

## A Pilot Study on the Prevalence of Psychiatric Disorders among Saudi Children and Adolescents: a Sample from a Selected Community in Riyadh City

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دراسة إستطلاعية عن نسبة انتشار الاضطرابات النفسية بين الأطفال والمراهقين في السعودية: عينة مختارة من مدينة سكنية

في الرياض

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### Abstract

**O**bjectives: Studies have shown that mental health problems at an early age can lead to greater impairment in adult life. Epidemiological evidence on the prevalence and incidence of mental health disorders is fundamental for planning mental health services. However, these data are lacking in Saudi Arabia. The current study examined the prevalence of mental health problems in Saudi children and adolescents living in a selected community in Riyadh City.

**Methods:** This two-stage epidemiological study used the Strengths and Difficulties Questionnaire (SDQ) to screen all eligible participants for the presence of a possible psychiatric disorder. The screening was followed by the use of a structured psychiatric interview (MINI-Kid), which was administered to a subsample to confirm the presence or absence of psychiatric disorders. **Results:** In the first stage, N= 924 participants were screened with n=226 receiving follow-up interviews. The overall prevalence of any psychiatric disorder was 36.3% (39.2% for children and 34.1% for adolescents). For the overall sample, behavioral disorders were more common than emotional disorders (25.7% vs. 21.7%). The most common specific disorders were oppositional defiant disorder (15.9%), attention-deficit/hyperactivity disorder (8.4%), general anxiety disorder (7.8%) and separation anxiety (7.8%). Only having internet in the house and the mother's education were predictors of having psychiatric illness among the adolescents, but these were not predictors among the children. **Conclusion:** The rate of psychiatric disorders among Saudi children and adolescents is within the wide range reported by international studies, but is associated with specific social predictive factors.

**Keywords:** Psychiatric disorders, prevalence, children, adolescents, Saudi Arabia

**Conflict of Interest:** None

### Introduction

The study of child and adolescent mental health disorders is increasingly important, as these disorders involve significant impairments in general functioning, marked deterioration among different domains of quality of life and increased health care utilization.<sup>1,2</sup> There is substantial agreement among epidemiologists that mental health problems at an early age can lead to greater impairment in adult life. A 2003 World Health Organization (WHO) report noted that the "Lack of attention to the mental health of children and adolescents may lead to mental disorders with lifelong consequences, undermines compliance with health

regimens, and reduces the capacity of societies to be safe and productive".<sup>3</sup>

Epidemiological evidence on the prevalence and incidence of mental health disorders is fundamental for planning mental health services.<sup>4</sup> While psychopathology in children and adolescents is not uncommon (the mean prevalence estimate is between 15.0% and 17.5%),<sup>5</sup> many conditions are commonly unrecognized. A Western study found that only 27% of children with a psychiatric disorder had been in contact with a health care specialist.<sup>6</sup> In an Arab community sample, 1 in 7 children had a psychiatric disorder that involved significant functional impairment, but none of

them had received professional health care.<sup>7</sup> Epidemiology studies of child and adolescent mental health problems shape the rational planning of service delivery, improve early detection and allow professionals to develop prevention programs for this vulnerable group.

In the past decade, large-scale child and adolescent psychiatric epidemiology studies have become increasingly common in developed countries, especially in the United States and the United Kingdom.<sup>4,5</sup> In comparison, such studies are much less common in the Arab world and the Gulf countries, with the exception of a limited number of studies from the United Arab Emirates.<sup>7-9</sup> To the best of our knowledge, there are no data on the child and adolescent population in Saudi Arabia. Using data from studies in other countries allows for estimates of mental health problems in general. However, the planning of local health service delivery should be based on results from local communities; therefore, research into mental health problems in Saudi Arabia is warranted.

The proposed study is a community-based study from Saudi Arabia that examines the prevalence and incidence rates of mental health problems in Saudi children and adolescents living in a selected community in Riyadh City. This is a community with a population of approximately 3000, consisting of families that are expected to be representative of the average professional Saudi family. The community is also a contained population that allows a community-inclusive survey to be conducted. This is a much-needed study that is believed to be a significant step to expanded epidemiological research that can have important clinical implications.

