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RESEARCH ARTICLE

PREVALENCE OF SYMPTOMS OF DEPRESSION, ANXIETY AND STRESS AMONG SECONDARY SCHOOL STUDENTS IN BAGHDAD, IRAQ

***Shalan Al-Abbudi**

FIBMS Psych, Consultant psychiatrist, Imamain Kadhimain Medical City, Baghdad, Iraq

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ABSTRACT

Background: Several studies indicate that prevalence rates of the individual symptoms: depression, anxiety and stress are growing among adolescents. Objective: to evaluate the extent of depression, anxiety, and stress among secondary school students in Baghdad, Iraq. Method: A school based cross-sectional study was conducted during the school year 2007/2008, from October 2007 to March 2008. The sample included secondary school students in Baghdad, Iraq. Cluster sampling method was used. The students were evaluated by well-trained group of teachers. Data were collected using the Arabic version of the Depression Anxiety Stress Scale (DASS-42) while sociodemographic and environmental data, as well as the presence of associated psychological factors, were collected via a questionnaire devised for the study. Formal consent from students was taken. Statistical analysis was conducted using the Statistical Package for the Social Sciences (SPSS, Version 15 for Windows). Results: A total of 48720 secondary school students participated in the study; 62.5% had symptoms of at least one of the three studied symptoms. Depression, anxiety, and stress symptoms were 29.4 %, 40.6% and 51.1% respectively. Statistical analysis showed highly significant findings (P<0.001). Conclusion: High prevalence rates of depression, anxiety and stress symptoms among Iraqi secondary school students indicated exposure to sever ongoing stresses. Psychosocial support and stress resilience reduced the severity of these symptoms.

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INTRODUCTION

Because of the amount of time children spend in school, school-based programs provide opportunities to identify, refer and support children with mental health problems. To be effective however, school-based mental health programs must be a collaborative effort among health care professionals, educators, school administrators, mental health specialists and families (School Mental Health Services, 2007). Slightly more than 28 percent of students admitted to feeling so sad or hopeless for two or more continuous weeks over the past 12 months that they stopped doing some usual activities (http://www.cdc.gov/mmwr/PDF/SS/SS5505.pdf June 2006. Vol. 55/No. SS-5). Unfortunately, four out of five children who need mental health services do not receive them (NIHCM Foundation Issue Paper NIHCM Foundation Issue Paper, 2015). Worldwide, measures of child and adolescent mental health vary and are influenced by social and cultural factors. There is also a lack of consensus or shared understandings as to meanings (Rowling, 2002). Globally, Roberts *et al*. (Roberts, 1998), reported that the prevalence rates of mental disorders among children and adolescents range from 1% to 51% with a mean rate of 15.8% for adolescents. In the USA and Australia, one in five teenagers suffers from mental health problems (Kessler, 1994 and Centre for Epidemiology and Research, 2004). In developing countries, the prevalence of mental disorders among adolescents attending primary health care facilities ranges between 12% and 29% (Ringeisen, 2002). Several studies indicate that prevalence rates of the individual disorders: depression, anxiety and stress are growing among adolescents (Kessler, 1994; Centre for Epidemiology and Research, 2004; Ringeisen, 2002 and Newman, 1998). However, while the increasing role of schools as providers of mental health care is recognized, few national studies have addressed how these services are organized, staffed, funded, and coordinated with community-based services (Judith, 2007). The current status of mental disorders in Iraq remains uncertain, even though it is obvious that the consequences of an ongoing humanitarian situation for several decades significantly affected the population therefore, this study aimed to evaluate the extent of depression, anxiety, and stress symptoms among secondary school students in Baghdad, Iraq.

MATERIALS AND METHODS

A total of 48720 secondary school students participated in this school based cross-sectional study which conducted during the

Correspoding author:* **Shalan Al-Abbudi,
FIBMS Psych, Consultant psychiatrist, Imamain Kadhimain Medical City, Baghdad, Iraq.

school year 2007/2008 (from October 2007 to March 2008). The sample included students, of the scientific and literal branches. They were investigated with the help of special well trained group of teachers. Each secondary school has three teaching levels, which represent the 10th, 11th, and 12th years of study, (locally named as 4th, 5th, 6th secondary class). The number of secondary schools in Baghdad: 62 scientific secondary schools, the literal 64, and the mixed scientific and literal were 290 schools. Secondary schools for boys were 187, for girls were 213, and mixed were 16. Few of them were private and few were night schools. Mixed scientific and literal secondary schools for boys were 102 and for girls were 161.Cluster sampling method was used; one classroom from each year level, from both of scientific and literal branch was selected. Prior to administration of the questionnaire, the purpose of the study was briefly and clearly described to the students.

