

## Prevalence and predictors of emotional and behavioral problems among rural school Egyptian adolescents

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### Abstract

**BACKGROUND:** Emotional and behavioral problems among adolescents are common problems in developing and developed countries with a great impact on their health and wellbeing. **The OBJECTIVE** is to determine prevalence, predictors and impact of emotional and behavioral problems among rural adolescents' school children.

**METHODS:** A cross sectional study with multistage random sample was taken from Giza governorate rural school students aged 13 to 17 years during the academic year 2012-2013. A sample of 476 students was selected. Psychological assessment was conducted using self-reported strengths and difficulties questionnaire (SDQ).

**RESULTS:** The study showed that 18.5% of students had behavioral problems with the highest proportion in emotional problems followed by conduct problems, hyperactive problems and lastly peer relations. Abnormal impact score was found in 13.7% of studied students. Students from private school, at secondary educational grade, with separated or dead parent and frequently punished at school were significant predictors of behavioral problems.

**CONCLUSIONS:** Students from private schools, secondary education, with separated or dead parent, and frequently punished were at higher risk to have behavioral abnormalities than others. School teachers need proper training on how to communicate properly with their adolescent students aiming to avoid frequent punishments.

**Key words:** Adolescents, emotional and behavioral problems, rural, Egypt.

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### Introduction

Emotional and behavioral problems among adolescents represents a considerable public health problem in developing countries; despite being less widely studied than causes of physical mortality and morbidity.<sup>1-3</sup> In developed countries emotional and behavioral disorders represents around 12% of the overall load of morbidity. Evolving researches from developing countries suggests similar levels of morbidity although strong epidemiological evidence is poor.<sup>4</sup> It is essential to have true and up-to-date information about the prevalence of these

problems to be able to guide the health policies in these countries.<sup>5</sup>

Adolescents have to experience sudden changes in their environment, since they begin to take on different social roles. The speedy social change and development are associated with greater emotional and behavioral health risks. Their physical body exceeds their emotional maturity, and their peer pressure usually override their common sense.<sup>6</sup>

Emotional and behavioral problems have serious negative consequences for adolescents' academic achievement and social development.<sup>7</sup> These problems could

be accompanied with chronic health problems or intensifying the present medical problems, like substance abuse and suicidal behaviors. (8, 9)

Many sociodemographic factors as socioeconomic status, interpersonal factors and family pressures are known to increase the risk of emotional and behavioral problems in adolescents. <sup>10</sup> Special concerns should be given to those students aiming to control these problems.

The objectives of the study are to measure the prevalence and the predicting risk factors of behavioral problems among adolescents in preparatory and secondary school among the studied group. Also we aimed to study the impact of behavioral problems on students and people around them and to its predicting risk factors

## Methods

### Participants

In this cross sectional study a multistage random sample was collected from the target population including preparatory and secondary school students from 13 to 17 years old in Nikla rural village in Giza governorate. Students known to have neuropsychiatric disorders or severe chronic diseases or not within this age group were excluded from the study.

West Menshaat el Khanater was randomly selected out of the 22 directorates in Giza governorate. The selected directorate had 11 villages from which Nikla village was randomly selected to be the site of the study; it has a population census of 25717 people for the year 2012. Data were collected in the academic year 2012 - 2013 from the four schools in Nikla village; after taking the permission from the Ministry of Education. The four schools include three public schools (two preparatory and one secondary) in addition to a private secondary one; all of which were addressed in the study. A

systematic randsample of 500 students was systematic randomly selected from all schools (every 5<sup>th</sup> student was taken). Out of 500 students 476 participated in the study after the approval of their caregiver and their agreement to participate

Sample size calculation was done using Epi Info program version 3.5.3. At 95% confidence interval, population size (number of students registered in the selected village schools in the academic year 2012-2013 in preparatory and secondary educational grade) was 2172 students, problem frequency is 24.45% <sup>(11)</sup> and 5% margin of error, the calculated sample size was 251 participants. Using design effect = 1.8 <sup>(12)</sup> and nonresponsive rate 10% yield a sample size of 497 students. A sample of 500 students was selected with 476 responded and participated (response rate 93.4%).

