

Emotional and behavioral problems among male Saudi schoolchildren and adolescents

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ABSTRACT

Objectives: Determination of the prevalence rate of emotional or behavioral problems, or both, among male Saudi schoolchildren and identifying the possible risk factors behind these problems.

Methods: The study was conducted from March-May, 2003 and included all male schoolchildren of Al-Abnae schools specialized for the sons of the employees of the Saudi Ministry of Defense (military and civilians) in Taif Governorate, Kingdom of Saudi Arabia (total number 1416 students). It was conducted through 2 phases: A screening phase (using the Child Behavior Checklist "Parent's form") for all schoolchildren and adolescents included in the study through a cross-sectional approach to assess their emotional and behavioral problems, and a case-control phase to study risk factors.

Results: Among the 1313 male schoolchildren that participated in the study, 109 (8.3%) were emotionally or behaviorally disturbed students. Among studied sociodemographic variables, only educational level

(intermediate versus primary) and mother's occupation (working versus non working) was associated with a higher risk of developing emotional or behavioral disturbance. Unwanted pregnancy (odds ratio [OR]=4.77, confidence interval [CI] 3.68-5.86), history of meningitis (OR=7.50, CI 5.12-9.88), history of accidents (OR=4.07, CI 2.87-5.26) and those with history of bronchial asthma (OR=2.96, CI 2.16-3.76) had an increased risk of emotional or behavioral disturbance.

Conclusion: The prevalence rate of behavioral and emotional disturbance according to parent's reports is lower than that reported in other countries. Several risk factors including child, familial, and environmental risk factors play an important role in the genesis of emotional and behavioral problems in schoolchildren. Mental health problems can be recognized and treated; caring families and communities working together can help.

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Young people can have mental, emotional, and behavioral problems that are real, painful, and costly.¹ These problems, often called "disorders," are sources of stress for children and their families, schools, and communities.^{2,3} Although it is difficult to get accurate estimates of childhood mental disorders, the sparsely available epidemiological data indicate that 12-51%, with the average approximately 29% of the world's children, suffer from emotional and other mental problems that

warrant mental health treatment.⁴ Out of this group, 6-19% are seriously emotionally disturbed children who need intensive psychiatric care.⁵ In addition, there are untold numbers of at-risk children who need attention and secondary preventive services.⁶ Recent evidence indicates that emotional and behavioral disorders frequently lead to poor school performance and to dropping-out of school.⁷ This wastes educational resources and seriously impairs the economic and social potential of such children.⁷

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Some disorders are more common than others, and conditions range from mild to severe. Often, a child has more than one disorder.⁸ There is an ample weight of evidence suggesting that, several risk factors including child, familial, and environmental risk factors play an important role in the genesis of emotional and behavioral problems in schoolchildren.^{3,9} Many environmental factors can affect mental health, including exposure to violence, extreme stress, and the loss of an important person.⁸ The current study is aimed at the determination of the prevalence rate of emotional and behavioral problems among male Saudi schoolchildren, their relation with school performance and at identifying the possible risk factors behind these problems.

Methods. The study was conducted between March and May, 2003 and included all male schoolchildren and adolescents (primary and intermediate) of Al-Abnae schools specialized for the sons of the employees of the Saudi Ministry of Defense (military and civilians) in Taif Governorate, Kingdom of Saudi Arabia (total number 1416 students). These schools are King Fahd primary school (267 students), King Fahd intermediate school (412 students), Amir Abdul-Rahman primary school (537 students), and Al Abnae primary and intermediate school (200 students). Twenty non-Saudi students (1.4%) were excluded from the study and 83 (5.9%) parents refused to complete the Child Behavior Checklist (CBCL) sheets for their children. It was conducted through 2 phases: A screening phase for all schoolchildren and adolescents included in the study through a cross-sectional approach was carried out to assess their emotional and behavioral problems (phase I). A case-control study (phase II) followed the first phase aimed at comparing schoolchildren emotionally or behaviorally disturbed with a randomly chosen sample of their age and school matched controls (3 controls for each case were chosen) to study risk factors. All cases and their controls were recruited in the screening phase. The screening phase was conducted using the CBCL "Parent's form" as a self-administered tool. It is one of the most frequently used measures to assess emotional and behavioral problems of children aged 4-16 years.¹⁰ It assesses 2 broad dimensions of dysfunction: internalization problems and externalization problems. Internalization problems include anxiety, depression, obsession and somatic complaints. While, externalization problems include hyperactivity, aggression, and delinquency.¹¹ The first section of this questionnaire consists of 20 competence items (participation in sports, non sports activities, organizations, jobs, friendships, and relationships with other individuals). The second section consists of 120 items on behavioral or emotional problems during the past 6 months. Each CBCL item assesses one symptom by presenting 3 scales (0=Not true, 1=Somewhat or