They were informed that they could choose not to participate and were assured of the full confidentiality of their data. Formal consent from students was taken for participation to this study. All of them agreed to cooperate and to participate. In Iraq the school starting age is 7. Girls have separate schools from boys and very few secondary schools were mixed. Data were collected using the Arabic version of the Depression Anxiety Stress Scale (DASS) (Lovibond, 1995) while sociodemographic and environmental data, as well as the presence of associated psychological factors, were collected via a questionnaire devised for the study. The DASS-42 is used for data collection to assess the negative emotional symptoms among students. It is a 42-item self-report inventory designed to measure the presence and severity of symptoms of depression, anxiety and stress among people as young as 12 years of age (Lovibond, 1995). This scale was psychometrically validated to the Arabic culture by Taouk*et al*. (2008). DASS-42 was utilized in this research (Lovibond, 1995 and Taouk, 2008). It has the advantage that it can discriminate between the negative emotional symptoms of depression, anxiety, and stress; it is suitable for screening adolescents as young as 12 years of age; it is freely available in the public domain, and it is a short and easily answered questionnaire. One would expect anxiety and stress to load higher than depression on the common factors as they are more highly correlated and, therefore, dominate the definition of this common factor. The reliability of the test is considered adequate and test-retest reliability is likewise considered adequate with 0.71 for depression and 0.79 for anxiety. Exploratory and confirmatory factor analyses have sustained the proposition of its factors (p <0.05) (Lovibond, 1995).

Table 1. Scoring and grading of the Depression, Anxiety and Stress Scale (DASS)

Category	Depression	Anxiety	Stress
Normal	0-9	0-7	0-14
Mild	10-13	8-9	15-18
Moderate	14-20	10-14	19-25
Severe	21-27	15-19	26-33
Extremely severe	28+	20+	34+

This screening and outcome measure reflects the experience of the person over the previous 7 days. Gamma coefficients that represent the loading of each scale on the overall factor (total score) are 0.71 for depression, 0.86 for anxiety, and 0.88 for stress. Statistical analysis was conducted using the Statistical Package for the Social Sciences (SPSS, Version 15 for Windows). The significance of differences was tested using the $\chi 2$ test at the 5% level of probability significance.

RESULTS

About 232 secondary schools were reached by the team of the study. Each class consisted about 30-40 students (the range of 35 students for each class). Six classes from each of the 232 schools were selected making a total of 48720 students who were included in this study.

Table 2. shows the classification of the studentsparticipated in the study according to age groups and years of study

Student characteristics	%	No.
Age groups (in years)		
14-15	34.8	16955
16- 17	35.5	17296
18- 20	29.7	14469
School year		
4thsecondary class (10 y)	36.8	17929
5thsecondary class(11 y)	33.2	16175
6thsecondary class(12 y)	30	14616

Table (3). Shows that the majority of students lived with both their parents (73.0%). The most frequent level of education among fathers was secondary and university education (75%), while only 4% were illiterate. On the other hand, the most frequent mothers' education level was secondary education (38%) while only 8% were illiterates. The most frequent fathers' occupations of the studied sample were governmental employee (73%) while unemployed only (6%). About half of mothers were employed (52.9%), housewife (40%) and only 0.2% were private business.

Table 3. Sociodemographic characteristics of the sample

Characteristics		
Parents' status	No.	%
Living within the family	35566	73.00
Divorced/separated	2436	5.00
Deceased father	5847	12.00
Deceased mother	1948	3.99
Both parents deceased	2923	5.99
Father's education		
Illiterate	1949	4.00
Primary	3898	8.00
Intermediate	6333	12.99
Secondary	16565	34.00
University	19975	40.99
Father's employment		
Unemployed	2924	6.00
Governmental employee	35566	73.00
Private business	6333	12.99
Retired	3897	7.99
Mother education		
Illiterate	3898	8.00
Primary	5846	11.99
Intermediate	10231	20.00
Secondary	18514	38.00
University	10231	21.99
Mother's employment		
Housewife	19877	40.79
Employed	25821	52.99
Private business	98	0.20
Retired	2924	6.00

Table 4. Shows that 62.5% of the students had at least one of the three studied symptoms (depression, anxiety or stress) and 37.5% were free of symptoms

Morbidity	%	No.
One symptom or more	62.5	30450
More than one symptom	40	19488
Free of symptoms	37.5	18270

Table 5. Frequency and percentages of psychological traits

Psychological traits	%	No.
Depression	29.4	14325
Mild	15.1	7357
Moderate	10.2	4970
Severe	4.1	1998
Anxiety	40.6	19782
Mild	12.1	5896
Moderate	21.3	10378
Severe	7.2	3508
Stress	51.1	24897
Mild	26.2	12765
Moderate	15.8	7698
Severe	9.1	4434

Table 6. shows the positive and significant correlation between depression, anxiety, and stress symptoms and other sociodemographic variables. Correlation is significant at the 0.01 level (2-tailed)