### Instrumentation

Data collection was done using a pre-tested, self-administrated questionnaire guided by researcher's instructions. The questionnaire probed the following variables:

First: Socio-demographic variables: including age, sex, parents' education and occupation, marital status, number of children in the family, child order and exposure to domestic physical violence. Socioeconomic status was classified into low, middle and high classes according to: Parental highest level of education and work and crowding index. Scoring from 19-25 is high social class, 12-18 middle social class, while less than 12 is low social class. <sup>(13)</sup> Second: school variables including school type (public or private), school grade (preparatory or secondary), frequent absence from school, frequency of punishment and scholastic achievements. Also students were asked about smoking and substance abuse. Third: The self-reported version of Strengths and Difficulties Questionnaire (SDQ) which is a brief behavioral screening questionnaire

that includes 25 questions and 5 scales. Each of the 5 scales includes 5 questions and a scale ranging from 0 to 10. The 5 scales are: emotional symptoms, conduct problems, (hyperactivity/inattention) peer relationship problems and prosocial behavior. The total difficulties score is generated by summing the scores from all the scales except the prosocial scale. The resultant score can range from 0 to 40. The cut point of SDQ was regarded 10 for adolescents.<sup>14</sup> The impact supplement enquires about chronicity, distress, social impairment, and burden for others. It includes 5 questions and a scale ranged from 0 to 10. Subtotal, total and impact scores are classified as normal, borderline and abnormal. The cut off point for abnormal total impact scores is 2 or more is abnormal. The psychometric properties of the Arabic version of the SDQ have been validated in 2 former Arabic samples.<sup>15, 16</sup>

### Data analysis

The data was coded and entered using the statistical package SPSS version 15. The data was summarized using descriptive statistics: mean standard deviation and range for quantitative variables and number and percentage for qualitative values. Statistical differences between groups were tested using Chi Square test (or Fisher's Exact test when expected cell count is < 5) for qualitative variables. Correlations were done to test for linear relations between variables. Logistic regression analysis was done to test for significant predictors of behavioral problem or impact score. P- value less than or equal to 0.05 was considered statistically significant.

### Results

A total of 476 children, aged 13–17 years, were enrolled in the study. Table 1a & 1b presents characteristics of the studied group

with 89.5% from public schools and 54.6% in the preparatory educational grade. About half (54.6%) of the students were males with mean age  $15.2 \pm 1.5$  years. 10.7% of students have separated or one dead parent. 65.9% of students fathers were secondary or highly educated and 62.5% had semiprofessional or professional jobs. Regarding the maternal education, only 31.9% were secondary or highly educated and the majority (90.5%) were not working. 65.5% of students' were from middle social level families. 2.3% of students were smoker and 5.7% ever tried drugs. 29% of students reported frequent absence from schools, 10.3% had poor scholastic achievements and 5% were frequently punished at school (physical and/or verbal).

Table 2a & 2b summarizes the results from the self-reported completed SDQs, describing the prevalence of abnormal symptom and impact scores. 18.5% of students had abnormal behavior. The highest proportion of abnormal behavior was for emotional problems followed by conduct problems, hyperactive problems and lastly peer relations. 15.7% of students perceived themselves as having emotional or behavioral difficulties and 13.7% of them had impact scores in the abnormal band. Tables 3 and 4 show the association between abnormal behavior and impact scores with different variables of the studied group. A significantly higher proportion of abnormal behavior was found among students who were from private school, had separated or dead parent, exposed to domestic physical violence, were frequently absent from school without obvious reasons or were frequently punished at school. Regarding abnormal impact score: it was significantly higher among students who were at secondary educational grade, had a working mother, were smokers, exposed to domestic physical violence, frequently punished at

school or were frequently absent from school without obvious reasons. Correlations done between SDQ scores and different studied variables found that students age was positively correlated with emotional symptoms scale (p value=.001 and  $r = .152$ ), hyperactive scale (p value <.001 and  $r = .202$ ), total difficulties score (p value =.006 and  $r = .126$ ) and impact score (p value <.001 and  $r = .171$ ). Family size was negatively correlated with prosocial scale (p value =.022 and  $r = -.105$ ). Social score was negatively correlated with peer problem scale (p value =.03 and  $r = -.100$ ). While no correlation was found with sibling number, child order or crowding index. Impact score was positively correlated with emotional symptoms scale (p value <.001 and  $r = .249$ ), conduct problem scale (p value <.001 and  $r = .203$ ), hyperactive scale (p value <.001 and  $r = .228$ ) and total difficulties score (p value <.001 and  $r = .278$ ).

