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Anxious and depressive symptoms in adolescents: epidemiological data of a large scale study in Dresden

Summary

Objectives: The present large scale epidemiological study was designed to assess the prevalence of mental disorders in adolescents.
Methods: Two cross-sectional studies have been performed in adolescents in Dresden and the results of the examination of 627 high school and 485 secondary school students (mean age 15.5 years) are presented. Self rating procedures like the Beck Depression Inventory (BDI) and clinical interviews have been used to enhance validity.
Results: The results underline the high prevalence rates of anxiety and depression in adolescents. Up to 30 % of the 9th and 10th grades students suffer from mental disorders or are at risk for the development of mental disorders.
Conclusions: Therefore primary prevention of mental disorders is desirable.

Key-words: Mental disorders – Adolescents – Epidemiology – Primary prevention – Anxiety – Depression.

Recent investigations of the WHO have shown the high prevalence of mental disorders in European countries[1]. In contrast there are considerable deficits remaining especially in primary prevention. In spite of the high prevalence rates of mental disorders and the increasing knowledge about them, only rare attempts for primary prevention exist and these have not been tested adequately in research and practice settings. The present project was therefore designed to develop and test a programme for primary prevention of anxiety and depressive disorders in adolescents and young adults. It is the first project of its kind in Germany. This article gives an overview of the aims and first epidemiological results of the project.

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Epidemiology of mental disorders in adolescents

Despite a growing body of knowledge on the epidemiology of mental disorders in Europe only few epidemiological studies on mental disorders with satisfying methodology cover adolescents and young adults. The life time prevalence of mental disorders in adolescents and young adults ranges between 20–30 %[2–5]. However there is limited knowledge about the onset of some of the disorders. In most of them the beginning lies in late childhood and early adolescence[6,7]. Simple phobias and social phobias have an onset at the age of 13[8]. For major depressive disorders (MDD) the age of onset is about 14 years[9]. Panic disorders and agoraphobia have an age of onset at 20. In contrast to panic attacks they are highly indicative for more severe psychopathology[10].
The course of anxiety and depressive disorders is of additional importance. Both anxiety and depressive disorders in adolescents show relatively low proportions of complete remission. The complete remission rates for MDD and dysthymia are about 43 % and 33 %, respectively[11]. Depression is associated with increased risk of poor outcome. Comorbidity with other mental disorders is common, increasing the risk for poor outcome. Further negative sequels of these disorders are social isolation, alcohol, drug, and tobacco abuse. Behavioural and cognitive impairment is likely to cause the young person to face learning deficits and school problems. The prevention of anxiety disorders and depression therefore is of high public health relevance.

Objectives

The study's objective was to assess the prevalence of depression and anxiety disorders and associated risk factors in adolescent high school students. In a second step a

programme for the prevention of these disorders in adolescents was to be developed. The role of cognitive distortions and deficiencies in the etiology of depressive and anxiety disorders has not yet completely been understood they may be considered as underlying risk factors[12]. Apart from this sub-threshold manifestations of clinical symptoms are known risk factors for mental disorders.

Methods

Design

A cross-sectional study design was used to calculate prevalence rates for mental disorders in adolescents. These investigations are part of a large scale quasi-experimental intervention study. Adolescents at high risk for depressive or anxiety disorders were investigated to test the effectiveness of a prevention programme. This has been described in detail elsewhere[13].

To control for possible socio-economic effects, an additional cross-sectional study was carried out to assess physical, social and behavioural impairment and psychopathology of 485 adolescents in secondary-schools in Dresden. The subjects were recruited according to the same procedure described above. In the second study only self rating instruments were administered. Altogether, 627 high school and 485 secondary school students of grades nine and ten in Dresden were examined by means of self-report measures.

Screening measures and definition of implicit risk-groups

Diagnostic instruments such as the Beck Depression and Anxiety Inventories (BDI[14] [German[15]] and BAI[16] [German[17]]) and the Youth Self Report (YSR[18] [German[19]]) help to identify individuals being at high risk for depression and anxiety. BAI and BDI are well known self-rating instruments that have proven to work efficiently in adults. The sensitifity and specifity of the BDI for the detection of clinical episodes are comparable in adolescents and in adults[20]. Because BDI and BAI are instruments designed for use in adults, we additionally administered the YSR main score to assess self rated impairment.