		Symptoms	Age Group	School Level	Father Employ	Father Education	Mother Employ	Mother Education	Living Circums
Symptoms	Pearson Correlation	1	-.411(**)	.652(**)	.257(**)	.474(**)	-.688(**)	.676(**)	-.329(**)
	Sig. (2-tailed)	.	.000	.000	.000	.000	.000	.000	.000
	N	48720	48720	48720	48720	48720	48720	48720	48720
Age	Pearson Correlation	-.411(**)	1	-.351(**)	.133(**)	-.646(**)	.513(**)	-.489(**)	-.047(**)
Group	Sig. (2-tailed)	.000	.	.000	.000	.000	.000	.000	.000
	N	48720	48720	48720	48720	48720	48720	48720	48720
School	Pearson Correlation	.652(**)	-.351(**)	1	.611(**)	.658(**)	-.842(**)	.834(**)	-.779(**)
Level	Sig. (2-tailed)	.000	.000	.	.000	.000	.000	.000	.000
	N	48720	48720	48720	48720	48720	48720	48720	48720
Father	Pearson Correlation	.257(**)	.133(**)	.611(**)	1	.175(**)	-.352(**)	.361(**)	-.785(**)
Employ	Sig. (2-tailed)	.000	.000	.000	.	.000	.000	.000	.000
	N	48720	48720	48720	48720	48720	48720	48720	48720
Father	Pearson Correlation	.474(**)	-.646(**)	.658(**)	.175(**)	1	-.683(**)	.661(**)	-.340(**)
Education	Sig. (2-tailed)	.000	.000	.000	.000	.	.000	.000	.000
	N	48720	48720	48720	48720	48720	48720	48720	48720
Mother	Pearson Correlation	-.688(**)	.513(**)	-.842(**)	-.352(**)	-.683(**)	1	-.970(**)	.490(**)
Employ	Sig. (2-tailed)	.000	.000	.000	.000	.000	.	.000	.000
	N	48720	48720	48720	48720	48720	48720	48720	48720
Mother	Pearson Correlation	.676(**)	-.489(**)	.834(**)	.361(**)	.661(**)	-.970(**)	1	-.493(**)
Education	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.	.000
	N	48720	48720	48720	48720	48720	48720	48720	48720
Living	Pearson Correlation	-.329(**)	-.047(**)	-.779(**)	-.785(**)	-.340(**)	.490(**)	-.493(**)	1
Circums	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	.
	N	48720	48720	48720	48720	48720	48720	48720	48720

** Correlation is significant at the 0.01 level (2-tailed).

Table 7. shows the highly statistical significant relationship between the prevalence of symptoms of depression, anxiety and stress among secondary school students and the sociodemographic characteristics of the students (p<0.001)

	Chi-Square	DF**	P value
Symptoms	3045	1	0.000
Age Groups	293.275	2	0.000
School Level	338.320	2	0,000
Living Circumstances	10309.888	1	0.000
Father Education	12354.621	1	0,000
Mother Education	1578.672	1	0.000
Father Employ.	10309.000	1	0.000
Mother Employ.	1650.024	1	0.000

**DF= Degree of Freedom

Table (5) shows that 40% of students had at least two disorders' symptoms, and about (20.5%) had all the three disorders' symptoms under study. Depression, anxiety, and stress were found in 29.4 %, 40.6% and 51.1% of the subjects respectively. Table (6) shows the positive and significant correlation between depression, anxiety, and stress symptoms and other sociodemographic variables. Correlation is significant at the 0.01 level (2-tailed). Table (7) shows the highly statistical significant relationship between the prevalence of symptoms of depression, anxiety and stress among secondary school students and the sociodemographic characteristics of the students (p<0.001).

DISCUSSION

The prevalence estimate for depression, anxiety and stress symptoms was 62.5%: stress was the most prevalent (51.1%), followed by anxiety (40.6%), then depression (29.5%). The present study indicated high prevalence rates of these symptoms among Iraqi secondary school students. The high stress symptoms prevalent in this study sample is in agreement with what expected for students lived in Iraq during the years of conflict and war. Since March 2003, there have been periods of insecurity, violence, death, destruction and displacement for many of the population of Iraq. The day today life for the