## **Methods**

The current study was a two-stage epidemiological study that investigated the rates of psychiatric disorders in a community-based sample of Saudi children and adolescents. The sample included all individuals aged

4-17 years old who lived in a selected community in Riyadh. The first stage involved the use of a self-report questionnaire the Strengths and Difficulties Questionnaire (SDQ) to screen eligible participants for the presence of a possible psychiatric disorder as reported by a parent (primarily the mother). Participants who scored higher than the cut-off point on the screening measures were identified as the high-risk (screen-positive) sample. Participants who scored below the cut-off point were identified as the low-risk (screen-negative) sample. To confirm the presence of a psychiatric disorder among the high-risk participants, the second stage involved detailed structured interviews with a parent (primarily the mother). An equal number of low-risk participants were randomly identified as a comparison group and were interviewed.

### **Sample**

Participants were recruited from a selected community in Riyadh City, which is a housing compound for government sector employees and their families (no specific details are given to ensure participant confidentiality). This is a contained population, which represents a small city with its own schools and health care facilities therefore; it allows a community-inclusive survey to be conducted, which will feed into the mental health service provided for them.

The original population of the study sample was approximately three thousand. All children and adolescents living in this community were eligible to participate in the survey and were all invited to take part in the current study. The total sample screened at stage one was N=924 respondents (children=355, adolescents=569) from 293 families, of which 528 participants were invited to the interview in the second stage. Only n=226 individuals (children=97, adolescents=129) from 138 families agreed to participate further and completed the interview. The current report provides the results from the second stage.

### **Procedures**

After receiving ethical approval, all families of children and adolescents were invited through the community health care center to participate in the study. Researchers explained the research rationale and procedures to the parents, and the parents signed consent forms.

*Stage One:* Only parents who consented completed individual screening questionnaires about their children. The screenings were completed by trained psychologists who assisted the participants in completing the survey.

Stage Two: Children and adolescents who were identified as high risk based on the screening questionnaire were invited for the follow-up interview. An equal number of low-risk participants were matched for age and gender and were randomly selected and were invited for the interview. All interviews were conducted by trained psychiatrists.

### **Instruments**

Demographic questionnaire: The demographic questionnaire was a structured questionnaire that covered age, years of education, parental marital status, parental education, parental occupation, quality of marital life, number of children in the household, chronic life difficulties, family history of psychiatric disorders and alcohol problems in the family.

Strengths and Difficulties Questionnaire (SDQ):<sup>10</sup> The SDQ is a brief, friendly and nonintrusive self-rated questionnaire that covers common areas of emotional and behavioral difficulties. The questionnaire consists of 25 items that are divided into five scales: conduct, hyperactivity, emotional problems, peer problems and prosocial scales. The SDQ has proven to be a valid and reliable screening measure for mental health difficulties

in young people. The Arabic version has also displayed good psychometric properties<sup>11</sup> and is available in a parent version.

The MINI International Neuropsychiatric Interview for Children and Adolescents (MINI-Kid):<sup>12</sup> The MINI-Kid is an abbreviated structured psychiatric interview that takes approximately 15-20 minutes to administer. The MINI-Kid uses decision-tree logic to assess the major child and adolescent DSM-IV and ICD-10 Axis I disorders. The interview elicits all of the symptoms that are listed for major Axis I diagnostic categories and for suicidality. The MINI has been validated against other structured interviews, including the English version of the Structured Clinical Interview (SCID-P) and the English and Arabic versions of the Composite International Diagnostic Interview (CIDI). There is no validation data on the Saudi sample; therefore, we are only using the Arabic version validated on an Egyptian sample.<sup>13</sup> The MINI-Kid-Parent interview was used to interview parents about the symptoms of their children.

