Screening for depressive symptoms and their associated risk factors in adolescent students in South Sinai, Egypt

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Abstract: Background: Adolescents - one quarter of Egyptian population - often face considerable challenges and dilemmas. They hesitate to disclose their feelings to their parents and rarely seek psychiatric help. In Sinai these challenges are aggravated by the unique quality of life and ecological problems. **Objective:** To explore the prevalence of depressive symptoms and depression associated risk factors in preparatory and secondary school students in South Sinai. **Subjects and methods**: This cross-sectional study included 546 male and female students, randomly recruited from preparatory and secondary public schools in South Sinai. Five cities were selected to include Bedouin and Urban students. Self-report questionnaires were applied to all subjects including socio-demographic characteristics, depression risk factors, Paediatric Symptom Checklist—Youth Report (Y-PSC), and Centre for Epidemiological Studies Depression Scale for Children (CES-DC). **Results:** The total sample mean score of CES-DC was 16.4 ± 9.3, for females the mean score was 18.7 ± 10.1, for males it was 14.4 ± 8.0. Using the cut-off score of CES-DC, 41.9% of the students had important indications of depressive symptoms. There was no significant statistical difference between means of the CES-DC score of students in preparatory and secondary stages. There was a statistically significant predominance of females above the cut-off score compared to males (49.8% versus 35.1%). The multiple logistic regression analysis showed that factors associated with depressive disorders were: being female (OR =1.64); Self-perception of weight as obese (OR = 2.3), presence of symptoms of psychosocial disorders (OR =3.88), having a chronic disease or a serious injury during the last year (OR = 2.28) and involved in physical activity for <60 min. /day (OR = 1.6).**Conclusion:** These results suggest that adolescent students in South Sinai have a high rate of depressive symptoms, with a clear predominance of females over males. Psychosocial disorders and health related variables were associated with symptoms of depression in this population. These findings suggest that it is important to include mental health assessment in School Health Programs for early detection of mental disorders and student counseling.

1. Introduction

Adolescence is a critical stage of life when physical, psychological and social changes occur. This period of life is a transitional period of development that is foundational but also noticeably malleable and plastic from a neurobiological, behavioral, and psychosocial perspective (**Steinberg, 2008.)**

Researches in the last decades have revealed that many mental disorders are relatively common in adolescence. At least one in five youth suffers from a current developmental, emotional, or behavioral problem (**Evans *et al.,* 2005**).

Adolescent depression is currently considered to be common, debilitating and recurrent, involving high morbidity and mortality (**Zinn-Souza *et al.,* 2008).**

Studies have shown that at any given time ("point prevalence") about three to nine per cent of school-aged children and adolescents meet the criteria for major depression. Taking a longitudinal view, the numbers are higher—for instance, one in five teen-agers have had a history of depression at some time. In primary care settings the rates of depression are higher still —as many as 28 per cent for adolescents (**Cheung *et al,* 2007)**.

Adolescent depressive disorders often have a chronic, waxing and-waning course, and there is a two- to fourfold risk of depression persisting into adulthood (**Pine *et al.,* 1999).**

Results of Egyptian studies investigate the prevalence of adolescent depression differ greatly; according to the setting of the study and the methodology. In the 1999 national survey of Egyptian children and adolescents, 59% of the sample reported experiencing feelings of fear or anxiety. Forty per cent of children with anxiety disorders had a comorbid depressive disorder (**Ibrahim *et al.,* 1999).** In a recent study, a percentage of 15.3% of the studied sample were estimated to meet criteria for depression

according to the Children Depression Inventory (CDI) cut-off point (**Khalil et al., 2010).**

Depressed adolescents face increased hospitalizations, recurrent depressions, psychosocial impairment, substance abuse, antisocial behaviors, and, of course, suicide (**Zuckerbrot et al., 2007**).

In Egypt, young people between the ages of 15 and 24 represent 22.54 percent of Egypt's total population (**CAPMAS, 2010**). This large and growing group faces problems and challenges that are unique to them and that require interventions and information that address their needs.

South Sinai is the least populated governorate of Egypt. It is located in the east of the country, encompassing the southern half of the Sinai Peninsula (**EEAA, 2004**). Inhabitants of Sinai have unique pattern of life, which is far different from that of other Egyptian urban or even rural communities. Limited dietary resources, lack of water supply, illiteracy, inadequate health services and unique historical circumstances have their effect on physical and mental health status of the population (**Abdel Kader, 2005; Yamamah et al., 2007**).