The *Youth Self-Report*[21] is a standardised, empirically-based dimensional inventory for the assessment of adolescent problem behaviour and competencies. The self-report instrument has been used extensively in previous research on psychopathology in childhood and adolescence. As a general indicator for psychopathological impairment a total score is computed.

Psychiatric diagnoses: To assess clinical diagnoses in our sample the original Diagnostic Interview for Mental Disorders[22] was modified to assess childhood and adolescent diagnoses[23]. The structured clinical interview is based on the Diagnostic and Statistical Manual of Mental Disorders, 4th ed. The interviews were conducted individually in a private location after regular classroom periods.

Interviewers were recruited from the clinical psychology programme at the Dresden University of Technology. They were used to conduct structured clinical interviews such as the DIPS, within the university psychology programme. Nevertheless interviewers took part in a comprehensive additional training seminar consisting of two 8-hour training sessions during which the criteria for the relevant disorders were reviewed. Coding and interviewing skills for the modified DIPS-version were taught. Role-playing techniques were performed under supervision. Interviewers were continually supervised by the authors during the study. Interview forms were reviewed on-site to assure quality and address difficulties immediately.

According to the main aim of our work, the primary prevention of mental disorders, three subgroups were defined. "Cases" were students who suffered from relevant physical, cognitive and emotional impairment. "At risk" were students with subclinical impairment who therefore were at risk to develop a disorder. "Normals" were students without impairment.

Case definition: Operational case definition was performed by means of self rating instruments. We used pre-test data of 600 secondary and high-school students to define cut-offs for BDI and BAI scores[13].

"Cases" of self rated impairment were students who scored 18 and above on the BDI or 24 and above on the BAI (cases: BDI > 17 or BAI > 23). For both instruments these values represent the cut-offs for the 90th percentile.

"At risk" was defined as 11 to 17 points on the BDI or 16 to 23 points on BAI and neither on BAI nor on BDI scores that would define a "case" (at risk: BDI 11–17 and BAI < 24; or BAI 16–23 and BDI < 18). For both instruments this defined the 75th to 89th percentile.

"Normals" were defined as scores on BDI lower than 11 and scores lower than 16 on BAI (normals: BDI < 16 and BDI < 11).

Subjects

Letter of consent forms to participate in the prevention programme were sent to all parents of 9th and 10th grade students of four randomly selected high schools in Dresden, Germany (Fig. 1). After this a total of 627 male and female adolescent students aged 15–17 took part. These were 90.2% of the initial pool of all 9th and 10th graders of these schools. High risk criteria for the development of anxiety or depressive