### **Results**

#### ***Demographic characteristics of the screened and interviewed samples***

The screened sample (N=924) and the interviewed sample (n=226) did not differ in many of the demographic variables reported in Table 1. The only exceptions were that the interviewed sample reported higher perceived stress than the screened sample (45.7% vs. 32.4%, p=.003), and the interviewed families had more children below the age of 18 ( $4.72 \pm 1.5$  vs.  $4.10 \pm 1.7$ , p≤.001). At the interview stage, there were no significant differences between interview participants and those who chose not to participate.

**Table 1:** Demographic characteristic of screened and interviewed sample\*

| <i>Individual Characteristics</i>                                | <i>All Screened (n=924)</i> |                               | <i>Interviewed(n=226)</i> |                               | <i>P Value</i>   |
|--|-----------------------------|-------------------------------|---------------------------|-------------------------------|------------------|
|  | <i>Child<br/>(n=355)</i>    | <i>Adolescent<br/>(n=569)</i> | <i>Child<br/>(n=97)</i>   | <i>Adolescent<br/>(n=129)</i> |                  |
| Age: Mean (SD)   | 8.06 (1.4)                  | 15.0 (2.7)                    | 8.05 (1.4)                | 14.8 (2.7)                    | <b>0.46</b>      |
| Gender (Male)  | 52.7                        | 58.3                          | 49.0                      | 44.9                          | <b>0.39</b>      |
| Had failed school  | 2.2                         | 0.0                           | 6.1                       | 6.9                           | <b>0.64</b>      |
| Freq school absence  | 12.1                        | 11.1                          | 6.0                       | 5.5                           | <b>0.82</b>      |
| Chronic medical condition, e.g.<br>DM, epilepsy, asthma, allergy | 23.6                        | 30.7                          | 23.4                      | 26.9                          | <b>0.40</b>      |
| History of psychiatry visit                                      | 3.6                         | 1.1                           | 2.9                       | 4.7                           | <b>0.29</b>      |
| <i>Family Characteristics</i>                                    | <i>Family<br/>(n=293)</i>   |                               | <i>Family<br/>(n=138)</i> |                               | <i>P Value</i>   |
| Father's age: Mean (SD)  | 42.8 (7.8)                  |                               | 43.2 (6.6)                |                               | <b>0.54</b>      |
| Mother's age: Mean (SD)  | 36.8 (6.0)                  |                               | 37.0 95.1)                |                               | <b>0.59</b>      |
| Father's education:  |                             |                               |                           |                               |                  |
| Illiterate   | 1.03                        |                               | 1.22                      |                               |                  |
| School education   | 75.9                        |                               | 77.6                      |                               | <b>0.83</b>      |
| Higher education   | 23.1                        |                               | 21.1                      |                               |                  |
| Mother's education:  |                             |                               |                           |                               |                  |
| Illiterate   | 16.9                        |                               | 15.1                      |                               |                  |
| School education   | 61.5                        |                               | 64.4                      |                               | <b>0.76</b>      |
| Higher education   | 21.5                        |                               | 20.5                      |                               |                  |
| Socioeconomic status:  |                             |                               |                           |                               |                  |
| 7000 and below   | 22.9                        |                               | 23.4                      |                               |                  |
| 7000-10000   | 36.5                        |                               | 43.1                      |                               |                  |
| 10000-13000  | 19.1                        |                               | 18.8                      |                               | <b>0.18</b>      |
| 13000 and above  | 21.5                        |                               | 14.6                      |                               |                  |
| Internet in the house  | 72.2                        |                               | 73.0                      |                               | <b>0.77</b>      |
| Number of family member Mean<br>(SD)                             | 8.0 (2.4)                   |                               | 8.2 (2.4)                 |                               | <b>0.42</b>      |
| Number of children below 18yrs<br>in the family: Mean (SD)       | 4.1 (1.7)                   |                               | 4.7 (1.5)                 |                               | <b>&lt;.0001</b> |
| Stress in the family   | 32.4                        |                               | 45.7                      |                               | <b>0.003</b>     |
| Father hits children   | 22.7                        |                               | 25.2                      |                               | <b>0.50</b>      |
| Mother hits children   | 35.7                        |                               | 38.0                      |                               | <b>0.58</b>      |

\*Data are given as percentage unless otherwise indicated.