A school is generally acknowledged to be a key setting for promoting pupils' health, including mental health (**Shochet et al., 2001).** Schools provide access to adolescents for assessment and intervention. Student functioning is tracked regularly, and behavior is assessed by multiple observers (teachers). Preventive interventions designed to target large populations of adolescents are particularly well suited for the school setting (**Haavet et al., 2005**).

The aim of this study is to explore the prevalence of depressive symptoms and its associated factors among adolescents in public schools in South Sinai. The ultimate goal is putting an intervention plan to reverse, halt, or at least retard the progress of depression and its sequels in this target population.

2. Subjects and methods
Study design:

This study is a cross-sectional, school-based study.

It was a part of the project "Improvement of health and nutritional status of children and adolescents living at South Sinai", which is funded by the European Union (EU) as a collaborative research with the National Research Center in Egypt.

Setting of the study:

Nine preparatory and secondary public schools were selected on stratified random basis from five cities in South Sinai to include Bedouin and Urban students and represent all social and environmental variations in South Sinai. These cities are: El-Tur, Saint Catherines, Ra's-Sedr, Abo-Zenimah and Nuweiba.

Subjects:

The study was performed in the period between March and May 2009. All male and female students who were present in the selected schools at the period of survey were eligible. Students, who were absent or refused to participate, were excluded.

Ethical considerations:

The study was approved by the Ethical Committee of the National Research Centre. Permission to conduct the research in the selected schools was obtained from the Egyptian Ministry of Education. In addition, a verbal consent was obtained from each participant; they were informed about the questionnaires being used in the study and accepted their sharing in the study. Confidentiality was maintained as no identification was used.

Procedures

The subjects of the study completed a self-report questionnaire which included the following items:

- **Demographic and personal data** such as: age, sex, parental education and occupation, residence and origin whether Bedouin or Urban.

- **Depression risk factors:** the participant answered a group of questions concerned with self-perception of health, self-perception of weight, history of organic illness or serious injury, dietary behaviour, physical activity, cigarette smoking and substance use (**Bhatia and Bhatia, 2007**).

- **Psychosocial functioning assessment:** Using Youth Paediatric Symptoms Checklist-17(Y PSC-17).The Paediatric Symptoms Checklist (PSC) is a widely used and validated instrument using parents to help screen children's psychosocial dysfunction (**Jellinek et al., 1988**).The PSC-Y was adapted from the PSC to allow the youth to complete the questionnaire himself. The shortened version of the PSC-35was used. It consists of 17 items, each item is rated as "NEVER," "SOMETIMES," or "OFTEN" present and scored 0, 1, and 2 respectively. The total score is calculated by adding together the score for each of the 17 items. . A total score of 15 or higher suggests the presence of significant behavioral or emotional problems. It consists of 3 subscales: internalizing subscale, where cut-off point is 5 or more, externalizing subscale, its cut off point is 7 or more and attention subscale, its cut-off point is 7 or more (**Gardner et al., 1999**). The PSC-17 subscales have obtained reasonable agreement with validated and accepted parent-report instruments for internalizing, externalizing, and attention problems (**Gardner et al., 2007).**

- **The Center for Epidemiological Studies Depression Scale for Children (CES-DC):** The CES-DC (**Weissman et al., 1980**) is a valuable tool for identifying a group at-risk for depression. It is a 20-item self-report scale with possible

scores ranging from 0 to 60. Each item is rated on 4-point Likert-type scale indicating the degree of their occurrence during the last week. The items' responses range from 0 (rarely or none of the time) to 3 (most all of the time). There are various cut-off scores for clinical depression with reasonable associations between cut-off scores and clinical diagnosis. **Weissman *et al.* (1980)**, the developers of the CES-DC, have used the cut-off score of 15 as being suggestive of depressive symptoms in children and adolescents. That is, scores over 15 can be indicative of significant levels of depressive symptoms. Acceptable validity and reliability have been found among different cultural contexts (**Faulstich *et al.*,1986; Fendrich *et al.*, 1990**). The psychometric properties of the Arabic version of the CES-D were investigated before and it was found to possess reasonable reliability and reasonable discriminative and criterion validity (**Ghubash*et al.*, 2000).**

For the purpose of this study, the English version of the Youth Pediatric Symptoms Checklist- 17 was translated into the Arabic language using the back-translation method (**Brislin, 1980; Harkness, 2003**). The translation team included experts in surveys, adolescent behavior, and language. Then another expert team translated the Arabic version into English without accessing to the original version. A third expert researcher compared the translated Arabic and the translated English versions, corrected any incongruence in the translation. No significant variation between the two was detected.