sometimes true, 2=Very true or often true). Parents are asked to circle the number of items in which their child has exhibited the behavior listed during the past 6 months. Parents with difficulty in reading were administered the forms orally. The Arabic version previously validated by Koura was applied.¹² Emotionally or behaviorally disturbed children were identified according to cutoff score for boys estimated at the 90th percentiles, which was 61. Accordingly, emotionally or behaviorally disturbed children were those whose CBCL total scores were equal or above the cutoff score. Similarly, the internalization and externalization problems were identified at cutoff scores higher than that of any individual subscale problem. The school performance of the last year final examination was taken from the pupil's file in the school. It was categorized as follows; <50% "failure", 50-<65% "pass", 65-<75% "good", 75 -< 85% "very good", 85% "excellent".

Statistical analysis. To test for the association between 2 categorical variables, chi-square test was applied (school performance and emotional or behavioral problems). Analysis was initially carried out based on a series of univariate comparisons. In order to control simultaneously for the possible confounding effects of the different variables, a multiple logistic regression analysis with stepwise variable selection was utilized to evaluate factors related to emotional or behavioral disturbance among schoolchildren.¹³ The variables included in each analysis were the following: (rc=reference category): age (15 (rc), >15); educational level (primary (rc), intermediate); paternal occupation (military (rc), civil, retired); maternal occupation (house wife (rc), working); paternal and maternal education (low (rc), intermediate, high); number of siblings (3 (rc), 4-7, >7); birth order (1st (rc), 2-4, >4); wanted pregnancy (wanted (rc), unwanted); history of maternal diseases during pregnancy (No (rc), yes); history of maternal medications during pregnancy (No (rc), yes); mode of delivery (normal (rc), abnormal); history of accidents (No (rc), yes); history of meningitis (No (rc), yes); history of chronic diseases (No (rc), yes). The significance level for covariates entering and staying in the logistic model was 0.1. Both in univariate and multivariate analyses, the association between exposures and outcomes is thus expressed in terms of odds ratios (OR) together with their 95% confidence intervals (95% CI). Statistical analysis was performed using Statistical Package for Social Sciences version 10 for windows.

Results. The first phase of the study includes 1313 male Saudi schoolchildren. Their age ranged from 6-18 years with a mean of 11.2±2.5 years. Regarding educational level, children attending primary schools were nearly 2-fold those attending intermediate schools represented by 65.2% and

Table 1 - Baseline characteristics of students included in the first phase of the study.

Baseline characteristics	Students (N=1313)	
	n	(%)
Age in years		
<12	790	(60.2)
12-15	449	(34.2)
>15	74	(5.6)
Mean	11.2	years
SD	2.5	years
Range	6-18	years
Educational level		
Primary	856	(65.2)
Intermediate	457	(34.8)
Paternal occupation		
Military	1122	(85.5)
Civil	127	(9.6)
Retired	64	(4.9)
Maternal occupation		
Housewife	1112	(84.7)
Working	201	(15.3)
Paternal education		
Low	72	(6.2)
Intermediate	819	(62.4)
High	412	(31.4)
Maternal education		
Low	524	(39.9)
Intermediate	546	(41.6)
High	243	(18.5)