#### **Prevalence of psychiatric disorders**

Table 2 displays the prevalence estimates and 95% CIs for DSM-IV diagnoses for the full sample and separated by age (child age between 4-10 and adolescent age between 11- 17). The overall prevalence of any psychiatric disorder was 36.3% (39.2% for children and 34.1% for adolescents). For the overall sample, behavioral disorders (e.g. attention deficit hyperactivity

disorder, conduct disorder and oppositional defiant disorder) were more common than emotional disorders (e.g. affective disorders and anxiety disorders) (25.7% vs. 21.7%). Among specific diagnoses, the most common disorders were oppositional defiant disorder (15.9%), ADHD combined (8.4%), general anxiety disorder (7.8%) and separation anxiety (7.8%). For the child sample, the most common disorders were separation anxiety (14.4%), oppositional defiant

disorder (12.4%) and ADHD combined (11.3%). For the adolescent sample, the most common disorders were

oppositional defiant disorder (18.6%), generalized anxiety disorder (10.1%) and ADHD combined (6.2%).

**Table 2:** Prevalence rate of psychiatric disorders\*

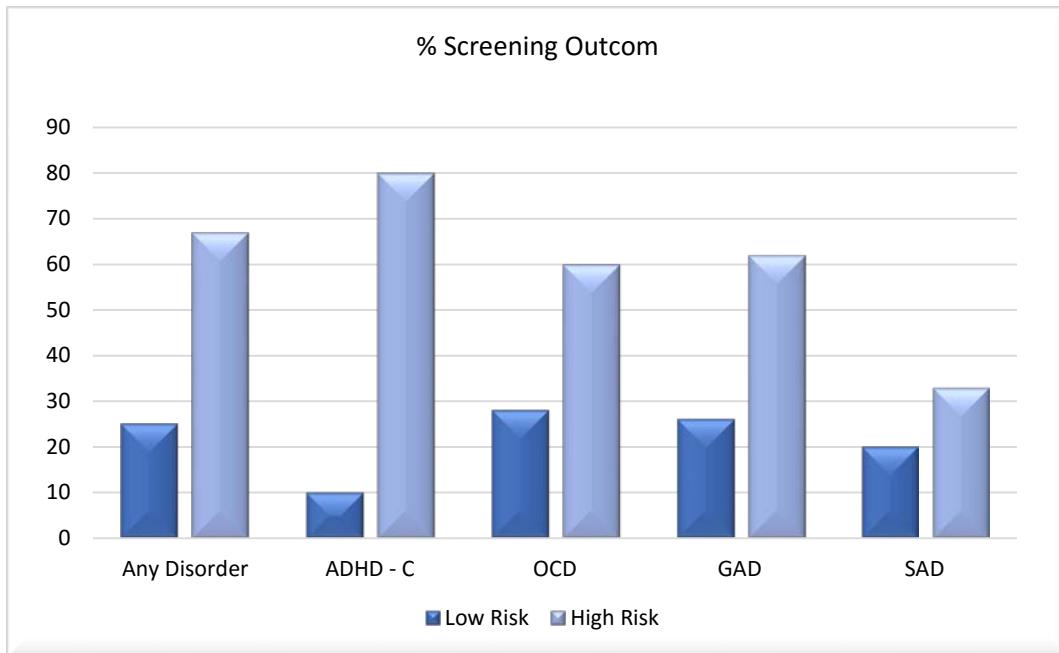
| <i>Diagnosis</i>                          | <i>Overall</i> | <i>Child</i>   | <i>Adolescent</i> |
|---|----------------|----------------|-------------------|
| Attention deficit/hyperactivity disorder: |                |                |                   |
| Combined                                  | 8.4            | 11.3 (0.0-0.2) | 6.2 (0.0-0.1)     |
| Inattentive                               | 3.1            | 3.1 (0.0-0.1)  | 3.1 (0.0-0.1)     |
| Hyperactivity                             | 5.3            | 8.2 (0.0-0.1)  | 3.1 (0.0-0.1)     |
| Behavioral disorders:                     |                |                |                   |
| Conduct disorder                          | 1.8            | 2.1 (0.0-0.1)  | 1.5 (0.0-0.05)    |
| Oppositional defiant disorder             | 15.9           | 12.4 (0.1-0.2) | 18.6 (0.1-0.3)    |
| Affective disorders:                      |                |                |                   |
| Major depression- current                 | 3.5            | 1.0 (0.0-0.05) | 5.4 (0.0-0.1)     |
| Major depression- lifetime                | 3.5            | 1.0 (0.0-0.05) | 5.4 (0.0-0.1)     |
| Dysthymia                                 | 0.9            | 1.0 (0.0-0.1)  | 0.8 (0.0-0.04)    |
| Anxiety disorders:                        |                |                |                   |
| General anxiety disorder                  | 7.9            | 5.1 (0.0-0.1)  | 10.1 (0.0-0.2)    |
| Separation anxiety                        | 7.9            | 14.4 (0.1-0.2) | 3.1 (0.0-0.1)     |
| Social phobia                             | 4.9            | 5.1 (0.0-0.1)  | 4.6 (0.0-0.1)     |
| Specific phobia                           | 5.3            | 6.2 (0.0-0.1)  | 4.6 (0.0-0.1)     |
| Panic                                     | 0.9            | 1.0 (0.0-0.05) | 0.8 (0.0-0.04)    |
| Obsessive Compulsive Disorder             | 0.4            | 0              | 0.8 (0.0-0.04)    |
| Posttraumatic Stress Disorder             | 0.9            | 2.1 (0.0-0.1)  | 0                 |
| Adjustment disorder                       | 0.9            | 1.0 (0.0-0.05) | 0.8 (0.0-0.04)    |
| Aggregated categories:                    |                |                |                   |
| Any psychiatric disorder                  | 36.3           | 39.2 (0.3-0.5) | 34.1 (0.2-0.4)    |
| Any behavioral disorder                   | 25.7           | 24.7 (0.2-0.3) | 23.4 (0.2-0.3)    |
| Any affective or anxiety disorder         | 21.7           | 23.7 (0.2-0.3) | 20.2 (0.1-0.3)    |

