia (KSA), mental health awareness has grown considerably in recent decades, including recognition of child and adolescent disorders. Government health initiatives, supported by Vision 2030, have emphasized prevention and early detection of mental illness across age groups [13]. Despite this progress, significant barriers remain in terms of access, diagnostic infrastructure, and culturally appropriate service delivery for younger populations [14].

Historically, mental health services in Saudi Arabia have been centralized within psychiatric hospitals, with limited integration into primary care settings [15]. Only in the past two decades have child and adolescent mental health services begun to receive targeted investment. Nevertheless, a shortage of trained child psychiatrists and developmental pediatricians persists, particularly outside major urban centers like Riyadh and Jeddah [16]. This has contributed to delays in diagnosis, overreliance on referrals, and fragmented care pathways.

Several studies conducted within the Saudi context have shown that general practitioners and pediatricians in primary healthcare settings often lack the tools and training to effectively screen for or manage child psychiatric disorders [17]. For example, in a study conducted by Alkhadra et al., only 34% of surveyed primary care physicians reported feeling confident in diagnosing ADHD or anxiety in children [18]. In another study, parents of children with suspected ASD or developmental delays reported dissatisfaction with the long wait times and ambiguity of referral processes within government-run clinics [19].

The burden of child mental health disorders in Saudi Arabia is also reflected in epidemiological

studies. AlHaidar (2003) reported that among children presenting to primary healthcare centers in the Eastern Province, nearly 20% showed signs of behavioral or emotional disturbances [20]. More recent studies suggest that rates of ADHD and ASD in Saudi children may be underreported due to stigma, low public awareness, and limited screening coverage [21,22]. These findings underscore the need for enhanced integration of mental health services into the broader primary healthcare system.

Primary care, by its nature, is well positioned to serve as a gateway for early detection and intervention. In a well-functioning health system, pediatricians and family physicians are trained to recognize early warning signs of neurodevelopmental, behavioral, and emotional disorders. Routine well-child visits offer unique opportunities for mental health screening, yet these opportunities are often missed due to time constraints, lack of training, or absence of culturally adapted tools [23, 24]. Addressing these barriers requires targeted capacity-building initiatives, as well as validated screening instruments tailored for use in Arabic-speaking populations.

Moreover, Saudi families often approach child behavioral concerns through religious or traditional lenses before seeking medical evaluation, which can delay access to care [25]. Therefore, increasing community awareness and reducing stigma are vital components of improving early diagnosis and management.

Gender Differences, Risk Factors, and Study Rationale

A growing body of evidence highlights significant gender differences in the prevalence and presentation of mental health disorders among children. Boys are more frequently diagnosed with externalizing disorders such as ADHD and conduct disorder, while girls are more commonly affected by internalizing conditions such as anxiety and depression [26]. These gendered patterns are not merely artifacts of diagnostic bias, but reflect a complex interplay of biological, developmental, and sociocultural influences [27].

Neurodevelopmental disorders like ADHD and ASD are up to three times more common in boys, possibly due to differences in brain maturation rates, neurochemical profiles, and genetic vulnerability [28]. Boys also tend to present with more overt behavioral symptoms, which are more easily recognized by caregivers and clinicians. In contrast, girls may exhibit inattentive or withdrawn behavior that is less likely to be interpreted as problematic, especially in cultures where compliance is socially encouraged in females [29].

Other factors known to influence child mental health include parental education, family income, and family structure (e.g., single-parent vs. two-parent households). Children in lower socioeconomic settings are more likely to be exposed to chronic stress, poor nutrition, and limited access to educational and healthcare resources all of which are linked to poor developmental outcomes [30]. In Saudi Arabia, studies examining these associations are scarce and often focused on hospital or school-based populations, with limited representation of those seen in routine primary care.

Given the evolving role of primary healthcare as the front line for pediatric assessment in Saudi Arabia, it is vital to understand the current landscape of mental health conditions among children presenting to these facilities. While specialized tertiary care centers and school programs have

received some attention in prior research, primary care settings remain understudied, despite being the first point of contact for most families.