34.8%. Most of them have non-working mothers (84.7%) and military fathers (85.5%). The great majority of them have intermediate (62.4%) or highschool (31.4%) educated fathers and either intermediate (41.6%) or low (39.9%) educated mothers (**Table 1**). Among 1239 investigated schoolchildren, the most common emotional or behavioral problems were anxiety (13.5%) and depression (8.6%), followed by somatic disorders (7%), obsession (6.9%), hyperactivity (6.1%), aggression (4%) and finally delinquency (3.6%). While among adolescents, the most commonly encountered emotional or behavioral problems were anxiety (13.5%), somatic disorders (12.2%), obsession (10.8%), followed by aggression (8.1%), delinquency and depression (4.1% for each). Co-morbidity (namely, presence of 2 or more problems simultaneously) was found in 48.8% among the affected children and adolescents (**Table 2**).

The second phase includes 109 emotionally or behaviorally disturbed students, representing 8.3% of all students included in the first phase of the study. Their age ranged from 6.5-15 years with a mean of 10.84 ± 2.56 . A control group consists of 327 emotionally or behaviorally not disturbed students who were randomly selected through the computer. Their age ranged from 6.5-15 years with a mean of 10.65 ± 2.21 . As shown in **Table 3** there was a significant difference between the 2 compared groups regarding school performances where 4.6% of emotionally or behaviorally

Table 2 - Prevalence of emotional and behavioral problems* among studied schoolchildren and adolescents (N=1313).

Emotional and behavioral problems	Schoolchildren (N=1239) [†]		Adolescents (N=74) [‡]		Total (N=1313)		P value
	n	(%)	n	(%)	n	(%)	
Internalization problems	92	(7.5)	9	(12.2)	102	(7.8)	0.146
Depression	107	(8.6)	3	(4.1)	110	(8.4)	0.167
Somatic disorders	87	(7)	9	(12.2)	96	(7.3)	0.099
Obsession	86	(6.9)	8	(10.8)	94	(7.2)	0.210
Anxiety	167	(13.5)	10	(13.5)	177	(13.5)	0.993
Externalization problems	53	(4.3)	4	(5.4)	57	(4.3)	0.644
Delinquency	45	(3.6)	3	(4.1)	48	(3.7)	0.851
Aggression	49	(4)	6	(8.1)	55	(4.2)	0.083
Hyperactivity	75	(6.1)	3	(4)	78	(5.9)	0.479

*Co-morbidity (namely, presence of 2 or more problems at the same time was found in 48.2% of affected children and adolescents) [†]6 - 15 years, [‡] > 15 years

disturbed students were failed in the last year examination as opposed to 3.4% of those non disturbed ($\chi^2 = 22.71, p=0.0001$). **Tables 4 & 5** report the socio-demographic and medical related characteristics, with the results of the univariate analyses. The results of the logistic regression analyses are described below.

Socio-demographic characteristics. Students of intermediate level of education had a higher risk of developing emotional or behavioral disturbance as opposed to students of primary level of education (OR=2.34, CI 1.8-2.88). Regarding maternal occupation, students with working mothers were more likely to develop emotional or behavioral disturbance than those with non-working mothers (OR=1.66, CI 1.06-3.2.27). No significant association could be detected between development of emotional or behavioral disturbance and age, paternal occupation, paternal or maternal education and number of brothers or birth order.

Medical variables. Unwanted pregnancy was significantly associated with an increased emotional or behavioral disturbance risk (OR=4.77, CI 3.68-5.86). History of meningitis was strongly and positively related to emotional or behavioral disturbance (OR=7.50, CI 5.12-9.88). Students with history of accidents (OR=4.07, CI 2.87-5.26) and those with history of bronchial asthma (OR=2.96, CI 2.16-3.76) had an increased risk of emotional or behavioral disturbance as compared to students without history. History of diseases or drug intake during pregnancy and mode of delivery was not independently associated with the outcome.