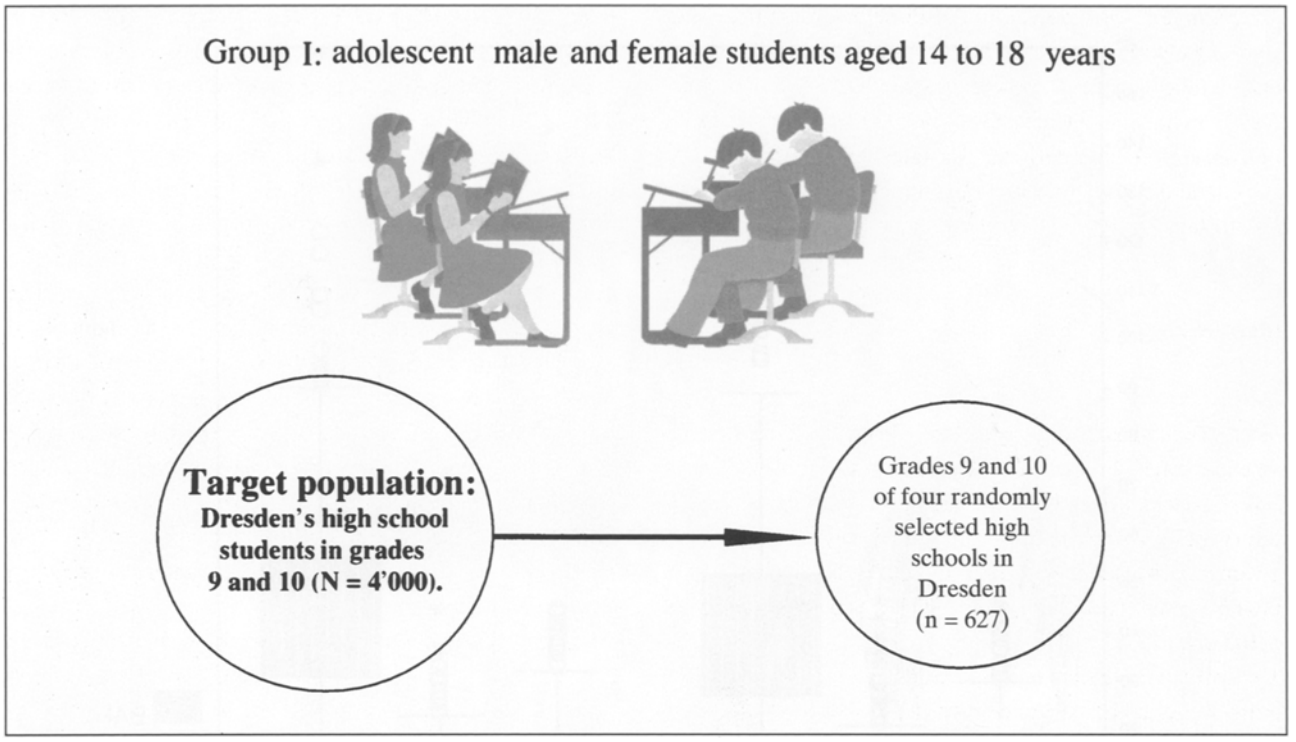

Figure 1 Selection of 627 high school students grades nine and ten in Dresden

disorders had been expected to be met by 30% of the students.

Sample characteristics

The age cohort to be studied is particularly relevant to the early manifestation of anxiety and depressive disorders and their prevention. Table 1 gives an overview of demographic characteristics of the two samples.

Variables	High school n = 627	Secondary school n = 485
Age (mean/SD) (range)	15.5/0.8 14–18	15.4/0.8 14–19
Sex (male/female: %)	41/59	49/51
Parents married (%)	79	75
Familiy social status (%)		
academic	7.8	2.8
self-employed	15.3	20.2
civil servant	8.8	10.3
white collar worker	57.0	45.2
blue collar worker	9.6	19.6
other	1.6	1.9

Table 1 Demographic variables by group (percentages)

Results

Overall pre-test scores of both student samples indicated no difference in psychopathology between high-school and secondary-school students[13] (see Fig. 2).

As expected, female students scored higher on BDI, BAI and YSR-scales than males (see Fig. 3). Prevalence of "at risk" status was 21.8% in males and 32.6% in females. The YSR pointed out more "cases" than did the case-criteria but it indicated less people "at risk". Thus prevalence rates of "at risk" status ranged from 19.8% in males to 26.6% in females (results for YSR see Fig. 4).

In addition to self rating instruments the high-school students were interviewed with the diagnostic interview for psychic dysfunctions DIPS[21] in a modification for adolescents, the MINI-DIPS-J[22]. In addition to DSM-IV diagnoses for adults the MINI-DIPS-J also contains disorders that are specific for children and adolescents (see Tab. 2).

The results of the diagnostic interviews according to DSM-IV criteria underline the high prevalence rates for anxiety and depression in adolescents. Life-time prevalence for all disorders together was found to be 23.4%. The life-time prevalence for anxiety disorders was 16.4% and for affective disorders 6.2%. Subclinical disorders were assessed as well. Prevalence rates were provided in Table 3.

The high prevalence rates again underlined the relevance for prevention of mental disorders in adolescents. According

