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The Prevalence of Depression Among High School and Preuniversity Adolescents: Rasht, Northern Iran

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Background: Depression is an important mental health problem, which is quite unknown among adolescents in our community. We conducted this study to determine the prevalence of depression among high school and preuniversity students of Rasht, northern Iran.

Methods: We studied 4,020 randomly-selected individuals out of 41,815 high school and preuniversity students. Beck's self-administered standard questionnaire and a predetermined form containing some demographic variables were applied to measure variables.

Results: Two hundred ninety-nine subjects (due to incomplete responses) and 40 subjects (evening-school students) were excluded from our study. One thousand two hundred fifty (34%: CI95% 32.4 – 35.4%) out of 3,681 subjects suffered from depression. There were significant differences between the prevalence of depression and type of school ($P < 0.001$), educational field ($P < 0.0005$), socioeconomic class ($P = 0.0002$), and gender ($P < 0.001$). There was no significant difference between the prevalence of depression and city district, school grade, and age of participants.

Conclusion: Our study indicates that depressive symptoms are common in our subjects and they have significant association with low socioeconomic status. We, therefore, recommend the use of psychiatric interview and analytical methods for determination of the prevalence of depressive disorders and its relationship with studied variables.

Introduction

According to World Health Organization (WHO), depressive disorders are the fourth leading health problem in the world. Major depressive disorder is estimated be the second disabling disease of mankind in 2020.[1, 2]

Some studies reported that most of the young adults born after World War II, suffered from depressive disorders. Meanwhile, there were more committed suicides among 12- to 19-year-old American adolescents, which have attracted more attention.[3]

A Chinese-American study on 503 subjects, using the Chinese version of Beck's questionnaire and a cut-off point of 16, revealed that 15% of participants had depression.[4]

Another study reported the prevalence of depression among high school students as follows: mild depression in 18%, moderate depression in 9%, and severe depression in 7%, hence, a total rate of 34%.[5]

Four studies, which were using Beck's depression questionnaire, reported moderate depression in 8% to 36%,[6] another survey, using a summarized self-administered Beck's questionnaire, reported severe depression in 18% of 8,206 adolescents.[7] Although the rate of depression seems to be higher in those with low socioeconomic status, there is no strong evidence to support this hypothesis.[8]

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One study has reported a significant association between the prevalence of depression and low socioeconomic class.[9] The prevalence of depression among female adolescents has been reported to be from two[10] to five times more than males.[11] Another survey, which compared the prevalence of depression in early and late adolescence showed a higher rate in late adolescence.[3] We conducted this study to determine the prevalence of depression among high school and preuniversity students of Rasht, Guilan Province, northern Iran.

Patients and Methods

Subjects

We examined high school and preuniversity students in Rasht, North of Iran from October 2002 through September 2003. There were 62 girls and 52 boys high schools and preuniversity schools in educational district one of this city. It included 12,553 high school and 8,740 preuniversity students. The corresponding figures for the second district were 67 and 56 high schools and preuniversity schools, with 10,678 and 9,843 students, respectively. There were a total of 41,815 students studying in 237 high schools and preuniversity schools.

Based on the previous studies, we assumed a prevalence of 5%. With a precision of 1% and 95% confidence interval (CI), taking into account the multistage clustering sampling method, we calculated the minimum sample size, and finally selected 4,020 students for our study. Assuming 40 students in each cluster, we selected 100 clusters that were proportionately distributed among educational districts. At first, the list of students was obtained from the Education and Training Office of Guilan Province. The number of students was added up accumulatively. Selecting the location of the first cluster was based on a random number table. Then, using a systematic sampling technique, knowing the intercluster interval, we selected the subsequent clusters. Forty students from evening-schools were excluded because they were older than our subjects. Totally, our sample included 2,172 girls and 1,848 boys.

Definition

- *Depression:* Considering a cut-off point of 16 in Beck's questionnaire.
- *Education level:* As recorded in class inventory.
- *Educational field:* As recorded for class field.

- *School type:* As recorded in school sign.
- *Districts:* There were two educational districts in Rasht City.
- *Age:* As reported by students.
- *Social class:* As calculated by adding up result of scores obtained from parent's occupational status, parent's educational level, and family incomes.[12, 13]

Data collection tools and assessment

After attending a short training and explanatory course about the proposed subjects, and coordinating with school deans, trained clinical psychologists referred to the predetermined schools and explained the needs for the participants (students), obtained informed consents, and recorded each student's demographic data including age, gender, socioeconomic class, grade and educational field, as well as type of school (i.e., private or state).

To reduce falsepositive responses, the assessment of depression was performed using Beck's questionnaire that was adapted for local use. Beck's standardized questionnaire scores defined as follows: symptom-free (0 – 15), mild depression (16 – 30), moderate depression (31 – 46), and severe depression (47 – 63).[14]

Each of the students completed Beck's questionnaire in 15 minutes, and if needed, the correspondent attendant gave appropriate answers. If by any way the student was in a holiday, psychologists would have returned to carry the study on another day.