This study was designed to:

- Determine the prevalence of common child mental health disorders (ADHD, ASD, anxiety, speech delay, and learning disabilities)
- Explore gender differences in diagnosis
- Examine associations between child diagnoses and parental education or family structure
- Provide local data to support national efforts aimed at integrating mental health into primary care

By addressing these objectives in a well-utilized public health facility like AlWazarat Health Center, this research aims to fill a critical evidence gap and guide future policies, training programs, and screening protocols tailored for the Saudi pediatric population.

Methods

Study Design and Setting

This was a Cross-Sectional Cohort study conducted at AlWazarat Healthcare Center, at Prince Sultan Military Medical City (PSMMC), a large primary healthcare facility in Riyadh, Saudi Arabia. The center operates under the Ministry of Defense and serves a mixed population of military personnel, civilians, and their families. The study was conducted between October 2023 and November 2024 within the Child & Adolescent Mental Health Clinic at AlWazarat Healthcare Center.

Participants and Inclusion Criteria

Children aged 4 to 15 years who were referred to the clinics for behavioral, developmental, or emotional concerns were included. Eligibility criteria were as follows:

- Age between 4 and 15 years
- Referral for behavioral or developmental evaluation
- Informed consent obtained from parents

Children with acute medical illness, chronic neurological impairment, or missing sociodemographic data were excluded.

Sample Size and Sampling Technique

A total of 251 children were included using non-probability convenience sampling. Although this method limits generalizability, it was appropriate given the nature of the patient flow and the study's focus on referred cases.

Diagnostic Process

Diagnoses were assigned by a Child / Adolescent Mental Health and family physician Consultant who is specialized in Child /Adolescent Mental Health and has training in DSM-5 criteria [31]. The physician conducted clinical interviews, behavioral observations, and reviewed documentation. The following diagnostic categories were used:

- Attention-Deficit/Hyperactivity Disorder (ADHD)
- Autism Spectrum Disorder (ASD)
- Anxiety Disorders
- Speech Delay
- Learning Disabilities

Validated tools such as the Vanderbilt ADHD Diagnostic Rating Scale and a clinician-adapted version of the Child Behavior Checklist (CBCL) were used as supportive instruments [32,33].

Sociodemographic Data Collection

Parents completed a structured questionnaire during clinic visits. It included:

- Child's age and gender
- Family structure (two-parent, divorced, single mother)
- Father's and mother's education level (illiterate, high school, university, postgraduate)

All interviews were conducted in Arabic in a private setting by the physician

Ethical Considerations

This study was approved by the Institutional Review Board (IRB) at the Prince Sultan Military Medical City (PSMMC). Institutional Review Board (IRB) HP-01-R079 approved and granted permission to conduct research protocol has been documented under: IRB Approval No: E-2594 Date Approved: 22nd Jun Series of: 2025. Written informed consent was obtained from parents or guardians. All data were anonymized before statistical analysis.

Statistical Analysis

Data were analyzed using IBM SPSS Statistics Version 26. Descriptive statistics (frequencies and percentages) were used for demographic variables and diagnoses. Chi-square tests were conducted to determine associations between diagnoses and gender, parental education, and family structure. A p-value of < 0.05 was considered statistically significant.

Results

Participant Demographics

The final sample consisted of 251 children between the ages of 4 and 15 years. Of these, 181 (72.1%) were male, and 70 (27.9%) were female. The average age was 9.2 ± 3.1 years. The

majority of children (82%) lived in two-parent households. Regarding education, 61% of fathers and 58% of mothers had at least a university degree. See Table 1

Table1: Demographic Characteristics of Participants

Demoghraphic Data	Percentage %
Male	181 (72.1%)
Female	70 (27.9%)
Parental Education (Father)	
High school or less	98 (39%)
University+	153 (61%)
Parental Education (Mother)	
High school or less	106 (42%)
University+	145 (58%)
Family Structure	
Two-parent	206 (82%)
divorced	45 (18%)