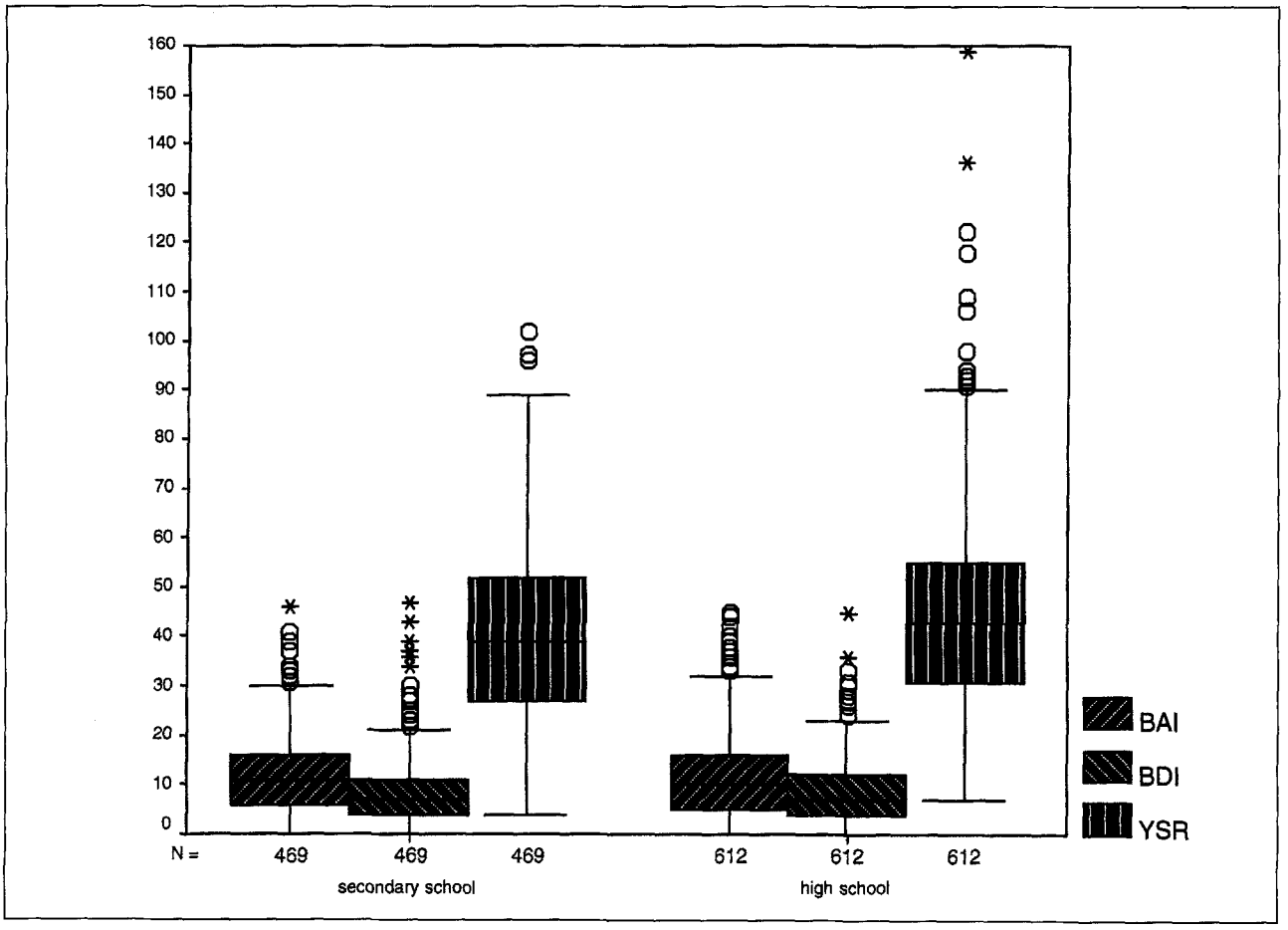

Figure 2 BDI, BAI and YSR pre-test scores for high school (treatment and control groups) and secondary school students in Dresden