Discussion. The advantages of this study included the following: 1. using a standardized instrument that assesses a broad range of childhood problems, 2. using samples large enough to test differences. In addition, 3. to our knowledge, this study is the first in Saudi Arabia to assess emotional or behavioral problems among schoolchildren and adolescents on a standardized measure of child psychopathology and to compare them with matched children. 4. It is also among the first to include schoolchildren through adolescent children.

Results of the present work revealed that only 8.3% of the surveyed children and adolescents (6-18 years) were emotionally or behaviorally disturbed according to parent's reports. This figure was lower than that reported in United Arab Emirates (23.9%) in a work conducted on schoolchildren aged 6-15 years.¹⁴ This could be attributed to the fact that in our work the reporting was based on the parent's scale only, while in the Emirate's work the reporting was based on either parent scale, or school health physician. It is also lower than that reported by others in developed countries (**Table 6**).¹⁵⁻¹⁸ However, it is comparable with others.¹⁹⁻²⁴ Al-Sharbati, et al²⁵ conducted research among primary school students in Benghazi, Libya (boys and girls). He found that the prevalence of hyperactive behavior was 5.3% as compared to

6.1% in our study and the prevalence of aggressive behavior was 8.1%, which is higher than ours (4%). These findings enforce the concept that the behavioral and emotional problems children develop, may differ from one cultural context to another.²⁶ In addition, different tools have been utilized in different studies to recognize emotional or behavioral problems. Approximately half (48.2%) of affected children and adolescents had 2 of more emotional or behavioral problems simultaneously. The same had been reported recently by others.⁸

In the current study, generally the prevalence of internalizing problems among children and adolescents was higher than externalizing problems. This finding could be explained by the fact that in the Saudi community, externalizing problems such as hyperactivity, aggression and cruelty are suggested to be socially accepted behavior among boys. Agreeing with others,^{7,26} our results showed that emotional or behavioral problems might lead to poor school achievement.

Risk factors. It has been reported that, emotional and behavioral problems among preadolescent children are most likely to be due to a complex interaction between biological risk factors and environmental risk factors.²⁷ Documented risk factors include mainly low socioeconomic status, negative family events and maternal psychopathology.^{27,28} After adjustment using multiple logistic regression, findings of the present work revealed that, only 2 sociodemographic factors were proved to increase the risk of emotional or behavioral problems; these are student's level of education and maternal occupation. Regarding students, educational level, intermediate level of education (mostly from 6-12 years old) as opposed to primary level (mostly from 12-15 years old). Age was not proven to be a significant predictor. It seems that the educational level independently reflects more the emotional or behavioral disturbance than the age in our culture. In china, Liu et al²⁹ found that younger boys exhibited more externalization problems. In Washington State, one in 18 young children (6-11-year-olds) and one in 15 adolescent children (12-17-year-olds) are reported by their parents to show signs of behavioral or emotional problems.³⁰ Crijnen, et al³¹ reported that total score declined with age. Regarding maternal working, our finding was exactly opposite to that documented among Washington's children. Where it was found that children whose mothers are employed are more likely to exhibit emotional or behavioral problems than children with unemployed mothers.³⁰ This contradiction simply reflects the difference in the cultural context between the 2 communities (third world living conditions as well as the difference in the effects of parent sensitivities). There are several explanations for the higher rate of emotional and behavioral problems among children with working mothers in our work.

Table 3 - Distribution of emotionally or behaviorally disturbed (n=109) and non-disturbed (n=327) students according to their school performance.

School performance	Disturbed (N=109) n (%)	Not-disturbed (N=327) n (%)
Failed (<50%)	5 (4.6)	11 (3.4)
Pass (50-<65%)	14 (12.8)	19 (5.8)
Good (65-<75%)	21 (19.3)	35 (10.7)
Very good (75-<85%)	40 (36.7)	176 (53.8)
Excellent (≥85%)	29 (26.6)	86 (26.3)
$X^2 = 22.71, p=0.0001$		

Table 4 - Socio-demographic risk factors for behavioral or emotionally disturbed children (6.5-15 years): Results of univariate analysis.