Data processing and statistical analysis

Data were transferred to a personal computer, classified, and analyzed with SPSS (Windows version 10). χ^2 test was used to compare the categoric variables.

Results

Study population

Two hundred ninety-nine subjects due to incomplete responses and also 40 subjects (evening school students) totally (8.5%) were excluded from our study, while 3,681 subjects were included.

Table 1 shows the baseline information on our studied sample. It shows educational districts, type of school, educational fields, and level according to the studied variables.

Table 2 shows the relative frequency of depression in different groups. Most of the depressed cases were females (38.9%), in grade 3

Table 1. Baseline information on the study sample.

	Grade				Educational filed				Type of school		District	
	1	**2**	**3**	**Preuniversity**	**High school**	**KVD***	**Technical**	**Other**	**State**	**Private**	**1**	**2**
Original sample	1148	1025	1168	639	2900	499	544	37	3065	915	1977	2003
Excluded	59	67	100	73	198	49	49	3	226	73	139	160
Study subjects	1089	958	1068	566	2702	450	495	34	2839	842	1838 (49.9%)	1843 (50.1%)
Age group												
14	85	1	0	0	84	0	2	0	73	13	45 (52.3%)	41 (47.7%)
15	600	101	10	0	657	22	32	0	606	105	342 (48.1%)	369 (51.9%)
16	342	587	135	1	787	104	168	6	822	243	513 (48.2%)	552 (51.8%)
17	53	217	683	118	646	190	224	11	796	275	557 (52%)	514 (48%)
18	6	43	203	361	425	113	60	15	430	183	323 (52.7%)	290 (47.3%)
19	1	8	29	68	83	15	7	1	88	18	49 (46.2%)	57 (53.8%)
20	2	1	8	18	20	6	2	1	24	5	9 (31%)	20 (69%)
Gender												
Male	486	460	506	203	1027	324	297	7	1121	534	806 (48.7%)	849 (51.3%)
Female	603	498	562	363	1675	126	198	27	1718	308	1032 (50.9%)	994 (49.1%)
Socioeconomic status												
Low	624	472	517	215	1280	298	241	9	1640	188	1005 (55%)	823 (45%)
Medium	433	441	500	312	1299	134	232	21	1082	604	761 (45.1%)	925 (54.9%)
High	10	18	15	8	41	1	8	1	19	32	19 (37.3%)	32 (62.7%)

KVD* = Kar va Danesh (Job and Knowledge: a new major in Iranian high schools).

(36.2%), had a low socioeconomic (40.9%) status, and were around 19 years of age (39.6%).

There were significant differences between the prevalence of depression and type of school ($P < 0.001$), educational field ($P < 0.0005$), socio-economic status ($P = 0.0002$), and gender ($P < 0.001$).

Table 3 shows the relative frequency of depression stratified by the severity and other studied variables; 10.3% of subjects had severe depression.

Discussion

Depression is a worldwide public health problem. We found that 34% of subjects were depressed, which is in keeping with another study that has shown that more than 34% of subjects had depression.[5] Our results, however, were different from an American study, which was performed on 13,558 young adults, using CES-D questionnaire, which reported that 28.7% of subjects had symptoms of depression.[15] Our findings were also different from Yeung et al's study.[4] The disagreement may be contributed to using different tools for measurement of depression, different sample size, motivation of subjects to response, and subject's lifestyle.

Our study showed mild depression in 28%, moderate in 5.7%, and severe in 0.3% of students, which is different from Hughes'[5] and Kandel and Davies' studies.[7] Considering the similarity of the age and gender in the above-mentioned studies and ours, it seems that cultural differences regarding areas such as psychosocial stress and different using of concepts such as self evaluation, social self-confidence, and adaptive behavioral styles, explain the differences.

Higher rate of mild depression and lower prevalence of severe depression observed in our study indicates that our subjects are more exposed to environmental stress[16] which is a deserving point for public health authorities.

According to our findings, 25% of male and 39% of female students had depressive symptoms, which is similar to Dahlmann's study[17] that showed depression symptoms in 16% of males and 26% of females aged 12 – 17 years. Our findings are also

Table 2. The prevalence of depression stratified by target variables.