In table 5 logistic regression analyses was done to test for significant predictors for total difficulties score and impact score abnormalities. For total behavior abnormalities: school type, educational grade, marital status, domestic violence exposure, frequent absence from school and punishment at school were entered in the regression model but only students who were from private school, at secondary educational grade, had separated or dead parent, and were frequently punished at school were at higher risk to have behavioral abnormalities than other students.

Regarding abnormal impact score: student age, educational grade, maternal work, smoking, domestic violence exposure, frequent absence from school, punishment at school and behavioral problem were entered in the regression model but only students who were at secondary educational grade, had working mother, were smokers, were frequently punished at school and had behavioral problems were at higher risk to

have abnormal impact score than other students.

## Discussion

The main objective of this cross-sectional study was to find out the prevalence of behavioral problems in a sample of rural adolescent students in Giza Governorate, Egypt and its association with different sociodemographic variables using the SDQ. The reliability and validity of the SDQ made it a useful brief measure of the psychopathology of children and adolescents.<sup>(14)</sup> Being used worldwide allows comparisons with results from other countries and cultures. It was found that 18.5% of the adolescent students in the present study had an abnormal total behavioral score. This is very close to a similar study in Brazil (18.7%)<sup>(17)</sup>, but higher than that reported in India (10.4%)<sup>(18)</sup>, Gaza strip (14.2%)<sup>(19)</sup> and 9.5% in Britain.<sup>(20)</sup> This was lower than that from Egypt (20.6%)<sup>(11)</sup>, Iran (24.4%)<sup>(21)</sup> and Bangladesh (22%)<sup>6</sup> and Pakistan (35%)<sup>22</sup>. These differences may be due to different sociodemographic, cultural factors, and sources of information.

In the present study, emotional problems were the most prevalent problems (19%) which is consistent with similar studies from Brazil<sup>(17)</sup>, Gaza<sup>(19)</sup> and Siberia.<sup>(23)</sup> However, this was different from similar studies from Egypt, India and Iran which found that conduct problems were the most common.<sup>(11, 18, 24, 25)</sup> Another Chinese study found out that peer problems were the most common problems.<sup>(26)</sup> The higher prevalence of emotional problems in this study compared to higher prevalence of behavioral problems (hyperactivity and conduct scale) in other studies used teacher and parent forms may be due the fact that parents are more likely not aware of a adolescent's emotional condition and students may be unconcerned

of the consequences of their behavioral problems or may hide a problem.<sup>(27)</sup> Also the age of our subjects from 13-17 years may raise the prevalence of emotional disorder, as prevalence of emotional disorder increase with age.

Students from secondary schools were at significant higher risk of total difficulty score and difficulty impact score. This agrees with similar studies from Bangladesh, Iran and Greece.<sup>(6, 28, 29)</sup> This might be explained by increasing academic pressure, difficulties in adjustment with their families, peers and teachers or difficulties in adjustment with rapid transition of their lives.

The total difficulty score was significantly higher among students with separated parents or dead parent compared to students with two-parent families. This was consistent with a similar survey by Pastor et al and Pathak et al who found out that the prevalence of behavioral problems was twice in mother-only families than in biological nuclear families.<sup>30, 31</sup> This might be explained by positive relation between the proper adolescent adjustment and the family structure.

In the present study, it was found that exposure to frequent punishment was a significant predictor of total difficulty score and difficulty impact score. This was consistent with previous literature that found out significantly higher association between physical violence and frequent corporeal punishment with behavioral problems and hence abnormally impact score.<sup>(32-34)</sup> This is against the United Nations' Committee on the Rights of the Child General Comment No. 8 and so the policy makers should take all appropriate legislative, administrative, social and educational measures to eliminate this abuse of punishment.<sup>(35)</sup>

The presence of working mother was significantly associated with difficulty impact score in the present work. This

agrees with [Strazdins](#) et al who found out similar results.<sup>(36)</sup> This could be because maternal employment could hamper mothers' capacity to care. By contrast, theories of child mental health often view fathers' employment as necessary and beneficial for children's and adolescents' wellbeing. Further studies should consider whether mothers' and fathers' rewards from combining employment with childcare may be protective for children's mental health, and whether their conflicts and dilemmas generate risks.

The use of the SDQ to measure emotional and behavioral problems in adolescents is a strength of the present study. Research by Kessler and colleagues has shown that the brief version of the SDQ is a reliable and valid instrument for screening psychiatric disorders in adolescents.<sup>37</sup>

### Limitations

1-The sampling unit for the present study was schools, which was most feasible method of recruiting and assessing children in Pakistan therefore the generalizability of findings of this study is limited only to school attending children.