3. Results

The total number of the participants was 546 male and female students, with ages ranged from 12 to 20 years. Table (1) showed the mean ± SD of the CES-DC score of the whole sample (16.41 ± 9.3) and a highly significant difference between the mean male and female students' scores (14.41 ± 8 vs.18.67 ± 10.1, $p<0.001$). Using the cut-off score of 15, it is evident that 41.9% of the whole sample had significant levels of depressive symptoms. Highly significant proportion of female subjects had indications of depressive symptoms which exceeded that of males (49.8% of females vs. 35.1% of males, $p<0.001$).

As elicited in Figure (1), there was no significant statistical difference between means of the CES-DC score of students in preparatory and secondary stages. There was a statistically significant predominance of females mean score above the cut-off score compared to males in both preparatory and secondary stages. Moreover, females in the preparatory stage had significantly higher mean score than those in the secondary stage.

Table (2) showed the number and percentage of adolescent students with depressive symptoms according to demographic variables. Female gender and low household income according to father's occupation represented the most significant variables associated with depressive symptoms ($p<0.05$). On the other hand, no significant association was observed with differences in origin whether Bedouin or Urban, stage of education, parental education or maternal occupation ($p> 0.05$).

Table (3) illustrated that, depressive symptoms were present in high proportion of students if they perceived their own health as bad, had a history of chronic disease or serious injury in the last year, perceived their own weight as obese, had health risk behavior as lack of physical activity, never or rarely eating breakfast, fruits or vegetables ($p< 0.01$). Presence of symptoms of anorexia had no association with symptoms of depression ($p>0.05$), while symptoms of bulimia were significantly associated with depressive symptoms ($p= 0.01$).

The association of depressive symptoms with smoking habits and symptoms of psychosocial disorders was revealed in Table (4). Cigarette smoking during the last month was not significantly associated with depressive symptoms ($p= 0.656$). However, Cannabis smoking, using sedatives or stimulants or snuffing drugs during the last month were significantly associated with depressive symptoms ($p<0.05$). The presence of symptoms of psychosocial disorders was highly significantly associated with depressive symptoms ($p< 0.001$).

Stepwise multiple logistic regressions of factors associated with symptoms of depression were performed to explore the risk factors of developing depressive symptoms. Table (5) showed the variables which were significant in the multivariate analyses. The regression coefficients and the odds ratio show the effect of each variable after controlling of the effect of the other variables in the model. Female students were 1.64 times (95% CI 1.08-2.50) more prone to develop depression than male students. Students perceived their weight as obese were 2.3 times more at risk of developing depression than those perceived their weight as normal weight. There was no significant difference between students perceived themselves as thin or normal weight ($p= 0.219$). Those who eat less fruits were more likely (1.77 times) to develop depression than those who eat fruits regularly. Those involved in physical activity less than 60 minutes/day were 1.6 times more susceptible to develop depression.Those who had any chronic disease or serious injury during the last year were 2.28 times more prone.Those who use snuffing drugs were 12.24 more liable to develop depression, however, the confidence interval is very wide; meaning the sample

size was very small and therefore the estimate of the odds ratio was very unreliable. Presence of psychosocial disorders, presence of inattention or presence of internalizing behavior increases the risk of depression by 3.88, 3.08, and 2.71 times, respectively.