	No. of subjects	Depression level				Scores means		
		Normal (0 – 15)		Depressed (16 – 63)				
		n	*%*	*n*	*%*	df	CI95%	*P* value
District								
1	1838	1216	66.2	622	33.8	1	0.99	
2	1843	1215	65.9	628	34.1		(91<OR<1.09)	0.88
School type								
State	2839	1805	63.6	1034	36.4	1	1.42	<0.000
Private	842	626	74.3	216	25.7		(1.25<OR<1.61)	
Grades								
1	1089	707	64.9	382	35.1			
2	958	642	67	316	Borderline	3		0.3
3	1068	681	63.8	387	36.2			
Preuniversity	566	401	70.8	165	29.2			
Educational field								
High school	2702	1802	66.7	900	33.3			
KVD*	450	265	58.9	185	41.1	3		<0.00048
Technical	495	340	68.7	155	31.3			
Other	34	24	70.6	10	29.4			
Socioeconomic status								
Low	1828	1081	59.1	747	40.9			
Medium	1686	1230	73	456	27	2		0.0002
High	51	42	82.4	9	17.6			
Gender								
Male	1655	1193	72.1	462	27.9	1	0.72	<0.00
Female	2026	1238	61.1	788	38.9		(0.65<OR<0.79)	
Age (years)								
14	86	57	66.3	29	33.7			
15	711	494	69.5	217	30.5			
16	1065	699	65.6	366	34.4			
17	1071	702	65.5	369	34.5	6		0.97
18	613	396	64.6	217	35.4			
19	106	64	60.4	42	39.6			
20	29	19	65.5	10	34.5			

KVD* = Kar va Danesh (Job and Knowledge: a new major in Iranian high schools).

similar to those of Cooper and Goodyear[18] who showed a prevalence of 20.7% depression symptoms in girls, and also the results of Scheidt et al[19] who reported a rate of 34% and 49% depression symptoms in males and females, respectively, those of Bowrs' study,[20] Graham and Verhulst's study,[10] and Angold and Rutter's[21] study that have shown male/female ratio of 1:2. Our results, nonetheless, were different from that of Kashani and McNaul[6] who reported a male/female ratio of 1:5. It seems that differences in questionnaire, methodology, and sample size are the reasons of afore-mentioned differences.

We found a significant correlation between low social class and depression symptoms. Similar results were obtained by Blazer.[9] However, it is different from reports of Poznanski and Mokros[8] and Rushton et al.[16] Using different kinds of socio-

economic classification methods, and short-comings of social and familial support systems in our subjects maybe the reasons for above-mentioned differences.

Our study showed more depressive symptoms in 19-year-old students; however, no statistically significant association was observed between age and rate of depression. This supports the Pataki's hypothesis.[3]

Our study indicates that depressive symptoms are common in our subjects and it seems that they have significant association with low socioeconomic status.

Study limitations were as follows:

- Research methodology (cross-sectional); that only indicates point affective situation rather than its trend in past and future; and also cannot establish an association between background

Table 3. The prevalence of depression stratified by type of depression and target variables.

	Normal (0 – 15)		Mild (16 – 30)		Moderate (31 – 46)		Severe (47 – 63)		Total
	n	*%*	*n*	*%*	*n*	*%*	*n*	*%*	
District									
1	1216	66.159	527	28.672	92	5.005	3	0.163	1838
2	1215	65.925	504	27.347	117	6.348	7	0.380	1843
School type									
State	1805	63.579	847	29.834	180	6.340	7	0.247	2839
Private	626	74.347	184	21.853	29	3.444	3	0.356	842
Grade									
1	642	67.015	270	28.184	45	4.697	1	0.104	958
2	642	67.015	270	28.184	45	4.697	1	0.104	958
3	681	63.764	317	29.682	67	6.273	3	0.281	1068
Preuniversity	401	70.848	135	23.852	26	4.594	4	0.707	566
Educational field									
High school	1802	66.691	745	27.572	148	5.477	7	0.259	2702
KVD*	265	58.889	144	32.000	39	8.667	2	0.444	450
Technical	340	68.687	135	27.273	19	3.838	1	0.202	495
Other	24	70.588	7	20.588	3	8.824	0	0.000	34
Socioeconomic status									
Low	1081	59.136	609	33.315	135	7.385	3	0.164	1828
Medium	1230	72.954	384	22.776	68	4.033	4	0.237	1686
High	42	82.353	7	13.725	1	1.961	1	1.961	51
Gender									
Male	1193	72.085	401	24.230	54	3.263	7	0.423	1655
Female	1238	61.106	630	31.096	155	7.651	3	0.148	2026
Age (years)									
14	57	66.279	25	29.070	4	4.651	0	0.000	86
15	494	69.480	187	26.301	30	4.219	0	0.000	711
16	699	65.634	296	27.793	67	6.291	3	0.282	1065
17	702	65.546	307	28.665	58	5.415	4	0.373	1071
18	396	64.600	176	28.711	38	6.199	3	0.489	613
19	64	60.377	33	31.132	9	8.491	0	0.000	106
20	19	65.517	7	24.138	3	10.345	0	0.000	29

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factors and studied variables.

- Due to transitional probability character of depression symptoms in different people, it is difficult to generalize our finding to extended period than adolescence.
- Despite Beck's questionnaire validity, it seems that it is affected by the motivation of response in subjects.
- Nonrespondent characteristics, excluded from the study, may affect the results.

We, therefore, recommend that psychiatric interview and analytical methods be used for the determination of prevalence of depressive disorder and its relationship with other variables.

Acknowledgment

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