Risk factors	Not-disturbed (N=327) n (%)	Disturbed (N=109) n (%)	OR	95% CI
Age in years				
15*	317 (96.9)	103 (94.5)	1	
>15	10 (3.1)	6 (5.5)	1.85	0.58-5.69
Educational level				
Primary*	275 (84.1)	73 (67)	1	
Intermediate	52 (15.9)	36 (33)	2.61	1.54-4.42†
Paternal occupation				
Military*	278 (85)	94 (86.2)	1	
Civil	37 (11.3)	11 (10.1)	0.88	0.4-1.88
Retired	12 (3.7)	4 (3.7)	0.99	0.26-3.4
Maternal occupation				
Housewife*	284 (86.9)	84 (77.1)	1	
Working	43 (13.1)	25 (22.9)	1.97	1.09-3.52†
Paternal education				
Low*	15 (4.6)	1 (0.9)	1	
Intermediate	202 (61.8)	67 (61.5)	4.98	0.67-102.86
High	110 (33.6)	41 (37.6)	5.59	0.73-117.01
Maternal education				
Low*	128 (39.1)	44 (40.4)	1	
Intermediate	141 (43.1)	43 (39.4)	0.89	0.53-1.48
High	58 (17.8)	22 (20.2)	1.1	0.58-2.09
Number of brothers				
3*	26 (23.9)	63 (19.3)	1	
4-7	62 (56.9)	211 (64.5)	0.71	0.40-1.26
>7	21 (19.2)	53 (16.2)	0.96	0.46-2
Birth order				
First	32 (29.4)	71 (21.7)	1	
2-4	38 (34.8)	155 (47.4)	0.54	0.3-0.98
>4	39 (35.8)	101 (30.9)	0.86	0.47-1.55
* - Reference category, † - $p < 0.05$ OR - odds ratios, CI - confidence intervals				

Table 5 - Medical risk factors for behavioral or emotionally disturbed children (6.5-15): Results of univariate analysis.

Risk factors	Not-disturbed (N=327) n (%)	Disturbed (N=109) n (%)	OR	95% CI
Diseases during pregnancy				
NO*	318 (97.2)	105 (96.3)	1	
Yes	9 (2.8)	4 (3.7)	1.35	0.34-4.91
Drugs during pregnancy				
NO*	301 (92)	95 (87.2)	1	
Yes	26 (8)	14 (12.8)	1.71	0.81-3.57
Mode of delivery				
Normal*	297 (90.8)	101 (92.7)	1	
Abnormal	30 (9.2)	8 (7.3)	0.78	0.32-1.86
Wanted pregnancy				
Wanted*	320 (97.9)	100 (91.7)	1	
Unwanted	7 (2.1)	9 (8.3)	4.11	1.36-12.62‡
History of meningitis				
NO*	326 (99.7)	105 (96.3)	1	
Yes	1 (0.3)	4 (3.7)	12.42	1.29-295‡
History of accidents				
NO*	322 (98.5)	100 (91.7)	1	
Yes	5 (1.5)	9 (8.3)	5.8	1.73-20.4‡
History of chronic diseases†				
NO*	313 (95.7)	92 (84.4)	1	
Yes	14 (4.3)	17 (15.6)	4.13	1.85-9.26‡
*Reference category, †all were bronchial asthma, ‡ <i>p</i> <0.05 OR - odds ratios, CI - confidence intervals				

Table 6 - Prevalence findings of emotional and behavioral problems among children and adolescents from recent epidemiological surveys.⁴⁰

Authors (year)	Site	Age	N	Prevalence		
				AED	ABD	AD
Fergusson et al (1993) ¹⁹	Christchurch, New Zealand	15	986	-	-	1
Lewinsohn et al (1993) ²⁰	Oregon, USA	16-18	1710	-	1.8	-
Fombonne (1994) ²¹	Chartres, France	6-11	2441	5.9	6.5	1
Costello et al (1996) ¹⁵	North Carolina, USA	9,11,13	4500	6.8	6.6	2
Verhulst et al (1997) ¹⁶	Nationwide, the Netherlands	13-18	780	-	7.9	3
Simonoff et al (1997) ²²	Virginia, USA	8-16	2762	8.9	7.1	1
Steinhausen et al (1998) ¹⁷	Zurick, Switzerland	7-16	1964	-	6.5	2
Breton et al (1999) ¹⁸	Quebec, Canada	6-14	2400	-	-	1
Meltzer et al (2000) ²³	Nationwide, England and Wales	5-15	10438	4.3	5.8	-
AED - any emotional disorder, ABD - any behavioral disorder, AD - any disorder						