Table (1): Descriptive data according to The Centre for Epidemiological Studies Depression Scale for Children (CES-DC)

Measurement	Whole sample (N=546)	Male students (N=291)	Female students (N=255)	*p*-value
Mean depression score+ SD	16.41±9.3	14.41± 8	18.67 ± 10.1	<0.001
Number and percentage of students having symptoms of depression (score on depression scale≥15)	229 (41.9%)	102 (35.1%)	127 (49.8%)	<0.001

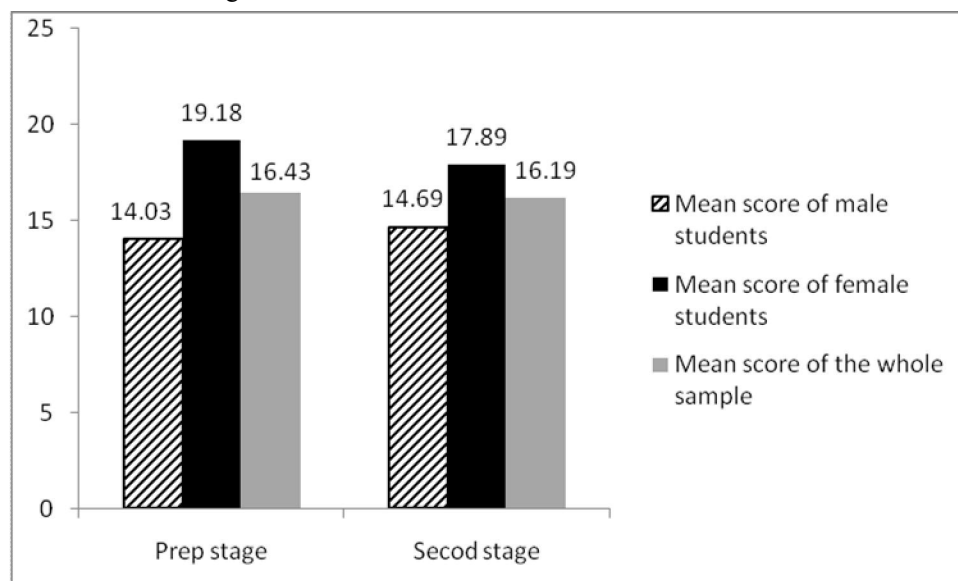*P*-values≤0.05 are considered significant

Figure (1): Means of the CES-DC score of the whole sample, male and female students according to stage of education

Table (2): Number and percentage of adolescent students with depressive symptoms according to demographic variables

Variable		Total number of students	Students with depressive symptoms N(%)	*p*-value
Gender	Male	291	102 (35.1)	
	Female	255	127 (49.8)	0.002*
Origin	Bedouin	188	96 (51.1)	
	Urban	358	186 (52.0)	0.843
Stage	Prep	333	175 (52.6)	
	Sec	213	107 (50.2)	0.597
Parent's education	Both uneducated	236	123 (52.1)	
	At least one educated	310	157 (50.6)	0.882
Father occupation	Manual/skilled worker	248	131 (52.8)	
	Governmental employee	167	96 (57.5)	
	Businessman/professional	130	54 (41.5)	0.021*
Mother occupation	Not working /manual worker	399	200 (50.1)	
	Businesswoman/professional	146	82 (56.2)	0.211

*P-values≤0.05 are considered significant

Table (3): Number and percentage of adolescent students with depressive symptoms according to self–perception of health, weight, dietary and health risk behavior

Variable		Total number of students	Students with depressive symptoms N (%)	p-value
Self –perception of health	Bad	51	38 (74.5)	
	Good	494	243 (49.2)	0.001
History of chronic disease or serious injury during the last year	No	474	235 (49.6)	
	Yes	71	46 (64.8)	0.017
Self –perception of weight	Normal	377	175 (46.4)	
	thin	111	69 (62.2)	
	obese	58	38 (65.5)	0.001
Regular eating breakfast during the last month	Never/ rarely	253	149 (58.9)	
	Sometimes/often	293	133 (45.4)	0.002
Frequency of eating fruits/month	Never/ rarely	108	68 (63.0)	
	Sometimes/often	437	214 (49.0)	0.009
Frequency of eating vegetables /month	Never/ rarely	85	56 (65.9)	
	Sometimes/often	461	226 (49.0)	0.004
Symptoms of bulimia	Rarely	432	211 (48.6)	
	Sometimes/often	114	71 (62.3)	0.011
Symptoms of anorexia	Rarely	235	115 (48.9)	
	Sometimes/often	309	166 (53.7)	0.269
Frequency of physical exercise for >60min./day	None	259	157 (60.6)	
	Sometimes/often	287	125 (43.6)	<0.001
Frequency of participation in PE /term	None	276	164 (59.4)	
	Sometimes/often	270	118 (43.7)	<0.001

P-values≤0.05 are considered significant

Table (4): Number and percentage of adolescent students with depressive symptoms according to smoking habit and psychosocial disorders