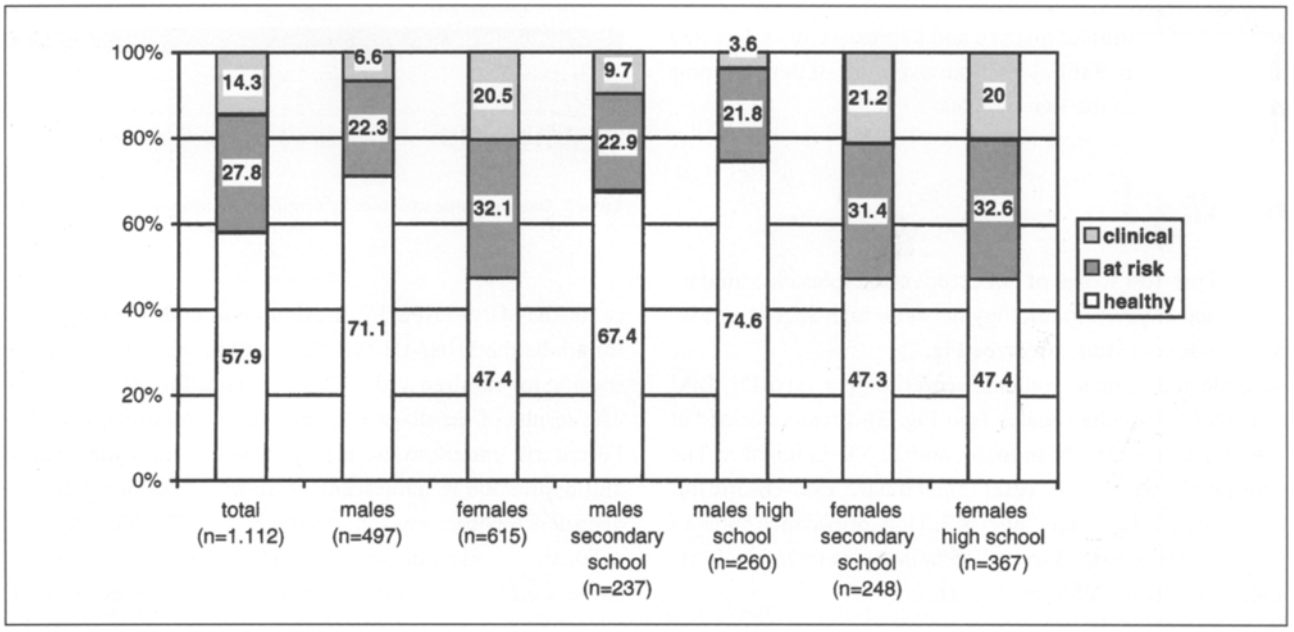

Figure 3 Anxiety and depressive impairment of 1'112 Dresden students aged 14 to 18 (prevalence rates according to operational criteria, BDI and BAI)

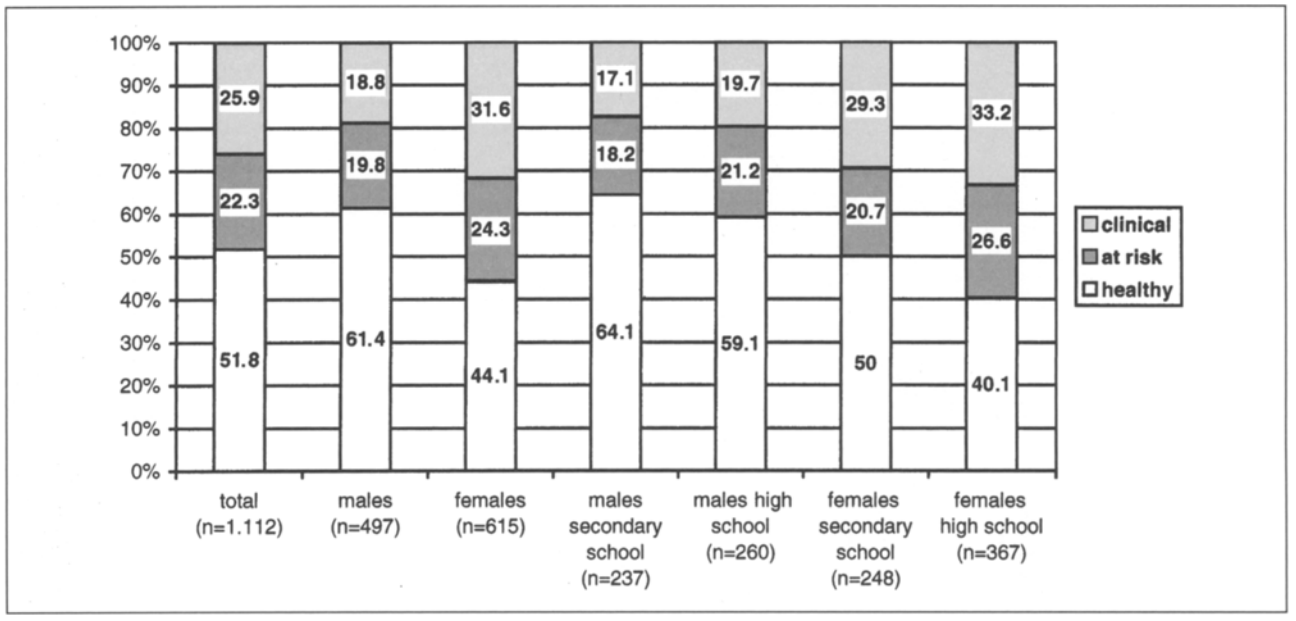

Figure 4 Psychopathology of 1'112 Dresden students aged 14 to 18 (prevalence rates according to YSR)

to findings of Kessler et al.[8] in our sample specific phobias and social phobias showed the highest life-time prevalence rates with 9.6% and 5.0%, respectively.