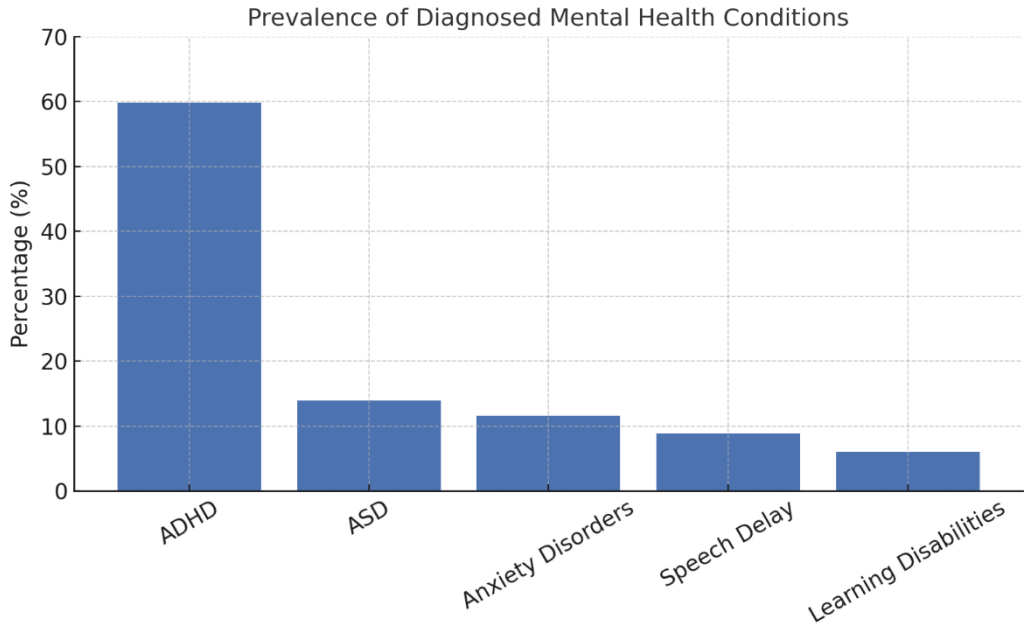
Prevalence of Diagnosed Disorders

The most common diagnosis was Attention-Deficit/Hyperactivity Disorder (ADHD), present in 150 children (59.8%). Other diagnoses included:

- Autism Spectrum Disorder (ASD): 35 children (13.9%)
- Anxiety disorders: 29 children (11.6%)
- Speech delay: 22 children (8.8%)
- Learning disabilities: 15 children (6.0%)

These frequencies reflect the trend of neurodevelopmental disorders dominating primary care referrals. See Figure 2

Figure 2: Prevalence of Diagnoses

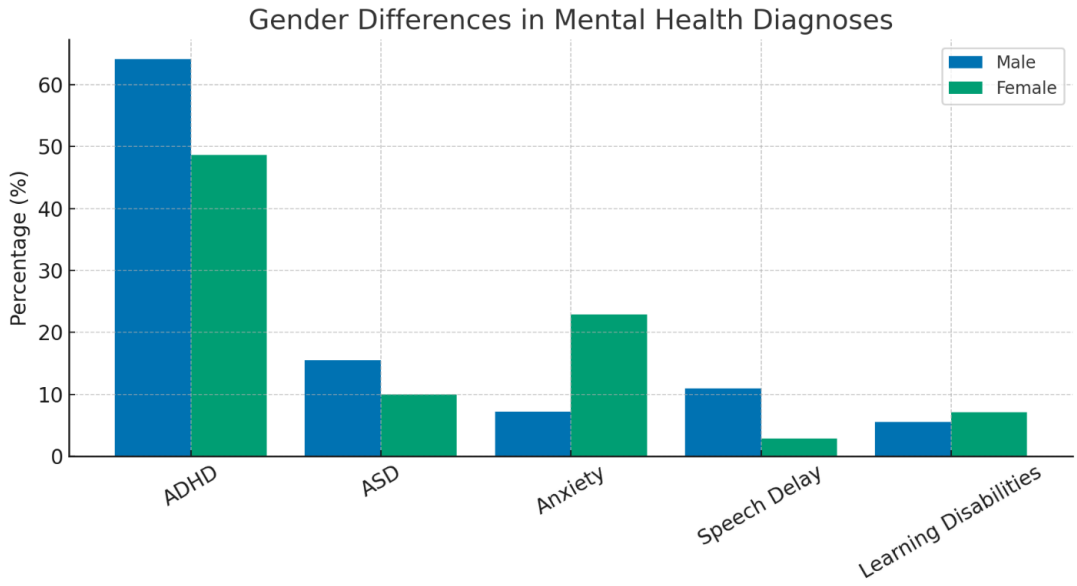


Gender-Based Differences in Diagnosis
Significant gender-based differences were observed:

- ADHD: 64.1% in males vs. 48.6% in females ($p = 0.03$)
- Speech delay: 11.0% in males vs. 2.9% in females ($p = 0.01$)
- Anxiety disorders: 22.9% in females vs. 7.2% in males ($p = 0.002$)
- ASD and learning disabilities showed no statistically significant gender differences ($p > 0.05$)

These findings are consistent with literature on gendered symptom expression, where boys are more likely to display externalizing symptoms, while girls present with internalizing disorders [26, 27]. See Figure3

Figure 3: Diagnoses by Gender



Sociodemographic Associations

It is shown that ADHD was present in all family statuses with different distribution, as it is shown that in the divorced status, 69.2%, while the child was living with his parent (together) is 59.4%, and if the child is living with his mother, it is about 57.1%.

In the Anxiety condition, it was present in divorced, together, and with the mother in 0.0%, 12.1%, and 14.3% respectively.

For the ASD condition, it was present in divorced, together with the mother in 15.4%, 13.8%, and 14.3% respectively.

For the Learning Disability condition, it is shown that in divorced, together, and with the mother in 7.7%, 5.4%, and 14.3% respectively.

For Speech delay condition, it is shown that in divorced, together, and with the mother in 7.7%, 59.4%, and 0.0% respectively.

In general, no statistically significant associations were found between diagnoses and:

- Family structure (two-parent vs. single-parent households) — $p > 0.05$
- Father's education level — $p > 0.05$
- Mother's education level — $p > 0.05$

These findings suggest that within this population, gender was a more important predictor of diagnosis than family background. See Figures 4, 5, and 6

Figure 4: Family Status and Mental Health Disorders among Children

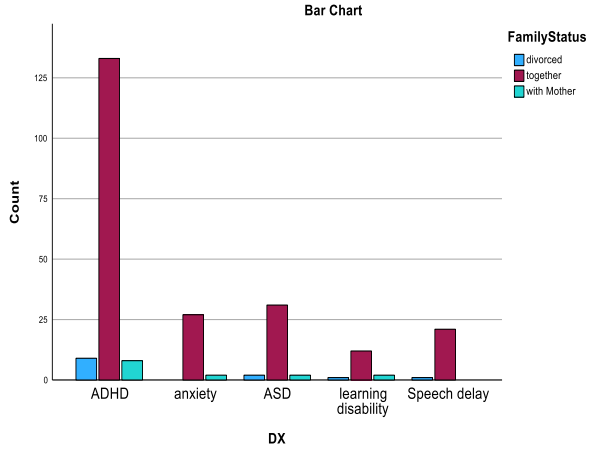


Figure 5: Father's level of Education and Mental Health Disorders among children

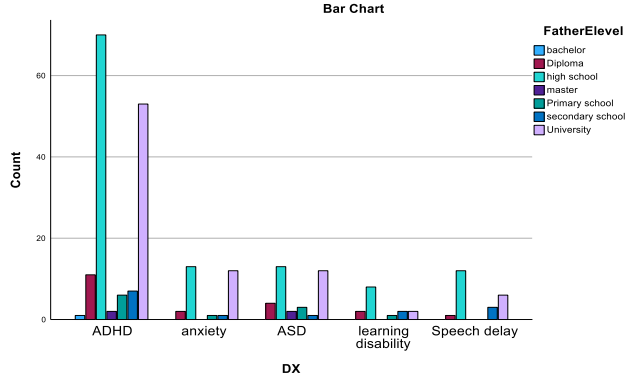
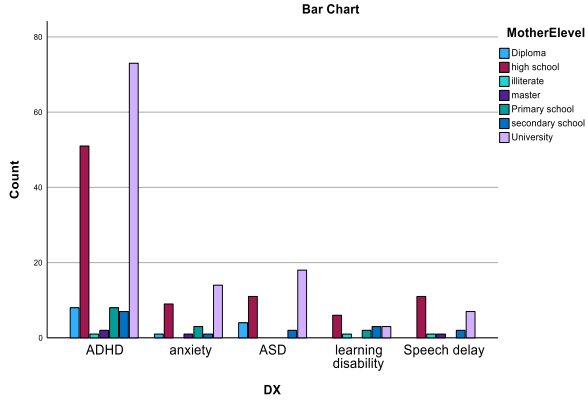


Figure 6: Mother's Level of Education and Mental Health Disorders



Discussion

This study presents a clear picture of the prevalence of mental health disorders among children attending primary care services at AlWazarat Healthcare Center. The findings demonstrate a high rate of neurodevelopmental and emotional conditions, particularly ADHD, ASD, and anxiety, with significant gender-based patterns.