One explanation is that in households with working mothers there are decreased resources for parental monitoring of children, which is associated with subsequent problem behavior.³² Another reason is that children in many households with working mothers may receive less time and support than those with non working mothers. The critical factor for emotional stability of children is the involvement of both parents in their lives.³³⁻³⁴

Sprich-Buckminster, et al³⁵ and Matsuishi, et al³⁶ reported that, there is a strong association between prematurity and instrumental delivery from one side and the development of emotional and language problems from the other side. We failed to demonstrate a significant association between mode of delivery, history of diseases or drug intake during pregnancy and emotional or behavioral problems among schoolchildren.

The present results revealed a significant association between being an unwanted child and occurrence of emotional or behavioral problems among children. Moreover, an evidence of physical, verbal as well as emotional abuse was significantly more encountered among those children. This can be explained by many speculations. Firstly, being an unwanted child because of unwanted pregnancy, parents may react by anxiety, uncertain handling and thus, exacerbating the difficulties. Secondly, parents of an unaccepted child may perceive normal child's behavior as problematic. Thirdly, as most unwanted pregnancies are the result of poverty, illiteracy, social disadvantages, single parent and marital difficulties. So, its effect on the child's psychopathology may be mediated through these risk factors.

Child's physical illness whether acute or chronic has been identified as one of the important determinants of child's behavioral and emotional symptomatology.²⁷ Physical illness may be either a cause or an effect of child's maladjustment. The present work revealed that history of chronic diseases (bronchial asthma) was a significant predictor of children's emotional or behavioral disturbance.

The present work revealed a significant difference between disturbed and non-disturbed children regarding history of accidents. Accidents might be contributing factors in the development of child psychopathology. Also, it could be a consequence of the conduct of a disturbed child, as they are known to be accident-prone.

Severe neurodevelopmental sequelae occurs in 10-20% of patients recovering from bacterial meningitis and as many as 50% may have some neurobehavioral morbidity.³⁷ Agreeing with this and with other studies conducted in developing countries to analyze the sequelae of bacterial meningitis in children,^{38,39} our results demonstrated that history of meningitis is a significant risk factor

for emotional or behavioral problems among schoolchildren.

Study limitations. This study has some possible limitations that need to be discussed. 1. Including only males in our study has a cultural background, and we had great difficulty in including schools for girls in our research. 2. Parents were the only informants of their children's problems. They might underestimate, or overestimate their children's problems or their responses might be less accurate, making it important to compare our findings with findings from other informants (for example, teachers). However, all were informed that all information about their children would be confidential and would not be released to anyone without their express written consent. 3. Some important risk factors were not included in our study because of cultural background of our study group (for example, maternal smoking, history of drug intake among parents, low income, single parent families, inter-parental relationship, and so forth). 4. We did not discriminate between schoolchildren and adolescents regarding risk factors because in our study all those reported as having emotional or behavioral problems were under 15 years and accordingly, their matched control group.

It is concluded that every child's mental health is important, many children have mental health problems, and these problems are real and painful and can be severe. The present study highlights one of the sizable mental health problems among Saudi male schoolchildren. Nearly 8.3% of surveyed children and adolescents were behaviorally and emotionally disturbed according to parent's reports which is lower than that reported in other countries. The more we understand the challenges of the young people we serve; the more effective and life-changing our services become. Several risk factors including child, familial, and environmental risk factors play an important role in the genesis of emotional and behavioral problems in schoolchildren. Mental health problems can be recognized and treated; caring families and communities working together can help.

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