\*Data are given as prevalence (95% confidence interval).

### ***Relationship between the screening measure and the diagnostic interview***

The percentages of high-risk (screen-positive) and low-risk (screen-negative) on the screening measures across the common psychiatric diagnoses are shown in Figure 1. The parent SDQ identified 52% of the participants diagnosed with any psychiatric disorder. Over three-

quarters (78.9%) of the participants diagnosed with ADHD combined, 57% of those diagnosed with oppositional defiant disorder, 58% of those diagnosed with generalized anxiety disorder and 35% of those diagnosed with separation anxiety disorder were also identified by their parents as high risk.



### **Predictors of psychiatric disorders**

None of the independent variables was a statistically significant predictor of psychiatric disorders among children (see Table 3). However, children who were hit by their fathers (but not by their mothers) had an increased likelihood of a psychiatric disorder ( $OR=3.30$ , 95% CI (.958-11.366),  $p=0.058$ ). Adolescent participants who had internet access were 25% more likely to have a psychiatric disorder compared with

adolescents who did not have internet access ( $OR=0.254$ , 95% CI (0.072-0.897),  $p=0.033$ ). Finally, mother's education was also a predictor of psychiatric illness among adolescents; specifically, the adolescents of mothers who only had a high school education had an 11% higher likelihood of having a psychiatric illness compared with adolescents of mothers with higher education ( $OR=.114$ , 95% CI (.013-.981),  $p=0.048$ ).