Discussion

The results of our cross sectional data replicate the high prevalence rates of psychiatric disorders especially anxiety disorders in adolescent students. The results from self rating instruments were validated by clinical interviews according to the DSM-IV criteria in the high-school sample. About 14 to 20% of the adolescents aged from 15 to 17 were found to suffer from mental disorders to a clinical extent and another 20 to 30% were seen at risk to develop a mental disorder. Like other epidemiological studies reviewed females showed higher prevalence rates than males. The most frequent disorders were specific and social phobias. This is in line with other epidemiological reports on mental health in children and adolescents[7,8].

As expected the observed prevalence rates differed between instruments and case criteria. Self rating instruments tended to overestimate the prevalence of clinical and sub-clinical cases because they generated many false positives[20] and this effect appeared to be much stronger for the YSR than for the combined BDI-BAI criteria. As there were identical results with respect to the self rating defined prevalence rates for the two samples we assume that our interview based data for the high school students are representative for secondary school students as well.

The high prevalence of clinical and sub-clinical mental disorders emphasises the need for preventive strategies for adolescents. The public health relevance of a prevention programme for mental disorders results from the enormous costs caused by their treatment. Several authors[24–26] recently have developed programmes for the prevention of depression in adolescents and young adults. These programmes appear to work well in selected samples of high risk persons. We hope that our prevention programme also will work.

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N = 581	Clinical diagnoses						Subclinical diagnoses					
	Point prevalence (%)			Lifetime prevalence (%)			Point prevalence (%)			Lifetime prevalence (%)		
DSM-IV –disorders	Total	Males	Females	Total	Males	Females	Total	Males	Females	Total	Males	Females
Any of the disorders below (except substance abuse)	*19.5*	*12.7*	*24.1*	*23.4*	*16.5*	*28.2*	*10.7*	*6.4*	*13.7*	*14.7*	*10.2*	*17.7*
Anxiety disorders, *any*	*14.8*	*8.9*	*18.9*	*16.4*	*11.0*	*20.1*	*8.1*	*4.2*	*10.8*	*10.0*	*6.3*	*12.5*
separation anxiety d.	0.3	–	0.6	1.4	0.4	2.0	0.2	0.4	–	0.7	0.8	0.6
panic disorder	0.3	–	0.6	0.3	–	0.6	0.3	–	0.6	0.5	0.4	0.6
agoraphobia	1.0	–	1.7	1.0		1.7	0.7	0.4	0.9	0.9	0.4	1.2
social phobia	4.6	2.1	6.4	5.0	2.5	6.7	2.8	2.5	2.9	2.9	3.1	3.0
specific phobia	9.0	5.9	11.0	9.6	7.6	10.8	3.4	0.8	5.2	3.6	1.3	5.2
generalised anxiety d.	1.4	0.4	2.0	1.4	0.4	2.0	1.0	–	1.7	1.2	–	1.7
posttraumatic stress d.	0.5	0.4	0.6	1.0	0.8	1.2	0.2		0.3	0.5		0.9
obsessive compulsive d.	–	–	–	–	–	–	0.2	0.4	–	0.7	1.3	0.3
Affective disorders, any	*2.1*	*0.4*	*3.2*	*6.2*	*3.8*	*7.8*	*0.3*	–	*0.6*	*2.6*	*0.8*	*3.8*
major depression	1.4	0.4	2.0	5.5	2.9	7.2	0.2	–	0.3	2.2	0.8	3.2
dysthymia	0.7	–	1.2	1.0	0.8	1.2	0.2	–	0.3	0.3	–	0.6
bipolar disorders	–	–	–	0.2	0.4	–	–	–	–	–	–	–
Somatoform disorders, any	*0.7*	*0.8*	*0.6*	*0.9*	*0.8*	*0.9*	*0.5*	–	*0.9*	*0.5*	–	*0.9*
Eating disorders, any	*0.9*	–	*1.5*	*1.5*	–	*2.6*	*0.7*	–	*1.2*	*1.2*	–	*2.0*
anorexia nervosa	0.2	–	0.3	0.5	–	0.9	–	–	–	0.3	–	0.9
bulimia nervosa	0.7	–	1.2	1.2	–	2.1	0.7	–	1.2	0.9	–	1.5
Externalizing childhood disorders, any	*3.1*	*3.4*	*2.9*	*4.1*	*5.1*	*3.5*	*1.7*	*2.5*	*1.2*	*3.1*	*4.2*	*2.3*
attention deficit and hyperactivity d.	1.4	1.7	1.2	2.2	3.4	1.5	0.9	1.3	0.6	1.7	2.1	1.5
oppositional defiant d.	1.0	1.3	0.9	1.2	1.7	1.2	0.5	0.4	0.6	0.9	0.8	0.9
conduct disorder	1.2	1.7	0.9	1.4	1.7	1.2	0.3	0.8	–	0.5	1.2	–
Substance abuse (only screening)	*2.4*	*3.0*	*2.0*	*2.9*[1]	*3.4*[1]	*2.6*[1]	*0.3*	*0.8*[1]	–	*0.3*[1]	*0.8*[1]	–
alcohol	0.9	1.3	0.6	0.9	1.3[1]	0.6[1]	0.2	0.4	–	0.2[1]	0.4[1]	–
medical drugs	0.2		0.3	0.2		0.3			–		–	–
illegal drugs	1.5	1.7	1.5	2.2[1]	2.1[1]	2.4[1]	0.2	0.4	–	0.3[1]	0.8[1]	–