2- This was a single informant assessment of the behavioral problems and not from the teachers nor the parents. In future research, the authors recommend to analyze multi informants and explore potential differences between every two different informants which would provide surplus value of consulting multiple informants in screening behavioral problems to get a complete picture

### Conclusion

Emotional and behavioral problems are common among Egyptian adolescents. Students from private schools, secondary education, with separated or dead parent and frequently punished were at higher risk to have behavioral abnormalities than others.

### Implications For School Health

Specific screening programs to train, sensitize and mobilize teachers and parents regarding adolescents' emotional and behavioral problems are urgently needed in Egypt especially among high risk adolescents. School teachers need proper training of how to communicate properly with their adolescent students aiming to avoid frequent punishments.

### Human Subjects Approval Statement

The study was approved by the Central Agency for Public Mobilization and Statistics and the Ministry of Education, Egypt. Also, the approval of institutional review board of the family medicine department at Cairo University was obtained for both scientific and ethical considerations of the study. A written informed consent was obtained from the parents before enrollment of the students in the study. Student participation was voluntary after parent's agreement.

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**Table (1a) Sociodemographic characteristics of the studied group**

Characteristics		Number n=476	%
<b>Age</b>	13	83	17.4
	14	86	18.1
	15	87	18.3
	16	86	18.1
	17	134	28.2
<b>Sex</b>	Male	260	54.6
	Female	216	45.4
<b>Marital status (family)</b>	Married	425	89.3
	Separated	51	10.7
<b>Maternal education</b>	Illiterate/	111	23.3
	Basic	213	44.7
	Secondary/	100	21.0
	University	52	10.9%
<b>Maternal work</b>	HW	431	90.5
	Work	45	9.5
<b>Paternal education</b>	Illiterate/	49	10.3
	Basic	113	23.7
	Secondary/	171	35.9
	University	143	30.0
<b>Paternal job</b>	Professional	296	62.2
	Manual	116	24.4
	Mo or	64	13.4
<b>Social level</b>	Low	119	25.0
	Middle	312	65.5
	High	45	9.5

**Table (1b) Personal characteristics of the studied group**

Characteristics		Number	
		n=476	%
<b>School type</b>	Public	426	89.5
	Private	50	10.5
<b>School grade</b>	Preparatory	260	54.6
	Secondary	216	45.4
<b>Child order</b>	The first	178	37.4
	The middle	210	44.1
	The last	88	18.5
<b>Sibling number</b>	1---2	83	17.4
	3---4	256	53.8
	> 4	137	28.8
<b>Domestic Violence exposure</b>		108	22.7
<b>Special habits</b>	Smoking	11	2.3
	Drugs	27	5.7
<b>School</b>	Frequent absence	138	29.0
	Poor achievements	49	10.3
<b>School Punishment</b>	Never or rare	178	37.4
	Sometimes	274	57.6
	Always	24	5.0

**Table (2a) Strength and difficulty questionnaire scores among the studied group**

Items		Number =476	%	Items		Number =476	%
<b>Symptoms scores</b>							
Emotional symptoms	Normal	303	63.7	Peer problem	Normal	292	61.3
	Borderline Abnormal	82 91	17.2 19.1		Borderline Abnormal	148 36	31.1 7.6
Conduct problem	Normal	340	71.4	Hyperactive	Normal	334	70.2
	Borderline Abnormal	68 68	14.3 14.3		Borderline Abnormal	78 64	16.4 13.4
Prosocial behavior	Normal	433	91.0	Total difficulties	Normal	267	56.1
	Borderline	19	4.0		Borderline	121	25.4
	Abnormal	24	5.0		Abnormal	88	18.5
<b>Difficulty Impact score</b>							
Difficulties	No or minor	401	84.2	Duration of difficulties (months) No=75	< 1	11	14.7
	Yes, definite	51	10.7		1-5	6	8.0
	Yes, severe	24	5.0		6-12	26	34.7
Difficulties impact score	Normal	405	85.1		> 12	32	42.7
	Borderline Abnormal	6 65	1.3 13.7				

**Table (2b) Strength and difficulty questionnaire scores among the studied group**

Difficulties interfere with	Never / A little		Quit a lot		A Great Deal	
	No.	%	No.	%	No.	%
Daily life at home	432	90.8	24	5.0	24	5.0
Friendships	436	91.6	14	2.9	26	5.5
Difficulties upset or distress you	424	89.1	26	5.5	26	5.5
School learning	426	89.5	17	3.6	33	6.9
leisure activity	446	93.7	17	3.6	13	2.7
Difficulties make it harder for people around you	436	91.6	19	4.0	21	4.4