**Table 3:** Predictors of psychiatric disorders\*

| <i>Variables</i>      | <i>Child</i>               | <i>Adolescents</i>             |
|-----------------------|----------------------------|--------------------------------|
| Mother's education    | NA                         | <b>0.1 (0.0-1.0), p=0.05</b>   |
| Internet in the house | NA                         | <b>0.2 (0.1-01.0), p=0.033</b> |
| Father hits children  | 3.3 (0.96-11.4), $p=0.058$ | NA                             |

\*Data are given as odd ratio (95% confidence interval) and P value. NA indicates not applicable.

### **Discussion**

The present study's 36.3% rate of psychiatric disorders was based on a selected community sample using parent reports on the MINI structured diagnostic interview. The present study is similar to the study by Alyahri and Goodman,<sup>14</sup> which also employed a two-stage design, but focused on schoolchildren between 7 and 10 years

old; the current study used a community-based sample with a wider age range. As evidenced by Eapen and colleagues,<sup>7,9</sup> the rate of psychiatric disorders can be higher when the sample is collected from the community rather than schools.

The community study from Al Ain in the United Arab Emirates<sup>7</sup> showed a lower rate than the current study

(36.3% vs. 22.2%). The Al Ain study selected a community sample and applied a two-stage design; however, the rates of psychiatric disorders were based on the best-estimated diagnoses from two informants (the mother and the child) using the Kiddie-Schedule for Affective Disorder and Schizophrenia (K-SDS). In contrast, the rate in the current study was estimated based on information that was reported by the mother and information from the MINI structured interview. The K-SDS yields a lower rate compared with other diagnostic interviews.<sup>5</sup> Therefore, our relatively higher rate compared with these Arab studies may reflect the difference in methodology regarding informants and the use of diagnostic tools.

This is also true when comparing our study with Matsuura et al. who found the rate of psychiatric disorder to be around 12%.<sup>14</sup> However, a study done by Giel and colleagues<sup>15</sup> in collaboration with the WHO to study psychiatric disorders in developing countries have found the rate of psychiatric disorder up between 12-30%. This is close to the finding of the current results. Considering specific disorders, our study showed more behavioral disorders than emotional disorders (25.7% vs. 21.7%). This contrasts with the Alyahri and Goodman study,<sup>14</sup> that found anxiety disorder to be the most common diagnosis, with a rate of 9.3%, followed by behavior disorder, with a rate of 7.1%. These findings contrast with Eapen's study, which found a 4.8% rate for emotional disorder and a 3.0% rate for externalizing disorder.<sup>9</sup> This result may reflect that parents, who were the primary source of information, are better reporters of external symptoms, whereas children and adolescents are better reporters of internal symptoms.<sup>17</sup>

Previous studies and surveys have found psychiatric disorders to be associated with specific factors, such as family socioeconomic status and parental education and occupation.<sup>18</sup> One explanation for the impact of maternal education on children's general health and mortality is that the economic advantage associated with education accounts for half of the overall association between psychiatric disorder and parental education.<sup>19</sup> Our study failed to find a link with socioeconomic

status, but found that mother's education was a significant predictor of adolescent psychiatric disorders. The fact that our sample came from relatively homogenous middle-class families may explain why economic status failed to account for psychiatric disorders and therefore cannot be accounted for the link between mother education and adolescent psychiatric disorder in this study. Rather, there might be other variables that mediate this link. Further research will need to explore this point.