ADHD and ASD Prevalence

The most commonly diagnosed condition was ADHD (59.8%), which is significantly higher than global community-based prevalence rates, generally estimated between 5–7% [5,6]. However, this high rate is expected in a clinical referral population where children are pre-selected for behavioral symptoms. The high ADHD rate also highlights possible overrepresentation due to increased physician awareness or diagnostic sensitivity.

Similarly, the 13.9% prevalence of ASD in this sample far exceeds global estimates (typically 1–2%) [8]. this could reflect a combination of increased awareness, improved access to specialists in Riyadh, or the referred nature of the sample. These findings are in line with studies showing ASD is often underdiagnosed in general populations but becomes more visible in clinical contexts [21].

Gender Differences in Diagnosis

This study confirms expected gender disparities in mental health diagnosis: ADHD and speech delay were significantly more common in boys, while anxiety was more prevalent in girls. These findings reflect global trends of externalizing behaviors being dominant in males and internalizing symptoms in females [26, 27]. The observed gender-specific symptomatology reinforces the importance of gender-sensitive screening protocols in clinical settings.

Sociodemographic Factors

Contrary to international findings, no significant associations were observed between mental health disorders and parental education or family structure [30]. This is potentially due to the specific population studied a relatively homogenous group with military-affiliated benefits, stable employment, and equal access to healthcare.

Although other studies highlight strong links between lower socioeconomic status and increased mental health risk, these associations may be less visible in government-supported populations with health coverage and schooling access [31, 32].

Implications for Primary Care

The results have significant implications for primary healthcare policy and practice. Primary care physicians are often the first point of contact for children with developmental or behavioral symptoms. However, studies from Saudi Arabia and globally suggest that most frontline providers feel underprepared to manage child mental health issues [18].

This highlights the urgent need to:

- Integrate routine screening tools such as the SDQ or Vanderbilt scales into pediatric visits
- Expand mental health training within family medicine and pediatrics residencies
- Ensure rapid referral pathways for suspected neurodevelopmental conditions

Moreover, parental cultural beliefs continue to influence whether and when mental health care is sought. Stigma, religious interpretations, and lack of awareness may contribute to delayed diagnosis, particularly for internalizing conditions like anxiety or ASD [19,25].

Limitations

Despite the strengths of the study, including a real-world clinical sample and DSM-5-based diagnoses, several limitations must be acknowledged:

- The convenience sampling limits generalizability
- The absence of standardized psychometric testing may affect diagnostic precision
- The study was conducted in a single center, potentially limiting regional diversity

Future studies should incorporate multi-center sampling and include follow-up outcomes to assess long-term mental health trajectories.

The findings of this study reinforce the pressing need to build child mental health capacity within primary care in Saudi Arabia. With proper training, tools, and public education, frontline clinics can become the foundation of early identification and intervention, reducing the burden of untreated pediatric psychiatric conditions and improving long-term developmental outcomes.

Conclusion

This study highlights the significant burden of child mental health disorders within a primary

care setting in Riyadh, Saudi Arabia. The high prevalence of ADHD, ASD, and anxiety disorders emphasizes the need for early recognition and timely intervention.
Notably, the data revealed strong gender differences in the presentation of these conditions: males were more frequently diagnosed with externalizing disorders such as ADHD and speech delay, while females were more likely to be diagnosed with internalizing conditions such as anxiety. However, no statistically significant associations were found between diagnoses and either parental education or family structure.

These findings underscore the urgent need to:

- Equip primary care providers with the tools and training required to recognize early signs of mental health disorders
- Implement routine screening programs within pediatric services
- Reduce cultural stigma through community awareness initiatives
- Develop national referral protocols that ensure efficient access to specialist care

By addressing these needs, Saudi Arabia can enhance its mental health infrastructure and support improved outcomes for children and their families in line with Vision 2030 health priorities.

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