Variable		Total number of students	Students with depressive symptoms N (%)	p-value
Cigarette smoking during the last month	Never	521	268 (51.4)	
	Yes	25	14 (56.0)	0.656
Cannabis smoking during the last month	Never	529	269 (50.9)	
	Yes	17	13 (76.5)	0.037
Using sedatives or stimulants during the last month	Never	479	238 (49.7)	
	Yes	67	44 (65.7)	0.014
Snuffing drugs during the last month	Never	520	257 (49.4)	
	Yes	26	25 (96.2)	<0.001
Presence of psychosocial disorder	Negative	438	190 (43.4)	
	Positive	108	92 (85.2)	<0.001
Presence of inattention disorder	Negative	486	229 (47.1)	
	Positive	60	53 (88.3)	<0.001
Presence of externalizing behavior	Negative	518	258 (49.8)	
	Positive	28	24 (85.7)	<0.001
Presence of internalizing behavior	Negative	379	150 (39.6)	
	Positive	167	132 (79.0)	<0.001

P-values≤0.05 are considered significant

Table (5): Stepwise multiple logistic regressions of factors associated with symptoms of depression

Measurement	B	S.E.	P-value	OR	95.0% C.I. for OR	
					Lower	Upper
Gender	0.495	0.215	0.021	1.64	1.08	2.50
Self-perception of weight			0.036			
Thin	0.323	0.263	0.219	1.38	0.83	2.31
Obese	0.831	0.341	0.015	2.30	1.18	4.48
Frequency of eating fruits/month	0.572	0.257	0.026	1.77	1.07	2.93
Having any chronic disease or serious injury during the last year	0.823	0.261	0.002	2.28	1.37	3.80
Frequency of physical exercise for <60min./day	0.472	0.213	0.026	1.60	1.06	2.43
Snuffing drugs during the last month	2.505	1.065	0.019	12.24	1.52	98.79
Presence of psychosocial disorder	1.356	0.350	<0.001	3.88	1.95	7.70
Presence of inattention disorder	1.126	0.473	0.017	3.08	1.22	7.80
Presence of internalizing behavior	0.998	0.254	<0.001	2.71	1.65	4.47
Constant	-1.574	0.208	<0.001	0.21		

B=regression coefficients, SE=standard error of the coefficients, p-values≤0.05 are considered significant, OR= odds ratio, and CI=confidence intervals.

4. Discussion

Nowadays, depression in children and adolescents is an important public health problem (**Zuckerbrot et al., 2007).** Childhood–onset depression has a 60–70% risk of continuing into adulthood and 20–40% develops bipolar disorder within 5 years **(Sitholey, 1999; Weller and Weller, 2000)**. After a recovery from a major depressive episode, children might experience sequels, such as poor self-esteem, increased risk-taking behavior, subclinical depressive symptoms, and impairment of interpersonal relations and global functioning (**Birmaher et al., 1996).**

Our study showed high prevalence of depressive symptoms among public schools 'adolescents in South Sinai (41.9%), which is relatively high when compared to similar studies. In developed countries, community surveys indicated less prevalence rate of depressive disorder in adolescents. In an American study the rate was 4-8% (**Birmaher et al., 1996**), while it is 20% in Germany (**Oldehinkel, 1999**), 20.8% in Ireland (**Donnely, 1995**) and 23% in Norway (**Sund et al., 2011**).

In developing countries adolescents possess many risk factors that may lead to mental health issues (**Patel et al., 2001**). In a recent study, authors found that 37% of Zambian adolescents were experiencing depressive symptoms at a level that may be clinically relevant (**Neese et al., 2013**). A greater ratio of depressive symptoms was reported among Jordian College students aged 17-29years. It was found that 47.8 % of students had a major depression and 24.4 % of students suffered from mild-moderate depression according to results of the CES-D total scores (**Zawawi and Hamaideh, 2009).**

In Egypt, depression is encountered more frequently in larger urbanized governorates as Cairo and Alexandria as compared to rural cities. Depressive symptoms were present in15.3% of secondary school females in Cairo (**Khalil et al.,2010**), 12.8% among adolescent female students in Alexandria (**Afifi, 2004**).On the other hand, a previous study on Egyptian students in El Sharquia Governorate (rural area) found a prevalence of 7.6% using self-reported questioners (**Said et al.,1998**). This difference in prevalence rates may be attributed to the more stressful life style and societal demands in large urbanized governorates (**Harpham, 1994).**