majority of the population of Iraq has been associated with multiple deprivations of basic necessities like electricity, water, sanitation, food, employment, access to health services and continuous threat of violence. Pelcovitz et al.(2006) (13) found that anxiety symptoms are the main in adolescents (48.9%), followed by depression symptoms (38.2%), then symptoms of stress (35.5%) (14). Al-Gelban *et al.,* (2009) (15) showed prevalence of mental illness among students 73.4% with the most prevalent symptoms were anxiety 66.2%, stress 52.5% and depression 41.5%. Moreover, results revealed that about 62.5% of Iraqi secondary school students reported the symptoms of at least one of the three studied disorders' symptoms. This is higher than those reported by several national, regional and international studies (Al-Gelban, 2017; Al-Gelban, 2009; Roberts, 1998; Harrington , 1998; Abdel-Fattah , 2004; Eapen, 1998). A review of the literature reveals a considerable disparity in figures on the prevalence of psychiatric disorders in adolescents. This could be due to the diversity in methods, definitions used, or geographical locations (Roberts, 1998). Robert *et al.* (1998) (16) reviewed 52 studies carried out in over 20 countries over the past four decades, and found that prevalence estimates of psychopathology ranged from 1 to 51%, (mean 15.8%), with a median rate of 15% among adolescents. Abdel-Fattah et al. (2004) (Abdel-Fattah, 2004) reported that 8.3% of male pupils in primary and secondary schools were emotionally disturbed. Eapen *et al.* (1998) conducted a study on schoolchildren aged 6 to 15 years in the United Arab Emirates, found that 23.9% of children had a mental health problem. In agreement with previous studies, where comorbidity among adolescents ranged from 25% to 68 % (McGee, 2012 and Offord, 1987).

The comorbidity in this study was 50.1%.Al-Gelban KS (2007) (Al-Gelban, 2017) showed59.4% co morbidity among students in a study of 1,723 Saudi secondary school boys using the same methodology. Symptoms were 38.2% depression, 48.9% anxiety, and 35.5% had stress. Although this study showed high prevalence of psychiatric symptoms among secondary school students but still within the range of mild to moderate intensity and very low percentages showed severe symptoms. About 4.1% of students showed severe symptoms of depression, 7.2% of students showed severe symptoms of anxiety, and 0.1% of them showed severe symptoms of stress. These low percentages of severe symptoms may be explained by close social network and social support, religious faith, a sense of commitment to a political cause, and psychological preparation for torture appeared to provide protection against adverse psychological consequences. psychosocial factors associated with depression and /or stress resilience include positive emotions and optimism, humor, cognitive flexibility, cognitive explanatory style and reappraisal, acceptance, religion/spirituality, altruism, social support, role models, coping style, exercise , capacity to recover from negative events and stress inoculation (Southwick, 2005 and Salman, 2010). The social network and close family relationships enhancing social support improving coping skills and stress resilience that affect the prevalence in this study and other Arab studies. Olfson *et al.* (2000) California, USA showed prevalence of mental illness 12%, depression 3.7%, and anxiety 7.3%. Daradkeh *et al.* (2005), Al Ain, UAE, showed prevalence of mental illness 37.8%, depression 6.1%, and anxiety 9.7%. Karam *et al.* (2008) (Daradkeh *et al.,* 2005). Lebanon showed prevalence of mental illness 25.8%, depression 12.6%, and anxiety 16.7%. Alqahtani and Salmon, (2008) Asir region, Saudi Arabia showed prevalence of mental illness 43%, depression 27%, and anxiety 25%. Hussein and Sa'adoon (2006) Al-Nasiriyah, Iraq, showed the prevalence of mental illness 18%, depression 10.8%, and anxiety 8.4%.Iraqi mental health survey (2009), which carried out during 2006-2007 showed prevalence of mental illness 16.5%, depression 7.48%, and anxiety 11.5%. Salman *et al.,* (2010) Baghdad, Iraq, showed prevalence of mental illness 36.8%, depression 18.22%, and anxiety 7.59%

Conclusion

Secondary school students exposed to severe ongoing stresses and this study confirm the high prevalence of symptoms of mental illnesses among them. Psychosocial support and stress resilience were decreased the severity of depression, anxiety and stress. The challenges ahead include the need to carry out extensive further research, and to develop national intervention programmes to promote school mental health.

Recommendations

The school environment can offer an excellent opportunity to promote sound principles of mental health and healthy lifestyles. Consequently, further national studies are needed to explore the ability of school health unit staff and primary health care physicians to diagnose and manage mental disorders. In the light of the findings of this study, the following suggestions for future development in mental health education are offered to help schools move towards achieving the goal of becoming "health promoting schools": Education should be delivered by a range of people (including class teachers and external professionals) who demonstrate a thorough knowledge of the subject.Non-school personnel who have experienced mental health difficulties themselves should be involved in teaching some aspects of mental health education. A variety of interactive techniques should be employed to teach mental health education including group discussions and practical activities. School trips to appropriate facilities which deliver mental-health services should be used when possible to reinforce learning. Mental health education should begin in primary school and should become more detailed and challenging at the secondary school stage. The mental health education curriculum should be broadened to include a wider variety of topics relevant to young people. Each school should designate one staff member to have an overall view of mental health education in order to facilitate better long-term planning and to reduce repetition. Providers of mental health education should also take into account gender preferences and year-group preferences as this could increase programme impact.

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