[1] In the column "lifetime prevalence" 12-month prevalence rates of substance abuse are displayed (assessed only by screening-interview question).

Table 2 Prevalence rates of mental disorders in high school students aged 14 to 18 at baseline; total: N = 581; males: N = 237; females: N = 344

Zusammenfassung

Angst- und depressive Symptome bei Jugendlichen: epidemiologische Ergebnisse einer umfangreichen Untersuchung in Dresden

Fragestellung: Die vorliegende Arbeit beschreibt das Design einer umfangreichen epidemiologischen Studie zur Prävalenz psychischer Störungen bei Jugendlichen.

Methoden: Zwei Querschnittstudien an Dresdner Jugendlichen werden vorgestellt und die Untersuchungsergebnisse von 627 Gymnasiasten und 485 Mittelschülern (Durchschnittsalter 15,5 Jahre) werden berichtet. Zur Verbesserung der Validität der Untersuchungsergebnisse wurden Selbstbeurteilungsinstrumente wie das Beck Depressions Inventar (BDI) zusammen mit klinischen Interviews verwendet.

Ergebnisse: Die Ergebnisse unterstreichen die hohe Prävalenz von Angststörungen und Depression bei Jugendlichen. Bis zu 30% der Schüler der 9. und 10. Klassen von Gymnasien und Mittelschulen weisen manifeste psychische Störungen oder ein erhöhtes Risiko an einer solchen zu erkranken auf.

Schlussfolgerungen: Die Ergebnisse unterstreichen die Bedeutung der primären Prävention psychischer Störungen.

Résumée

Symtômes d'anxiété et de dépression chez les adolescents: des résultats épidémiologiques d'une large enquête effectuée à Dresden

Objectifs: Le travail présent décrit la conception d'une large enquête sur la fréquence des troubles psychiques chez l'adolescent.

Méthodes: Deux études d'échantillon effectuées sur des adolescents de Dresden sont exposées et les résultats d'enquêtes menés sur 627 lycéens et 485 collégiens (âge moyen 15,5 ans) sont présentés. Des procédures d'auto-evaluation telles que le Beck Depression Inventory (BDI) et des entretiens cliniques ont été utilisés pour améliorer la validité des résultats obtenus.

Résultats: Ces derniers démontrent un taux élevé de troubles liés à l'anxiété et de dépressions chez l'adolescent. Jusqu'à 30% des élèves des 3ème et Secondes des classes de collèges et lycées manifestent des troubles psychiques ou présentent un risque élevé de développer de tels troubles.

Conclusions: Ces résultats soulignent l'importance d'un dépistage précoce de ces troubles psychiques.

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