Population in South Sinai have unique circumstances. They live on the periphery of Egypt, away from the centre and away from the basic services. Adolescents (whether Bedouin or Urban moved from the Nile valley with their families) are growing up in contexts characterized by rapid urbanization, weak economies, limited educational opportunities, high unemployment rates, pervasive poverty, and other socio-cultural transformations (**International Crisis Group, 2007).** This

environment can have negative impacts on youth development as reported in similar communities (**Patchin** *et al. ,***2006, Strickland** *et al.,***2009 and Kabiruetal., 2013).**

While the high prevalence rate in our study may reflect true rates, they may also be related to differences in methods and measures used for assessing depression, sampling procedures, time frame and age (**Merikangas and Knight, 2009).**

We examined different variables thought to be risk factors in developing depression among the study population. We used the cut-off of the CES-DC score as dependent factor and the other variables as independent risk factors. Age and school grade seem to have no effect in developing depressive symptoms in male students, while females in the preparatory stage have higher scores of depressive symptoms than those in the secondary stage. This finding is in line with the reported peak of onset of depressive symptoms in females (**SAMHSA, 2012).**

Gender difference and female predominance in our study, is a constant finding in other similar studies**.** One of the most consistent findings in the social epidemiology of mental health is the gender gap in depression (**Cyranowski** *et al.,* **2000; Van de Velde** *et al.,* **2010).**

Girls are no more likely than boys to evidence depression in childhood, but by about age 13, girls' rates of depression begin to increase sharply, whereas boys' rates of depression remain low, and may even decrease. By late adolescence, girls are twice as likely as boys to be depressed and this gender ratio remains more or less the same throughout adulthood (**Nolen-Hoeksema, 2001).**

A report recently released by Center for Behavioral Health Statistics and Quality, 2012states that girls aged 12-17 years are 3 times more likely than boys of the same age to have had a major depressive episode in the last year (**SAMHSA, 2012).** Previous Egyptian studies confirmed the same results (**Abou Nazel** *et al.,* **1991; Okasha** *et al.,* **1999; Khalil** *et al.,* **2010).** This gender difference in depression has been attributed to genetics, increased prevalence of anxiety disorders in females, biological changes associated with puberty, cognitive predisposition and sociocultural factors (**Compas** *et al.,* **1997).**

The majority of cross-sectional studies suggest that individuals with low socioeconomic status (SES) have higher levels of depressive symptoms and depressive disorders. The evidence seems most consistent for comparisons involving income or composite measures of SES (**Gallo and Matthews, 2003).** In this study, no significant association was observed between depressive symptoms and parental education or maternal occupation ($p > 0.05$).

However, paternal occupation with low household income had a strong association with depressive symptoms.

A systematic literature review detailing the association between SES and depressed mood or anxiety in youth goes in line with our results. Authors revealed that, youth with low socio-economic status are approximately two and a half times more likely to suffer from depressed mood or anxiety than other youth with higher socio-economic status (**Lemstra** *et al.,* **2008).**

In contrast to our results, **Goodman** *et al.,* **2003** found that both the population attributable risk (PAR) for household income and parental education relative to depression were large, but the PAR for education (40%) tended to exceed that for income (26%) (**Goodman** *et al.,* **2003).** Inadequate detailed information about parental education level in our study may mask the association between depressive symptoms in adolescents and their parental level of education.

Cognitive and emotional development in adolescents is linked to weight perception and body image (**Cheung** *et al.,* **2007).** In this study, although actual weight of the participants was not measured, there was a strong relationship between self-perceived weight and depressive symptoms. This relationship was more pronounced among students perceived themselves as obese (OR=2.3, CI: 1.18-4.48).

Al-Mamun *et al.,* **2007** suggested that weight perception but not measured overweight during adolescence is a significant risk factor for depression in young males and females at age 21. It may be that the causal pathway between perceived weight status and depression occurs through weight stigmatization, body dissatisfaction and low-self-esteem (**Ali** *et al.,* **2010).**

Goldberg reported that the rate of depression in patients with a chronic disease is almost three times higher than normal (**Goldberg, 2010).**

In this study, students who had any chronic disease, disability or serious injury during the last year were 2.28 times more prone to develop depressive symptoms. The most common complaints or disabilities registered by the students were visual defects, auditory problems, renal colic and chronic headache. Lack of health services is responsible for their continuous suffering.