Another interesting link was found between adolescent psychiatric disorders and having access to internet in the house. Internet usage has been identified as a possibly problematic behavior since the late 1990s. Young reported significant behavioral differences between internet users and internet non-users that were similar to characteristics of impulse control disorder.<sup>20</sup> Since then, the issue of internet addiction has become more common and recognized as a psychiatric problem. A recent review found that internet addiction is often comorbid with other psychiatric disorders, such as ADHD, depression and social phobia, which suggests that careful assessments and interventions are warranted when internet use is a concern.<sup>21</sup> The present study did not measure internet usage or addictive behavior in this regard; therefore, the question of whether having internet at home reflects problematic internet usage and is associated with psychiatric disorders remains open. Limitations of the current study need to be addressed. First, the sample was based on a selected community from Riyadh City. While the sample is considered to be fairly representative of the average professional Saudi families, the generalizability of the results needs to be confirmed by further studies. Second, the response rate for the second stage was relatively low which emphasizes the need to interpret these results with caution. Moreover, the results were based on information obtained from one informant. Other sources of information, such as the fathers or the children/adolescents themselves, should also be explored. Finally, our study failed to identify predictors of child psychiatric disorders, which can likely be attributed to the small sample size.

Having acknowledged these limitations, the current findings have important clinical implications for child and adolescent mental health research and service planning. This is especially important since information on this area is very limited in Saudi Arabia.

## Conclusion

The current study was a two-stage epidemiological survey that examined the prevalence of mental health problems in Saudi children and adolescents living in a selected community in Riyadh City. The overall prevalence of any psychiatric disorder was 36.3% (25.7% for behavioral disorders and 21.7% for emotional disorders). The differences in methodology affect the comparability with other studies; the use of a community sample and the reliance on information from the mother may have contributed to a relatively higher rate compared with other Arab studies. Having internet in the house and mother's education were the only predictors of psychiatric disorders in the adolescent sample.

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### الملخص

أظهرت الدراسات العالمية أن المشاكل النفسية التي يتعرض لها الفرد في سن مبكرة يمكن أن تؤدي إلى تدهور كبير في أدائه في مرحلة الرشد. ولذلك تعد الأبحاث التي تعنى بمدى انتشار الاضطرابات النفسية أمراً أساسياً في التخطيط للخدمات الصحية النفسية في أي مجتمع؛ لكن هذا النوع من الدراسات محدود جداً في المملكة العربية السعودية. ولهذا سعت الدراسة إلى البحث في نسبة انتشار الاضطرابات النفسية لدى الأطفال والراهقين السعوديين الذين يعيشون في المجتمع السكني الذي جرى اختياره في مدينة الرياض. **الطرق:** طبقت هذه الدراسة على عينة من مرتبتين: اعتمدت المرحلة الأولى على مسح العينة المختارة باستخدام استبيان نقاط القوة والضعف (SDQ)، لفحص مدى احتمال وجود اضطراب نفسي لدى جميع المؤهلين للمشاركة؛ وتبع ذلك المرحلة الثانية، مرحلة المقابلة، باستخدام المقابلة المقترنة (MINI-KID)؛ والتي أجريت على عينة فرعية لتأكيد وجود أو عدم وجود أي اضطرابات نفسية. **النتائج:** تم فحص 924 من المشاركون في المرحلة الأولى، وخضع 226 مشاركاً للمقابلات في المرحلة الثانية. وكان معدل انتشار أي اضطراب نفسي هو 36.3% (39.2% للأطفال و34.1% للراهقين). وقد كانت الاضطرابات السلوكية الأكثر شيوعاً عن الاضطرابات العاطفية (25.7% مقابل 21.7%)؛ أما من ناحية الاضطرابات المحددة وكانت النتائج كالتالي: اضطراب السلوك المضاد (15.9%)، واضطراب فرط الحركة وتشتت الانتباه (8.4%)، واضطراب القلق العام (7.8%) وقلق الانفصال (7.8%)، كما توصلت الدراسة إلى أن لوجود شبكة الإنترنت في المنزل، ومستوى تعليم الأم، قدرة على التنبؤ بوجود اضطراب نفسي بين عينة المراهقين فقط. **الخلاصة:** أن معدل الاضطرابات النفسية بين الأطفال والراهقين من عينة الدراسة يقع ضمن الحدود الواسعة، والتي ذكرت في دراسات عديدة؛ ولكن عوامل التنبؤ بهذه الاضطرابات مرتبطة بعوامل اجتماعية مختلفة.

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