**Table (3) Association between total difficulty score and impact score with sociodemographic characteristics of the studied group**

Characteristics	Total difficulty score			Difficulty impact score		
	Abnormal		P-value	Abnormal		P-value
	Number	Row %		Number	Row%	
School type Public	72	16.9	.009	58	13.6	.940

	Private	16	32.0		7	14.0	
School grade	Preparatory	40	15.4	.056	24	9.2	.002
	Secondary	48	22.2		41	19.0	
Age	13	11	13.3	.387	2	2.4	.004
	14	13	15.1		12	14.0	
	15	17	19.5		10	11.5	
	16	16	18.6		13	15.1	
	17	31	23.1		28	20.9	
Sex	Male	46	17.7	.624	31	13.1	.687
	Female	42	19.4		34	14.4	
Sibling number	1---2	11	13.3	.381	10	12.0	.447
	3---4	49	19.1		32	12.5	
	> 4	28	20.4		23	16.8	
Child rank	The first	30	16.9	.726	21	11.8	.222
	The middle	42	20.0		35	16.7	
	The last	16	18.2		9	10.2	
Marital status (family)	Married	72	16.9	.012	57	13.4	.655
	Separated /divorced/widow	16	31.4		8	15.7	
Paternal education	illiterate or Reads& writes	9	18.4	.533	4	8.2	.066
	Basic	18	15.9		9	8.0	
	Secondary / vocational	29	17.0		26	15.2	
	University or higher	32	22.4		26	18.2	
Paternal job	professional or semiprofessional	52	17.6	.091	37	12.5	.574
	Manual	18	15.5		17	14.7	
	no or periodic work	18	28.1		11	17.2	
Maternal education	illiterate or Reads and writes	20	18.0	.640	21	18.9	.108
	Basic	38	17.8		27	12.7	
	Secondary / vocational	17	17.0		8	8.0	
	University or higher	13	25.0		9	17.3	
Maternal work	Housewife	80	18.6	.897	54	12.5	.027
	work	8	17.8		11	24.4	
Social level	Low	20	16.8	.524	13	10.9	.072
	Middle	57	18.3		41	13.1	
	High	11	24.4		11	24.4	

All p values by Chi square test

**Table (4) Association between total difficulty score and impact score with personal, and school characteristics of the studied group**

Characteristics	Total difficulty score			Difficulty impact score		
	Abnormal		P value	Abnormal		P value
	Number	Row %		Number	Row %	
Smoking	Yes	3	27.3	4	36.4	.050*
	No	85	18.3	61	13.1	

Substance Abuse	Yes	8	29.6	.129*	5	18.5	.396*
	No	80	17.8		6	13.4	
Domestic violence exposure	Yes	27	25.0	.047	22	20.4	.021
	No	61	16.6		43	11.7	
School punishment	Never/ rare	29	16.3	.010	28	15.7	<.001
	Sometimes	49	17.9		27	9.9	
	Always	10	41.7		10	41.7	
Frequent absence from school	Yes	35	25.4	.014	30	21.7	.001
	No	53	15.7		35	10.4	
Scholastic achievement	Good	82	19.2	.235	57	13.3	.565
	Poor	6	12.2		8	16.3	

\* P value of Fishers exact test otherwise of Chi square test

**Table (5) Significant predictors for abnormal total difficulty score and impact score among the studied group**

	Odds ratio (95% confidence interval)	P value.
<b>otal difficulties score</b>		
Private / public school	3.037 (1.397-6.600)	.005
Secondary / preparatory students	1.851 (1.039-3.299)	.037
Single /married parent	2.106 (1.068-4.152)	.032
Frequent punishment at school	2.725 (1.087-6.828)	.032
Constant	.092	<0.001
<b>Difficulties impact score</b>		
Secondary / preparatory students	2.710 (1.490-4.928)	.001
Working mother / house wife	2.466 (1.108-5.490)	.027
Frequent punishment at school	4.808 (1.842-12.547)	.001
Smoker / nonsmoker	3.979 (1.027-15.419)	.046
SDQ total score abnormal / normal & borderline	4.277 (2.373-7.709)	<0.001
Constant	.046	<0.001