(**Yamamah** *et al.,* **2012 a**) reported that 19.3% of 453 primary school children in South Sinai had hearing impairment. None of these children had been previously diagnosed or was receiving treatment and support. Prevalence of urinary crystals was found to be 28.99 % among Egyptian children in 6 localities of South Sinai (**Yamamah** *et al.,* **2012 b).**There is

some evidence that people living with chronic physical conditions often experience emotional stress and chronic pain, which are both associated with the development of depression and anxiety. Experiences with disability can also cause distress and isolate people from social supports (**Evans** *et al.,* **2005**).

People's health choices; including eating habits, physical activity and substance use, change during adolescence (**WHO, 2012**).People who engage in unhealthy lifestyle practices are at an increased risk for developing mental illnesses such as depression (**Nemande** *et al.,* **2007**).In this study, students who are mostly tend to skip breakfast, or who are not getting enough fruits and vegetables and those who are physically inactive are more liable to develop depressive symptoms than their peers. In contrast to common dictum, depression does not seem to be associated with cigarette smoking among our study population. Previous longitudinal studies have shown that depression is associated with higher rates of smoking, alcohol abuse, unhealthy eating, and infrequent exercise (**Haarasilta** *et al.,***2004; McMartina***et al.,***2013).**

In this study, we found that substance abuse (Cannabis, sedatives, stimulants and snuffing drugs) was highly associated with depression. Several epidemiological studies have shown that depressive illness and substance abuse frequently co-occur (both concurrently and over the lifetime) in adolescents **(Armstrong and Costello, 2002)**. It is likely that the high prevalence of these disorders occurring together reflects, in part, overlapping genetic, environmental and neurobiological factors. It is also possible that there will be differences in neurobiology based on the temporal course of development of these two disorders; whether depression precedes substance abuse or the reverse. For instance, substance use may occur in attempts to improve mood in depressed subjects, however it is possible that chronic substance use leads to neurobiological changes that increase vulnerability for depression (**Rao and Chen, 2008**).

Psychosocial dysfunction has been found to contribute substantially to morbidity and disability among children and adolescents **(Prince, 2007).** Screening for psychosocial dysfunction using a screening questionnaire can greatly facilitate early detection and treatment of these problems leading to considerable health benefits (**Reijneveld, 2006**). In this study, about 20% of the study sample reported to have psychosocial dysfunction according to the cut-off of The Y PSC-17. Eighty five percent of these adolescents have high level of depressive symptoms, while the percentage of adolescents having depression without psychosocial dysfunction was 43.4%. In addition, the multiple logistic regressions analysis projected that adolescents with psychosocial dysfunction are 3.88 times at risk to have depressive symptoms.

In a previous study, the PSC-Y showed strong associations with teacher-reported attention and behavioural problems, parent-reported child dysfunction, and child-reported depression and anxiety. The PSC-Y identified children with internalizing symptoms who were missed by parents, consistent with the superiority of self-report as a measure of internalizing disorders (**Pagano** *et al.,* **2000**).

There were some study limitations, first, the cross-sectional design does not allow to establishing cause-effect relationship. Therefore, longitudinal studies are required to prove the causal relationship and to test the association of depression with the expected risk factors. Second, the study findings cannot be generalized to the entire adolescent population in Sinai, as the adolescent sample evaluated as having depressive symptoms may be under or overestimated since only one depression scale (CES-DC)) was applied, the timing of the study was short and self-report questionnaires might elicit inflated or false responses. More extensive studies are required with different assessment strategies of depression, greater diversity of students, schools and done at different times of the year.

In spite of the limitations, this study takes a snapshot on the prevalence of depression in adolescents in South Sinai and its associated risk factors. The purpose of the study is well served to highlight the common but ignored problem.

In conclusion, Knowledge of the magnitude of the problem of adolescent depression would be of use in planning a program for prevention and control. Schools offer a convenient location for the widespread delivery of depression prevention programs.

Effective interventions must involve activation of the role of psychosocial counselor in schools, promoting complimentary relation between parents and adolescent early in life and collaboration between schools and communities to build resilience against conditions that produce frustration, apathy, isolation, and hopelessness experienced by many of our youth.

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